



The High Cost of Free Parking

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Updated by the author

Preface

A Progress Report on Parking Reforms

All of us, if we are reasonably comfortable, healthy and safe, owe immense debts to the past. There is no way, of course, to repay the past. We can only repay those debts by making gifts to the future.

—JANE JACOBS

Who would have predicted that a 750-page book on parking could be popular enough to reprint as a paperback? One sign that *The High Cost of Free Parking* has attracted a following is a Facebook group for the book with about a thousand members, called the Shoupistas. Although the group sounds radical, the members support market-rate prices for parking, which sounds conservative. Because of this widespread interest across the political spectrum, the American Planning Association is publishing this paperback edition to make the book more affordable, especially for students who are the next generation of city planners.

When the hardback edition was published in 2005, the reviews were, with one unimportant exception, very good.¹ More important than good reviews, several cities have adopted the policies proposed in the book, and the paperback edition offers an opportunity to report on progress made in parking reforms during the past six years. In this preface I will discuss reforms that have taken place in relation to the three basic policies recommended in the book: (1) set the right price for curb parking, (2) return the parking revenue to pay for local public services, and (3) remove minimum parking requirements. (The Afterword on pages 683–709 presents more information about these reforms.)

I hope the progress reported here will convince readers that my policy proposals are not theoretical and idealistic but are instead practical and realistic. The good news about our decades of bad planning for parking is that the damage we have done will be far cheaper to repair than to ignore.

1. SET THE RIGHT PRICE FOR CURB PARKING

Cities should set the right price for curb parking because the wrong prices produce such bad results. Where curb parking is underpriced and overcrowded, a surprising share of traffic can be cruising in search of a place to park. Sixteen studies conducted between 1927 and 2001 found that, on average, 30 percent of the cars in congested traffic were cruising for parking (see Chapter 11). New studies continue to find that many drivers cruise for curb parking like hawks looking for prey. For example, when researchers interviewed drivers who were stopped at traffic signals in New York City, they found that 28 percent of the drivers on one street in Manhattan and 45 percent on a street in Brooklyn were cruising for curb parking.²

In another study, observers found the average time to find a curb space on 15 blocks in the Upper West Side of Manhattan was 3.1 minutes and the average cruising distance was 0.37 miles. These findings were used to estimate that cruising for underpriced parking on these 15 blocks alone creates about 366,000 excess vehicle miles of travel and produces 325 tons of CO₂ per year.³

Performance Parking Prices

Free curb parking in a congested city gives a small, temporary benefit to a few drivers who happen to be lucky on a particular day, but it creates large social costs for everyone else every day. To manage curb parking and avoid the problems caused by cruising, some cities have begun to adjust their curb parking prices by location and time of day to produce an 85 percent occupancy rate for curb parking, which corresponds to one vacant space on a block with eight curb spaces. The price is too high if many spaces are vacant and too low if no spaces are vacant. But if one or two spaces are vacant on a block and drivers can reliably find open curb spaces at their destinations, the price is just right. We can call this the Goldilocks principle of parking prices.

Although cruising may seem to be an inevitable consequence of living in a crowded city, some drivers believe they have good “parking karma,” an uncanny ability to find a curb space when they arrive at a destination. Given the laws of probability, some drivers will be luckier than others in finding a parking spot, and they may interpret this luck as a rare gift rather than pure chance. Setting the right parking prices can give all drivers the gift of good parking karma.

Some cities refer to the policy of setting prices to produce one or two open curb spaces on every block as *performance pricing*. It can

improve performance in three ways. First, curb parking will perform more efficiently. If all but one or two curb spaces are occupied on every block, parking will be well used but also remain readily available for drivers who want to park. Second, the transportation system will perform more efficiently because cruising for curb parking will not congest traffic, waste fuel, pollute the air, and waste drivers' time. Third, the economy will perform more efficiently. In business districts, drivers will park, buy something, and leave promptly, allowing other customers to use the spaces.

SFpark. With a grant from the U.S. Department of Transportation, San Francisco has embarked on an ambitious program, called *SFpark*, to get the prices of curb parking right. The city is installing meters that can charge variable prices and sensors that can report the occupancy of each space in real time. The city will thus have information on curb occupancy rates and the ability to adjust curb parking prices in response to the occupancy rates. The city intends to adjust prices once a month, by not more than 50¢ an hour. By nudging prices up or down in a trial-and-error process, the city will seek a structure of prices that vary by time and location throughout the city, yielding one or two open spaces on every block.⁴

The central idea of *SFpark* is that you cannot set the right price for curb parking without observing the occupancy. The goal is to set the lowest price that will yield one or two open spaces on every block. Figure P-1 shows that nudging up the price on crowded Block A by enough to shift only one car to less crowded Block B can significantly improve the performance of the transportation system. This shift will eliminate cruising on Block A and take advantage of the empty spaces on Block B. Even if all the curb spaces are occupied on all the nearby blocks, shifting only one car per block from a curb space to nearby off-street parking can also eliminate cruising. Small changes in parking prices and location choices can lead to big improvements in transportation efficiency.

Beyond managing the curb parking supply, *SFpark* can depoliticize parking by stating a clear principle for setting the prices for curb spaces: the

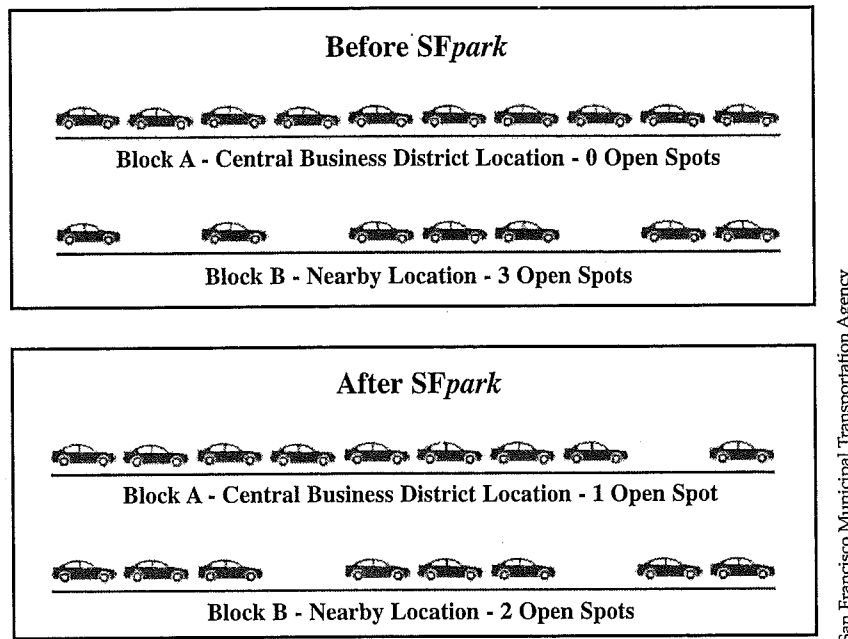


Figure P-1. Performance prices create open spaces on every block.

lowest prices the city can charge without creating a parking shortage. Because San Francisco has set a policy goal for how curb parking should perform, the demand for parking will set the prices.

Performance parking programs do not rely on complex models to set prices; they rely only on paying attention to the results. After shifting from a revenue goal to an outcome goal for the parking system and choosing the occupancy rate to indicate the desired outcome, the city council will no longer have to vote on parking prices. If too many curb spaces are vacant, the price will go down, and if no curb spaces are vacant, the price will go up. Wanting more money will no longer justify raising prices. Relying on the power of an impersonal rule to set prices makes an end run around the politics of parking.

In preparing for *SFpark*, San Francisco conducted a census of its parking spaces and found 281,000 on-street spaces, which make up 58 percent of all publicly available parking in the city. San Francisco has one on-street parking space for every three people in the city, but only 9 percent of those spaces are metered.⁵ Expanding *SFpark* into areas that have a shortage of curb parking can greatly improve management of this valuable asset and also yield substantial revenue for local public investments.

Several other cities—including Los Angeles, New York, Seattle, and Washington, D.C.—have adopted similar performance parking policies. The Afterword explains their programs.

Opposition to SFpark. Drivers who cruise in search of free curbside parking pay with time instead of money, and their cruising congests traffic, pollutes the air, and wastes fuel. In contrast, drivers who pay money for performance-priced curbside parking provide funds to improve public services. Nevertheless, some people oppose charging anything for curbside parking. One group in San Francisco, the Act Now to Stop War and End Racism (ANSWER) Coalition, has strongly but unsuccessfully tried to block SFpark. One flyer proclaimed:

Stop the parking meter hike! Make the rich pay, not the workers! Don't squeeze workers and small business. This is a tax on the people! It's time to organize and defeat the parking meter robbery!⁶

The ANSWER Coalition opposes foreign wars for oil but supports free parking at home, and this sort of confusion is common in debates about parking policy. Thinking about parking seems to take place in the reptilian cortex, the most primitive part of the brain responsible for making snap decisions about urgent fight-or-flight choices, such as how to avoid being eaten.⁷ The brain's reptilian cortex is said to govern instinctive behavior involved in aggression, dominance, territoriality, and ritual display—all important factors in cruising for parking and debating about parking policies.

The ANSWER Coalition's criticism of SFpark is misguided. Thirty percent of households in San Francisco don't own a car, and the city uses all the parking meter revenue to subsidize public transit. Many poor people ride buses that are mired in traffic congested by richer drivers who are cruising for underpriced curbside parking.⁸

Drivers who don't want to pay for parking often push poor people out in front of them like human shields, claiming that charging for parking will hurt the poor. Free curbside parking limits the revenue available to pay for public services, and poor people are less able to replace public services with private purchases the way richer people can. The poorest people cannot afford cars, but they can benefit from public services—such as public transportation—that are financed by parking revenues. Using curbside parking revenue to pay for local public services is much fairer than keeping curbside parking free and requiring ample off-street parking (see pp. 530–539).

Some opposition to performance parking prices may be due to unfamiliarity, and only experience will change minds. Once drivers have become accustomed to performance prices and see that prices can decline as well as increase, they may come to value the ready availability of curbside parking. What seems indefensible for a current generation

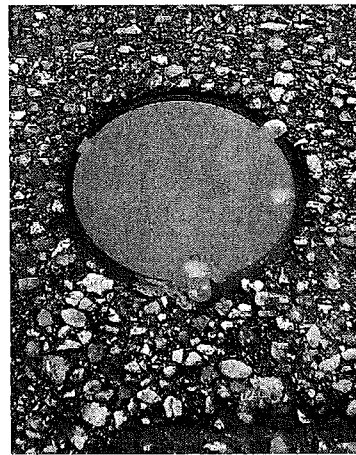
may become indispensable for future generations. Familiarity breeds acceptability and, as Thomas Paine wrote, "Time makes more converts than reason."

New Technology for Performance Pricing

Setting an occupancy goal is easier than achieving it. How can a city adjust parking prices to yield one or two open curb spaces on every block? Fortunately, the technology used to charge for parking and measure occupancy has advanced rapidly in recent years. This new technology enables cities not only to set different prices at different times of day but also to measure the resulting occupancy of curb spaces.

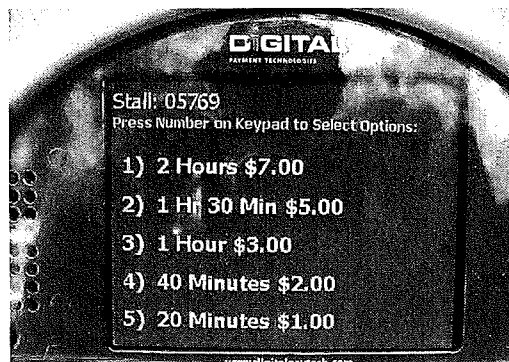
Occupancy sensors are one promising new technology (see Figure P-2).⁹ These sensors are about the size of a hockey puck and are placed in every curb space, either on the surface of the street or a few inches beneath it. They sense changes in the earth's magnetic field when a ton of metal is parked above and send this information to a central database. San Francisco will use the data from sensors to adjust parking prices once a month to reach the occupancy goal.¹⁰

The technology for charging variable prices has also advanced. Most multispace meters can charge variable prices through the day, and these prices can be remotely updated without touching the meters. Multispace parking meters on the UCLA campus charge four different prices during a day, and the price of parking is not printed anywhere on the meter. When drivers touch a button on the meter, the digital display shows the price of parking at that time (see Figure P-3). For example, during peak hours the price of parking at the center of campus is \$3 for the first hour and \$4 for the second hour. Is this too much to charge for parking at a university? You cannot answer this question without looking at the results. The right price of curb parking is like Supreme Court Justice Potter Stewart's definition of pornography: "I know it when I see it."



www.streetlinenetworks.com

Figure P-2.
Occupancy sensor



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Figure P-3. Variable parking prices

UCLA has not installed occupancy sensors, but I took photographs of eight parking spaces governed by the meter in Figure P-3 every four minutes for an hour and calculated the occupancy rate. In effect, I was the occupancy sensor. The goal of having one or two vacant spaces was met 87 percent of the time, and the average occupancy rate was 83 percent (see Figure P-4). I am *not* saying that \$3 an hour is the right price for curb parking. I am saying that \$3 an hour was the right price *at that time, at that place*. The combination of high-tech meters and occupancy sensors will allow cities to charge the right prices for curb parking everywhere.

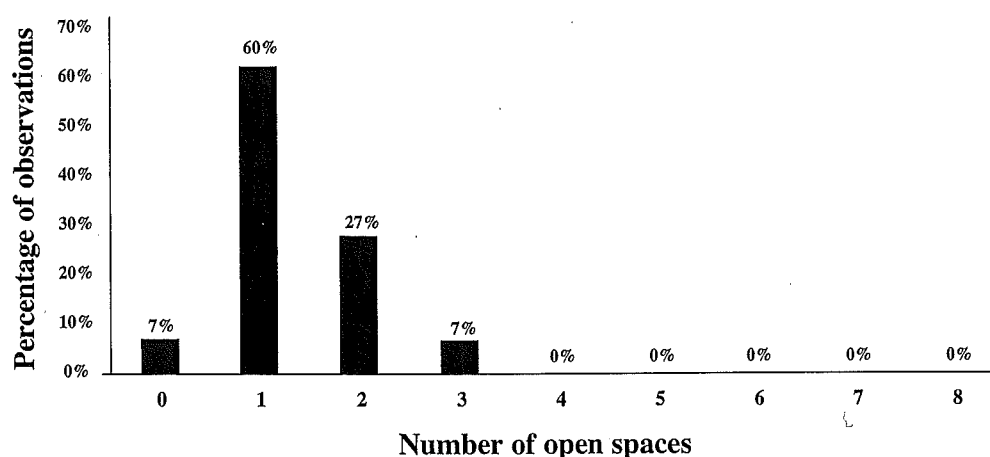


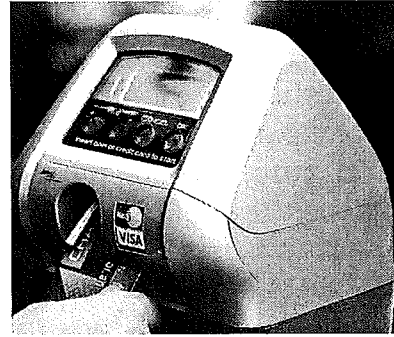
Figure P-4. Parking is well used but readily available.

Should the price of parking be lower? Then all the spaces will often be full and drivers will have to cruise for parking. This cruising will waste fuel, pollute the air, congest traffic, and increase carbon emissions. Should the price of parking be higher? Then more spaces will remain vacant because fewer drivers will pay to park in them. In business districts the stores will lose customers, the city will lose sales tax revenue, employees will lose jobs, and the economy will suffer. So other than aiming for one or two open spaces on every block, can anyone recommend a better principle for setting the price of curb parking?

Miniaturization is another technology that allows even single-space meters to offer sophisticated features such as variable prices, remote updates, payment by credit card, and solar power (see Figure P-5).¹¹ Drivers who pay by credit card can pay for more time than they expect to use, and, upon returning, reinsert the credit card to deduct the unused time before the card is charged.¹² This arrangement has two advantages. First, it reduces uncertainty. Drivers no longer have to guess how much to pay, worry that they have guessed wrong, or rush

back to the meter to avoid getting a ticket. Second, drivers pay only for the time they use.

The increasingly common option of paying for parking by mobile phone also offers drivers the ability to pay only for the time parked, with no worry about returning before a meter has expired (see pp. 389–390). Paying for curbside parking can thus be as convenient and worry



IPS Group Inc., San Diego

Figure P-5. Smart meter

free as paying for other services where the charge depends on the time used, such as long-distance telephone calls. If cities remove time limits at meters and give drivers the option to use credit cards at meters or pay by mobile phone, performance prices may become more acceptable, because they give drivers greater convenience.

Because occupancy sensors and parking meters provide real-time information for every parking space, the city has real-time information about the number of occupied but unpaid-for spaces on every block, enabling enforcement officers to focus on areas with high violation rates. Paying at a parking meter is like taking out an insurance policy against getting a parking ticket. It is a gamble, and a higher probability of being ticketed for overtime parking will encourage drivers to pay the meter rather than risk a ticket.

These two new technologies—occupancy sensors and remotely configured, variably priced parking meters—may change parking and transportation as profoundly as the invention of the cash register in the 19th century changed retail commerce. They can unlock the immense value of land now devoted to free parking and bring transportation into the market economy.

If the Price Is Right, Customers Will Come

Often when I present a proposal for performance parking prices in a city, someone in the audience vehemently says something like “If this city operates the parking meters in the evening, I will never drive downtown to eat in a restaurant again.” This threat to boycott downtown restaurants would be a convincing argument if many curbside spaces remained empty after the meters began operating in the evening. But this threat ignores the key argument for performance prices: *If the meters are priced right, cars will fill most of the curbside spaces, leaving only one or two vacant spaces on each block.* If most curbside spaces are filled, parking meters can’t be chasing all the customers away.

Meters *will* chase away some drivers, but the curb spaces these drivers would have occupied will then become available to customers who are willing to pay for parking if they can easily find a convenient curb space on the block they want to visit. Because the curb spaces will remain almost fully occupied, merchants shouldn't be alarmed that performance prices will harm their businesses. And who is likely to leave a bigger tip in a restaurant? Drivers who are willing to pay for parking if they can always find open curb spaces at their destinations? Or drivers who will come only if they can park free after they circle the block a few times to find free parking?

The benefits do not stop with bigger tips. Whenever I am in a restaurant, I usually ask the waiters where they park. If the meters cease operating at 6 p.m. in the area, waiters often tell me they try to arrive shortly before 6 p.m. so they can find a meter and park free for the whole evening. But the curb spaces these waiters use are then not available for potential restaurant customers. If cities instead charge performance prices for curb parking and run the meters as late as needed to manage demand, waiters can park off-street or farther away in cheaper curb spots, making the most convenient spots available for more restaurant customers, who can leave more tips for the waiters.

Both common sense and empirical research suggest that performance-priced curb parking will motivate more people to carpool, because carpoolers can share the cost of parking while a solo driver pays the full cost (see p. 362). Waiters who park free at the curb will probably be solo drivers, but diners who pay to park may arrive with two, three, or four customers in a car. Further, performance prices will promote faster turnover because drivers will pay as long as they park. If a curb space turns over twice during the evening, each space can deliver two groups of diners to a restaurant rather than one waiter (see pp. 363–366). For both reasons—higher-occupancy vehicles and faster turnover—performance prices for curb parking will attract more customers to a business district. With more customers, the restaurants can expand and hire more waiters and pay more in sales taxes. Charging performance prices to manage curb parking can thus benefit many people, including even those who don't live in the metered areas.

A further advantage of performance prices is that they will decline when demand declines during a recession. The price of curb parking will automatically fall to keep the customers coming. The cheaper curb parking will help businesses survive and prevent job losses. But if curb parking prices remain high during a recession, curb spaces will be underoccupied, stores will lose customers, and more people will lose jobs.

If cities eliminate cruising by charging performance prices for curb parking, where will the cruising cars go? Because drivers will no longer have to arrive at their destinations 5 to 10 minutes early to search for a curb space, their vehicle trips will be 5 to 10 minutes shorter. The reduction in traffic will come not from fewer vehicle trips but from shorter vehicle trips.

Everybody wants something for nothing, but we should not promote free parking as a principle for transportation pricing and public finance. Using performance prices to manage curb parking can produce a host of benefits for businesses, neighborhoods, cities, transportation, and the environment. Parking wants to be paid for.

2. RETURN PARKING REVENUE TO PAY FOR LOCAL PUBLIC SERVICES

Drivers want to park free, and that will never change. What can change, however, is that people can want to *charge* for curb parking. The simplest way to convince people to charge for curb parking in their neighborhood is to dedicate the resulting revenue to paying for added public services in the neighborhood, such as repairing sidewalks, planting street trees, and putting utility wires underground. That is, the city can offer each neighborhood a *package* that includes both performance-priced curb parking *and* the added public services financed by the meters. Performance pricing will improve the parking and the revenue will improve the neighborhood. The people who live and work and own property in the neighborhood will see the meter money at work, and the package will be much more popular than meters alone.

Local Politics

Old Pasadena, a historic business district in Pasadena, California, is the leading example of a battered area that dramatically improved after the city used parking meter revenue to finance added public services (see Chapter 16). Spending more than \$1 million a year of meter money on new public services helped convert what had been a commercial skid row into one of the most popular tourist destinations in Southern California. The success has even accelerated in recent years. In 2010, Marilyn Buchanan, a prominent business leader in Old Pasadena, said about the use of meter revenue:

Our public-private parking management situation works because of the knowledge we [the Old Pasadena business community] bring to it. . . . We have the passion for Old Pasadena and the business sense to recognize long-term good. Money is still a very personal issue and you can't just take our money and throw it into the general fund. Our money belongs here in Old Pasadena and we know how to put it to good use. Not selfish use but use for the good of the community which in the end of course helps us, the business people.¹³

If all parking revenue disappears into a city's general fund, business leaders and residents probably won't campaign for meters, even with all the sophisticated hardware now available to charge performance prices. Dedicating the revenue to paying for local public services can be the political software necessary to create local support for performance prices. If meter money stays in the neighborhood, it will probably be spent on things the residents value highly. And if new public spending in a neighborhood is financed by new revenue generated in that neighborhood, residents in the rest of the city will probably find this spending more acceptable.

Some people seem to think that parking meter revenue should go neither into the general fund nor back to the neighborhood but instead into a trust fund for motorists—for example, to build off-street parking garages. But if each neighborhood's parking meter revenue goes into a trust fund for the neighborhood and the money can be spent for the neighborhood's highest priorities, such as cleaner and safer sidewalks, residents may soon realize that subsidizing cars is not the best use of their trust fund.

Redwood City

In 2005, Redwood City, California, south of San Francisco, adopted legislation establishing a performance parking policy and returning the meter revenue to the metered district. The city council set a performance goal for curb parking—a target occupancy rate of 85 percent—and gave city staff the responsibility for adjusting prices to achieve the target occupancy. The council thus set parking *policy*, not parking *prices*. The council also dedicated the meter revenue to pay for public improvements in the metered zone. Once the merchants understood that the revenue would remain in the metered district, they strongly backed the proposal, and the members of the city council voted for it unanimously.

REDWOOD CITY'S PERFORMANCE PARKING ORDINANCE

To accomplish the goal of managing the supply of parking and to make it reasonably available when and where needed, a target occupancy rate of eighty-five percent (85%) is hereby established.

The Parking Manager shall survey the average occupancy for each parking area in the Downtown Meter Zone that has parking meters. Based on the survey results, the Parking Manager shall adjust the rates up or down in twenty-five cent (\$0.25) intervals to seek to achieve the target occupancy rate.

Revenues generated from on-street and off-street parking within the Downtown Meter Zone boundaries shall be accounted for separately from other City funds and may be used only . . . within or for the benefit of the Downtown Core Meter Zone.

Sections 20.120 and 20.121 of the Redwood City Municipal Code

When Redwood City began to charge performance prices for curb parking, it also removed the time restrictions at meters, and this has been the program's most popular feature.¹⁴ Because curb parking prices are higher than the adjacent off-street prices, most drivers who want to park for a long time naturally choose the off-street spaces.

Removing time limits for curb parking is especially important if meters operate in the evening. Having a one-hour time limit can make the curb spaces almost useless for people who want to dine in a restaurant or go to a movie. In 2009, desperate for new revenue, Los Angeles extended the hours of meter operation to 8 p.m. in business districts but left many of the one-hour time limits in place. As a result, many spaces remain empty in the evening and most revenue is from tickets for overtime parking. The time limits harm the adjacent businesses by making it difficult for restaurant or theater patrons to park and by irritating customers who get tickets. If customers have convenient curb parking, businesses will prosper and the city will receive more sales tax revenue, so removing time limits and pricing curb spaces to yield one or two vacancies in each block can help everyone.

The Afterword reports on the programs in several other cities—including Austin, Texas; St. Louis, Missouri; Ventura, California; and Washington, D.C.—that earmark the revenue from curb parking to pay for public services in the metered districts.

3. REMOVE MINIMUM PARKING REQUIREMENTS

Reform is not only adopting good policies but also repealing bad policies. Charging performance prices for curb parking and dedicating the revenue to pay for local public services are two good policies that cities can adopt. In contrast, requiring all buildings to provide ample parking is a bad policy that cities can repeal.

In Greek mythology, a cornucopia always overflowed with whatever its owner wanted. Chapters 1 to 10 show how the prohibition against buildings without ample parking does give us all the free parking we want, but that this cornucopian parking distorts transportation choices, debases urban design, damages the economy, and degrades the environment. Like alcohol prohibition in the 1920s, minimum parking requirements do more harm than good and should be repealed.

Some cities have begun to remove minimum parking requirements, at least in their downtowns, for two reasons. First, parking requirements prevent infill redevelopment on small lots, where fitting both a new building and the required parking is difficult and expensive. Second, parking requirements prevent new uses for many older buildings that lack the parking spaces required for the new uses (see pp. 97–101 and 153–156).

A search of newspaper articles about minimum parking requirements found 129 reports of cities that have removed off-street parking requirements in their downtowns since 2005. Although newspaper articles do not represent what all cities are doing, the articles include many comments on *why* cities are beginning to change their policies. At least in downtown business districts, some elected officials have been convinced that parking requirements put the brakes on what they want to happen and accelerate what they want to prevent. Some of the reasons given for removing parking requirements are “to promote the creation of downtown apartments” (Greenfield, Massachusetts), “to see more affordable housing” (Miami), “to meet the needs of smaller businesses” (Muskegon, Michigan), “to give business owners more flexibility while creating a vibrant downtown” (Sandpoint, Idaho), and “to prevent ugly, auto-oriented townhouses” (Seattle).

According to these quotes, cities remove parking requirements to prevent bad results and to produce good ones. The logical corollary is that parking requirements produce bad results and prevent good ones.¹⁵ Removing a minimum parking requirement is not the same, however, as restricting parking or putting the city on a parking diet. Rather, minimum parking requirements force-feed the city with parking spaces, and removing a parking requirement simply stops this force-feeding. Businesses will be free to provide as much parking as they like.

An Example from Downtown Los Angeles

Many older downtowns have some wonderful buildings in terrible condition. Minimum parking requirements make restoring these historic buildings difficult or impossible, because they rarely have all the parking spaces cities require for new uses. Spring Street in Los Angeles, once known as the Wall Street of the West, is a prime example. It has the nation's largest collection of intact office buildings built between 1900 and 1930. Starting in the 1960s, the city's urban renewal program moved most office uses a few blocks west to Bunker Hill and left many splendid Art Deco and Beaux Arts buildings on Spring Street vacant except for retail uses on the ground floor.

In 1999, Los Angeles adopted its Adaptive Reuse Ordinance (ARO), which allows the conversion of economically distressed or historically significant office buildings into new residential units—with no new parking spaces (Figure P-6). Before 1999, the city required two parking spaces per condominium unit in downtown Los Angeles; in effect, the city had determined that no housing was better than any housing without all the required parking spaces.¹⁶ Michael Manville studied the results of the ARO and found that many good things can happen when a city removes its parking requirements.¹⁷

Developers used the ARO to convert 56 historic office buildings into at least 7,300 new housing units between 1999 and 2008. All the office buildings had been vacant for at least five years, and many had been vacant much longer. By contrast, only 4,300 housing units were added in downtown between 1970 and 2000.¹⁸

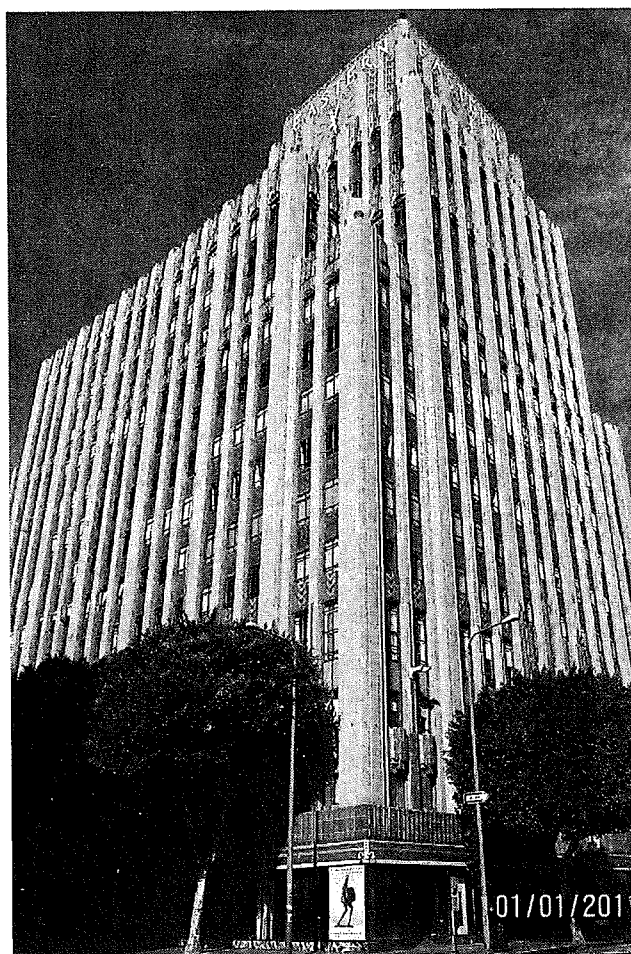
Skeptics doubted that banks would finance developers who wanted to convert office buildings into residential condominiums without two parking spaces each, but the skeptics were proved wrong. Developers provided, on average, only 1.3 spaces per unit, with 0.9 spaces on-site and 0.4 off-site in nearby lots or garages. Had the ARO not been adopted, the city would have required two *on-site* spaces for every unit, or more than twice as many as developers did provide. Manville noted, "The ability to supply parking off-site helped developers simultaneously satisfy lenders, minimize development costs, and maximize the potential of an old building."¹⁹ Deregulating both the *quantity* and the *location* of parking for the new housing was a key factor in restoring and converting the 56 office buildings Manville studied. Manville concluded that removing the parking requirements "led to both *more* housing and a greater *variety* of housing. Not only were more units built, but these units were constructed in buildings and neighborhoods that had long been stagnant and underused. Further, almost half of these buildings

unbundled some or all of the parking from rent, allowing them to target an underserved demographic—people without cars.”²⁰

The ARO also exempts the converted office buildings from other planning requirements, such as density and height limits for residential uses, so the exemption from parking requirements isn’t the sole reason for the conversions. Nevertheless, if the city hadn’t removed the parking requirements these conversions couldn’t have occurred, and the conversion boom shows that there is a residential market for people who don’t own two cars. These results strongly suggest that until the ARO was adopted, minimum parking requirements had been preventing the restoration and conversion of many obsolete office buildings into housing.

The ARO also produced other benefits. It allowed the preservation of many historic buildings that had been vacant for years and might have been demolished if minimum parking requirements had remained in place. Historic buildings are a scarce resource in any city, and the evidence shows that parking requirements stood in the way of preserving these buildings. The ARO applied only to downtown when it was adopted in 1999, but the benefits were so quickly apparent that it was extended citywide in 2003.

The ARO preserved not only individual historic buildings but also a historic neighborhood. The Spring Street Financial District was listed in the National Register of Historic Places in 1979, but by then, the *Los Angeles Times* reported, it had become “a neighborhood of hoodlums, derelicts



Donald C. Shoup

Figure P-6. Office building in Los Angeles converted to residential use without adding on-site parking spaces.

and winos—a neighborhood of echoing buildings full of absolutely nothing above the ground floor.”²¹ If empty office buildings blight a neighborhood, preserving and converting them to residential use can help restore a neighborhood. The benefits of removing off-street parking requirements do not stop with historic preservation. The conversion projects created many jobs, and the government receives higher property tax revenue on the converted buildings.

Los Angeles’s ARO shows the good results of removing off-street parking requirements. We usually can’t see things that don’t happen or count things that don’t occur, but the beautifully restored buildings on Spring Street show us some wonderful things that parking requirements had been preventing in Los Angeles and are now preventing in many other cities.

An Example from Silicon Valley

Cities are removing or reducing off-street parking requirements in their downtowns, but most people live and work outside downtown. In the suburbs, cities often require more space for cars than for people. Figure P-7 shows the relationship between buildings and the required parking at a few land uses in San Jose, California.²² The area required for parking at a restaurant, for example, is more than eight times larger than the dining area in the restaurant itself. Even if the required parking is used only intermittently, as at an auction house, the city requires the parking lots to be big enough to meet the peak demand for free parking.²³

High parking requirements help to explain the parking-dominated landscape in many parts of San Jose and the rest of Silicon Valley. The top picture in Figure P-8 shows an example of the parking-disoriented development. Developers rarely provide more parking than cities require (see pp. 89–92), so the buildings in the picture are probably as big as they can be, given the number of parking spaces surrounding them. Many of the spaces, especially the ones at the periphery of the parking lots and adjacent to the streets, remain vacant almost all the time. So what would happen if

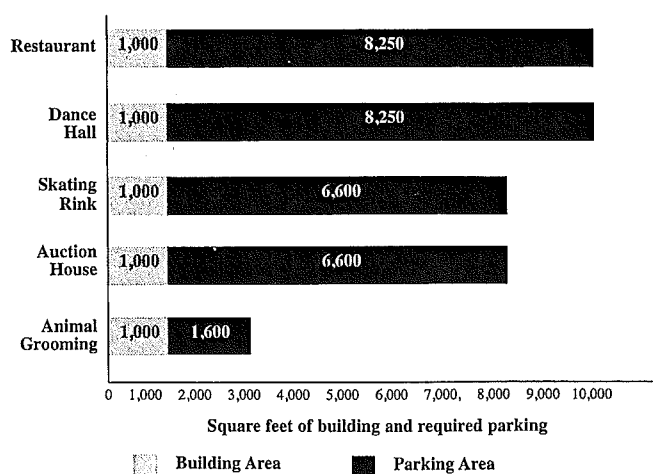
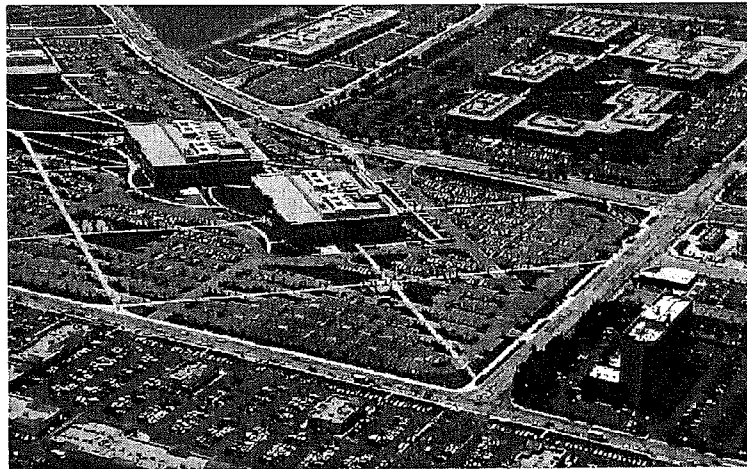


Figure P-7. San Jose's minimum parking requirements

San Jose removed off-street parking requirements, charged performance prices for on-street parking, and returned the resulting revenue to the metered neighborhoods? Property owners might decide their land was more valuable for housing than for vacant parking spaces.

Everyone in Silicon Valley complains about high housing prices, long commutes, traffic jams, air pollution, and the difficulty of attracting employees. Building housing on the periphery of parking lots would help to solve all these problems. The bottom picture in Figure P-8 suggests what might happen without minimum parking requirements. If apartment buildings were built next to the sidewalks, anyone walking, biking, or driving by would see what looks like a real city. The smartest way to travel is to be near your destination already, and this job-adjacent housing would give commuters out-of-car experiences while walking to work.



Stuart Cohen, Transportation and Land Use Coalition

Figure P-8. Parking lots in Silicon Valley before and after liner buildings

Liner Buildings

New urbanists refer to buildings that mask a parking lot or garage from the street as *liner buildings*. Figure P-9 shows one of the liner buildings inserted in the bottom picture in Figure P-8.²⁴ The term *liner* suggests that the wrapping is a superficial way to hide what is inside, but in this case the wrapping would probably be far more valuable than the parking spaces it would replace. Parking is probably the least profitable use of this peripheral land since almost any other use would yield far more revenue. In parking, as in everything else, there are opportunity costs.

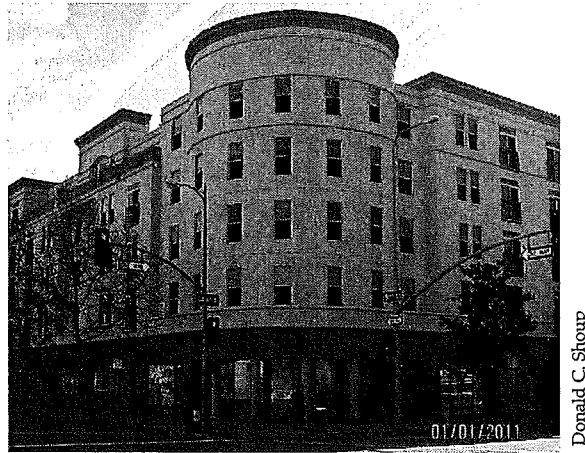


Figure P-9. Liner building

The land is already assembled, and the housing could be built without new parking because the existing spaces could be shared between office buildings and apartments. To avoid a parking shortage, the owner would probably have to unbundle the cost of parking from the rent for both apartments and offices, so car owners would pay only for the parking spaces they use (see Chapter 20). Some residents who work in a nearby office building may find they could easily live with only one car, and they would appreciate the freedom to rent an apartment without paying for two parking spaces.

If cities remove off-street parking requirements, they will have to charge performance prices for the curb spaces to prevent spillover, but this will produce another great benefit: All the money paid for curb parking will become a new revenue stream to pay for local public services. Curb parking will become too valuable not to meter.

Removing the parking requirements for both housing and offices can produce a cascade of benefits: shorter commutes, less traffic, a healthier economy, a cleaner environment, and more affordable housing. And the benefits don't stop there. If we reform our misguided planning for parking, the money now spent on cars and fuel will become available for other things. Cars and fuel are often imported, but we cannot import apartment buildings. Shifting spending from cars, fuel, and parking to housing construction will increase the demand for labor in a host of professions, such as architects, carpenters, electricians, engineers, gardeners, glaziers, laborers, lawyers, locksmiths, painters, plumbers, real estate agents, roofers, surveyors, and even urban planners. Importing

less oil and hiring all these people to build infill development will boost the whole economy.

The five-story apartment buildings shown in Figure P-8 are not the only option for liner buildings. Courtyard apartments, row houses, office buildings, stores, restaurants, or even single-family houses might be the best use for the land on the periphery of a parking lot. Liner buildings can create the atmosphere of a city, not a parking lot. If cities stop requiring off-street parking, vast suburban parking lots can evolve into real communities.

It is easy to see the bad results caused by parking requirements— asphalt everywhere and a lack of life on the streets. But it is hard to see the good results that parking requirements *prevent*. Photoshop can suggest, however, what cities might look like without parking requirements. The upside of the mess we have made is that we have an accidental land bank readily available for job-adjacent housing. This land is now locked up in required parking, but if cities remove their unwise parking requirements we can reclaim land on a scale that will rival the Netherlands.

A QUIET REVOLUTION IN PARKING POLICIES

Academic research has repeatedly shown that minimum parking requirements inflict widespread damage on cities, the economy, and the environment. But this research has had little influence on planning practice. Most city planners continue to set minimum parking requirements as though nothing has happened. The profession's commitment to minimum parking requirements seems to be a classic example of *groupthink*, which Yale professor of psychology Irving Janis defined as "a mode of thinking that people engage in when they are deeply involved in a cohesive in-group, when the members' striving for unanimity overrides their motivation to realistically appraise alternative courses of action."²⁵ The process of setting minimum parking requirements displays most of the symptoms of defective decision making that Janis identified with groupthink: incomplete survey of alternatives; incomplete survey of objectives; failure to examine risks of preferred choice; poor information search; and selective bias in processing information at hand.²⁶ Unfortunately, academic research on parking has had little effect on practitioners' groupthinking, even though the research shows that a central part of the practice does so much harm.

Requiring Peter to pay for Paul's parking, and Paul to pay for Peter's parking, was a bad idea. People should pay for their own parking, just as they pay for their own cars and their own gasoline. The planning profession has given cities bad advice about parking requirements, which

have misshaped our cities to fit the car—almost without planners' noticing.²⁷ Parking requirements hide the cost of parking, but they cannot make it go away, and free parking usually means fully subsidized parking. At the very least, parking requirements should carry strong warning labels about all the dangerous side effects.

Suppose cities required all fast-food restaurants to include french fries with every hamburger. The fries would appear free, but they would have a high cost in money and health. Those who don't eat the fries pay higher prices for their hamburgers but receive no benefit. Those who do eat the fries they wouldn't have ordered separately are also worse off, because they eat unhealthy food they wouldn't otherwise buy. Even those who would order the fries if they weren't included free are no better off, because the price of a hamburger would increase to cover the cost of the fries. How are minimum parking requirements different? Minimum parking requirements force people who are too poor to own cars to pay for parking spaces they don't use, and they encourage others to buy more cars and drive them more than they would if they had to pay separately for parking. I am not saying that there should be no parking. I am saying that parking should be supplied in a fair market.

Despite institutional inertia in the practice of planning for parking, reforms are sprouting. Paradigm shifts in urban planning are often barely noticeable while they are happening, and after they have happened it is hard to tell that anything has changed. But shifts happen. Planners simply begin to understand cities in a new way and can scarcely remember a time when they understood cities differently. The incremental reforms now under way suggest that off-street parking requirements will not quickly disappear but will gradually erode. Cities may slowly shift from minimum parking requirements to performance parking prices without explicitly acknowledging that planning for parking had ever gone wrong. Eventually, however, planners may recognize that minimum parking requirements were a poisoned chalice, providing ample free parking while hiding the many costs. Our ample free parking comes at the expense of our cities' future.

All parking is political, and the prospects for parking reform depend on what the political context allows. Diverse interests from across the political spectrum can for different reasons support a shift from minimum parking requirements to performance parking prices. Liberals will see that it increases public spending. Conservatives will see that it reduces government regulation. Environmentalists will see that it reduces energy consumption, air pollution, and carbon emissions. Business leaders will see that it unburdens enterprise. New urbanists will see that it enables people to live at high density without being over-

run by cars. Libertarians will see that it increases the opportunities for individual choice. Developers will see that it reduces building costs. Neighborhood activists will see that it devolves public decisions to the local level. Local elected officials will see that it reduces traffic congestion, encourages infill redevelopment, and pays for local public services without raising taxes. The current system of planning for parking does such widespread harm that the right reforms can benefit almost everyone.

But all these people also want to park free. They may not have an ideological or professional interest in free parking, but they do have a *personal* interest in it. This personal interest in free parking helps explain the popularity of minimum parking requirements. But the right use of parking meter revenue can also create a countervailing personal interest in *charging* for curb parking. Cities can create the necessary political support for performance parking prices by dedicating the meter revenue to pay for enhanced public services on the metered streets (see Chapters 16 and 17).

Both Jane Jacobs and Robert Moses might have agreed that charging performance prices for curb parking and using the revenue to improve the metered neighborhoods are good public policy. Jane Jacobs loved lively neighborhoods, and Robert Moses mastered the art of using tolls to finance public investments. Combining the best of both Jacobs and Moses can guide cities off the hard path of minimum parking requirements onto the soft path of performance parking prices.

In this book I focus on how performance parking policies can repair the damage minimum parking requirements have done to American cities, but the same policies are also appropriate for developing countries that do not yet have high levels of automobile ownership. Even countries with low automobile ownership have chaotic parking problems, as suggested by this description of Mexico City:

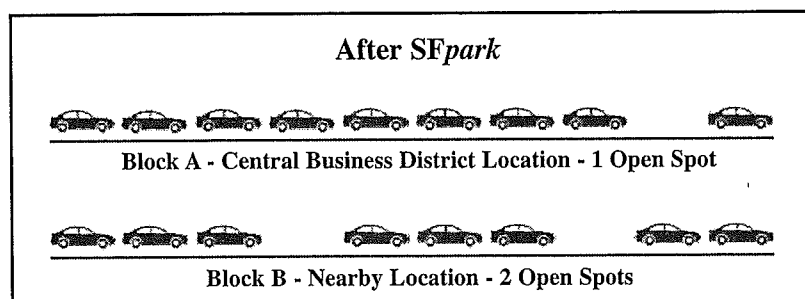
Cars dominate nearly every square inch of Mexico City's public space. Vehicle owners double- and triple-park on the streets, to say nothing of curbs, sidewalks, gardens, alleys, boulevards and bike paths.²⁸

Crowded cities in India also have problems with sacred cars, although only 14 percent of households in India own a car, and ownership is concentrated among the relatively rich.²⁹

Many big cities in poor countries have such a high density of people that even a low rate of car ownership per household leads to a high density of cars. If these cities adopt performance prices for curb parking and use the revenue to pay for local public services, never before will so

many poor people receive so much public benefit paid for by so few rich people. Even drivers will benefit because performance prices will help solve the two most difficult problems of owning a car in these cities: traffic congestion and parking shortages.

Market prices can manage the demand for parking spaces. If cities continue to offer free curb parking and require ample off-street parking, it won't be because performance prices don't work but because planners and politicians choose not to change course. There is a way, but we need the will. We can make great gifts to the future by reforming our misguided planning for free parking. In both sprawling rich cities and crowded poor cities, charging performance prices for curb parking, spending the revenue on local public services, and removing off-street parking requirements can do a world of good.



PREFACE NOTES

1. Twenty-four reviews of the book are available at <http://its.ucla.edu/shoup/BookReviews.pdf>.

2. Schaller (2006, 1, 15) and Transportation Alternatives (2007, 1).

3. Transportation Alternatives (2008, 10). Another way to learn about cruising is to ask drivers how much time they spend hunting for parking spaces. A survey of 9,000 drivers in the United Kingdom in 2010 found that British drivers reported spending an average of 25 minutes per day, or 152 hours per year, cruising for parking (Macrae 2010). That adds up to 11 months for someone who drives over the course of 50 years. Londoners lost the most time cruising, an average of 182 hours a year, or 54 weeks in 50 years.

4. Also with a grant from the U.S. DOT, Los Angeles will establish a similar program, called ExpressPark (Groves 2010). Berkeley, California, is establishing a program of "dynamic parking pricing" in two neighborhoods. In Los Angeles, occupancy sensors send information on curb vacancies to an iPhone app, Parker, which provides a real-time map showing nearby city blocks with more than four, more than two, or less than two vacant curb spaces, as well as blocks with "rock star" parking—the closest blocks with the most open spaces. The app also shows information about meter time limits, meter prices, and whether meters take credit cards or coins.

5. The census did not include off-street residential parking spaces. The data are available at <http://sfpark.org/2010/04/05/parkingcensus>.

6. The ANSWER Coalition's website is www.answercoalition.org/national/index.html.

7. See, for example, Raskin (2007).

8. Even rich people who complain about paying for parking may shift to public transit. Consider this instance in Beverly Hills: "Glen Rosten, 60, a retired real estate investor in Beverly Hills, took the bus to shop at Cartier on Rodeo Drive on Friday. 'You hate to get ripped off for parking, especially if you're going to spend the money you generally spend in Beverly Hills,' said Rosten after buying new sunglasses for about \$1,000. 'The parking wouldn't break me,' he said. 'It's just the principle. If I'm going to spend \$1,000 for sunglasses, I shouldn't have to pay for parking'" (Hennessy-Fisk and Abdollah 2007).

9. Barry (2010).

10. SFpark has an excellent website that describes the program, including a short video that shows how the program works: <http://sfpark.org>.

11. Pierce (2010). Multispace meters also offer a new twist: pay by license plate number. Drivers enter their license plate numbers at the pay station when paying for parking. They do not need to remember their space numbers or return to their cars to display receipts. Parking enforcement officers use vehicle-mounted license-plate-recognition cameras that communicate with the payment database to check whether drivers have paid or whether they have permits for residential parking districts.

12. The payment system has two forms: (1) start-duration, in which the driver inserts the credit card to pay for a fixed time in advance and reinserts the card when leaving to receive a rebate for unused time, or (2) start-stop, in which the driver inserts the credit card to start paying and reinserts the card when leaving to stop paying. Payment by cell phone can have the same start-duration and start-stop options.

13. Salzman (2010, 27).

14. In a *Wall Street Journal* article about Redwood City's program, Conor Dougherty (2007) wrote, "In the past, Cheryl Angeles has had to jump up in the middle of a coloring treatment, foil in her hair and a black-plastic cape around her neck, to pop more

quarters in the meter. Twice the self-storage company regional manager got \$25 parking tickets when she didn't make it in time. Now that the time limits have been removed, she can pay once and return when the appointment is over."

15. Many other newspaper articles illustrate how off-street parking requirements affect the layout and restrict the use of buildings. Consider, for example, this report about the design of the \$25 million Holocaust Memorial Museum in Illinois: "The number of seats in the main lecture hall of the museum, originally set at 293, has been reduced to 270 to meet parking requirements" ("Holocaust Museum makes modifications to site plan," *Pioneer Press*, December 1, 2005). Consider also this report about a restaurant in Florida: "Town planning staffers have recommended approval of the site plan changes, but tagged several conditions onto their recommendations. Chief among them are the requirements to reduce the restaurant area by 1,500 square feet to match the parking available during the day" ("Guanabanas seeks Jupiter's permission to become full-fledged restaurant," *Jupiter Courier*, December 4, 2005).

16. Behdad (2006) explains the history of the ARO. For conversion of an office building to residential use under the ARO, Section 12.222-A, 26(h)(3) of the Los Angeles Municipal Code requires that "the number of parking spaces shall be the same as the number of parking spaces that existed on the site on June 3, 1999."

17. Manville (2010).

18. Manville (2010, 12).

19. Manville (2010, 17).

20. Manville (2010, 26).

21. Dreyfuss (1982).

22. The average size of an off-street parking space is assumed to be 330 square feet, including the access aisles needed for circulation in the parking lot or structure. San Jose requires 25 parking spaces per 1,000 square feet of dining area in a restaurant, so the parking lot is 8,250 square feet for every 1,000 square feet of dining area (25 spaces x 330 square feet).

23. See Table 20-190 in the San Jose Municipal Code.

24. The apartment buildings inserted on the periphery of the parking lot are copied from downtown Los Angeles.

25. Janis (1982, 9). Other definitions of groupthink emphasize conformity and uncritical acceptance of a perceived majority point of view; the lack of creativity or individual responsibility in making decisions; the search for consensus without critically testing, analyzing, and evaluating ideas; the desire to minimize conflict; and making decisions without weighing all the facts, especially those contradicting the majority opinion.

26. Janis (1982, 175).

27. A survey of land-use plans in 30 cities and counties in North Carolina found that only two included any discussion of off-street parking requirements. Rodriguez et al. (2004, 7) explain that minimum parking requirements "lie at the intersection between land use and transportation planning, and as such are rarely included explicitly in either type of plan."

28. Dickerson (2004).

29. The Centre for Science and Environment (2009) explains how parking reforms in New Delhi can reduce traffic congestion, air pollution, and energy consumption; save drivers' time and fuel; and improve both neighborhood businesses and the environment. Barter (2010) studied parking policies in 14 Asian cities and recommends many promising policy reforms. The Institute for Transportation and Development Policy has also recently published two excellent reports on parking reforms in the United States (Weinberger, Kaehny, and Rufo 2010) and in Europe (Kodransky and Hermann 2011).