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Parking Regulation and Land Use in the Portland Metropolitan Region: A Case for Local Parking Districts and Shared Parking Arrangements

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The purpose of this paper is to examine parking regulations and parking management in a land-use and transportation planning context. Current parking management policies in the Portland metropolitan region provide the overall framework for this analysis. The paper is divided into six sections:

- Section one provides a summary of the planning policies and growth management strategies of the Portland metropolitan region which impact parking policy. These policies provide the context for the current discussion of parking regulations in the region.
- The experiences of two close-in Portland neighborhoods are discussed in section two. Parking is not regulated by the city zoning code in these neighborhoods. Lessons learned from these areas provide important case studies if existing parking regulations are to be re-considered.
- Section three includes a description of how parking outside of the downtown area is regulated by the City of Portland's zoning code, and examines several problems with this approach.
- The geography and spatial layout of parking is explored in section four. This section examines how existing private parking development patterns might be converted to a different parking pattern. Different approaches to parking may be necessary with different development patterns.
- Section five examines the characteristics of common goods and services to provide a theoretical basis for considering parking as an element of the public infrastructure.

- Section six outlines a model for establishing a different approach to parking policy, one which emphasizes shared parking and neighborhood parking districts rather than zoning code regulation.

The Policy Context of Parking Regulation

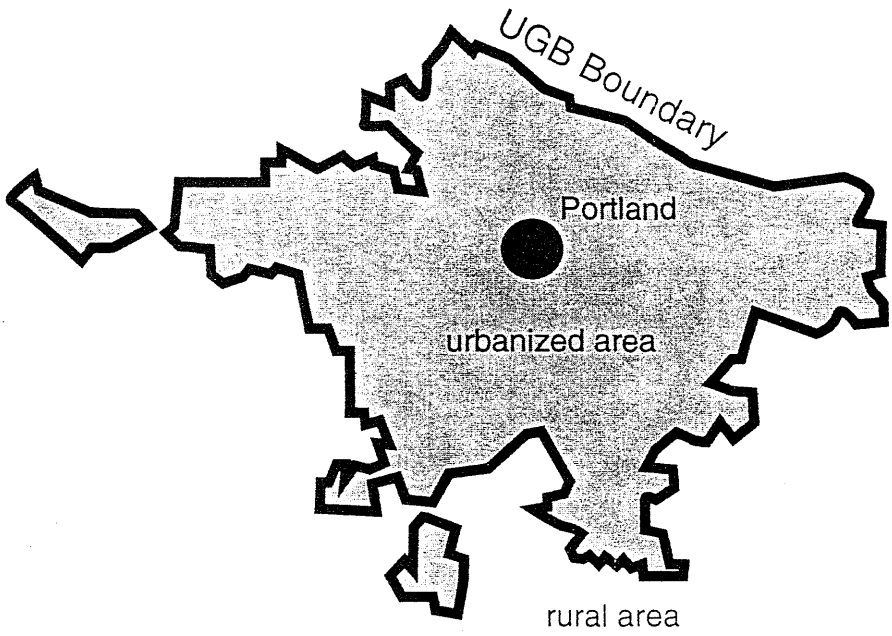
Planning agencies in the Portland metropolitan region are attempting to implement a ten percent reduction in the number of parking spaces per capita over the next twenty years. This Parking Reduction Requirement is a central element of the state of Oregon's Transportation Planning Rule (TPR), which aims to reduce the number of "vehicle miles traveled" per capita. The Parking Reduction Requirement was formulated with the understanding that excessive free parking encourages people to drive more often than is socially optimal, considering the environmental costs of automobile use. These policies were also developed with the recognition that parking lots represent valuable land resources for future re-development. The opportunity for redevelopment is particularly important given the regional planning and growth management policies of the Portland metropolitan region.

Between 1970 and 1990, the Portland region grew by almost 300,000 people (Clackamas, Multnomah, and Washington Counties) (Knaap and Nelson, p. 117). Between 1990 and 1994, Metro estimates the region (including Clark County Washington) has grown by an additional 110,000 people. Metro, the elected regional government charged with planning for regional growth, has forecast that the region will grow by an additional 650,000 people between 1995 and 2015 (Metro, 1994/95). In many metropolitan areas, this kind of population influx would be expected to cause extensive suburban sprawl.

The Portland region is in a unique situation, thanks to Oregon's land use planning laws. Senate Bill 100 (passed in 1973) is the cornerstone of Oregon's planning legislation. A central element of SB 100 was establishing an "Urban Growth Boundary" (UGB) around each of the cities and towns in

the state. An Urban Growth Boundary is essentially a line encircling a city, containing development. Outside of the UGB, growth is limited by zoning restrictions and the lack of urban services - which are not extended beyond the line. Figure 1 shows the Portland UGB.

Figure 1. The Portland Urban Growth Boundary.



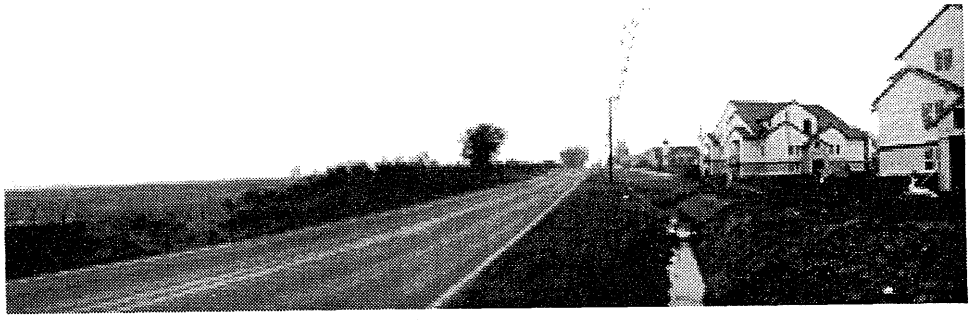
Oregon's planning laws provide for the expansion of the UGB in order to maintain a twenty year supply of buildable land within the urbanized area. The Metro Council, in response to these growth pressures, is contemplating an expansion of less than 9,000 acres (if any at all). This figure represents an expansion of less than four percent (Metro, 1994/95).

The desire to protect the accessibility of rural landscapes, the desire to maintain the feeling of a small city, and the desire to avoid the perceived sprawl of Los Angeles, has lead to popular political support in Portland for maintaining the UGB where it is. Portland residents are protective of the rural farm land and forested landscapes that surround the city. Many rural

residents have also supported maintaining the UGB where it is. One of the original sponsors of Senate Bill 100 was a dairy farmer from the Willamette Valley concerned about the impact of unchecked sprawl on the farm economy. In Oregon the UGB is as much of a "right to farm" law as an urban planning tool. This odd combination of interests has made expansion of the UGB surrounding Portland a politically unpopular idea.

This blend of explosive growth and public policy favoring urban containment has created a planning challenge: How will the projected influx of growth fit within the existing urban area? For most of the 1970's and 1980's, this was not a problem since the original UGB was drawn loosely around Portland. Over the last twenty years there has been plenty of room to allow for development as usual, as long as it was within the UGB. As Knaap and Nelson explain: "Although development at urban densities has been contained within UGBs, development densities inside UGBs are lower than planned..." (Knaap and Nelson, p. 67). The Portland region does have plenty of sprawling suburban housing tracts. The difference between growth in Portland and other cities is that Portland has discouraged leap-frog development by containing suburban sprawl within a determined area. In the late 1990's, the UGB is no longer just a political line. It is now visible on the landscape - that point where the housing development stops abruptly, and the open farm land begins. There are few large tracts of undeveloped land left within the UGB. As a result, residents of the Portland region are now presented with the choice of expanding the UGB to allow continued urban sprawl, or facing the challenges of living in a denser urban environment, where land is a more expensive commodity.

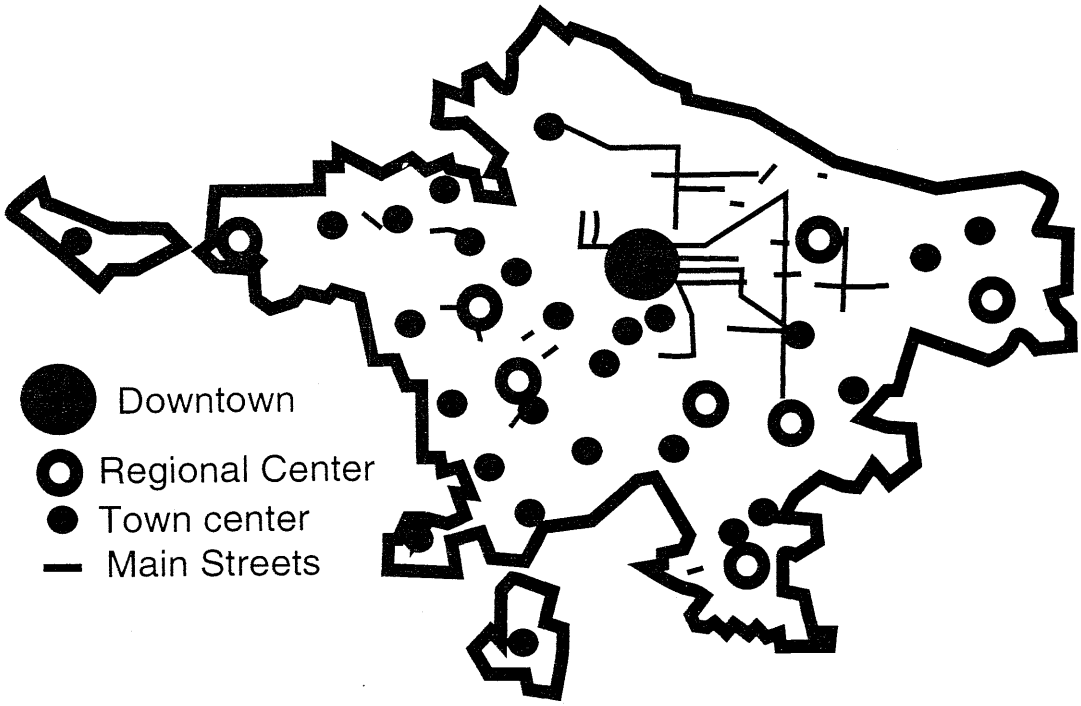
Figure 2. The Urban Growth Boundary. On the right is land within the urbanized UGB area, while the land on the left is off-limits to development as long as it remains outside of the boundary.



In response to this challenge, Metro has created a long range regional planning process, known as the *Region 2040* project. The 2040 Concept plan was adopted by the Metro Council in 1996. The central strategy of the 2040 plan is to accommodate a large percentage of projected growth in higher density, mixed use communities clustered around the major transit routes (Figure 3). The City of Portland itself has set a target of accommodating about 20 percent of the expected growth (Tashman Associates). Planners in the Portland region have been charged with planning for a denser urban land use pattern within the existing urban area. The Parking Reduction Requirement is one element of that challenge.

As a result of the Parking Reduction Requirement, local governments in the region are cooperating with Metro to draft a list of parking reduction strategies. This list of strategies includes: preferential carpool parking programs, changing zoning code required parking minimums and maximums, establishing area-wide parking caps, removing on-street parking, encouraging new development to replace existing surface parking, re-striping

Figure 3. The 2040 Concept Plan above. Each of the regional centers, town centers, and main streets represent a node of higher density "mixed use" development, often where major transit lines converge. Below is a mixed use development near Downtown Portland.



existing lots to reduce the number of spaces, enhancing the regional park and ride system, pricing parking when possible, establishing employer based demand management programs, and establishing tighter controls over on-street parking (JHK & Associates).

All of these methods, however, assume a continuation of the present system of parking supply, which can be characterized by three rules of thumb:

(1) Parking is privately supplied.

(2) For each parcel of land, enough parking is supplied to meet the needs of the uses on that individual parcel.

(3) Parking needs are determined by government regulation (the zoning code).

This paper examines a different approach to implementing the Parking Reduction Requirement, one which emphasizes parking as a shared element of the public infrastructure, rather than an accessory to private development. Rather than a part of private development that is regulated by the city zoning code, parking might be considered part of the public infrastructure.

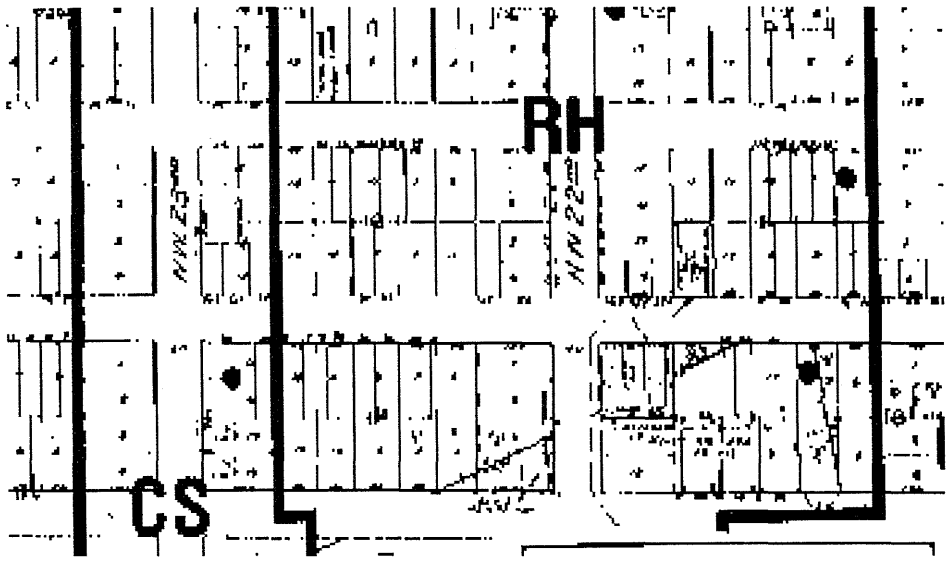
The Experience of Close-In Neighborhoods

Several of Portland's older neighborhoods developed before the advent of automobiles and zoning. In some of these close-in commercial areas parking is not regulated by the zoning code. Commercial districts within these areas (such as Northwest Twenty-third Avenue and Southeast Hawthorne Boulevard) continue to be successful without extensive parking areas. The experiences of these neighborhoods do however suggest the problems that can occur where parking is not regulated by zoning requirements. These neighborhoods also provide examples of what can be done in the absence of zoning code requirements to address parking problems and maintain healthy commercial districts.

Northwest Portland

Northwest Twenty-third Avenue is an upscale shopping district with older brick storefronts and Victorian houses, surrounded by a dense residential area of walk-up apartment buildings, with very little off-street parking. The Northwest Neighborhood (an area about twenty blocks across) is home to approximately 12,000 people (City of Portland, Office of Neighborhood Associations). It is one of the most densely developed neighborhoods in Oregon. Much of the commercial part of the Northwest Neighborhood is zoned with the Storefront Commercial (CS) designation, which does not require off-street parking.

Figure 4. Zoning along NW Twenty-third Avenue.



(City of Portland, Bureau of Planning)

Figure 5. Storefront Commercial Development along NW Twenty-third Avenue.

A 1995 survey conducted by Tri-Met (the regional transit agency) concluded that parking is the number one problem in the neighborhood, according to residents. Fifty-two percent of 400 respondents listed parking as the major problem in the neighborhood (*Northwest Examiner*, February 1996). As part of Tri-Met's survey, residents were also asked to name acceptable options to solve the parking problem. The results are shown in Table 1.

Table 1. Results of 1995 Parking Survey in NW Portland.

Solution	Resident Support
Better use of off-street lots	79%
Encourage alternative transportation	71%
Use angle parking	67%
Dedicate some streets for resident parking only	66%
Shuttles for non-residents	65%
Charge non-residents for on-street parking	58%
Build commercial pay parking structures in the neighborhood	30%
Shuttle service for residents	26%
Leave things the way they are	12%
Charge residents for on-street parking	8%

(*Northwest Examiner*, 1996)

As the table above indicates, the best solution, from the point of view of neighborhood residents, was better management of existing off-street parking lots. The results of this survey is consistent with the perception by many residents that there are numerous off-street (private) parking lots which remain empty outside of normal business hours, but are not available to residents due to customer only parking restrictions, or complete closure of the lot during after business hours. In contrast, residents preferred the status-quo to being charged for parking.

In May of 1995, a neighborhood newspaper published a story suggesting several ways to solve the parking problem. The solutions listed included: allowing more diagonal parking, allowing residents to block their own driveway, building multi-story structures, operating shuttle buses for events and local businesses, opening private lots for after hours use, and creating a non-profit office to administer private lots. For purposes of this discussion, the last two suggestions, which require shared use of private lots, demand further explanation. An explanation of these two ideas appeared in the neighborhood newspaper as follows:

> "Private lots don't profit from having their property vacant at night. Letting the public freely partake of their resource, however, can have pitfalls. If unauthorized cars fail to disappear when the paying tenants/customers arrive, lot owners have to quickly identify and remove the offenders. Tow companies don't charge property owners, but lot owners may still have to pay their own employees to monitor and report cars for towing. Free public use also leads to a build up of litter, which few squatters see as their responsibility to remove. There's also the matter of liability should a free user have an accident."
>
> (*Northwest Examiner*, 1995)

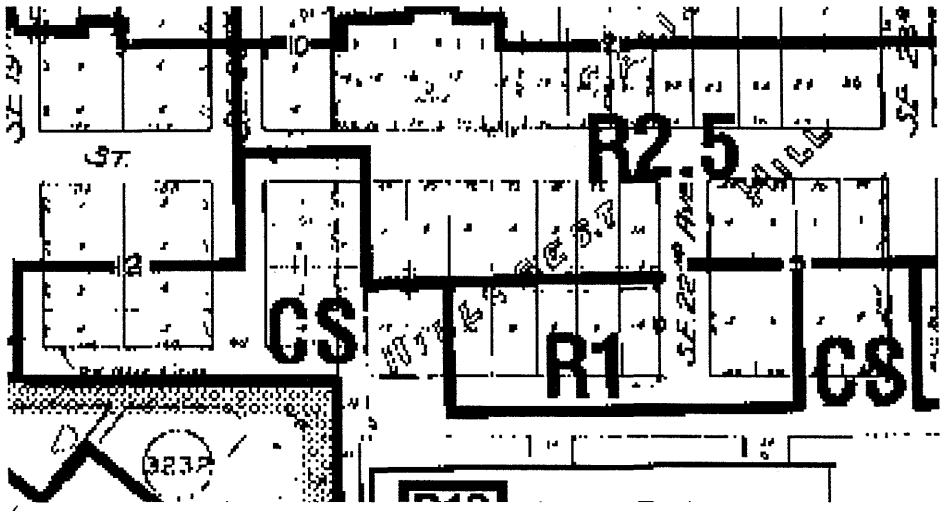
> "Assuming that logistical matters may be preventing commercial lot owners from trying idea number 3 [after hours use of private lots], perhaps a centralized office is needed to take advantage of the available spaces. A non-profit parking authority could sell permits, which would be valid at designated lots. Permits could be displayed in the windshield so tow companies could roam the lots looking for violators. Lot would receive a modest payment for their participation, and they would be freed from all administrative duties and legal liability."
>
> (*Northwest Examiner*, 1995)

Based on the parking discussion that has occurred in Northwest Portland, shared parking emerges as a viable solution. A similar debate in Southeast Portland leads to similar conclusions.

Southeast Hawthorne Boulevard

Southeast Hawthorne Boulevard, an older streetcar era commercial strip, is in a similar situation. Like Northwest Twenty-third, many of the commercial buildings along Hawthorne Boulevard are older, with brick storefronts extending to the sidewalk. Aside from a few banks, a large supermarket, and a medical clinic, there is very little off-street parking within the core of the Hawthorne District. Like Northwest Twenty-third, much of SE Hawthorne is zoned with the Storefront Commercial (CS) designation, which does not require off-street parking.

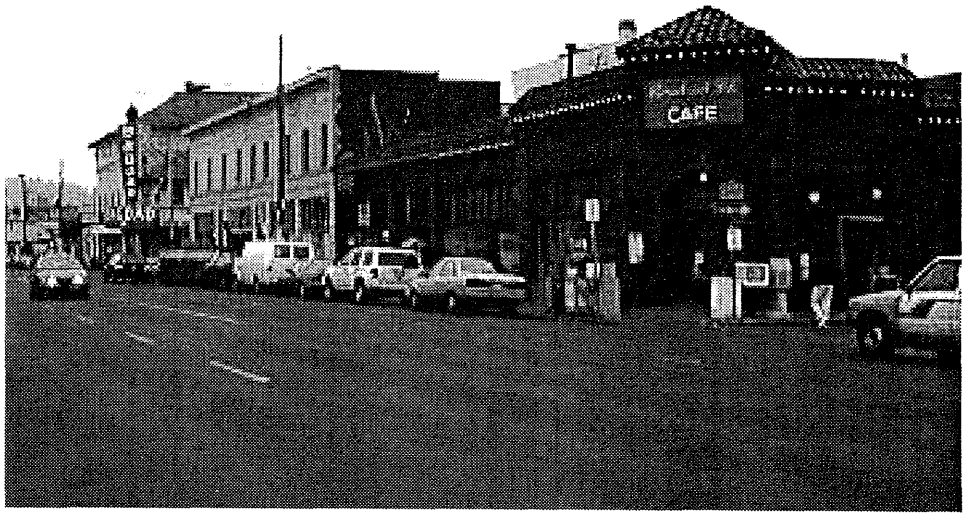
Figure 6. Zoning along SE Hawthorne Boulevard.



(Source: Portland Planning Bureau)

A recent controversy illustrates how a shared parking solution evolved in the Hawthorne District. In February of 1996, the owners of the Hawthorne medical clinic parking lot initiated a policy of towing all unauthorized vehicles (non-customers), day or night. Prior to this policy, the lot was often used by customers of other nearby establishments. The medical clinic was closed in the evening, while many adjacent shops, restaurants, and bars remained open late. Other merchants were angered by this new policy

Figure 7. Storefront Commercial Development along SE Hawthorne.



because the medical clinic lot would now sit empty in the evening, while the customers of other establishments would have more trouble finding convenient parking. A neighborhood newspaper reported a response to this frustration from the point of view of other parking lot owners: "Other Hawthorne merchants [who own parking lots] are having similar problems in their lots, and want to communicate the fact that if you own a lot, you are responsible for what happens there" (*Southeast Examiner*, 1996).

During the spring of 1996, neighborhood tension was relieved when the health clinic contracted with a pay-to-park company to manage the lot. The lot is now open to the public 24 hours a day, free to customers, and $2 for everyone else. This example illustrates how, in the absence of zoning regulation, a market for parking can evolve where shortages occur, allowing for more efficient utilization of existing space.

As in Northwest Portland, a poll was conducted of area residents. Of 1425 residents, forty-six percent believe parking is a problem, although in this case, only 13% considered parking a "major problem". As in Northwest Portland, residents were asked to consider a variety of solutions. Table 2

Figure 8. Pay Parking on SE Hawthorne.

Table 2. Results of 1996 Parking Survey in The Hawthorne District.

Solution	% of Residents who consider this option "very acceptable"	% of Residents who consider this option "very unacceptable"
Encourage businesses to share existing parking lots with others when not needed by their customers	**72%**	7%
Encourage residents and non-residents to use transportation alternatives (walking, biking, bus, car pool)	62%	6%
Recommend an increase in frequency of Bus # 14 in the evening and weekends	50%	7%
Encourage parking lot owners to allow businesses to use their available space for valet parking	50%	9%
Install more bike racks on Hawthorne	49%	11%
Educate local customers and residents how to park courteously	49%	13%
Use curb extensions to prevent parking in crosswalks and street corners	44%	13%
Increase parking enforcement	36%	8%
Dedicate some neighborhood streets for permit parking only	33%	20%
Re-evaluate time zones on commercial streets	33%	7%
Use angle parking if possible to fit more parking spaces on the street	30%	24%
Explore the possibility of a parking program whereas residents dedicate their driveway space when not in use to employees of local businesses	20%	35%
Do nothing	13%	42%
Charge residents for on-street parking	8%	**78%**

(City of Portland, Office of Transportation)

summarizes the results. As in Northwest Portland, the most popular solution was to encourage shared parking in commercial areas. The shared parking solution was ranked "acceptable" or "very acceptable" by more people than was a residential parking permit solution. Hawthorne area respondents, like residents of Northwest Portland, were particularly un-supportive of options which would charge residents for parking.

Shared Parking and Zoning Regulation

As suggested by the two examples above, shared parking is one means of reducing parking problems. Some elements of shared parking, however, can conflict with the zoning approach to parking provision. This conflict suggests why approaches other than zoning regulation may be more effective.

The implementation of shared parking depends on adjacent land uses having different peak hours of operation. For example, activity at an office building occurs during the day, while theaters are often used primarily in the evening. As each use is developed, under the current regulatory environment, each is required to provide enough parking to meet the peak demand hours of that use. Because these uses have different peak hours of parking demand, only one lot might be full at any given time, while the other lot remains empty.

Other uses may have similar peak hours, but those peaks occur on different days. For example, a church and an office building might both be used during the day, but on different days. Again, under the current regulatory environment, even if these uses were adjacent to one another, they would usually be required to provide enough parking to accommodate each use separately.

In addition, some uses compliment one another - where a visit to one place results in a visit to the other without the need to move to a new parking space. For example, an office building may be located adjacent to a lunch cafe. Under current regulations, the office building and the cafe are both required to supply enough parking to meet peak demands. Zoning

regulations cannot easily account for the fact that office workers from the adjacent building might patronize the cafe without moving their car.

In a 1983 study, Barton Aschman Associates quantified the impact of shared parking. They gathered parking accumulation data from 17 test cases, and compared the actual peak hour parking demand with the estimated demand if the complimentary uses would have been considered separately. In cases where office uses shared parking with retail development, they found between 5% and 25% lower parking space demand than would be expected if they had been separate. In cases where office uses shared parking with evening entertainment facilities, between 11% and 37% fewer spaces were needed. In several cases, office - hotel - entertainment, or office - retail - entertainment combinations demanded between 19% and 179% fewer parking spaces than they might if they located separately (Barton Aschman Associates, p. 16).

Zoning regulations are not easily applied to these situations, primarily due to the prescriptive nature of most zoning codes. A typical zoning code will include a chart specifying out how many parking spaces are required for each type of land use. For example, several tables within the Portland Zoning Code list parking requirements for selected land uses in the City of Portland, based on zoning designations (Table 3). As shown in Table 3, the primary means of accommodating different parking situations is to divide the city into zones and uses, and describe a prescription for required parking for each zone and each use. The over-riding assumption is that each parcel of land should have private parking on the site. Another table in the Portland Zoning Code (Table 4) shows the prescription for converting the floor area of a development (or some measure of development intensity) to the number of required parking spaces.

Table 3. Required Parking Spaces by Zone within the City of Portland.

Zone	Requirement
OS, RF - RH, IR, CN2, CO1&2, CG, EG, I	None required inside the Central City plan district, except for residential uses: See Chapter 33.510. Outside the Central City plan district: See Table 266-2
EX	None required inside the Central City plan district, except for residential uses: See Chapter 33.510. Outside the Central City plan district: Minimum of 1 per 1000 sq.ft. Maximum of Table 266-2, except: 1. Retail, personal service, repair-oriented have a maximum of 1 per 200 sq.ft. 2. Restaurants, etc. have a maximum of 1 per 75 sq. ft., and 3. Household Living; minimum of 0 for 1 to 3 units, 1 per 2 units for four+ units, and SROs exempt.
CN1	None required except for residential uses: Inside the Central City plan district, see Chapter 33.510. Outside the Central City plan district: (see Table 266-2). Maximum of 1 space per 2,500 sq. ft. of site area.
CM, CS	None required
RX, CX	None required inside the Central City plan district, except for residential uses: See Chapter 33.510. None required outside the Central City plan district.

(City of Portland, Bureau of Planning)

This prescriptive approach makes some sense, given the original rationale for parking regulations. In most cases, parking regulations were established in order to encourage or require more parking than was being provided by the private sector. Prior to the widespread use of automobiles, there was no need for off street parking and, as a result, the private sector did not provide any. As private cars became more common, existing on-street parking became in-adequate. In this context parking regulations (such as minimum requirements) implemented the public interest in relieving parking congestion, and pushed private developers to provide on-site parking. The current context, however, is quite different. In Oregon, with the TPR and the Parking Reduction Requirement, it is now public policy to reduce the number of parking spaces, and perhaps even to make driving more difficult.

Table 4. Minimum Required Parking Spaces in the OS, RF-RH, IR, CN2, CO1&2, CG, EG, and I Zones within the City of Portland.

Use Categories	Specific uses	Minimum Required Parking
Residential Categories		
Household Living		1 per unit, except SROs exempt and in RH, where it is 0 for 1 to 3 units and 1 per 2 units for four + units
Group living		1 per 4 residents
Commercial Categories		
Retail Sales and Service	Retail, personal service, repair oriented	1 per 500 sq. ft. of floor area
	Restaurants, bars, health clubs, gyms, lodges, meeting rooms, and similar. Continuous entertainment such as arcades and bowling alleys	1 per 250 sq. ft. of floor area
	Temporary Lodging	1 per rentable room; for associated uses such as restaurants, see above
	Theaters	1 per 4 seats or 1 per 6 feet of bench area
Office		1 per 400 sq. ft. of floor area
Quick Vehicle Servicing		1 per 500 sq. ft. of floor area
Vehicle Repair		1 per 750 sq. ft. of floor area [1]
Commercial Parking		Not Applicable
Self-Service Storage		[2]
Commercial Outdoor Recreation		20 per acre of site
Major Event Entertainment		1 per 8 seats or per CU review
Industrial Categories		
Manufacturing and Production		1 per 750 sq. ft. of floor area [1]
Warehouse and Freight Movement		1 per 750 sq. ft. of floor area for the first 3,000 sq. ft. of floor area and then 1 per 2,000 sq. ft. of floor area thereafter [1]
Wholesale Sales, Industrial Service, Railroad Yards		1 per 750 sq. ft. of floor area [1]
Waste Related		Per CU review
Institutional Categories		
Basic Utilities		None
Community Service		1 per 500 sq. ft. of floor area
Parks and Open Areas		Per CU review for active areas
Schools	Grade, Elementary, Jr. High	1 per classroom
	High School	7 per classroom
Medical Centers		1 per 500 sq.ft. of floor area; or per CU review or Impact Mitigation Plan approval
Colleges		1 per 600 sq. ft. of floor area exclusive of dormitories, plus 1 per 4 dorm rooms; or per CU review or Impact Mitigation Plan approval
Religious Institutions		1 per 100 sq. ft. of main assembly area
Daycare		1 per 500 sq. ft. of floor area
Other Categories		
Agriculture		None, or per CU review
Aviation		Per CU review
Detention Facilities		Per CU review
Aggregate Extraction		Per CU review
Radio & TV Broadcast Facilities		2 per site
Rail Lines & Utility Corridors		None

(1) For uses in an EG or I zone, if the site size is 5,000 sq. ft. or less, no more than 4 spaces are required. Where the site size is between 5,001 and 10,000 sq. ft., no more than 7 spaces are required.
(2) 1 per resident manager's facility, plus 3 per leasing office, plus 1 per 100 leasable storage spaces in multi-story buildings.

(City of Portland, Bureau of Planning)

In April of 1996, the Metro regional government released a draft *Framework Plan* to implement the long range 2040 growth management plan. The *Framework Plan* provides an early implementation program to begin the process of moving the region toward a denser, more transit oriented development pattern. The plan contains policies and objectives that local governments in the region must meet. Local jurisdictions may meet these requirements by either adopting model ordinances drawn up by Metro, or by adopting their own ordinances which meet the general requirements of the *Framework Plan*. Included within the Draft plan are proposed regional parking ratio's. The proposed regional parking ratios are shown below in Table 5. These ratio's, like the Portland Zoning Code, describe a prescriptive parking standard that each local zoning code must comply with. The proposed ratios distinguish between downtown areas, transit oriented areas, and other areas. They are aimed at establishing an upper limit on the number of parking spaces local jurisdictions may require. They attempt to reduce the number of parking spaces developed in the future, but do not represent a shift away from the existing regulatory (zoning code) approach to parking provision.

The parking prescriptions in the Portland Zoning Code, and in the Draft *Framework Plan* are complex, attempting to take into account a variety of different situations. Shared parking requires an even more detailed analysis, taking into account the relationships between uses, and the different characteristics of uses, such as what time of the day are they used. In addition, parking minimum requirements (which provide the conceptual basis for parking maximums) were established with an entirely different objective. Public policy has made a 180 degree turn since the original adoption of parking minimums.

Table 5. Proposed Metro Parking Ratio's.

(parking ratios are based on spaces per 1,000 square feet of gross leasable area unless otherwise stated)			
Land Use	**Minimum Parking Requirements** (see Central City Transportation Management Plan for Downtown Portland Standards) *Requirements May Not Exceed:*	**Maximum Permitted Parking - Zone A** Transit and Pedestrian accessible Areas	**Maximum Permitted Parking - Zone B** Rest of Region
General Office (includes Office Park, "Flex-Space", Government Offices & Misc. Services)	2.7	3.4	4.1
Light Industrial Park Manufacturing	1.6	none	none
Warehouse (gross square feet; parking ratios apply to warehouses greater than 150,000 gsf.)	0.3	0.4	0.5
Schools: College/University & Highschool (spaces/total # of students and staff)	0.2	0.3	0.3
Tennis/Racquetball Court	1.0	1.3	1.5
Sports Club/Recreation Facility	4.3	5.4	6.5
Retail/Commercial, including shopping centers	4.1	5.1	6.2
Bank with Drive-In	4.3	5.4	6.5
Movie Theater	0.3	0.4	0.5
Fast Food with Drive Thru	9.9	12.4	14.9
Other Restaurants	15.3	19.1	23
Place of Worship (spaces/seats)	0.5	0.6	0.8
Medical/Dental Clinic	3.9	4.9	5.9
Hotel/Motel	1.0	none	none
Single Family Detached	1.0	none	none
Residential Unit, less than 500 square feet per unit, one bedroom.	1.0	none	none
Multi-Family Townhouse, one bedroom	1.25	none	none
Multi-Family Townhouse, two bedrooms	1.5	none	none
Multi-Family Townhouse, three bedrooms	1.75	none	none

(Metro, 1996)

In cases where shared parking is possible, the prescriptive zoning code system will tend to create an excessive supply of parking. A study in 1991 revealed, for example, that the supply of parking at suburban office buildings in the Seattle area was 36% greater than the average peak demand (Willson

1995, p. 30). Willson points out that current parking requirements are often based on surveys of the current peak demand of particular land uses. The problem with this approach is that the current demand for parking is based on a market price of zero. In other words, parking requirements are being established based on observed behavior when parking is free (Shoup, 1995, p. 19 - 20). Parking infrastructure, however, is not free. In the case examined by Wilson, the cost of developing a structured parking garage was $12,300 per space, while the equivalent cost of surface parking was $6,280 per space (Wilson 1995, p. 39). Table 6 shows the estimated development costs of parking in downtown Portland, as provided by the largest commercial parking operator in the city.

Table 6. Commercial Parking Development Costs in Portland.

Type of Parking Lot	Low Estimate	High Estimate
Structure (above grade)	$14,000	$16,000
Structure (below grade)	$20,000	$22,000
Surface (minimal improvements)	$3,500	$4,500
Surface (landscape and lighting)	$4,500	$5,000

(Chris Kopka, City Center Parking. 1996).

In most cases the costs of developing required parking is paid for in the form of higher development costs, which translates into higher costs of doing business, and higher prices (Wilson 1995, p. 38). The effect of regulating parking using zoning codes is to require that developers incur these costs. In many cases this leads to economic inefficiency, particularly if that parking is not really needed. In some cases, the need for parking could be met by some other less expensive means. In the absence of these regulations, a business could decide to provide no parking at all, and instead subsidize the public transportation costs of its employees. Alternatively, a business could choose

to locate next to a complementary use in order to share the costs of parking development, or could choose to locate next to a heavily used transit line in order to reduce parking development costs. It is often argued that excess parking enhances property value by creating the perception of accessibility. This is only true to a point. Many of these extra spaces are simply an artifact of prescriptive zoning regulations and property lines. Zoning code parking minimums are not required to ensure the perception of accessibility. If a particular business finds that empty parking spaces are necessary to attract customers, that business will be willing to pay for those extra spaces, regardless of what the zoning code requires as a minimum.

In recognition of this dynamic, the City of Portland's zoning regulations do provide a mechanism for shared parking:

> "Joint use of required parking spaces may occur where two or more uses on the same or separate sites are able to share the same parking spaces because their parking demands occur at different times. Joint use of non-residential parking spaces is allowed if the following documentation is submitted in writing to the Bureau of Planning as part of a building permit application or land use review:
>
> a. The names and addresses of the uses and the owners or tenants that are sharing the parking;
>
> b. The location and number of parking spaces that are being shared;
>
> c. An analysis showing that the peak parking times of the uses occur at different times and that the parking area will be large enough for the anticipated demands of both uses; and
>
> d. A legal instrument such as an easement or deed restriction that guarantees access to the parking for both uses.
>
> (City of Portland, City Code Chapter 33.266, p. 2)

As part of the preliminary research to formulate a regional shared parking policy, Clare Levine has researched the shared parking provisions in other cities in the Pacific Northwest. Table 7 summarizes the results of her research. As these requirements suggest, there are several institutional barriers to shared parking within the current regulatory environment. Shared parking requirements must be considered within the context and original purpose of parking regulations - to ensure adequate parking is provided. They are aimed primarily at *allowing* for shared parking under certain circumstances, with criteria aimed at ensuring that adequate parking will still be provided. They do not *encourage* shared parking. For the most part, as indicated by the above summary of shared parking provisions, implementing shared parking under the current codes, requires a specific effort on the part of developers, which usually includes paying for an extensive study to prove that shared parking is feasible. The cost of those studies has discouraged developers who might have otherwise been interested in (and qualified for) shared parking arrangements.

Recognizing this dynamic, a draft model shared parking ordinance prepared for Metro requires all new development to justify why shared parking is <u>not</u> feasible before being allowed to build more than ten percent above the minimum number of allowed parking spaces. This proposal essentially turns the existing rules around, and provides a mandate for many developments to consider shared parking. More stringent requirements are proposed in pedestrian districts and transit oriented areas. This proposal also includes a mechanism for reducing the number of required spaces in a "captive market" situation:

> "Parking requirements for retail, restaurant, hotel, convention/conference and other ancillary uses may be reduced when it can be determined that some portion of the patronage of

these businesses comes from other nearby uses (e.g. employees of area offices patronizing restaurants) located within a maximum walking distance of 500 feet. Parking requirements may be reduced up to 90 percent as appropriate. For uses that are considered ancillary to a much larger business, no additional parking may be required. These reductions must be supported by surveys at similar establishments or documented experience in similar situations."

(Stein Engineering)

Table 7. Elements of Shared Parking Ordinances in Different Jurisdictions.

Jurisdiction	Criteria		Fewer Required Spots for Shared Parking	Maximum Distance from Land Use to Parking - ft	Requires Written Documentation
	No Overlap in Hours	No Overlap in Peak Hours			
Ashland		x	x*	200	x
Beaverton	x			200	
Cornelious	x			500	x
Forest Grove	x*			500	
Gresham		x		250	x
Hillsboro	x			500	x
Milwalkie	x		x	300**	x
Olympia	x	x	x***	700**	x
Portland		x		300	x
Tigard		x		200	x
Tualatin		x****		500	x
West Linn	x			200	x
Wilsonville		x		100	
Clackamas		x****	x		x
King City	x	x	x	150	x
Multnomah City	x			350	x
Washington City		x		100	x

* This is not explicitly stated in the ordinance, but staff says the intent is to encourage development of fewer spaces.
** These ordinances include distance requirements in the shared parking sections, other jurisdictions use general distance requirements for all parking facilities.
*** Different reductions for different circumstances.
**** Also allows shared parking using other criteria.

(Clare Levine., Stein Engineering)

The City of Portland's response to the TPR includes making changes to the zoning code which will allow further modification of the prescriptive approach to parking regulations. For example, developers will now be allowed to reduce the number of required parking spaces by as much as 35 percent by providing additional bicycle parking, or developing "transit plazas" in place of parking spaces. For example, a new section will be added to the parking code:

> "Bicycle parking may substitute for up to 25 percent of required parking. For every five non-required bicycle parking spaces that meet the short term or long term bicycle parking standards, the motor vehicle parking requirement is reduced by one space. Existing parking may be converted to take advantage of this provision."
>
> (City of Portland, Bureau of Planning. Recommended Draft: Interim Implementation of the Transportation Planning Rule)

The transit plaza provision reads as follows:

> "Sites where at least 20 parking spaces are required, and where at least one lot line abuts a transit street may substitute transit-supportive plazas for required parking, as follows. Existing parking areas may be converted to take advantage of these provisions. Adjustments to the requirements of this paragraph are prohibited. Transit supportive plazas may be substituted for up to ten percent of the required parking on the site. The plaza must be adjacent to the transit street. If there is a bus stop along the site's frontage, the plaza must be adjacent to the bus stop. The plaza must be at least 300 square feet in area shaped so that a 10 by 10 square will fit entirely within the plaza. The plaza must include all of the following elements: A plaza open to the public; A bench or other sitting area; a shelter or other weather protection (the shelter must cover at least 20 square feet); and landscaping (at least 10 percent, but not more than 25 percent of the transit-supportive plaza must be landscaped to the L1 standard of chapter 33.248, landscaping and screening. This landscaping is in addition to any landscaping or screening required for parking areas by the Zoning Code). "
>
> (City of Portland, Bureau of Planning. Recommended Draft: Interim Implementation of the Transportation Planning Rule)

It appears then, that jurisdictions in the Portland region have recognized (or will soon recognize) that developers should be encouraged to utilize shared parking. These provisions represent a step beyond simply allowing shared parking. Most shared parking arrangements, however, will still require additional analysis in order to be approved. Aside from the burden of paying for additional analysis, and arranging for the appropriate legal documents, there are two other major barriers to shared parking that should be examined. Both barriers are inherent in the way we treat parking - as a regulated private good. The first barrier is associated with the land use review process, which is structured around the individual parcel of private property. The second barrier is liability.

In the land use review process, developers bring development proposals before a planning agency, which considers the case, and can attach conditions to that development in response to public policy, code regulations, and relevant public concerns. Conditions cannot, however, be attached to adjacent development. A recent land use case in the City of Portland illustrates this point. In this case, a community college applied for permission to develop a branch campus facility in a mixed-use, central city location. Immediately adjacent to the proposed facility is a large museum, and a satellite park-and-ride lot serving a large regional hospital. An office complex is also planned in the immediate area. This is the kind of location where shared parking should be considered. The City, however, was unable to require the community college to share parking with adjacent uses, despite the strong potential for such an arrangement. While the City could possibly require the college to obtain shared parking with its neighbors, it could not require any of those neighbors to share parking with the college. Because the neighboring uses did not have a current land use application before the

planning agency, there was no way require anything of them. (City of Portland, Bureau of Planning, LUR Case file 94-88).

In some other cases, the City of Portland has successfully required shared parking agreements as part of the land use review process. This has occurred most often with churches. Where shared parking agreements are made, liability is often the biggest issue. In order for one private land owner to allow another land owner the use of privately owned parking spaces, an agreement must be made determining who is liable for those spaces. Private land owners will not be willing to allow others to use a portion of their land if doing so will increase their liability. Shared parking has usually meant one private landowner obtaining agreements to utilize other privately owned parking lots, rather than shared parking being considered as a public utility to be owned collectively.

Historically, the rationale for public intervention in the parking market has been the existence of negative externalities (spillover) when private developers fail to provide enough parking. However, it could be argued that this is hardly a problem in most suburban areas. In a city where most people travel in private automobiles, most developers are very willing to provide adequate parking. Failure to do so will make the project more difficult to sell. At the same time, planning agencies are increasingly discussing the negative externalites associated with too much parking. In addition, in the Portland region there are specific state and local policies aimed at reducing the number of parking spaces per capita. In this context, by what rationale does public policy regulate the minimum supply of parking? As Willson and others argue, the primary effect of minimum parking requirements may be to require parking when it is not needed.

Douglas Lee argues that public regulation of land uses is a poor (inefficient) method of correcting market failure. He argues instead for performance based standards (Lee, p. 160). For example, performance based standards might consist of regulations targeted at specific areas which fail to meet certain levels of parking performance, as measured by congestion and ease of access. The current zoning code approach, in contrast, imposes regulations on all development, regardless of performance. In some situations existing regulations dictate what the actual land use will be. In many situations, requirements in-effect dictate that two thirds of the land on a particular parcel will be used for parking (Wilson 1995, p. 36 - 37). Unless developers are willing to provide structured parking (and many are not so willing), then the result of current parking requirements is to dictate land use, rather than just describing a standard of accessibility. In many cases, a private (unregulated) market would probably still provide expansive amounts of parking, given that commercial development is more attractive to customers if it has ample parking. A parking requirement that is truly based on a performance standard should be able to accommodate (or even encourage) shared parking. Rather than focusing on regulation, Lee argues that public policy objectives might be more effectively met by guiding investment in public infrastructure, and controlling negative externalities via performance standards (Lee, p. 164).

The Geography of Shared Parking

Urban design and development patterns play a major role in determining the effectiveness of shared parking. Some forms of development are more accommodating to shared parking than others. Different land use patterns will require different approached to shared parking. Figures 8 through 16 on the following pages illustrate a variety of land use patterns, and possible shared parking treatments for strip commercial development, corner lots, malls, downtown blocks, and park-and-ride transit stations.

Figure 8. Existing Pattern Strip Commercial Development Without Public Parking. Suburban strip development does not easily accommodate shared parking because land uses that might share parking are spread over a narrow corridor, increasing the walking distance from a shared lot to any specific business. In addition, some uses would be closer to shared lots than others.

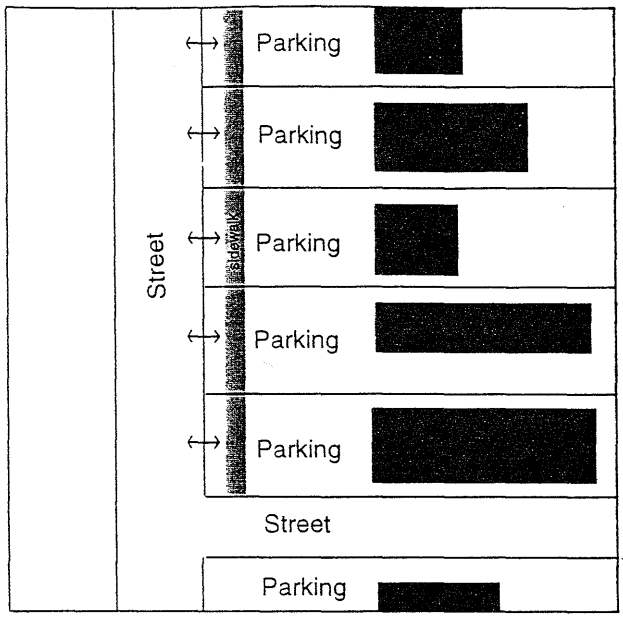


Figure 9. Strip Commercial Development With Expanded Public Parking Along the Street. There are, however, some configurations that become more possible if parking is considered to be part of the public infrastructure. For example, an avenue design for major commercial streets might allow for a separate lane on one or both sides of the street with angled parking.

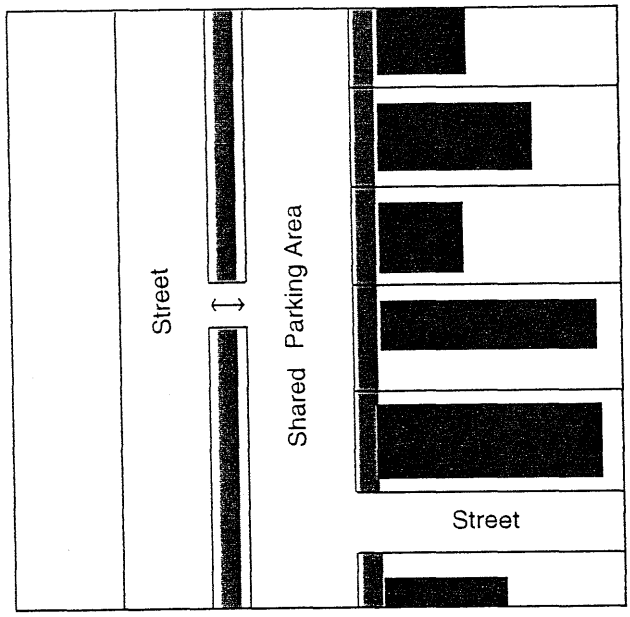


Figure 10. Existing Corner Lot Commercial Development. Suburban development located at the corners of large blocks can be physically somewhat more accommodating, but can be limited if the development is all of one use

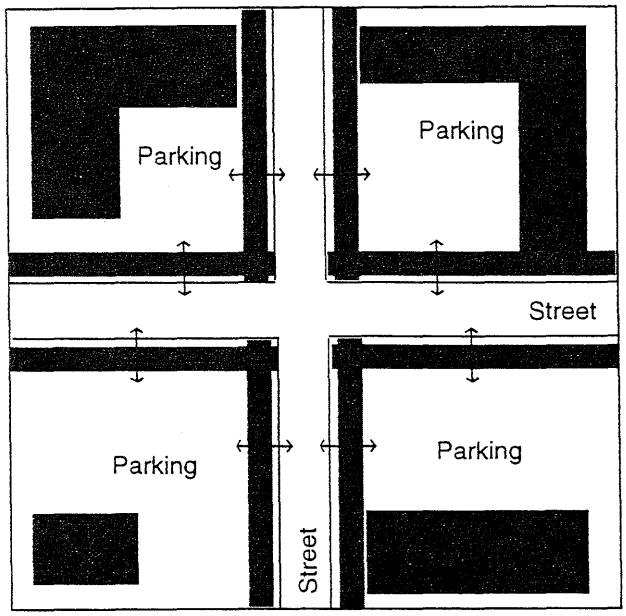


Figure 11. Corner Lot Commercial Development With Public Parking . Shared parking will not lead to a reduction in the number of spaces unless there is a variety of land uses on the same corner. Even if the number of spaces is not reduced by shared parking, the pedestrian environment may be improved. For example, placing all parking in a separate island might reduce the number of curb cuts crossing the public sidewalk.

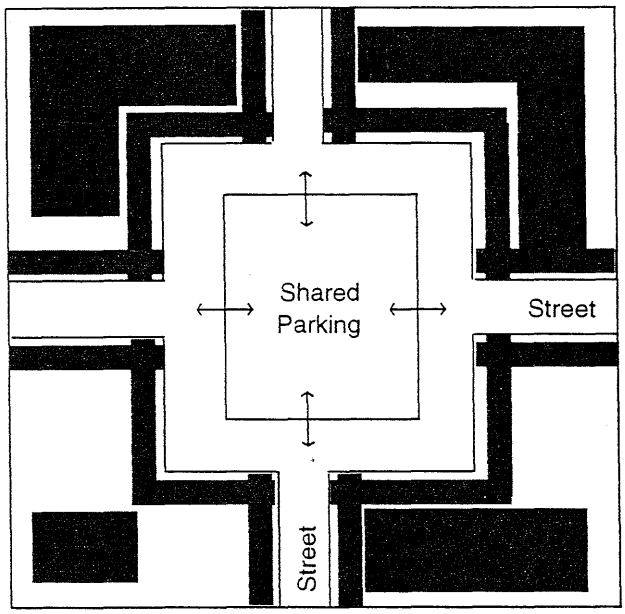


Figure 12. Existing Mall With Only Retail Development. The suburban mall is an example of existing shared parking, in the sense that there are many establishments utilizing the same parking lot. The problem, from a shared parking point of view, is a lack of land use variety.

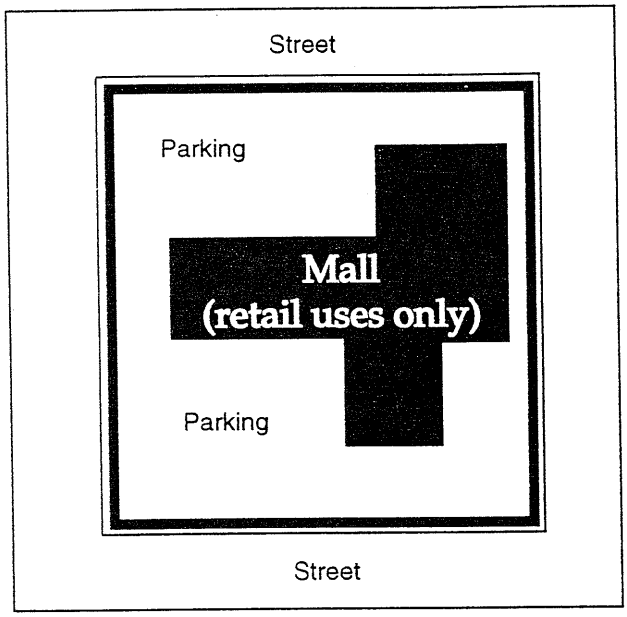


Figure 13. Mall With Additional Development With Different Peak Hours. Shared parking could be more effective if new complimentary land uses could be added to these developments. Theaters, churches, office, or even residential uses could potentially be added to suburban malls without requiring additional parking.

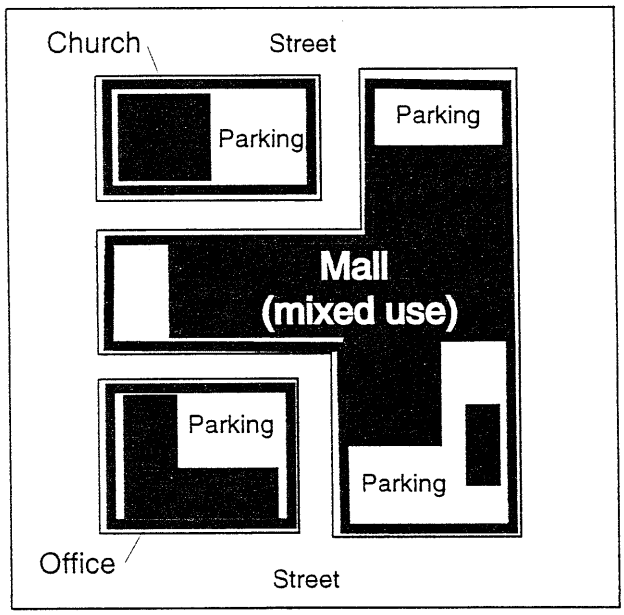
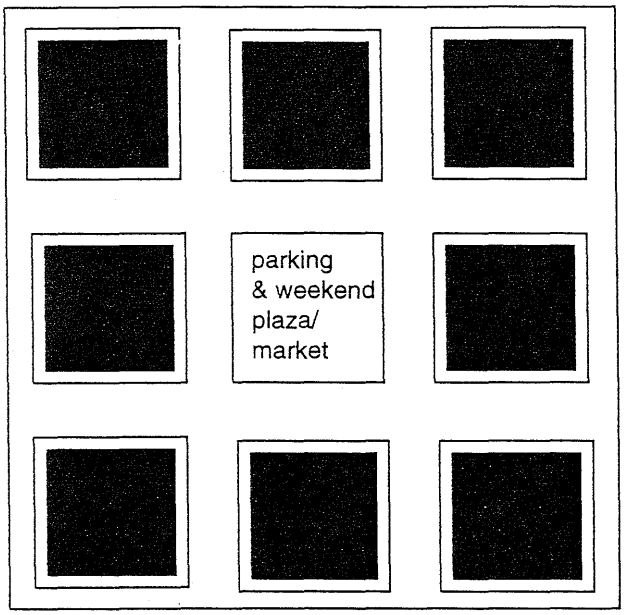


Figure 14. Downtown Blocks with an Existing Public Parking Lot. Older urban centers which have a grid pattern development are particularly accommodating to shared parking. Within a dense grid pattern, development can cluster around occasional shared parking facilities which can serve as public plazas or marketplaces during the off hours. In such cases, the parking lot itself might share space with another use. Such lots could be designed with additional amenities, such as cobblestone pavers. Below is Portland's Saturday Market, which shares space with weekday parking.



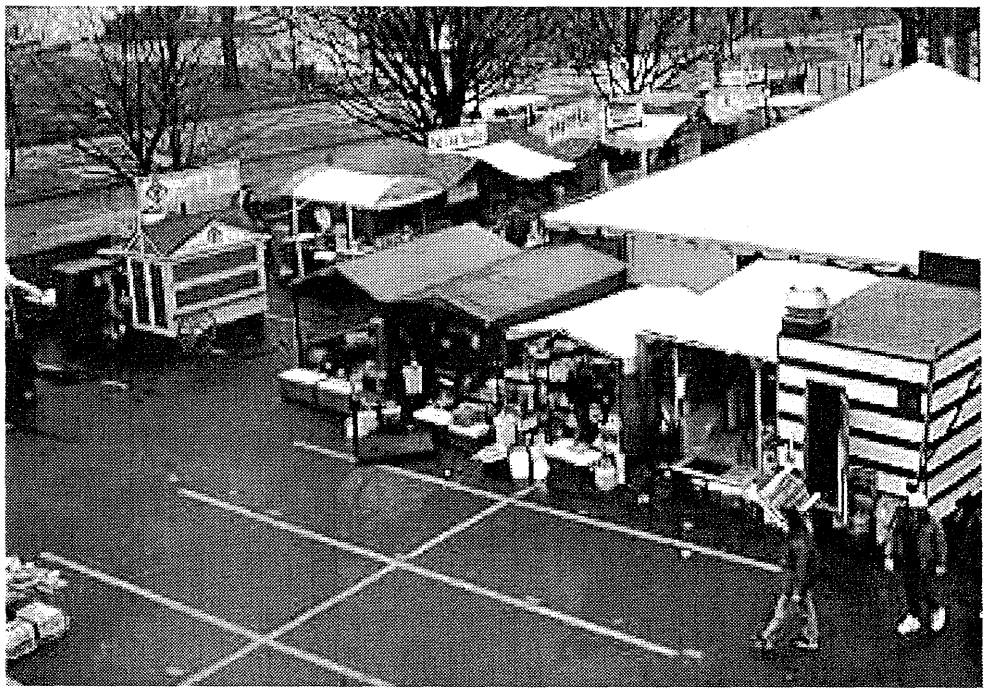


Figure 15. Existing Development Pattern Surrounding Park and Ride Lot. Existing public parking lots (such as the park and ride lots) might serve as shared parking if compatible development is clustered around them.

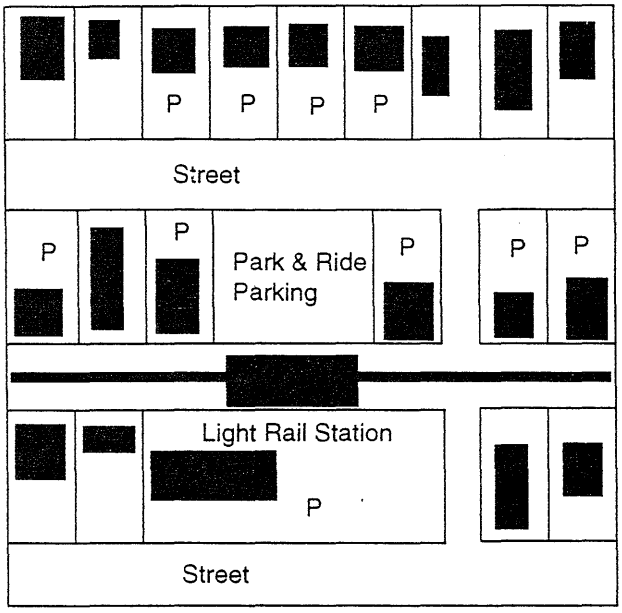
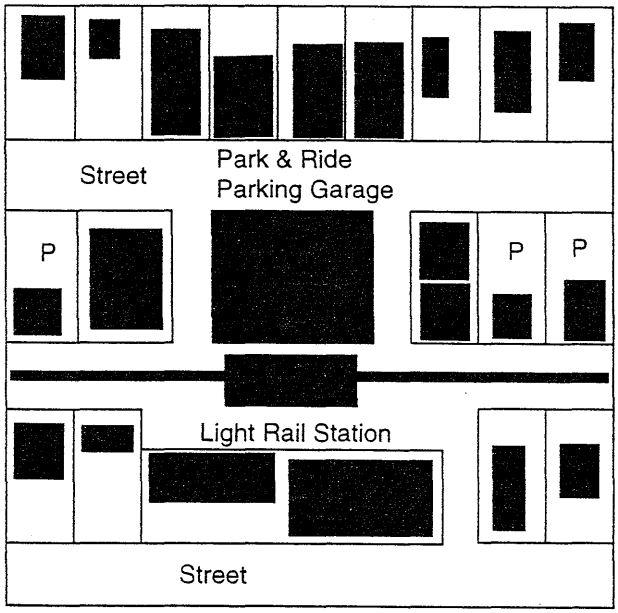


Figure 16. Potential Reconfiguration of Development, Based on Shared Use of Park and Ride Lot. Some businesses are naturally patronized by transit commuters between the time they park and when they board the bus or train. These businesses (such as news and magazine shops, coffee shops, convenience stores, bike shops, video stores, day care establishments, etc.) might not require additional parking beyond what is provided by the transit agency.



The examples shown on the previous pages illustrate a variety of different scenarios where shared parking might be employed. Determining the specific layout of each situation, the right combination of land uses, and the number of parking spaces appropriate for each situation requires a comprehensive and site specific analysis which may transcend property ownership boundaries. This level of design is not encouraged (or even possible) given the existing zoning code approach to parking regulation.

Characteristics of Goods and Services

Before considering other methods of parking provision, such as publicly owned parking, it is useful to consider the nature of different kinds of goods and services in general. The economist E.S. Savas provides one framework for discussing public goods and services. Savas classifies goods and services into four categories based on how they are consumed, and whether people can be excluded from them (Savas, p. 35). According to Savas, a good can be either consumed jointly, or individually. For example, my consumption of a TV signal does not interfere with another person's consumption of that same signal. My consumption of a sandwich, on the other hand, does interfere with another person's consumption of that sandwich. In addition, it is difficult exclude others from certain goods. For example, it would be foolish to exclude one house from fire protection services if that person did not pay for the service - to do so would endanger neighboring homes, who do pay for the service. Using these two characteristics, Savas creates four categories of goods: private goods, common-pool goods, collective goods, and toll goods (Table 8).

Table 8. Categories of Goods and Services According to Savas.

	Feasible to exclude	**Infeasible to exclude**
Individual consumption	Private good	Common-pool good
Joint consumption	Toll good	Collective good

(Savas, p. 56)

These different kinds of goods are often associated with different models of production. Different kinds of infrastructure are provided in

different ways. Goods that Savas describes as private goods are usually produced by private firms. Government involvement in the production of private goods, it is argued, is inefficient. The most common government involvement in private goods is regulation, often to establish minimum safety or quality standards. Common-pool goods are often produced by nature, and regulated by government. For example, no individual produces the fish in the sea. In the case of common-pool goods, government involvement has occurred in order to avoid the "Tragedy of the Commons" (Hardin). Without regulation, common-pool goods would be quickly depleted by over consumption. Much of our natural resource infrastructure fits into this category. Collective goods are often produced by government directly. Police and fire protection, prisons, and basic healthcare (such as immunization) are collective elements of the public infrastructure.

Toll goods are often what we think of when we discuss public infrastructure. Toll goods are often either produced by government, a private monopoly, or some combination of the two. Examples include electric power, mass transit, libraries, telephone, and piped water. There are also very often large economies of scale associated with toll goods. A large investment in facilities is required up front to provide these goods, but once the infrastructure is in place, it is easy to add a new customer. This prevents easy entry into the market, restricting competition. It would seem rather inefficient, for example, to have two competing sets of electric power lines. Without regulation, the tendency would be for private monopolies to charge high prices, and thus toll goods would be under-supplied. The public has intervened in the production of toll goods to insure that adequate levels of this kind of infrastructure is provided. In other words, it has been deemed to

be in the public interest to supply these goods in larger quantities than the private market would provide.

Public infrastructure has different characteristics at different densities. With low density development, septic systems are used, while at higher densities, sewer systems are needed. Similarly, at very low density, parks are essentially a private good, where each parcel of land has enough space to meet many recreational needs. With higher density development, a need is created for public parks. With low density development, one aspect of the transportation infrastructure (the vehicle) is essentially a private good. At a higher density, the negative externalities associated with individualized vehicles become large enough that mass transportation (essentially a toll good) is introduced. At a very high density, mass transit is sometimes even treated as a collective "worthy good", where the benefits are such that we may not want to exclude people from using the service at all. Hence, in downtown Portland, there is a "Fareless Square", where all transit travel is free.

Parking also has different characteristics at different development densities, although current zoning regulations do not easily respond to those differences. With low density development, parking is essentially a private good, like a private septic system, a private yard, or a private car. In these situations, some performance based zoning regulation is appropriate if negative externalities occur. Performance based regulation of parking might focus more directly on the externalities associated with parking, rather than the absolute number of spaces. Spillover problems might be more directly regulated when they occur, perhaps using neighborhood based parking controls in problem areas.

With higher density development, the characteristics of parking change. Parking structures, which are very capital intensive, are required for development density to pass beyond a certain point (Willson, p. 36 - 37). This high cost is a barrier for small to medium sized developments. Like electricity, or piped water, it takes a large investment to serve one customer (to provide the first structured parking space). The more people using a parking garage, the less that garage will cost per user. This barrier of high cost insures that only the largest developments can utilize structured parking. As a result, many small and medium sized office buildings have been developed with separate surface parking lots. One way to increase the number of users per lot is to insure that spaces are utilized for a greater proportion of the day. Shared parking accomplishes this.

This cost dynamic implies that in areas where higher density development is planned, public policy should try to locate firms that can share parking next to one another, and then facilitate the provision of shared structured parking, where appropriate. Rather than requiring each medium-sized office building to have a certain number of on-site parking spaces, public policy should focus on locating those buildings next to complimentary uses so they can more effectively share the cost of parking infrastructure. In many cases this may lead to fewer parking spaces, and could potentially make structured parking more viable in a suburban area. Such a policy would encourage more compact development.

A Model For The Provision Of Shared Parking Supplies.

There are a variety of different models by which public goods can be provided. Because many economists have argued for changes in the way public goods are provided, any suggestion to treat parking as public infrastructure should address these concerns.

One method of public parking supply is the public parking authority. Such public authorities exist in some large cities, primarily in the central business districts (such as in Philadelphia and San Francisco). Some cities have municipal parking lots which are staffed by municipal employees. Increasingly, however, public parking is organized by public agencies, but carried out by private firms under contract.

Many economists, such as Savas, argue that private contractors can provide public infrastructure more efficiently than public agencies. In many other cases, public goods and services are provided by private firms, under contract, or franchise. In many central city locations parking is managed by some form of regulated monopoly. In this context (as discussed above), government is often involved in order to supply the initial investment that no one firm can afford to supply by itself. In addition, government is also involved in these monopolies due to large economies of scale. The most efficient way to supply electricity, for example, is via a very large firm. Due to this economy of scale, one region may be supplied by a single firm, creating a market where no one customer can choose another firm. The existence of a single firm in many downtown parking markets suggests that management of parking also has greater efficiencies at larger scales.

Savas outlines a number of considerations that effect how effective contract or franchise arrangements will be (Savas, 1987). In particular, he points out that those services that are very capital intensive may only be able to be produced by a few firms. This will reduce the competitiveness of the bidding process (Savas, 1987, p. 96). The scale of the contract will also effect the ability of firms to bid for that contract. In the case of parking, for example, if a contract is awarded for public parking management for the whole metropolitan area at once, only a few firms will be large enough to bid for such a contract. If, however, contracts are awarded for the management of individual lots or garages, a larger number of firms can compete. Awarding contracts in smaller units also allows individual firms to adjust the scale of their operation to the most efficient level. If contracts are awarded based on political boundaries, firms are forced to adjust the scale of their operations to match the size of the jurisdiction, and inefficiencies may result (Savas, p. 97).

Savas also points out that contracts are more effective if a direct link is established between the contractor and the benefactors of a particular public service (Savas, p. 98). In the case of parking, commercial establishments are the direct benefactors of parking supplies. Retail establishments benefit from parking because ample parking attracts customers, while many other firms benefit from parking because it attracts quality employees. Thus, contracts would be most effective if they link parking contractors directly with the firms that benefit from their services. This implies that a city-wide parking authority would not be the most effective way to contract for shared public parking. A more direct link could be provided by local business and neighborhood associations.

Shoup suggests one way to manage parking at the neighborhood level that is somewhat analogous to a local utility district. He suggests that

"Parking Benefit Districts" be created in residential areas that are near popular commercial districts, particularly those neighborhoods suffering from commercial parking spillover. A benefit district could be created to install parking meters on a residential street. Each resident of the area would be assessed a small annual fee, to pay for the operation of the meters, and would then receive a sticker, allowing them to park anywhere in the district without putting money into the meter. Shoppers or other non-residents wishing to park in the district would have to pay. Shoup suggests that the proceeds from the meters be dedicated to improvements within the neighborhood, such as sidewalk repair, street lighting, traffic calming, etc. (Shoup, p. 23).

By using this kind of system, a link is created between parking and local improvements. This provides an incentive for local residents to tolerate, and even encourage greater utilization neighborhood on-street parking. This incentive is not small. Shoup calculates that one metered curb paring space could generate $884 a year, assuming it is used 8 hours a day, at an 85% occupancy rate, and a price of fifty cents an hour is charges. This is comparable to the $922 median property tax paid on a single family house in the U.S. (Shoup, p. 23). This could reduce neighborhood pressure to provide excessive off street commercial parking. Spillover parking is one of the most forceful arguments against eliminating minimum parking requirements, and against charging a fee for commercial parking. Creating a structure by which local neighborhoods directly benefit from spillover could change that dynamic. Although Shoup does not discuss commercial parking supplies directly with this concept, such localized parking districts could also develop shared parking lots (or garages) within commercial districts.

A distinction could be made between parking districts designed to control spill-over (Shoup's Parking Benefit District) and those created to

develop shared parking and encourage higher density development (Perhaps called a Parking Improvement District). These two models, however, may be complimentary. Shared parking facilities, under certain scenarios, could be financed by user fees. One of the largest concerns associated with parking fees is the creation of spill-over parking, which might be addressed by Shoup's Parking Benefit Districts. Both of these concepts might be used to develop a comprehensive parking strategy for a developing regional center.

Metro's ambitious 2040 plan focuses new development into specific areas of the city (Regional Centers, Town Centers, Main Streets and Light Rail Station Areas. These areas will receive a large percentage of the regions growth, becoming much more densely developed over the next 50 years. This land use plan is closely tied to large public investments in transit. High levels of transit service, and higher density mixed-use development will create a landscape where prescriptive parking requirements make less sense.

If high density commercial centers are to be economically viable, they must, at least in the short term, have adequate parking. However, because these areas are intended to be transit-oriented, it is important that parking supplies not be excessive. The densities and designs that support transit are not feasible if there are large areas of surface parking between each use (Figure 17). Zoning regulations are unable to adequately consider the complexities of how much parking is needed in these areas. The quantity and the location of parking to be supplied in these areas should be determined by careful consideration of design, transit supplies, and demand. Demand analysis must be use-specific, time-of-day-specific, day-of-the-week-specific, and season-specific. Planning efforts could also be undertaken to create situations where compatible firms can share the same parking spaces.

Figure 17. A Sea of Parking. Transit-oriented design is difficult in this context.

Localized parking improvement districts could respond to these challenges more efficiently than zoning codes. Under the current regulatory system, business districts (unless they are in a zone which does not require off-street parking) cannot collectively organize to supply shared parking without first being exempted from the zoning requirements that force each use to have its own on-site parking. Another approach would be to eliminate all minimum parking requirements within regional centers, town centers, main streets, and light rail station areas, and instead create local parking improvement districts for each area. Rather than utilizing maximum parking ratios, local jurisdictions might instead be required to eliminate all parking minimums and maximums within certain zones, and require the establishment of local shared parking districts within each zone.

These improvement districts could be charged with developing enough parking to meet the parking needs of existing and new development in the district (both residential and commercial), and consolidating that

parking in an efficient manner. As Shoup suggests, these districts could also manage on-street parking, and spill-over problems. New development could then be exempted from building any parking at all, provided they participate in the local improvement district. Existing establishments within these zones could also choose to redevelop existing parking lots, provided the overall needs of the district are met. Alternatively, individual uses could sell existing parking lots to the improvement district, leasing back only those spaces which are needed. These districts could be controlled by the local beneficiaries of parking supplies: the businesses and residents. The district could choose to charge a fee for parking, or maintain free parking by charging businesses a fee. The main point of this approach is not to force drivers pay for parking, but to give businesses a more explicit choice to decide how much parking is needed, based on how much that parking costs[1]. This, in theory, would lead to reduced parking supply, since with this system the number of parking spaces in a given area would be established by the sum of numerous individual cost-benefit analysis. In contrast, the number of parking spaces is currently determined by regulations which are based on observed demand when the price of parking is zero.

Localized districts would also facilitate an efficient bidding process, as described by Savas, if these districts relied on private contractors to manage parking on a day-to day basis and develop new parking. Because these districts would relatively small, and there could be large number of them throughout the region, small parking management firms may be able to enter the market, establishing a more competitive parking management industry.

A conceptual model for financing shared parking facilities could be the local improvement district (LID), which allows a jurisdiction to sell bonds, to

[1] Although there is evidence that parking demand is reduced by establishing parking fees.

be re-paid over time by an assessment benefiting property owners, or by some other source of public revenue. One problem with the LID approach, particularly in areas where infrastructure is already well developed, is that some property owners may not see any reason why additional infrastructure improvements are necessary. In addition to an assessment on property, shared parking infrastructure could be financed by a variety of other means, some of which could help distribute costs more equitably between existing and future development. Shared Parking could be financed in part by charging users. User fees could be either direct (the driver of a car pays to park), or indirect (a business leases the rights to a certain number of employee or customer parking spaces at a shared facility, for specific hours). In many areas local governments can require developers to provide certain public facilities, or dedicate a certain amount of land to a public use as a condition of development. This process could be used to insure that space is provided for shared parking facilities within large commercial developments. Some jurisdictions collect impact fees to finance road improvements. Shared parking could similarly be financed by an impact fee on new development. Existing park-and-ride facilities could be used as shared parking for surrounding development (Figure 18). Expanding the use of existing public parking facilities through shared parking arrangements may be an in-expensive method of getting a shared parking district established.

The point of this paper is not to argue that government should supply all parking, or that a traditional regulated monopoly be established to develop and manage parking. The point, rather, is to suggest that in some situations parking has characteristics like that of other utilities. If that is true, regulating parking with the zoning code seems out of step with how other kinds of infrastructure are provided. In addition, current public policy runs

Figure 18. A public park-and-ride lot. This lot is part of the Gresham Central Station, at the end of Portland's MAX light rail line. The first floor of the garage has retail space for a cafe or news stand. Other supporting uses could locate nearby without additional parking.

counter to the original reasons for establishing parking regulations. By dictating that each development provide its own parking, public policy is forcing parking to act like a purely private good, when in fact it may be more economical to supply parking by some other model, in some situations. While much of the literature on the subject of parking reduction suggests that parking fees for drivers may reduce parking demand, with this paper I have suggested public policies which might reduce the overall number of parking spaces built.

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