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Cashing Out Employer-Paid Parking

Donald C. Shoup

Final Report
UCTC No. 140
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Cashing Out Employer-Paid Parking

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Final Report
December 1992

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U.S. Department of Transportation
Washington, DC 20590

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The University of California Transportation Center
University of California at Berkeley
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### METRIC / ENGLISH CONVERSION FACTORS

#### ENGLISH TO METRIC

**LENGTH (APPROXIMATE)**
- 1 inch (in) = 2.5 centimeters (cm)
- 1 foot (ft) = 30 centimeters (cm)
- 1 yard (yd) = 0.9 meter (m)
- 1 mile (mi) = 1.6 kilometers (km)

**AREA (APPROXIMATE)**
- 1 square inch (sq in, in²) = 6.5 square centimeters (cm²)
- 1 square foot (sq ft, ft²) = 0.09 square meter (m²)
- 1 square yard (sq yd, yd²) = 0.8 square meter (m²)
- 1 square mile (sq mi, mi²) = 2.6 square kilometers (km²)
- 1 acre = 0.4 hectares (he) = 4,000 square meters (m²)

**MASS - WEIGHT (APPROXIMATE)**
- 1 ounce (oz) = 28 grams (gr)
- 1 pound (lb) = 0.45 kilogram (kg)
- 1 short ton = 2,000 pounds (lb) = 0.9 tonne (t)

**VOLUME (APPROXIMATE)**
- 1 teaspoon (tsp) = 5 milliliters (ml)
- 1 tablespoon (tbsp) = 15 milliliters (ml)
- 1 fluid ounce (fl oz) = 30 milliliters (ml)
- 1 cup (c) = 0.24 liter (l)
- 1 pint (pt) = 0.47 liter (l)
- 1 quart (qt) = 0.96 liter (l)
- 1 gallon (gal) = 3.8 liters (l)
- 1 cubic foot (cu ft, ft³) = 0.03 cubic meter (m³)
- 1 cubic yard (cu yd, yd³) = 0.76 cubic meter (m³)

**TEMPERATURE (EXACT)**

\[
[(x - 32) \times \frac{5}{9}]°F = y°C
\]

#### METRIC TO ENGLISH

**LENGTH (APPROXIMATE)**
- 1 millimeter (mm) = 0.04 inch (in)
- 1 centimeter (cm) = 0.4 inch (in)
- 1 meter (m) = 3.3 feet (ft)
- 1 meter (m) = 1.1 yards (yd)
- 1 kilometer (km) = 0.6 mile (mi)

**AREA (APPROXIMATE)**
- 1 square centimeter (cm²) = 0.16 square inch (sq in, in²)
- 1 square meter (m²) = 1.2 square yards (sq yd, yd²)
- 1 square kilometer (km²) = 0.4 square mile (sq mi, mi²)
- 1 hectare (he) = 10,000 square meters (m²) = 2.5 acres

**MASS - WEIGHT (APPROXIMATE)**
- 1 gram (gr) = 0.036 ounce (oz)
- 1 kilogram (kg) = 2.2 pounds (lb)
- 1 tonne (t) = 1,000 kilograms (kg) = 1.1 short tons

**VOLUME (APPROXIMATE)**
- 1 milliliter (ml) = 0.03 fluid ounce (fl oz)
- 1 liter (l) = 2.1 pints (pt)
- 1 liter (l) = 1.06 quarts (qt)
- 1 liter (l) = 0.26 gallon (gal)
- 1 cubic meter (m³) = 36 cubic feet (cu ft, ft³)
- 1 cubic meter (m³) = 1.3 cubic yards (cu yd, yd³)

**TEMPERATURE (EXACT)**

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For more exact and/or other conversion factors, see NBS Miscellaneous Publication 286, Units of Weights and Measures. Price $2.50. SD Catalog No. C13 10 286.
CASHING OUT EMPLOYER-PAID PARKING

by

Donald C. Shoup

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CASHING OUT EMPLOYER-PAID PARKING

QUALIFIED PARKING - The term "qualified parking" means parking provided to an employee on or near the business premises of the employer . . . if the employer offers the employee the option to receive, in lieu of the parking, the fair market value of the parking, either as a taxable cash commute allowance or as a mass transit or ridesharing subsidy.

The text in roman type is the existing definition of tax-exempt "qualified parking" in Paragraph (5) of Section 132(f) of the Internal Revenue Code, and the italic text is the proposed amendment.

This amendment retains the popular tax exemption for employer-paid parking, but would require that employers offer their employees the option of cash or a mass transit or ridesharing subsidy in lieu of the tax-exempt parking. The proposal has several important advantages:

1. **Free Parking Will Have an Opportunity Cost.** When commuters are offered the choice between free parking or nothing, the parking has no opportunity cost, and is therefore over-used. But asking commuters to choose between a free parking space or its cash value makes it clear that parking has a cost, which is the cash not taken. The new "price" for taking the "free" parking would increase the perceived cost of solo driving to work.

2. **Cashing Out Will Benefit Employees.** Offering employees the option to cash out employer-paid parking subsidies avoids the seemingly intractable problem that voters don’t like new taxes and motorists don’t like to pay for parking they used to get free. Employers could continue to offer tax-exempt parking subsidies, so long as they broaden the offer. Cashing out adds a new alternative to the current take-it-or-leave-it choice between a parking subsidy or nothing.

3. **Cashing Out Will Cost Employers Little or Nothing.** Compared to other solutions to the employer-paid parking problem, the cash option requirement is least intrusive in the employer’s decisions about employee compensation. The requirement is only that if an employer offers to subsidize commuting expenses, use of the subsidy cannot be confined to parking (and thus driving to work). The only added cost for an employer would occur in the unusual case of current ridesharers who are now offered the choice between free parking or nothing and yet do not take the parking. These current ridesharers would have to be offered the cash value of the parking subsidies they have not taken. This added expense of subsidizing current ridesharers who are offered free parking but have not taken it should be considered the inevitable and wholly justified cost of moving to a commute subsidy policy that does not discriminate against ridesharers. Few employers would argue that the Internal Revenue Code should encourage them to favor employees who drive to work. Also, most employers would find it difficult to take a public position against giving employees the right to choose a ridesharing subsidy in lieu of an offered parking subsidy.

4. **Cashing Out Will Especially Benefit Low Income and Disabled Employees.** Because they are in the lowest tax brackets, the lowest paid workers would gain the most after-tax cash
from a taxable cash allowance. Also, the cash allowance would be larger in proportion to a lower income, so the cash option would clearly improve the relative well-being of the lowest paid workers. Disabled employees and others who cannot drive a car will also benefit from the option to choose cash in lieu of a parking subsidy.

5. Cashing Out Will Strengthen Central Business Districts. Employer-paid parking simply equalizes the cost of parking between downtown and suburban work sites (by making it free in both places), and does nothing to make downtown superior to a suburban location. Because downtown employers must pay more than suburban employers to provide employee parking, however, downtown employers could offer more cash in lieu of a parking space without any increase in their cost. This higher cash option for downtown employees would make downtown work sites relatively more attractive than suburban work sites, at least for those who rideshare. Downtown employees could more easily take advantage of the cash option by shifting to mass transit. Also, because a high density of employment implies a high density of potential fellow carpoolers, downtown employees could more easily shift to carpools. Finally, parking spaces vacated by commuters would be a boon to visitors, including shoppers, business clients, and tourists.

6. Cashing Out Will Yield a Tax Revenue Windfall. In making the choice between a parking subsidy or its cash value, commuters would have to consider that the cash is taxable, while the parking subsidy is not. When a commuter does voluntarily choose taxable cash rather than a tax-exempt parking subsidy, federal and state income tax revenues increase. With very conservative assumptions, it is estimated that offering employees the option to cash out employer-paid parking subsidies would increase federal and state tax revenues by at least $1.2 billion a year (see Table 3 on page 28). This increase in tax payments does not result from an increase in tax rates, or from taxation of previously tax-exempt parking subsidies. Rather it results from voluntary action: cashing out an inefficient in-kind parking subsidy that costs the employer more to provide than the employee thinks it is worth. Put most simply, cashing out an inefficient parking subsidy converts economic waste into increased tax revenue and increased employee welfare, at no extra cost to the employer. This tax revenue windfall is an additional benefit above and beyond the reductions in air pollution, traffic congestion, and energy use.

The Results of Cashing Out Employer-Paid Parking

A statistical model based on a survey of 5,000 commuters and their employers suggests that offering the option of a taxable cash travel allowance to employees who now park free in downtown Los Angeles would reduce their solo driving share by 20 percent, and would eliminate 9,000 vehicle commute trips a day. These mode shifts would reduce automobile commuting by 847 VMT per commuter per year, and would reduce gasoline consumption for automobile commuting by 50 gallons per commuter per year (see Tables 9 and 10 on pages 60 and 62).

Although it is risky to extrapolate from one city to the rest of the country, we can illustrate the implications of what has been found in Los Angeles. Approximately 90 million
CASHING OUT EMPLOYER-PAID PARKING

6

commuters park free at work in the United States. If all these commuters responded to the cash option as has been estimated for Los Angeles, automobile use for commuting would decrease by 76 billion VMT a year, and gasoline consumption would decrease by 4.5 billion gallons of gasoline a year. Obviously, these estimates can suggest only general magnitudes and must be viewed cautiously.

Experience of Firms That Offer Their Employees the Cash Option

A survey of the few firms that already offer employees the cash option shows that it is simple and cheap to administer, particularly in comparison with other ridesharing incentives employers offer. A detailed case study shows how one firm was able to offer all its employees the option to cash out their parking subsidies without increasing the firm's total cost of subsidizing employee travel.

California's New Parking Cash-Out Legislation

The Federal Internal Revenue Code creates a strong incentive for employers to pay for their employees' parking, and thus a strong incentive for commuters to drive to work alone. States and localities are then left with the enormous problem of devising policies to deal with the resulting traffic congestion and air pollution. The State of California has recently enacted legislation that directly addresses the problems caused by employer-paid parking, and that serves as a model of how the Federal government could address the same problems. Briefly, the new California cash-out legislation requires employers of 50 or more persons who provide a parking subsidy to employees to:

provide a cash allowance to an employee equivalent to the parking subsidy that the employer would otherwise pay to provide the employee with a parking space. "Parking subsidy" means the difference between the out-of-pocket amount paid by an employer on a regular basis in order to secure the availability of an employee parking space not owned by the employer and the price, if any, charged to an employee for the use of that space.

Note that the employer must offer an employee the option to take cash in lieu of a parking subsidy only if the employer makes an explicit cash payment to a third party to subsidize the employee's parking. Therefore, the employer clearly saves the cash paid for the parking subsidy if the employee takes the cash allowance instead. The employer's avoided parking subsidy directly funds, dollar for dollar, the employee's cash allowance, so there is no net cost increase for the employer when an employee foregoes the parking and takes the cash. The employer must offer the cash allowance only to each employee who is offered a parking subsidy. And each employee's cash allowance is equal to the parking subsidy offered to that employee, so if some employees are offered smaller parking subsidies than other employees, their required cash allowance would also be smaller. Thus, the law is very tightly written to avoid imposing a net cost on employers who comply with the cash-out requirement.
The California cash-out legislation also reduces the burden of parking requirements on new development by mandating that:

*The city or county in which a commercial development will implement a parking cash-out program . . . shall grant to that development an appropriate reduction in the parking requirements otherwise in effect for new commercial development.*

Data derived from case studies and from a statistical model were used to estimate that cashing out employer-paid parking would reduce parking requirements for new development by at least 17 percent (see Table 18 on page 101).

**Implications for Federal Action**

California’s cash-out legislation shows that it is feasible to require that employers who pay for parking if an employee drives to work must offer to pay the same amount if the employee rideshares to work. Some employers will undoubtedly encounter problems in adjusting to the cash-out requirement, but the new legislation will merely expose, not create, most of these problems. The real challenge for many employers will be to abandon the outdated notion that the best way to help employees get to work is to pay for their parking.

California’s experience suggests that, at the Federal level, it is sensible to proceed cautiously, beginning first with the requirement to offer cash in lieu of a parking subsidy only in the clearest "win-win" case where the employer pays out-of-pocket cash to a third party to subsidize employee parking. In this case the employer’s avoided parking subsidy directly funds, dollar for dollar, the employee’s cash allowance, so there is no net cost increase for the employer when an employee foregoes the parking and takes the cash. Later, after employers have been given sufficient advance notice to adjust to the emergence of a parking market where spaces are allocated by prices rather than by subsidies, the cash-out requirement could be extended to all employer-paid parking. To repeat, however, the proposed cash-out requirement does not prohibit, tax, or discourage any employer-paid parking subsidy. Rather, the proposal is simply that an employer who offers to pay for an employee’s parking if the employee drives to work must also offer to pay the same amount if the employee rideshares to work.

Because a cash payment is taxable income to the employee, some employees may prefer to keep the tax-exempt parking space. However, the research on commuters in Los Angeles suggests that the taxable nature of cash does not seriously diminish its attractiveness. Requiring employers to offer employees the option to cash out their parking subsidies will reduce traffic congestion, improve air quality, conserve gasoline, enhance employee welfare, and increase tax revenue without increasing tax rates. All these benefits will derive simply from subsidizing people, not parking.
CASHING OUT EMPLOYER-PAID PARKING

by

Donald C. Shoup

I. EMPLOYER-PAID PARKING AS A TRANSPORTATION PROBLEM

Employer-paid parking is an invitation to drive to work alone. Thus, it strongly works at cross purposes with costly public policies designed to reduce traffic congestion, energy consumption, and air pollution. The purpose of this study is to explore the problems created by employer-paid parking, to propose a solution to these problems, and to predict the consequences of the proposal.

Evidence from a variety of sources shows that nine out of ten American commuters who drive to work pay nothing to park at work.

- Shoup and Pickrell (1980) used data from the 1977 Nationwide Personal Transportation Survey to estimate that 93 percent of auto commuters parked free at work.
- A 1988 survey of employers in Southern California found that 91 percent of employees park free at work (Commuter Transportation Services, Inc. 1988).
- A 1989 survey of large metropolitan areas found that 90 percent of those who drive to work park free (Center for Urban Transportation Research 1989).
- Willson and Shoup (1990a) found that only 12 percent of all commuters to downtown Los Angeles work for employers who do not subsidize employee parking.
- Lopez-Aqueres and Wasikowski (1992) report that 97 percent of the firms that submitted their first-year Trip Reduction Plans to the South Coast Air Quality Management District in Southern California in 1991 offered free parking to all employees as part of their travel demand management strategy.
- Williams (1992) found that 82 percent of all commuters' automobiles park free at work in the Washington, D.C. metropolitan area, and that employer-paid parking subsidies totalled approximately $1 million a day. Even in downtown Washington, where parking charges are highest, 74 percent of all commuters' autos parked at federal facilities paid nothing for parking, and another 22 paid a discounted rate; only 4 percent paid the market rate for parking.
- Finally, the 1990 Nationwide Personal Transportation Survey found that 95 percent of all automobile commuters pay nothing for parking.

Employer-paid parking may appear to be a generous and enlightened fringe benefit, but it greatly reduces the cost and increases the amount of solo driving to work. The 1990 Nationwide Personal Transportation Survey found that 91 percent of commute trips to work were by automobile (up from 78 percent in 1983), and the average vehicle occupancy rate for work commute trips was 1.1 persons per vehicle (down from 1.3 in 1983). These figures imply that there were 83 vehicles driven to work per 100 employees in the United States in 1990, an extraordinary automobile dependency that is strongly stimulated by employer-paid parking.
Employer-paid parking's strong stimulus to drive to work alone can be illustrated in three ways. First, an employer's offer of free parking at work is often worth more than the offer of free gasoline for the trip to and from work. For commuters to downtown Los Angeles, Willson and Shoup (1990a) found that the average round trip to work for those who park free is 36 miles. If their gasoline mileage is 20 miles a gallon, the round trip to work consumes 1.8 gallons of gas. At $1.50 a gallon, the cost of gas for the average round trip commute trip is $2.70. But the average employer-paid subsidy for commuter parking in downtown Los Angeles was $3.87 a day, or 43 percent more than the cost per trip for gasoline. Any employer who offered free gasoline to all employees who drive to work alone would probably be denounced as an environmental outlaw, but employer-paid parking is a much stronger financial incentive to drive to work alone.¹

Second, employer-paid parking subsidies dwarf the gasoline tax paid for the average work trip. The average parking subsidy of $3.87 for a trip that consumes 1.8 gallons of gas is equivalent to a subsidy of $2.15 per gallon of gas used. Therefore, the federal gasoline tax would have to be raised from 14 cents to $2.29 a gallon (a 16-fold increase) merely to offset the parking subsidies now given to over 50,000 solo drivers who park free at their employers' expense in downtown Los Angeles. Thus, even an improbably huge increase in the federal gasoline tax would discourage solo driving to work by much less then employer-paid parking already encourages it.

A third way to illustrate the powerful effect of employer paid parking is to compare it to a hypothetical congestion toll. Where the average round trip drive to work is 36 miles, and the average parking subsidy is $3.87 a day, the parking subsidy is equivalent to 11 cents per mile travelled. Thus, imposing a congestion toll of 11 cents per mile travelled would do no more to discourage commuters from driving to the Los Angeles CBD than employer-paid parking already encourages it. This is an important point because employers fully subsidize parking for almost half of all the solo drivers to downtown Los Angeles.

Because employer-paid parking subsidizes such a large share of the total cost of driving to work, it substantially increases the amount of solo driving to work. Table 1 summarizes the results from well-documented case studies of how employer-paid parking affects commuters' travel choices. These case studies have either: (1) compared the commuting behavior of employees before and after employer-paid parking was eliminated; or (2) compared the commuting behavior of matched samples of employees with and without employer-paid parking. Willson and Shoup (1990b) summarize these cases, covering a variety of locations, and employer and employee types.

¹ Pickrell (1991) points out that where the market price of parking is $5 a day, employer-paid parking is a bigger subsidy for driving to work than an employer's offer to provide free gasoline and a free car for the commute trip.
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Source: Adapted from Shoup and Willson (1992)
Table 1 first shows the effect of employer-paid parking in terms of solo driver mode share, and reveals that offering employer-paid parking shifted between 7 and 44 percent of commuters to solo driving from other modes, and on average shifted 27 percent of all commuters into solo driving. Among solo drivers whose employers offer free parking, 41 percent drive solo only because their employers pay for the parking.2

Second, the table shows that employer-paid parking increased the number of cars driven to work by between 7 and 28 cars per 100 employees, with an average increase of 19 cars per 100 employees. Twenty-seven percent of all the cars driven to work by free parkers were driven to work only because parking was free.

Finally, the last column of Table 1 standardizes the results in terms of the price elasticity of demand for parking. The price elasticity of demand ranges from -0.08 to -0.23, and averages -0.16, which can be interpreted as meaning that a 10 percent decrease in the price of parking will increase the number of cars driven to work by 1.6 percent.

In summary, the evidence on employer-paid parking shows that (1) most employers pay for their employees' parking at work, and (2) employer-paid parking greatly increases the number of cars driven to work.

2. If 66 percent of all commuters offered free parking drive solo, and if 27 of all solo drivers who park free drive solo because of the offer of free parking, then 41 percent (27/66) of all solo drivers offered free parking drive solo because of the offer of free parking.
II. EMPLOYER-PAID PARKING AS A MATCHING GRANT

If an employer offers free parking at work, the employee must still pay all the rest of the cost of driving to work. This employer-paid parking arrangement is essentially a type of matching grant, where the employer pays part of the cost of commuting by car (the parking cost) if the employee is able and willing to pay the rest of the cost of commuting by car (the driving cost). Employees who are unable or unwilling to commute by car cannot take advantage of the parking subsidy. Thus, the effects of an employer’s offer of free parking can be analyzed in the same way that public finance economists traditionally analyze the effects of a matching grant.

1. The Analogy to Public Finance

Matching grants are usually offered in order to stimulate a desired response by the recipient. For example, some employers offer to contribute $1 to an employee’s tax-deferred pension plan for every $1 the employee also contributes. The rationale for this matching grant is that by increasing the value of the employee’s own contribution, it will stimulate the desired response of additional retirement saving by the employee. But the employer’s contribution can also serve to replace some of the retirement saving that the employee would need to make to achieve a specific retirement savings goal. If employees respond to the dollar-for-dollar matching grant with a 50 percent reduction in their own contributions to the pension plan, the employer’s matching contribution does not stimulate any additional saving; rather, it merely replaces saving the employee would have done even without the matching contribution. To take another example, some employers offer to match their employees’ donations to designated charities. The rationale for this matching offer is that it will stimulate additional charitable donations by the employee, rather than replace charitable donations that the employee would have made anyway. The relative sizes of the stimulus and replacement effects of a matching grant are often hard to measure, but the intent of any matching grant is almost always to stimulate desired behavior by employees rather than simply to shift the burden of paying from the employee to the employer.

In the case of employer-paid parking, however, the unstated assumption seems to be that an employer’s payment for parking will simply replace a payment for parking that the employee would have made anyway. But for some employees, the employer’s offer to pay for parking will stimulate a mode shift (say from mass transit to solo driving), because the employee will pay all the rest of the cost of driving to work only if the employer pays for the parking. The data from the case studies summarized in Table 1 suggest that, for every 100 employees, employer-paid parking replaced employees’ payments for parking at work for 51 cars (the number of cars driven to work even when the employer does not pay for parking), and stimulated the driving of an additional 19 cars to work, a 37 percent increase. If it were known that employer-paid parking stimulates a 37 percent increase in solo driving to work rather than simply replaces payments for parking that drivers would have made anyway, would it seem reasonable and prudent for employers to subsidize employee commuting by subsidizing employee parking in the form of a matching grant?
2. *Private Waste and Public Harm*

Employer-paid parking is usually a take-it-or-leave-it offer. That is, employees are usually not offered any alternative benefit of equivalent value if they do not take the parking. Therefore, some employees who value the parking at less than it costs the employer to provide it will nevertheless take the parking subsidy rather than nothing. For example, suppose the market price of parking at your work site is $100 a month. Suppose also that you would drive to work alone if parking cost less than $60 a month. If, however, you had to pay anything more than $60 a month to park at work, you would instead choose to commute by bus, bicycle, carpool, vanpool, subway, or walking. Thus, if your employer offers you free parking at work (by paying the $100 a month parking charge for you), you would drive to work alone. If, however, your employer offered you the choice between either the free parking space or the $100 it costs to provide it, you would prefer to take the $100 in cash and rideshare to work.3

In the situation just described, the offer of employee-paid parking (without the option to choose its cash value instead) has two undesirable consequences. First, it is privately wasteful, because you take a parking space that is worth less to you than it costs your employer. Your employer is paying $100 to provide you with something that you value at only $60. That represents a net loss of $40 a month in income to you, compared to the alternative of taking the $100 parking subsidy in cash instead.

Of course, if you would choose to drive to work even when parking costs you more than $100 a month, the offer of employer-paid parking does not stimulate a change in your commute decision; it simply replaces a payment that you would have made anyway, and it is therefore not privately wasteful in the sense just argued. The subsidy is worth as much to you as it costs your employer. But all the studies cited earlier in Table 1 clearly show that many commuters do not think their parking spaces at work are worth what it costs their employers to provide them, because when commuters have to pay for their own parking, many of them do stop driving to work alone. As one example, consider the results found in the Mid-Wilshire Los Angeles case study, where an employer ceased offering to pay for parking at work for solo drivers (Surber, Shoup, and Wachs, 1984). Of the 42 solo drivers who had previously received free parking, only one solo driver chose to pay the market price of $57.50 a month to continue parking in the previously free spaces. That is, 98 percent of all employees who drove to work alone when their parking was free felt that the parking spaces were not worth the $57.50 a month that their employer had been paying for them. This suggests the potential for a considerable amount of private waste involved in offering parking subsidies that are worth less to employees than they cost the employer.

In addition to the private waste it entails, employer-paid parking is publicly harmful, because it needlessly increases the number of cars driven to work. On average, the case studies

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3. The term "ridesharing" is used here and throughout in its California interpretation: commuting to work by any mode other than solo driving.
summarized in Table 1 suggest that employer-paid parking increases the number of cars driven to work by 37 percent. Thus, employer-paid parking clearly contributes to the already serious urban problems of traffic congestion and air pollution.

Employer-paid fringe benefits are usually justified on the grounds that they encourage socially desirable behavior, and help to further important public objectives. For example, employer-paid medical insurance is intended to improve employees’ health. Employer-paid pension contributions are intended to provide retirement income in old age. But employer-paid parking is altogether different, because it strongly encourages the socially undesirable behavior—solo driving—that other subsidies and public policies are meant to discourage. Market parking prices encourage commuters to rideshare, but employer-paid parking shields commuters from these market signals and skews commuters’ choices toward driving to work alone.
III. WHY DO EMPLOYERS SUBSIDIZE PARKING RATHER THAN PEOPLE? THE TAX EXEMPTION ISSUE

Given the ample and growing body of evidence that employer-paid parking is both privately wasteful and publicly harmful, what explains its ubiquity? Why don't employers instead offer their employees an equivalent cash commute allowance that employees could use as they choose? The cash commute allowance would not be privately wasteful, because it would not tempt employees to park in spaces they don't think are worth what they cost, and it would not be publicly harmful, because it would not coax commuters into driving to work alone.

Federal and state income tax laws exclude the value of employer-paid parking subsidies from employees' taxable income. The favored income tax treatment of employer-paid parking subsidies makes it "tax-efficient" for employers to pay for their employees parking at work. Table 2 shows how much an employer in California would have to pay, in taxable cash income, to provide an employee the equivalent of a $1 tax-exempt parking subsidy. For an employee whose taxable income is $50,000 a year, an employer would have to pay payroll taxes of 11.55 percent on every additional dollar of wages paid to the employee. The employee would have to pay federal and state income and social security taxes of 45 percent on every additional dollar of wages. That is, the employer must pay $1.12, before taxes, for the employee to receive 55 cents, after taxes. Therefore, the employer would have to pay $2.03 in taxable cash ($1.12 + $0.55) for the employee to net, after all payroll and federal and state income and social security taxes, the after-tax equivalent of a $1 tax-exempt parking subsidy. The offer of employer-paid parking is thus worth more than twice as much, after taxes, as a taxable cash commute allowance. The "tax efficiency" of employer-paid parking is thus a strong incentive for employers to subsidize employee parking. Far from being irrational or irresponsible in subsidizing their employees' parking, employers are simply doing what the U.S. Internal Revenue code tells them to do.

How does the Internal Revenue Code tell employers to pay for employee parking? Until it was amended by the Comprehensive National Energy Policy Act of 1992, the Code's "special rule for parking" exempted employer-paid parking subsidies by stating that:

4. For an employee who itemizes deductions, the state income tax is a deductible item on the federal tax return, and this reduces the effective state income tax rate. For an itemizer, the taxable equivalent of a $1 tax-exempt parking subsidy is therefore $1.58 at an income of $25,000 per year, $1.93 at an income of $50,000 per year, and $1.72 at an income of $75,000 per year. Most taxpayers do not itemize deductions, and the effect is small even for those who do itemize.

5. Although the tax-exemption of parking subsidies makes it "tax efficient" for an individual employer to subsidize parking, the tax-exemption of parking subsidies makes the tax system itself less efficient because it reduces tax revenue, encourages an inefficient method of employee compensation, encourages socially undesired behavior, and reduces the effectiveness of a host of other public policies designed to reduce congestion, pollution, and energy consumption. Thus, "tax efficiency" for the individual employer does not in any way imply efficiency of the tax system itself.
### TABLE 2

THE TAXABLE CASH EQUIVALENT OF A TAX-EXEMPT PARKING SUBSIDY

<table>
<thead>
<tr>
<th>Employee's Taxable Income</th>
<th>$25,000</th>
<th>$50,000</th>
<th>$75,000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Employer’s Marginal Payroll Tax Rate</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Security</td>
<td>6.20%</td>
<td>6.20%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Medicare</td>
<td>1.45%</td>
<td>1.45%</td>
<td>1.45%</td>
</tr>
<tr>
<td>Unemployment Insurance</td>
<td>3.00%</td>
<td>3.00%</td>
<td>3.00%</td>
</tr>
<tr>
<td>Federal Unemployment Tax</td>
<td>0.80%</td>
<td>0.80%</td>
<td>0.80%</td>
</tr>
<tr>
<td>Employment Training Tax</td>
<td>0.10%</td>
<td>0.10%</td>
<td>0.10%</td>
</tr>
<tr>
<td><strong>Total Tax Rate</strong></td>
<td>11.55%</td>
<td>11.55%</td>
<td>5.35%</td>
</tr>
</tbody>
</table>

| Employer’s Total Cost per $1 of Additional Wages Paid | $1.12 | $1.12 | $1.05 |

<table>
<thead>
<tr>
<th>Employee’s Marginal Income Tax Rate</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Income Tax</td>
<td>15.00%</td>
<td>28.00%</td>
<td>31.00%</td>
</tr>
<tr>
<td>State Income Tax</td>
<td>8.00%</td>
<td>9.30%</td>
<td>9.30%</td>
</tr>
<tr>
<td>Social Security</td>
<td>6.20%</td>
<td>6.20%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Medicare</td>
<td>1.45%</td>
<td>1.45%</td>
<td>1.45%</td>
</tr>
<tr>
<td><strong>Total Tax Rate</strong></td>
<td>30.65%</td>
<td>44.95%</td>
<td>41.75%</td>
</tr>
</tbody>
</table>

| Employee’s Net After-Tax Income per $1 of Additional Wages Paid | $0.69 | $0.55 | $0.58 |

| Taxable Cash Equivalent per $1 of Tax-Exempt Parking Subsidy | $1.61 | $2.03 | $1.81 |

The marginal tax rates are for a married couple filing jointly, without itemizing, based on 1991 federal and California tax brackets and personal exemptions.
The term "working condition fringe" includes parking provided to an employee on or near the business premises of the employer. 6

Why has the Code had this special rule defining employer-paid parking as a "working condition fringe"? The Code's general definition of a "working condition fringe," which is excluded from the employee's gross income and is thus exempt from income taxation, is any item provided to an employee that the employee could deduct from gross income as a work-related expense if paid for by the employee. If, for example, the employer provides the employee a work uniform the cost of which the employee would be able to deduct if the employee paid for it, the value of the employer-provided uniform is a tax-exempt working condition fringe benefit. But if, to take a different example, the employer provides the employee a car the cost of which the employee would not be able to deduct if the employee paid for it, the car does not fit the definition of a tax-exempt working condition fringe, and the employer must report the imputed market value of the car as taxable income paid to the employee. Because employees can not deduct their own cost of parking at work, employer-paid parking does not fit the general definition of a tax-exempt working condition fringe benefit. Therefore, in order to exempt employer-paid parking from income taxation, Congress simply made an exception to the general rule, and specified that employer-paid parking is a working condition fringe. No other working condition fringe benefit is tax exempt when paid for by the employer but taxable when paid for by the employee: the special rule for parking was the sole exception to the general rule for working condition fringes in the Code.

The Internal Revenue Code's asymmetrical rule for employer-paid parking subsidies has clearly offered employers strong incentive to pay for their employees' parking. If the employee pays for parking at work, the employee cannot deduct the parking charge from taxable income as a work-related expense. But if the employer pays for the employee's parking at work, the Code has classified the payment as a tax-exempt working condition fringe benefit. This special rule for employer-paid parking subsidies has been a unique, deliberate, and specially targeted tax exemption that has had the unfortunate, unintended effect of stimulating a huge increase in the number of commuters who drive alone to work.

It is particularly important to understand the very peculiar asymmetry of the tax exemption for employer-paid (but not employee-paid) parking in order to understand the almost irresistible incentive it provides for employers to pay for their employees' parking. The tax exemption for employer-paid parking does not simply reduce the cost of commuter parking by the employee's marginal income tax rate in the same way that, for example, the tax deduction for contributions to charity reduces the cost of contributing to charity. To take advantage of the tax-exemption for employer-paid parking, the employer has to pay for the employee's parking. No tax deduction is allowed if the employee pays for the parking. Therefore, the tax exemption is of value only to the extent that the employer pays for the employee's parking. Although a

6. The "special rule for parking" is contained in Paragraph (4) of Section 132(h) of the Internal Revenue Code of 1986.
conventional tax deduction reduces the price of the deductible item only by the taxpayer's marginal tax rate, the unique tax exemption for employer-paid (but not for employee-paid) parking has inadvertently shifted the responsibility for paying for almost all commuter parking entirely from the employee to the employer, and has thus reduced the cost of almost every employee's cost of parking to zero. Further, the revenue loss created by this tax exemption must be made up by raising taxes elsewhere. Thus, all American taxpayers end up paying for a subsidy that congests their traffic, pollutes their air, and wastes their energy.

The tax-induced 100 percent reduction in the price for parking at work would not be catastrophic if the goal of public policy were to encourage as many commuters as possible to drive to work alone. But of course the case is exactly the opposite. As a remedy for the serious problems caused by employer-paid parking, ridesharing and mass transit advocates have argued for years that the tax code should be revised to exempt employer-paid transit and ridesharing subsidies from taxation, in the same way that employer-paid parking subsidies are tax exempt. The Comprehensive Energy Policy Act of 1992 took a short step in this direction by amending the special rule defining employer-paid parking as a "working condition fringe," and in its place creating a new category of tax-exempt fringe benefit called a "qualified transportation fringe." A new Subsection (f) was added to Section 132 of the Internal Revenue Code, which (effective January 1, 1993) defines the new tax-exempt transportation fringe benefit in the following way:

**QUALIFIED TRANSPORTATION FRINGE**

1. **IN GENERAL** - For purposes of this section, "qualified transportation fringe" means any of the following provided by an employer to an employee:

   a. Transportation in a commuter highway vehicle [a van that seats at least six adults not including the driver] if such transportation is in connection with travel between the employee's residence and place of employment.

   b. Any transit pass.

   c. Qualified parking. [The term "qualified parking" means parking provided to an employee on or near the business premises of the employer or on or near a location from which the employee commutes to work by transportation described in subparagraph (A), in a commuter highway vehicle, or by carpool.]

2. **LIMITATION ON EXCLUSION** - The amount of the fringe benefits which are provided by an employer to any employee and which may be excluded from gross income . . . shall not exceed -

   a. $60 per month in the case of the aggregate of the benefits described in subparagraphs (A) and (B) of paragraph (1), and

   b. $155 per month in the case of qualified parking.

In effect, the new "qualified transportation fringe" exempts the first $155 a month of employer-paid parking subsidies from income taxation, and exempts the first $60 a month of employer-paid vanpool or transit subsidies from income taxation. Both tax exemptions will be indexed to the cost of living. The rationale for the $155 per month cap on tax-exempt parking subsidies is that taxes on employer-paid parking subsidies over $155 per month will raise enough new tax revenue to replace the tax revenue lost by exempting the first $60 per month of
employer-paid transit and vanpool subsidies. Obviously, the estimate that a $155 cap on tax-exempt parking subsidies will raise the right amount of revenue is little more than a guess, because there are no data on how many employees now receive employer-paid parking subsidies greater than $155 per month, or on the total value of such subsidies that might become subject to taxation. Also, there is great uncertainty about how many employers will choose to offer tax-exempt transit and vanpool subsidies up to $60 per month, and how many employees will accept these offers.

This new cap on tax-exempt parking subsidies at $155 per month and the increase in the cap on tax-exempt vanpool and transit subsidies to $60 per month are clearly important changes. But setting the cap on tax-exempt parking subsidies at 258 percent of the cap on tax-exempt vanpool and transit subsidies clearly continues the tax bias in favor of employer-paid parking (and thus in favor of driving to work). Further, there is no tax exemption whatever for employer-paid carpool subsidies, or for employer-paid incentives to walk or bicycle to work.

Most significantly, the Code's new category of "qualified transportation fringe" retains the strong asymmetrical incentive for employers to pay for their employees' parking. It is still the case that if the employee pays for parking at work, the employee can not deduct the parking charge from taxable income as a work-related expense. But if the employer pays for the employee's parking at work, the Code classifies the payment (up to $155 per month) as a tax-exempt "qualified transportation fringe." And the qualified transportation fringe continues to exempt employer-paid parking from more than just the Federal income tax. The exemption is automatically extended to Social Security taxes, state income taxes, unemployment insurance taxes, and all other payroll taxes. When all these additional tax rates (shown in Table 2) are taken into account, the employer's offer to pay for the employee's parking can more than double the after-tax value of the employer-paid parking subsidy to the employee. Even after the recent reform, parking remains tax-exempt when paid by the employer but taxable when paid by the employee. This peculiar treatment of parking at work (tax-exempt if employer-paid, taxable if employee-paid) continues to make it extraordinarily tax-efficient for employers to continue paying for all their employees' parking at work.

Extending the tax exemption to transit passes and vanpool subsidies will help to counteract the continued tax exemption for parking subsidies, but this new tax exemption will probably not have much effect on commuter travel patterns. Employer-paid rideshare and transit subsidies were previously tax-exempt up to $21 a month, but most employers did not offer their employees even this small amount, so it is not clear that increasing the allowable tax-exempt amount will induce many employers to offer a larger subsidy. Also, there is very convincing evidence from case studies to show that when parking is free, it is very difficult to lure commuters out of cars by subsidizing mass transit. Finally, the new "qualified transportation fringe" does not exempt from taxation any employer-paid subsidies for other alternatives to solo driving, such as carpooling, telecommuting, bicycling, or walking to work.

7. For example, see Surber, Shoup, and Wachs (1984).
Despite the growing body of evidence (summarized in Table 1) that employer-paid parking seriously aggravates traffic congestion and air pollution, and greatly stimulates gasoline consumption, the Internal Revenue Code still gives its most favored treatment to employer-paid parking subsidies, and thus to driving to work, even after the important reform contained in the 1992 Energy Act. This new legislation--designed specifically to save energy--has left the tax exemption for employer-paid parking more than two and a half times larger than the tax exemption for employer-paid transit subsidies, which proves how difficult it is to reduce the tax exemption for employer-paid parking. One reason for this political difficulty is that the tax exemption for employer-paid parking benefits so many workers, at all income levels. Although the tax exemption provides the greatest benefits to those in higher income tax brackets, eliminating it would affect many low-wage employees as well. Also, quite aside from the money involved, employer-provided parking privileges often signify one's real status within an organization.\textsuperscript{8} For all these reasons, it seems quixotic to continue recommending an end to the income tax exemption of employer-paid parking.

\textsuperscript{8} Burt Reynolds once observed that, in Hollywood, your parking space knows before you do when you’re out of favor with the studio: someone else’s name is on the little sign when you try to pull into “your” reserved space. At UCLA, the rare and coveted Blue X parking permit is the University’s equivalent to a knighthood, conferring the almost seigneurial right to park anywhere on campus at any time. At Berkeley, Nobel Prize winners are rewarded with their choice of a reserved parking space anywhere on campus; since only Nobelists are awarded reserved parking spaces, the name on the parking sign is \textit{ipso facto} evidence of having won the Prize.
IV. A PROPOSED SOLUTION: CASHING OUT EMPLOYER-PAID PARKING

Given the extreme sensitivity of the issue, is there any possible public policy that can achieve the benefits of ending the tax exemption for employer-paid parking, without provoking the inevitable fierce opposition to taxing the substantial parking subsidies now given to so many commuters? The popularity and success of a recent program in Los Angeles suggests that the answer to this question is "Yes." The City of Los Angeles took an imaginative step in the right direction in 1989 when it adopted its employee transit subsidy ordinance. This ordinance requires that:

Each employer in the City that offers free or subsidized parking to any employee . . . shall offer a $15 (fifteen) per month transit subsidy to each of its employees for their use in commuting to and from the employer’s work-site.

The political rationale for this ordinance was quite simple. If an employer offers a parking subsidy to an employee who drives to work, the employer should also allow an employee to use the subsidy to ride mass transit if the employee doesn’t drive to work. The ordinance encountered no opposition when it was enacted, and none since, because it is very difficult for employers to argue that they should restrict their employees to using employer-paid travel subsidies only for parking (and thus for driving), but not for riding mass transit. The figure of $15 per month for the required transit alternative was chosen for the Los Angeles ordinance because it was then the maximum transit subsidy that was exempt from federal income tax. This required transit alternative to parking subsidies is a sensible, sensitive, and minimally intrusive public policy that is intended to expand the commuter’s options beyond the usual choice between a parking subsidy or nothing. The ordinance does not prohibit or discourage employer-paid parking; it simply says that an employer cannot confine its employees to the choice between a parking subsidy or nothing.

The precedent set by the Los Angeles transit subsidy requirement suggests a logical next step to further expand the commuter’s options beyond the usual choice between free parking or nothing. The required alternative to employer-paid parking could be expanded to give an employee the option to receive, in lieu of the parking subsidy, the fair market value of the parking subsidy, either as a mass transit or ridesharing subsidy, or as a cash commute allowance. But every local government should not have to enact its own parking cash-out requirement. Instead, the Federal government could achieve the same result by amending the Internal Revenue Code’s definition of tax-exempt “qualified parking” as follows:

QUALIFIED PARKING - The term "qualified parking" means parking provided to an employee on or near the business premises of the employer . . . if the employer offers the employee the option to receive, in lieu of the parking, the fair market value of the parking, either as a taxable cash commute allowance or as a mass transit or ridesharing subsidy.
The roman text is the existing definition of tax-exempt "qualified parking" in Paragraph (5) of Section 132(f) of the Internal Revenue Code, and the italic text is the proposed change.

Changing the Code's definition of "qualified parking" to require the option of cash or a mass transit or ridesharing subsidy in lieu of a parking subsidy would obviate the need for thousands of local governments to enact their own individual ordinances to require employers to offer alternatives to parking subsidies. (Because cash can be used to pay for any form of mass transit or ridesharing, the term "cash" is hereafter meant to include mass transit and ridesharing subsidies as well.) The federal income tax exemption for employer-paid parking creates the incentive for employers to offer free parking in the first place, so it should not be left to all local governments to design and implement a myriad of individual policies that are all directed solely toward countering this single inappropriate tax incentive.

The proposed policy of requiring an employer to offer employees the option to choose cash in lieu of any offered parking subsidy has several important advantages:

1. **Free Parking Will Have an Opportunity Cost**

   When commuters are offered the choice between free parking or nothing, the parking has no opportunity cost. But asking commuters to choose between a free parking space or its cash value makes it clear that parking has a cost, which is the cash not taken. The foregone cash would be a new "price" for taking the "free" parking, a price that would increase the perceived cost of driving to work. If a commuter foregoes the cash and continues to park "free," the commuter has in effect "spent" the cash on parking. Therefore, when the opportunity cost becomes explicit, some commuters who are now offered free parking and drive to work alone would begin to take the cash and rideshare instead. The cash option would most strongly tempt commuters to rideshare to worksites where parking prices are highest. Because parking is usually most expensive in the most congested areas, the option to take cash instead of a parking subsidy would automatically target its strongest incentive to rideshare exactly where this incentive is most needed. And because an employee can always use cash to pay for non-transportation expenses, the offer of cash in lieu of parking also rewards the most environmentally benign forms of commuting--walking, cycling, and mass transit--as alternatives to driving.

   The proposal that employers cannot confine employees to take a travel subsidy only in the form of parking will also encourage employers to take advantage of the newly enacted $60 per month tax exemption for employer-paid vanpool and mass transit subsidies. Almost all employers now subsidize their employees' parking, but most employers have not taken advantage of the existing option to offer a $21 per month transit subsidy. If employers are not required

9. For example, the University of California, Los Angeles spent $54 million to build its most recent campus parking structure (at a cost of $27,000 per parking space added), but has never offered its employees the available option of a tax-exempt $21 per month transit subsidy in lieu of a parking space.
to offer their employees the option to choose a tax-exempt transit subsidy in lieu of a tax-exempt parking subsidy, many will simply continue to offer the free parking to which their employees are accustomed. Thus, cashing out parking subsidies will increase the effectiveness of vanpool and mass transit subsidies.

2. **Cashing Out Will Benefit Employees**

The proposal to cash out employer-paid parking subsidies avoids the seemingly intractable problem that voters don't like new taxes and motorists don't like to pay for something that they formerly got free. Most proposals for using parking pricing to reduce solo driving presume a need to "cause discomfort" for solo drivers. But the option of cash in lieu of a parking subsidy would not cause discomfort for any commuter. Instead, commuters would receive a new option, the cash alternative. Rather than restricting an employee's options, cashing out adds a new option for many employees who now face a take-it-or-leave-it choice between a parking subsidy or nothing. Employers could continue to offer tax-exempt parking subsidies, so long as they broaden the offer to allow the employee the option to take the taxable cash value of the parking subsidy in lieu of the parking subsidy itself. Thus, employees who prefer cash or a ridesharing subsidy to a parking subsidy are clearly better off as a result of this policy, and those who continue to take the tax-exempt parking subsidy are unaffected (except that they will enjoy cleaner air and less congestion while driving to work). Nevertheless, although it sugar-coats the pill, the proposal to require cash as an option in lieu of free parking means that commuters who drive to work will "pay" for their "free" parking, because commuters who forego the cash in favor of the parking are in fact spending the cash to pay for the parking.

Transportation economists, and especially congestion pricing theorists, usually focus on sophisticated ways to make motorists pay for the social costs their driving causes. In contrast, cashing out employer-paid parking does not charge commuters for using parking, but rather pays them in-lieu cash for not using parking. Cashing out parking subsidies is like paying commuters to stop driving to work alone--a buy-back, not a take-away. Offering employees the option to cash out their parking subsidies would be a popular step in the right direction because, rather than punish commuters for doing the wrong thing, it rewards them for doing the right thing.

3. **Cashing Out Will Cost Employers Little or Nothing**

The only cost to an employer when an employee chooses to cash out a tax-exempt parking subsidy is the payroll tax paid by the employer on the cash value of the parking subsidy. As shown in Table 2, this payroll tax rate ranges between 4 and 12 percent. Thus, it would cost an employer between 4 and 12 percent more to pay an employee with taxable cash than with a tax-exempt parking subsidy. If the employee chose a tax-exempt vanpool or transit subsidy, however, there would be no payroll taxes at all on this alternative. And if the small burden of payroll taxes on cash were considered a serious objection to cashing out parking subsidies, this

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10. For example, see Koppelman, Schofer, and Bhat (1991, p. I-3).
objection can be met by defining the cash-out value of a parking subsidy as the cash value that, when payroll taxes are added, equals the fair market value of the parking subsidy. For example, if the payroll tax rate is 12 percent, employers could offer 89 cents in cash per $1 of parking subsidy, and the payroll tax on the 89 cents would raise the employers cash cost to $1. Alternatively, cashed out parking subsidies could be exempted from payroll taxes. In either of these cases, an employer is no worse off when an employee chooses cash in lieu of a parking subsidy because the cash alternative is by definition no more costly than the parking subsidy. Further, employers might be much more eager to offer the cash alternative if they know the tax code requires all similarly situated employers to make the same offer, so no employer would be put at any competitive disadvantage.

Note that the proposal is for the employer to offer the cash alternative only to each employee who is offered a parking subsidy, not to all other employees. And the size of each employee's cash alternative is equal to the parking subsidy offered to that employee, so if some employees are offered smaller parking subsidies than other employees, their required cash alternative would also be smaller. Nevertheless, a potential cost to employers could occur because there are some employees who are now offered employer-paid parking but who nevertheless do not drive to work. These currently ridesharing employees would become eligible to receive the cash alternative to the employer-paid parking that they already do not take, and the employer would not save anything on foregone parking with which to finance the new cash payment. But there can be only a very small percentage of employees who are now offered a parking subsidy but do not take it. The 1990 Nationwide Personal Transportation Survey found that 91 percent of the American work force commutes to work by car (Hu and Young, 1992). And one reason that many of the remaining 9 percent do not commute by car is probably that they are among the few employees who are not offered employer-paid parking (and who therefore would not have to be offered in-lieu cash). Of those very few who are now offered free parking but do not take it, some are certainly already offered an alternative ridesharing subsidy (such as a bus pass), and for these employees the employer's cost of the cash option would be only the difference (if any) between the cash option and the cost of the existing rideshare subsidy. For these reasons, any added cost to employers of offering the cash option to existing ridesharers would have to be very, very small.

Compared to other solutions to the employer-paid parking problem, the cash option requirement is least intrusive in the employer's decisions about employee compensation. It requires only that an employer who offers to subsidize an employee's parking if the employee drives to work must also offer to pay the same amount if the employee rideshares to work. Few employers would argue that the Internal Revenue Code should encourage them to confine their commuting subsidies to parking (and thus to employees who drive to work). Also, most

11. By contrast, the Los Angeles transit subsidy ordinance requires an employer who offers a parking subsidy to any employee to offer a $15 per month transit subsidy to all employees. This blanket requirement is far more intrusive than a requirement that only employees who are offered a parking subsidy must be offered a transit subsidy, and still the Los Angeles transit subsidy requirement has aroused no opposition from employers.
employers would find it difficult to argue publicly that it is unwise to allow their employees to choose a ridesharing subsidy as an alternative to a parking subsidy.

4. **Cashing Out Will Especially Benefit Low-Income and Handicapped Employees**

Another desirable feature of the required cash option is that, because they are in the lowest tax brackets, the lowest-paid workers would gain the most after-tax cash from a taxable cash allowance in lieu of employer-paid parking. Also, the cash allowance would be larger in proportion to a lower income, so the cash option would clearly improve the relative well-being of the lowest-paid workers. Further, some employees are unable to benefit from the offer of employer-paid parking because they have a physical handicap that prevents them from driving to work. Offering handicapped employees the option to choose the cash value of any offered parking subsidy will enable them to benefit from parking subsidies to the same extent that nonhandicapped employees can. These points directly respond to the conventional criticism that charging for parking is unfair because it would harm either low-income workers or those who need to drive to work because of family or personal circumstances. Therefore, on equity grounds, offering employees the option to cash out their parking subsidies seems clearly superior to offering employees the customary choice between a parking subsidy or nothing.

5. **Cashing Out Will Reveal the Size and Distribution of Parking Subsidies**

A simple way to implement and enforce the requirement to offer employees the option of taxable cash in lieu of a tax-exempt parking subsidy would be to require employers to report any tax-exempt parking subsidies on their employees' payroll forms in the same way they already report other tax-exempt fringe benefits (such as health care insurance contributions). This reporting requirement would not only tell employees the amount of the cash alternative available to them in lieu of their parking subsidy, but would also provide previously unobtainable data on the extent of total employer-paid parking subsidies, both locally and nationally. Further, the reporting requirement would make explicit--to employers, to employees, and to policy makers--what parking subsidies go to whom. This "daylight" feature might also focus serious attention on devising fairer and more efficient commuter travel subsidy policies.

6. **Cashing Out Will Strengthen Central Business Districts**

Those who are particularly concerned about the competitive position of central business districts might question whether a seemingly impartial policy of requiring all employers to offer their employees the option to cash out employer-paid parking might somehow harm employers in central business districts where parking prices are highest. But there are several compelling reasons to believe that cashing out employer-paid parking will make central cities relatively more, not less, attractive places to work, shop, and conduct business, compared to suburban locations.

Many downtown employers feel that they must offer their employees free parking because the higher cost of downtown parking would otherwise dissuade potential employees from
choosing to work downtown. But employer-paid parking simply equalizes the cost of parking between downtown and suburban work sites (by making it free to the commuter in both places), and does nothing to make a downtown location superior to a suburban location for workers. Because employers must pay more to provide employee parking in central business districts than in suburban locations, employers could offer more cash in lieu of a parking space to downtown employees, without any increase in cost to the employer. This higher cash option for downtown employees would make downtown work sites relatively more attractive than suburban work sites, at least for those who rideshare. And because downtown work sites are more accessible by mass transit, downtown employees would be better placed to take advantage of the cash option by shifting to mass transit, especially with the new $60 per month tax exemption for employer-paid mass transit subsidies. Similarly, downtown work sites are also more accessible by carpools because a high density of employment implies a high density of potential fellow carpoolers. Also, employees who prefer to take the cash and cease driving to work would reduce congestion on routes to downtown, so downtown work sites would become more accessible to everyone, including even those who continue to drive to work alone.

Single-occupant vehicle commuting to work typically accounts for 65 to 85 percent of the total traffic volume to and from downtown during peak hours (Beebe, 1991). One of the current disadvantages of a central location is the traffic congestion on all the routes leading to the CBD, so when commuters voluntarily choose cash to rideshare if given the cash option, the resulting reduction in congestion can significantly improve the accessibility of downtown employment locations. In addition to the reduction in peak-hour traffic, parking spaces vacated by peak hour commuters would become available to off-peak visitors, including shoppers, business clients, and tourists, who would find downtown relatively easier to visit. For all these reasons, any fears that cashing out employer-paid parking would weaken the central business district seem quite misplaced.

7. Cashing Out Will Yield a Tax Revenue Windfall

In making the choice between a parking subsidy or its cash equivalent, employees would have to consider that the cash is taxable, while the parking subsidy is not. Many employees, however, might still prefer after-tax cash to a free parking space. For example, recall the earlier example where your employer pays $100 a month to provide you a free parking space at work. You are in the 30 percent marginal income tax bracket. If your employer offers you a taxable $100 payment in lieu of the tax-exempt $100 a month parking space, your after-tax cash would be $70 a month. Thus, you would "pay" $70 a month to park at work. If you then choose cash in lieu of the parking, your choice proves that employer's in-kind parking subsidy of $100 a month was worth less to you than $70 a month in cash.

An in-kind parking subsidy must be a very inefficient way to help an employee get to work if the employee prefers the after-tax cash value of what it costs the employer to provide the parking. This inefficiency of providing in-kind parking subsidies was earlier referred to as the private waste caused by employer-parking, which is separate from and additional to all the
public harm of congestion and pollution caused by employer-paid parking. Offering employees the option to take cash in lieu of a parking subsidy reduces this private waste.

When a commuter does voluntarily choose taxable cash rather than a tax-exempt parking subsidy, federal and state income tax revenues increase. In the case where an employee chooses $70 in after-tax cash rather than a $100 tax-exempt parking space, the employee pays $30 extra in taxes and is still better off as a result. This increase in tax payments does not result from any increase in tax rates, or from any taxation of previously tax-exempt parking subsidies. Rather it results from voluntary action: cashing out an inefficient in-kind parking subsidy that costs the employer $100 to provide but is worth less than $70 to the employee. Put most simply, cashing out inefficient parking subsidies converts economic waste into increased tax revenue and enhanced employee welfare, at little or no cost to the employer. The tax revenue windfall is an additional benefit above and beyond any reductions in air pollution, traffic congestion, and energy consumption that also result when a commuter voluntarily chooses to cash out a parking subsidy.

The federal and state income tax revenue bonus is funded solely by reducing the economic waste that occurs when, faced with the typical choice between an employer-paid parking space or nothing, you take a parking space that you value at much less than what your employer pays to provide it. The size of the waste created by employer-paid parking is measured by the difference (if any) between what your employer pays to provide the space and the cash value you place on receiving the space. In the context of cashing out employer-paid parking, the value you place on a parking space is the lowest price at which you would "sell" the parking space back to your employer.\[12\]

For example, suppose that $60 a month is the lowest price at which you would sell your parking space back to your employer. In this case, you would choose the option of $100 in taxable cash, receive $70 in after-tax cash, and still be $10 a month better off than when you took the $100 a month in-kind parking subsidy. Thus, the option to cash out your parking subsidy eliminates an economic waste of $40 a month, of which the government captures $30 as an increase in tax revenue, and you keep $10 as an increase in your own welfare.

The taxability of cash in lieu of a parking subsidy reduces, but by no means eliminates, the effectiveness of offering the cash alternative as an incentive to rideshare. The taxability of cash is not an argument against offering cash in lieu of parking subsidies. If commuters freely choose taxable cash because they value the after-tax income more than a tax-exempt parking subsidy, how can anyone else argue that they have made the wrong choice? Indeed, choosing the taxable cash equivalent of a tax-exempt free parking space proves beyond any doubt that the parking space is worth considerably less to the employee than it costs the employer.

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12. This price at which you would be willing to sell the space may be higher than the price you would be willing to pay for the parking space if your employer did not provide it "free."
CASHING OUT EMPLOYER-PAID PARKING

The research summarized in Table 1 clearly shows that the cost of parking, previously hidden from many commuters by parking subsidies, profoundly influences commuters' mode choices. Many commuters, rather than pay for parking, switch from solo driving to another mode when asked to pay for parking spaces that they were formerly provided free. Thus, the option of cash in lieu of a parking subsidy would be a strong incentive to carpool, ride mass transit, bicycle, or walk to work. By allowing parking prices to influence commuting choices, requiring employers to offer the in-lieu cash option would reduce traffic congestion, air pollution, and gasoline consumption, and would increase federal and state income tax revenue. It would do all this simply by empowering commuters to make travel choices in accord with their own preferences about how they wish to spend their own income.

It might be argued that some commuters will choose cash in lieu of an employer-subsidized parking space, pay taxes on it, and then use the after-tax income to park in a cheaper space, without ceasing to drive to work alone. In that case, the employee is better off (because the employee chose that option), the employer is no worse off (because the in-lieu cash is no greater than the former parking subsidy), and federal and state income tax revenues increase. Who could possibly object to that outcome? Again, the option to cash out an inefficient parking subsidy (worth much less to the employee than it costs the employer) converts economic waste into both increased employee welfare and increased government revenue.

How much would tax revenues increase? The following calculations, which are summarized in Table 3, suggest the considerable revenue potential of the required cash option. There were 110 million employees on civilian nonagricultural payrolls in the United States at the end of 1990 (Economic Report of the President, 1991, p. 334). According to the 1990 Nationwide Personal Transportation Survey, 91.4 percent of the American work force (or 100.5 million workers) commute to work by car, and the average vehicle occupancy for work trips is 1.1 persons per vehicle. Thus, 91.4 million cars were driven to work on every business day in 1990. If 90 percent of auto commuters park free at work (as shown in Section I), these data imply that approximately 82 million cars receive employer-paid parking. If the average cost of providing this employer-paid parking is $30 per month, the total value of all tax-exempt employer-paid parking subsidies is $30 billion per year. If 20 percent of existing auto commuters who now get free parking choose the taxable cash alternative (or a mass transit or vanpooling subsidy greater than $60 per month), taxable income would increase by $6 billion per year. At an effective marginal tax rate on this income of 20 percent, the increase in tax revenue would be $1.2 billion per year. This revenue windfall would occur without increasing any tax rates, and without removing the existing tax exemption of employer-paid parking. As argued earlier, this revenue increase would result from converting economic waste into

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13. An unpublished but well-circulated study ("The Dimensions of Parking") done by Peat, Marwick for the United States Department of Transportation estimated that the total value of all employer-paid parking subsidies in the United States is $52 billion per year, or approximately one percent of the $5.5 trillion Gross National Product in 1990 (Economic Report of the President, 1991, p. 286). By comparison, the estimate here of $30 billion per year (still over one-half percent of GNP) is very low.
TABLE 3
HOW THE OPTION TO CASH OUT EMPLOYER-PAID PARKING SUBSIDIES WILL INCREASE INCOME TAX REVENUES

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nonagricultural Work Force</td>
<td>110,000,000</td>
</tr>
<tr>
<td>2</td>
<td>Share of Workforce Commuting by Car</td>
<td>91.4%</td>
</tr>
<tr>
<td>3</td>
<td>Number of Workers Commuting by Car</td>
<td>100,540,000</td>
</tr>
<tr>
<td>4</td>
<td>Persons per Car for Work Trips</td>
<td>1.1</td>
</tr>
<tr>
<td>5</td>
<td>Number of Cars Driven to Work</td>
<td>91,400,000</td>
</tr>
<tr>
<td>6</td>
<td>Share of Cars Parked Free at Work</td>
<td>90%</td>
</tr>
<tr>
<td>7</td>
<td>Number of Cars Parked Free at Work</td>
<td>82,260,000</td>
</tr>
<tr>
<td>8</td>
<td>Assumed Average Cost of Parking (per Month)</td>
<td>$30</td>
</tr>
<tr>
<td>9</td>
<td>Total Annual Employer-Paid Parking Subsidy</td>
<td>$29,613,600,000</td>
</tr>
<tr>
<td>10</td>
<td>Share of Drivers Who Will Cash Out Parking Subsidies</td>
<td>20%</td>
</tr>
<tr>
<td>11</td>
<td>Taxable Value of Cashed Out Parking Subsidies</td>
<td>$5,922,720,000</td>
</tr>
<tr>
<td>12</td>
<td>Assumed Marginal Income Tax Rate</td>
<td>20%</td>
</tr>
<tr>
<td>13</td>
<td>INCREASE IN ANNUAL INCOME TAX REVENUE</td>
<td>$1,184,544,000</td>
</tr>
</tbody>
</table>

Sources:
2. 1990 Nationwide Personal Transportation Survey (Hu & Young, 1992, p. 20)
3. (3)=(1)x(2)
4. 1990 Nationwide Personal Transportation Survey (Hu & Young, 1992, p. 22)
5. (5)=(3)/(4)
6. See Section I.
7. (7)=(5)x(6)
8. Assumption. See text.
9. (9)=(7)x(8)
10. Assumption. See Table 1 and text.
11. (11)=(9)x(10)
12. Assumption. See Table 2 and text.
13. (13)=(11)x(12)
government revenue when employees voluntarily choose the *taxable* cash value of the *tax-exempt* parking subsidies they now receive.

In this calculation, the assumed market parking price of $30 a month is above the market price of many commuter parking spaces, but those who now get the biggest parking subsidies would be the ones most tempted to take the cash alternative. Thus, the taxable cash alternative received by those who choose to cash out their parking subsidies should be significantly above the average parking subsidy for all workers. The assumption that 20 percent of those who now park free would choose the cash option is less than the average 27 percent reduction in auto trips to work found in the case studies comparing auto use between commuters who do and commuters who do not pay for parking at work (see Table 1). Finally, the assumed 20 percent combined federal and state income tax and social security tax rate is a conservative estimate of the marginal tax rate faced by those employees who would choose the taxable cash alternative to a parking subsidy (see Table 2). For all these reasons, the estimate of $1.2 billion a year is a deliberately conservative estimate of the income tax revenue that would result from cashing out employer-paid parking subsidies.\footnote{Although the chain of data and assumptions necessary to make this revenue estimate is long, Table 3 shows each step and allows the reader to examine the consequences of varying any assumption. The employers' taxable income and tax payments are unaffected if the new cash travel allowances are funded by replacing previous parking subsidies.}
V. QUESTIONS ABOUT CASHING OUT EMPLOYER-PAID PARKING

Several key questions must be answered before employers can be expected to agree to a policy of offering their employees the option to cash out their parking subsidies. Some of these refer to how the cash option would work, and others to whether cashing out is preferable to alternative policies:

(1) How is the equivalent cash value of a parking subsidy defined?
(2) How will employers find the money to pay the cash equivalent?
(3) How will the cash equivalent requirement be enforced?
(4) Why not instead eliminate the tax exemption for parking subsidies?
(5) Why not instead eliminate the employer's deduction for the cost of parking subsidies?
(6) Why not instead increase the income tax exemption for ridesharing subsidies?
(7) Why not instead require employer-based trip reduction plans?

The remainder of this section is devoted to answering these questions.

1. What is the Equivalent Cash Value of a Parking Subsidy?

The 1992 Comprehensive National Energy Policy Act's cap of $155 per month on the tax exemption for employer-paid parking subsidies already requires the IRS to develop a method to impute the value of employer-paid parking subsidies. Problems will undoubtedly be encountered in imputing the value of some parking subsidies, but these problems will have to be smaller than the problems created by ignoring the value of parking subsidies. In many cases imputing the value of employer-paid parking is an easy matter. For example, consider the situation where there is an active, competitive market for off-street parking, as there is in most downtown areas. If the employer pays an independent parking operator to provide a parking space for an employee, the equivalent cash value of the employer-paid parking subsidy is the difference between (1) the price the employer pays to secure the parking space offered to the employee, and (2) the price the employee pays for parking in the space. For example, suppose the employer pays $50 per space per month, and offers the spaces free to employees. Then the equivalent cash value of the parking subsidy is $50 per month. Similarly, if the employer pays $70 per space per month, and the employer offers the spaces to employees for $20 a month, the equivalent cash value of the parking subsidy is also $50 a month. In each case the offer of $50 in cash would cost the employer no more than the offered parking subsidy. And in each case, it seems entirely reasonable that an employer who offers to pay to subsidize an employee's parking if the employee drives to work should be willing to offer to pay the employee the same amount if the employee rideshares to work.

The situation is a little different if the employer owns the parking spaces rather than leases them from an independent parking operator. Still, if an employee does not take a "free" parking space that the employer owns but could rent out to someone else at the market price, then the employer could offer the employee the money that the employee thereby enables the employer to earn. In general, the definition of the fair market value of an employer-paid
parking subsidy is the difference between, (1) the market price of a parking space offered to an employee, and (2) the price that employee pays for parking in the space.

Because surprisingly fine distinctions among parking spaces (how close are they to the front door, whether they are reserved or unreserved, what level of the parking structure they are on, etc.) can affect the price of a parking space, it may often be difficult to put a precise value on every parking space. One way to ensure that the employer does not understatement the fair market value of a parking space, however, would be to require that the space be made available to anyone willing to pay the employer’s imputed price for the space. For example, when imputing the value of faculty parking spaces, a university could be required to offer the parking spaces to students at the fair market value it imputes to those spaces. An employer’s unwillingness to rent a parking space at the imputed value for the space implies that the employer has understated the fair market value.

Employers might simplify their cash-out programs by offering all employees an in-lieu cash option equal to the average fair market value for all the employee spaces. This practice would probably not cause serious problems, but on close inspection it seems an improbable outcome. The best spaces would have the highest fair market value, and in every known human organization the senior employees get the best parking spaces. Therefore, these senior employees would be put at a disadvantage by being offered the average value of all parking spaces as the cash option in lieu of their choice parking spaces. Conversely, junior employees get the worst parking spaces, so they would be put at an advantage by being offered the average value of all parking spaces as their in-lieu cash option. The obvious unacceptability of this situation would probably lead most employers to impute the fair market value of their current parking subsides with considerable precision.

Suppose, however, a work site is in an area where parking is so abundant that the market price is zero. In that case, the required cash alternative would also be zero because there is no market for parking spaces that employees do not use. An employer who buys or constructs new parking spaces to offer free to employees would presumably have to offer those employees the monthly equivalent of the cost of constructing, maintaining, and operating those new spaces as the cash alternative of providing those new spaces; otherwise, the cost of the new spaces would constitute a subsidy to drivers for which no equivalent cash alternative is made available to nondrivers. Thus, before an employer decides to provide new parking spaces, if enough existing auto commuters elect to take the alternative cash value of the proposed spaces, the cash option could eliminate or at least reduce the demand for new spaces.

Any argument that it will be difficult to estimate current parking subsidies implies that the employers don’t really know by how much they are now subsidizing their employees parking, and that they don’t want to know. Such behavior seems quite unbusinesslike. In any case, the practical problems of imputing market values to employer-owned parking spaces are probably more imaginary than real, because commercial parking operators manage to charge market values for parking all the time.
2. *How Will Employers Find the Money to Cash Out Parking Subsidies?*

The situation is simplest in the case where the employer leases parking spaces from a building landlord, and makes the parking spaces available free to employees. Then, if an employee who now drives to work when parking is free elects to take the cash value of the parking space instead, the employer saves exactly what the employee is paid in cash, and the net cost to the employer is zero. In the case where the employer owns the parking spaces and makes them available free to employees, the cash alternative offered to employees would be the market price that the employer can earn if the spaces are rented out on the open market; thus, the employee’s cash option is what the employer earns on the parking spaces that employees don’t take. The cash alternative requirement might create temporary costs for some employers who lease parking spaces on an arrangement that commits them to pay more for parking spaces than these spaces would earn if put on the open market. Employers could be shielded from this temporary cost by exempting them from the cash-out requirement until their existing leases expire. This temporary cost would end, however, when employers renegotiate their leases.

Employers may also face a problem with employees who are now offered parking subsidies but do not take them. For example, employees who now turn down the offer of a parking subsidy and, say, bicycle to work, cost their employers less than do otherwise similar employees who take the offer of a parking subsidy. If employees become eligible for the equivalent cash value of the parking subsidies they are now offered but don’t take, the employer would have to pay these current nondrivers the same subsidy they now pay to drivers who do take the parking subsidies. As argued earlier, however, the number of employees who are now offered employer-paid parking but do not take it must be a very small share of the total workforce, surely well below 10 percent, because 91 percent of the workforce travels to work by car, and many of the few who don’t travel to work by car are probably not offered free parking at work (or are already offered a ridesharing subsidy). Therefore, the cost of offering cash or a rideshare subsidy to current ridesharers who are eligible for a parking subsidy would have to be very small. (In Section VIII, a detailed case study of an employer who offers the cash option demonstrates that employees can be offered the option to cash out their parking subsidies at no increase in the employer’s cost of subsidizing employee travel.)

Still, it must be admitted that the requirement to offer in-lieu cash may cause fear of increased costs for employers who (1) offer employer-paid parking, (2) do not offer equivalent ridesharing subsidies, and (3) nevertheless have a significant number of employees who turn down the offer of a parking subsidy and rideshare to work instead. In this unusual case, the added cost of offering cash to current ridesharers who are already offered but have turned down a parking subsidy must be considered the inevitable and wholly justified cost of moving to a commute subsidy policy that does not discriminate against ridesharers. Offering smaller subsidies to ridesharers than to otherwise identical solo drivers is discriminating against ridesharers in the same way that offering lower wages to women than to otherwise identical men is discriminating against women. At the very least, the tax code should be amended to discourage this discriminatory anti-ridesharing behavior, *which it now encourages!* Arguing
against the required cash option on the grounds that it will increase the employer’s cost is the same as arguing that employers should offer smaller subsidies to ridesharers than to otherwise identical solo drivers. Who would be shameless enough to make such an argument?

In effect, employer-paid parking is a form of wage discrimination in favor of employees who drive to work. The economic motivation for this wage discrimination in favor of drivers is, presumably, that employees who drive to work can choose among a large number of employers within automobile commuting distance, while employees who do not drive to work have a more limited commuting area in which to seek employment. If an employer did not offer a parking subsidy to drivers, they would be more likely to work elsewhere, because they can choose among a larger number of potential employers within auto commuting distance. The employer doesn’t have the same incentive to offer non-drivers an equivalent subsidy because the non-drivers have fewer choices among alternative employment options.

This wage-discrimination rationale for offering employer-paid parking is separate from and additional to the tax-efficiency rationale created by the tax exemption of employer-paid parking. But it seems particularly inappropriate for federal tax policy to encourage employers to discriminate against employees who are least mobile, by not offering them a benefit equivalent to that offered to automobile commuters. The proposed requirement to offer employees the option to take in-lieu cash would make it difficult for employers to continue discriminating against employees who do not drive to work. If the employer wanted to keep its parking subsidies tax-exempt for drivers, it could not confine employees to use the subsidy to pay for parking. To repeat, however, the cash equivalent of a parking subsidy would have to be offered only to those who are also offered a parking subsidy, and not to anyone who is not offered a parking subsidy. Clearly revealing previously hidden parking subsidies (by offering the cash alternative) could, however, lead employers to consider travel subsidy policies that are more uniform than current parking subsidies. The proposed cash alternative requirement would not, however, require such uniformity, nor would it interfere with any ridesharing subsidy, such as free bus passes, that the employer may continue to offer.

3. How Will the Cash-Out Requirement be Enforced?

Parking subsidies are unique among tax-exempt fringe benefits in that both their cost to employers and their value to employees are unreported and largely unknown. The employer’s cost of other tax-exempt fringe benefits, such as health insurance premiums, are reported both to the employee and to the IRS. Thus, a simple way to implement and enforce the cash-out requirement would be to require employers to report any tax-exempt parking subsidies on their employees’ payroll forms in the same way they already report other tax-exempt fringe benefits.

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15. In labor economics terminology, the supply of employees who drive to work is more elastic to the employer than is the supply of employees who walk, bicycle, or ride transit to work. The employer gains by discriminating among employees according to their elasticity of supply, paying a lower wage to the employees who have fewer employment options and whose labor supply is thus less elastic.
The proposal to offer employees the option to cash out parking subsidies in no way implies that employers should offer employees the option to cash out any other tax-exempt fringe benefit, such as health care or pension contributions. No other tax-exempt fringe benefit causes external costs in the way that employer-paid parking does. Quite the reverse. All other tax-exempt fringe benefits are justified in terms of their external benefits. Because employer-paid parking is unique among fringe benefits in causing external costs rather than benefits, it alone should be subject to the cash-out requirement.

Reporting the cash value of employer-paid parking subsidies to employees would provide the information necessary for each employee to consider in choosing between parking and the cash alternative. It would also provide previously unobtainable data on the extent of total employer-paid parking subsidies, both regionally and nationally. Further, the reporting requirement would reveal who gets the parking subsidies. Putting this information in full view should focus public attention on devising fairer and more efficient commuter travel subsidy policies.

Employers who provide free or below-market parking for their employees could document the size of the implicit subsidy for any parking space by comparison to the market price charged for the same space in arms-length transactions, by a survey of nearby commercial parking prices, or by a standard IRS-provided estimate of the market price for parking in major employment areas. To discourage underreporting of tax-exempt parking subsidies, employers could be held liable to make restitution to ridesharing employees whose in-lieu cash payments are found to be smaller than they should have been. This would give employees an incentive to take an interest in the accuracy of their employers' estimates of any offered parking subsidies.

4. **Why Not Instead Eliminate the Income Tax Exemption for Employer-Paid Parking Subsidies?**

The tax-exempt status of employer-paid parking is clearly the root of the problem. But it is politically difficult to begin taxing a fringe benefit that so many commuters enjoy. As mentioned earlier, 91 percent of all commuters travel to work by car, and 90 percent of them park free at work, so perhaps as many as 82 percent of all commuters receive some form of parking subsidy. It would be hard to begin taxing such a popular and traditional tax-exempt fringe benefit, especially since so many influential decision-makers in the highest tax brackets now enjoy large parking subsidies. Although it would be preferable, both as transportation policy and as tax policy, to end the tax-exemption of employer-paid parking altogether, that course has been urged for many years, to almost no avail. The most that has been accomplished so far is to limit the tax exemption to $155 per month, an amount far greater than most parking subsidies and thus not likely to affect many commuters.

The intermediate step proposed here--requiring employers to offer their employees the option to choose the taxable cash equivalent of any offered parking subsidy--is at least a transitional measure in the right direction. Toward this end, the "daylight" feature of requiring employers to report tax-exempt parking subsidies both to their employees and to the IRS would
disclose the size of these subsidies, which can now be only roughly estimated, and might lead employers to rethink their parking subsidy policies. Further, the required reporting of these subsidies will increase the information available for future policy debates about the continued tax exemption of employer-paid parking. For example, the proposed cash option reporting requirement would provide information on how many employees receive employer-paid subsidies, and who and where they are.

Although the income tax exemption of employer-paid parking subsidies will remain, its peculiar asymmetry will be reduced. As argued earlier, a conventional tax deduction (such as for charitable contributions) reduces the "price" of the deductible item only by the taxpayer's marginal tax rate. But the employer must pay for the employee's parking in order to take advantage of the tax exemption for employer-paid (but not for employee-paid) parking. This arrangement has inadvertently reduced almost every employee's cost of parking to zero. The required cash option will remedy this serious defect, because the taxable cash will become a new "price" of taking a tax-exempt parking subsidy.

Finally, after employers have become accustomed to offering commuters the choice between a parking subsidy or cash, and some benefits of having the option have been demonstrated, it may become politically relevant to ask the following question: if cash in lieu of a parking subsidy is taxable, why is the parking subsidy itself tax-exempt?

5. Why Not Instead Eliminate the Employer's Deduction for the Cost of Parking Subsidies?

An alternative method of inducing employers to offer a cash commute allowance is to eliminate the employer's allowable deduction as a business expense for the cost of providing parking subsidies to employees unless the cash alternative is offered. A disadvantage of this employer-focussed approach is that it does not apply to public or non-profit employers who do not pay income taxes. Also, it would be difficult for many employers to separate out their expenses incurred to provide employee parking, especially if the employer already owns its parking spaces, or is provided them without separate charge in a lease for office space.

6. Why Not Further Increase the Income Tax Exemption for Ridesharing Benefits?

Even after the 1992 Comprehensive National Energy Policy Act, the tax exemption for employer-paid parking subsidies remains over two and a half times greater than the tax exemption for employer-paid vanpool and mass transit subsidies, and there is no tax exemption for carpool subsidies or for incentives to walk or bicycle to work. In order to level the playing field, it would be necessary to further increase the tax exemption for vanpool and mass transit subsidies, and to extend the tax exemption to other ridesharing modes (carpooling, cycling, walking). An increase in this tax exemption would make it tax-efficient for employers to offer larger ridesharing subsidies to counteract the harmful effects of the parking subsidies they also offer.
There are, however, three disadvantages to this recommendation: (1) it would further reduce federal and state income tax revenue; (2) it would not ensure that employers will offer employees the tax-exempt rideshare benefit; and (3) based on previous research, a ridesharing subsidy does little to counteract the influence of parking subsidies. In some of the case studies cited earlier the employer tried to encourage alternatives to solo driving by subsidizing carpools, vanpools and transit use. Only when parking subsidies were reduced, however, did significant numbers of solo drivers shift to other modes. Also, increasing the tax exemption of transit and vanpool subsidies would also continue the bias toward motorized commuting, and would retain, even strengthen, the bias against walking or bicycling to work.

If desired, however, the substantial revenue generated by income taxes on the voluntarily chosen cash payments in lieu of parking subsides (estimated above to be at least $1.2 billion a year) could be used to fund an increase in the existing tax exemption for employer-provided mass transit and vanpooling subsidies, and for extending the tax exemption to subsidies for other forms of ridesharing, such as carpooling, bicycling, or walking to work.

It might also seem reasonable to argue that cash taken in lieu of a tax-exempt parking subsidy ought also to be exempted from taxation. A serious problem with this argument, however, is that if the in-lieu cash were tax-exempt, it would encourage employers convert taxable wages into more and larger parking subsidies, so that the cash taken in lieu of these subsidies would also be tax exempt. The resulting income tax revenue losses could be prohibitive. Also, employees in locations where parking is more expensive would receive larger tax-exempt cash payments, sheltering a larger share of their income from taxation. A further disadvantage is that if an employer offered only a cash travel allowance, and no parking subsidy, the cash travel allowance would presumably be taxable because it is not offered in lieu of a parking subsidy. Ultimately, it might be preferable to eliminate the tax exemption for employer-paid parking and to replace it with a uniform tax-exempt travel allowance for all workers, but that proposal has long been advocated and gotten nowhere (see Shoup, 1982).

### 7. Why Not Instead Rely on Employer-Based Trip Reduction Plans?

There is growing interest in a new form of employer-based travel demand management (TDM) regulation that has been initiated in the Los Angeles metropolitan area by the South Coast Air Quality Management District (SCAQMD). To cut automobile air pollution emissions, in 1988 the SCAQMD began implementing its Regulation XV, which requires employers of more than 100 employees at any work site to submit a plan to increase the Average Vehicle Ridership (AVR) to the site to a specified level. The AVR targets are 1.75 persons per vehicle in the Los Angeles CBD, 1.5 for the medium density areas outside the CBD, and 1.3 for low density outlying areas. The employer is free to choose the methods it proposes to reach the
required target, but the SCAQMD must approve the plan as reasonably certain to attain the target AVR.\textsuperscript{16}

The Regulation XV approach to travel demand management could be considered an alternative to requiring employers to cash out parking subsidies, and it might seem to have an advantage in that it allows employers to choose whatever incentives they wish to offer their employees (such as preferential parking for carpools, transit passes, or telecommuting) in order to reduce automobile commute trips. The U.S. Environmental Protection Agency has considered requiring other air quality "nonattainment" areas to adopt some version of Regulation XV-like TDM requirements as a way to cut automobile pollution emissions. Also, in 1991 the State of Washington enacted its Transportation Demand Management Act, which mandates trip reduction requirements on all employers of more than 100 employees at a single worksite in counties with populations of over 150,000. Thus, imposing trip reduction requirements on employers may be seen an alternative to changing the tax code to require employers to offer their employees the option of cash in lieu any offered parking subsidy (although both approaches could also be used).

In comparing Regulation XV to a policy of cashing out parking subsidies, an important issue is the relative cost to employers of complying, and the relative effectiveness in reducing travel demand. A study just done for the South Coast Air Quality Management District should help in the task of estimating the cost and effectiveness of extending Regulation XV to areas other than Los Angeles. Carried out by the accounting firm of Ernst and Young (1992), it is the first comprehensive evaluation of the costs of the SCAQMD’s Regulation XV. Ernst and Young surveyed the 5,763 regulated work sites, representing 1,541,000 regulated employees. The objectives of the study were to estimate (1) the annual costs incurred by employers implementing Regulation XV, and (2) the resulting reduction in the number of peak-hour automobile commute trips.

The responding employers reported spending an average of $105 per employee to comply with Regulation XV, and reported an average of one reduced peak-hour automobile commute trip for every 29 employees. Thus, employers spent approximately $3,000 a year for every automobile commute trip reduced during the peak hour. Some of these automobile commute trips were shifted from the peak (defined as 6AM to 10AM) to off-peak rather than shifted from an automobile to another travel mode, so the employer’s cost per vehicle commute reduced would be greater than $3,000 a year.\textsuperscript{17}

The measure of accomplishment for Regulation XV is a reduction in trips rather than a reduction in vehicle miles travelled. Therefore, eliminating a short trip counts as much toward

\textsuperscript{16} Regulation XV is more complex than just described. See Giuliano, Hwang, and Wachs (forthcoming) for a detailed discussion and evaluation of Regulation XV.

\textsuperscript{17} Although this estimate is derived from a mail survey and must be treated with caution, its origin in a study sponsored by the SCAQMD and its publication by the SCAQMD suggests that $3,000 per year does not greatly overestimate the cost of reducing automobile commute trips by Regulation XV.
the goal of trip reduction as does eliminating a long trip. But if the average length of the commute trips eliminated by Regulation XV was the same as the average commute trip length for Southern California, it is possible to estimate the employers' average cost of reducing vehicle miles travelled. The average commute distance in Southern California is 33.2 miles round trip (Commuter Transportation Services, 1992), and the average number of days travelled to work is 217 (taking into account vacations, paid holidays, and sick leave). Therefore, the average automobile commuter drives 7,204 miles per year to and from work. If employers spend $3,000 per year to reduce VMT by 7,204 miles per year, the employers' cost of reducing peak-hour VMT by Regulation XV can be expressed as 4.2 cents per VMT reduced, a very high figure.

The employers' cost of complying with Regulation XV includes offering rideshare subsidies to employees who were already ridesharing before Regulation XV was imposed. This benefit provided to previously ridesharing employees could not be very large, however, because the Average Vehicle Ridership (AVR) reported in the employers' initial plans was only 1.20 persons per car, which implies that 83 vehicles were driven to work in peak hours for every 100 persons employed.

Ernst and Young found that the employers' annual cost of complying with Regulation XV ranged from less than $25 to over $750 per employee, and there is only a very weak correlation (correlation coefficient = .171) between an employer's cost and the resulting reduction in automobile use by its employees. This low correlation implies that the employer's spending per employee for complying with Regulation XV explains only 3 percent of the variation among work sites in the reduction in automobile use since Regulation XV was implemented.

Why does the very substantial variation among firms in spending on promoting ridesharing have such a small influence on the observed reductions in automobile use? One probable explanation is that it is very expensive to reduce automobile commuting at some sites, and very cheap to reduce it at other sites, while Regulation XV requires reductions in automobile use at all sites.

First, take the case of an employer who subsidizes employee parking in a downtown office building by paying the employee's parking charges. If the employer offers to cash out the subsidy, the employer saves on parking exactly what the employee receives in cash, so there is no net cost increase for the employer when an employee shifts from solo driving to ridesharing. Also, where parking is expensive, the cash option would be a strong incentive to rideshare. Thus, by offering the cash option, the employer can provide a strong incentive to rideshare at little or no cost, so cashing out should be very cost-effective in reducing automobile commute trips.

Second, take the case of an employer at a suburban employment site with ample free parking provided in accordance with the often absurdly high minimum parking requirements in most zoning codes. The employer thus has no alternative use for the parking spaces that would be vacated by an employee who shifts from solo driving to ridesharing. If the employer offers a subsidy for ridesharing, the employer saves nothing on parking costs when the employee shifts
to ridesharing, and thus any subsidy for ridesharing is a net cost increase for the employer. Also, even large subsidies for ridesharing may have little effect on mode choice if there is poor transit access and a low density of potential carpool partners for commuters to the site. Thus, some large ridesharing subsidies will have little effect in reducing automobile use, and will therefore not be cost-effective.

The comparison between these two different cases suggests cashing out employer-paid parking automatically provides the strongest incentive to rideshare at locations where parking is most expensive, which is exactly where congestion and pollution problems are usually worst, and where mass transit is most accessible. In these locations cashing out employer-paid parking will have the greatest effect on ridesharing at the least cost to the employer, and will thus be most cost-effective. In contrast, Regulation XV requires trip reductions even in locations where they are very expensive to achieve.

Quite aside from the extremely high cost of $3,000 per peak-hour automobile commute reduced by Regulation XV, there are important questions about how feasible it is to expect employers to attain specific ridesharing targets. Lopez-Aqueres and Wasikowski (1992) report that, of all firms that submitted their first-year Trip Reduction Plans to the SCAQMD in 1991, 97 percent offered free parking to all employees as part of their trip reduction strategy! Given this almost unlimited availability of free parking at work, it is not surprising that the mean achieved AVR fell well short of the target AVR for each of the three areas subject to Regulation XV, despite the employers' considerable expenditure on promoting ridesharing, and despite the fact that the SCAQMD approved all the employers' Trip Reduction Plans as sufficient to reach the target AVR. There is, however, a ray of hope in the data; only 92 percent of the firms that have submitted their second-year Trip Reduction Plans offer free parking to all employees as part of their effort to reduce auto trips to work.

Regulating all employers with over 100 employees at a worksite, while imposing no regulation at all on other employers, raises the question of whether all employers are being treated fairly. Quite aside from the fairness question, the arbitrary cut-off of 100 employees as the criterion for regulation creates an incentive to keep employment below 100 employees at each worksite. There are reports of employers' deliberately shrinking employment below 100 employees to escape regulation, or splitting employment among several worksites, each of which is below 100 employees. By contrast, all employers can be required to offer the option of cash in lieu of a parking subsidy. See Appendix 3 for an amusing illustration of the problems created by Regulation XV's 100-employees-at-a-worksites criterion.

I have contrasted the effectiveness of (1) amending the Internal Revenue Code to require employers to offer employees the option to take the taxable cash alternative to a tax-exempt

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18. Where the target AVR was 1.75 persons per car, the mean achieved AVR was 1.48; where the target AVR was 1.5 persons per car, the mean achieved AVR was 1.23; and where the target AVR was 1.3, the mean achieved AVR was 1.19. See Table 6 in Giuliano, Hwang, and Wachs (forthcoming).
parking subsidy, and (2) Federally imposing on other regions Regulation XV-like employer trip reduction requirements now being implemented in Southern California. My purpose here is not to criticize Regulation XV or its implementation. Indeed, cashing out employer-paid parking is one way to comply with Regulation XV, and some employers in Southern California now offer employees the option to cash out their parking subsidies as a way to comply with Regulation XV (see Appendix 3 again). Regulation XV has stimulated enormous interest in ridesharing in Southern California, even if it has not yet substantially reduced automobile commuting. Rather, the purpose is to point out that it would be counterproductive for Federal policy to (1) continue the tax exemption of employer-paid parking subsidies up to $155 per month without the required cash option, and (2) simultaneously impose a myriad of extremely costly state and local trip reduction regulations on employers in order to reduce the excessive solo driving that the tax code has stimulated.

Even if the tax code is amended to encourage employers to offer cash in lieu of parking subsidies, however, there may well be some areas, like Southern California, where the air pollution problem is so severe that employer-based trip reduction regulations are also justified. And where employer-based trip reduction regulations are enacted, they will be far more effective if the Internal Revenue Code supports the trip-reduction goals, rather than (as it does now) works against them. On simple cost-effectiveness grounds, however, it seems sensible first to amend the Internal Revenue Code's definition of tax-exempt "qualified parking" before proceeding to more costly and more complex trip reduction regulations.

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19. In the first year of implementation, mean AVR for regulated employees increased from 1.20 to 1.24 persons per car (Ernst and Young, 1992). This small increase in AVR for employees, combined with the employer's high cost of compliance, helps to explain why it cost employers $3,000 per year for each per peak-hour automobile commute trip reduced.
VI. HOW EMPLOYER-PAID PARKING INCREASES TRAFFIC CONGESTION, AIR POLLUTION, AND ENERGY CONSUMPTION

Before policy-makers would commit to the idea of requiring employers to offer the option of cash in lieu of parking subsidies, they would first want to know how employer-paid parking now increases traffic congestion, air pollution, and energy consumption, and (2) by how much cashing out employer-paid parking will reduce traffic congestion, air pollution, and energy consumption. This section and the next attempt to answer these two questions. For readers who are more interested in the results than in the modelling methods, the conclusions are summarized at the end of each section.

Previous research, summarized in Table I, has focussed on discovering how employer-paid parking increases solo driving, but has not gone on to measure the resulting increases in vehicle miles travelled, gasoline consumption, and total spending on transportation. To go beyond the simple measure of mode choice to these other more fundamental measures of transportation system performance, it is first necessary to have data not only on how employer-paid parking influences the mode choice of each commuter, but also on the distance travelled to work by each commuter. Fortunately, these additional data are available in a transportation survey of commuters to downtown Los Angeles, which collected data from 5,060 employees working for 118 employers; the statistical sample was designed to represent accurately the entire population of office workers in downtown Los Angeles. Because the survey included data on both employers' parking subsidies and their employees' travel behavior and socioeconomic characteristics, these data can be used to estimate how employer-paid parking alters employees' travel choices.

Willson (1991) used the employers' responses regarding their parking policy to select two subsamples of employees: the first is all those commuters whose employers do not subsidize any employee parking, and the second is all those commuters whose employers offer free parking to all employees. Willson then used these subsamples to estimate a logit model of commuter mode choice, with employer-paid parking included as an independent variable along with the other more customary variables such as income, occupation, and travel time and travel cost to work by each mode. I have used Willson's model to predict how the offer of employer-paid parking affects the cost of commuting to downtown Los Angeles, and Table 4 displays the results.

20. The Los Angeles CBD Employee-Employer Baseline Travel Survey, was undertaken by the Community Redevelopment Agency of the City of Los Angeles in 1986. See Willson and Shoup (1990b) for a full description of the survey.

21. See Willson (1991) and Shoup and Willson (1992) for more detail on the estimation of this logit model. The model was initially estimated with data on both those who pay to park and those who park free. The model was then used to predict how varying the price of parking would affect the mode choices of all commuters in the subsample who park free. Thus, it predicts how those who are now offered employer-paid parking would have behaved if they had not been offered employer-paid parking.
<table>
<thead>
<tr>
<th>Travel Behavior or Travel Expenditure</th>
<th>Driver Pays for Parking</th>
<th>Employer Pays for Parking</th>
<th>Stimulated Increase</th>
<th>Percent Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solo Driver Share</td>
<td>48%</td>
<td>69%</td>
<td>21%</td>
<td>44%</td>
</tr>
<tr>
<td>Cars Driven to Work &amp; Parking Spaces Occupied (per Employee)</td>
<td>0.56</td>
<td>0.75</td>
<td>0.19</td>
<td>34%</td>
</tr>
<tr>
<td>Parking Expenditure (per Employee per Year)</td>
<td>$563</td>
<td>$750</td>
<td>$187</td>
<td>34%</td>
</tr>
<tr>
<td>Vehicle Miles Travelled (per Employee per Day)</td>
<td>18.1</td>
<td>24.1</td>
<td>6.0</td>
<td>33%</td>
</tr>
<tr>
<td>Vehicle Miles Travelled (per Employee per Year)</td>
<td>3,919</td>
<td>5,230</td>
<td>1,311</td>
<td>33%</td>
</tr>
<tr>
<td>Gasoline Consumed (Gallons per Employee per Year)</td>
<td>231</td>
<td>308</td>
<td>77</td>
<td>33%</td>
</tr>
<tr>
<td>Auto Use Expenditure (per Employee per Year)</td>
<td>$1,137</td>
<td>$1,517</td>
<td>$380</td>
<td>33%</td>
</tr>
<tr>
<td>Parking + Auto Use Expenditure (per Employee per Year)</td>
<td>$1,700</td>
<td>$2,266</td>
<td>$566</td>
<td>33%</td>
</tr>
</tbody>
</table>

Assumptions:
- Days Worked per Year: 217
- Auto Fuel Efficiency (MPG): 17
- Auto Use Cost ($/Mile): $0.29
- Cost of Parking ($/Month): $83.82
1. **Employer-Paid Parking Stimulates Parking Demand**

As argued earlier, employer-paid parking is a matching grant—the employer pays the cost of parking if the employee pays all the rest of the cost of driving to work. The question then arises: to what extent does employer-paid parking replace payments for parking that employees would have made anyway, and to what extent does employer-paid parking stimulate an increase in the number of parking spaces demanded by employees? The first row of Table 4 reveals a striking difference in travel choices between those who pay to park and those who park free: only 48 percent drive to work alone if they pay to park, while 69 percent drive alone if they park free. Because the model takes into account both differences in the socioeconomic characteristics of the commuters and differences in the travel costs by different modes, it can be inferred that in this sample of downtown office workers the offer of employer-paid parking stimulates a 44 percent increase in the number of solo drivers. Thirty percent of all the solo drivers whose employers offer free parking at work drive solo only because of the offer of free parking.

Because some employees respond to employer-paid parking by shifting from carpools to solo driving, these mode shifting employees increase the number of parking spaces they occupy by less than they increase the number of solo drivers: those who pay to park occupy 0.56 parking spaces per employee, while those who park free occupy 0.75 parking spaces per employee, a 34 percent increase in parking demanded.22 Given the average cost of commuter parking in downtown Los Angeles of $83.82 a month, the third row of Table 4 shows that commuters who must pay to park if they drive to work spend an average of $563 per employee per year for parking. If the employer offers to pay for parking, the employer spends an average of $750 per employee per year for parking.23 Thus, the offer of employer-paid parking stimulates a 34 percent increase in spending for parking, because 34 percent more commuters demand parking at the zero price than at the market price. Therefore, on average, employer-paid parking replaces $563 per employee per year that the employees would have spent, and stimulates additional spending of $187 per employee per year; the employer pays the total sum of $750 per employee per year for both the replaced ($563) and the stimulated ($187) spending on commuter parking.

2. **Employer-Paid Parking Stimulates Additional Vehicle Miles of Travel**

We have data on the distance travelled to work by each commuter in the sample, so we can go beyond the simple comparison of mode split and parking demand to examine more fully

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22. The number of cars driven to work per employee is calculated by adding together (1) the number of solo drivers, and (2) the number of carpoolers divided by the reported average carpool occupancy of 2.92 persons per vehicle. This sum of vehicles driven to work is then divided by the total number of employees (including mass transit riders) to yield the number of cars driven to work per employee.

23. Note that the per-employee spending for parking is the total spending on parking for all employees (including transit users and carpoolers) divided by the total number of these employees.
how employer-paid parking affects employees' travel demand and total travel cost. Because some employees respond to the offer of employer-paid parking by shifting from carpools and mass transit to solo driving, these mode-shifts away from ridesharing increase the number of automobile vehicle miles travelled (VMT) to and from work. The fourth row of Table 4 shows that, on average, commuters who must pay to park create only 18.1 VMT per day. Employer-paid parking stimulates a 33 percent increase in vehicle use to 24.1 VMT per day. Thus, employer-paid parking stimulates an extra 6 VMT per day per employee because so many more of the commuters who can park free at work respond by driving to work. Row 5 of Table 4 shows that, on average, offering employees free parking at work in the Los Angeles CBD creates an additional 1,311 VMT per employee per year, almost all of which are added at peak hours on heavily congested routes. Twenty-five percent of all the VMT driven by commuters whose employers offer free parking at work were driven only because the employer offered free parking.

3. Employer-Paid Parking Stimulates Gasoline Consumption

There are numerous harmful consequences of increased VMT. For example, the additional VMT stimulated by employer-paid parking increases gasoline consumption. The California Air Resources Board estimated that the average automobile fuel efficiency in Southern California was 17.0 miles per gallon in 1987. Given this average fuel efficiency, Row 6 of Table 4 shows that when commuters pay for their own parking, they use an average of 231 gallons of gasoline for driving to work. Employer-paid parking stimulates a 33 percent increase in gasoline consumption to 308 gallons per year. That is, on average, commuters respond to the offer of free parking by driving 1,311 more vehicle miles, and this additional driving consumes an additional 77 gallons of gasoline per employee per year. Again, twenty-five

24. Employer-paid parking stimulates a slightly smaller increase in VMT than in parking demand because the offer of free parking induces more commuters with short travel distances to shift to solo driving, presumably because parking costs are a larger share of total travel costs for shorter trips.

25. The VMT of employees in each category (pay parking and free parking) is calculated by summing (1) the round trip distance of solo drivers and (2) the round trip distance of carpoolers, divided by the reported average carpool occupancy of 2.92 passengers per vehicle. This total VMT of solo drivers and carpoolers in each category (pay and free) is then divided by the total number of employees, including transit users, in that category, to yield the VMT per employee per day. This measure therefore refers to vehicle miles travelled by automobiles, and excludes passenger-miles travelled on mass transit. To measure the distance travelled by each solo driver we use the average reported distance for all solo drivers from the same zip code of residence, and for each carpooler we use the average trip distance reported by all carpoolers from the same zip code. Because carpoolers reported a greater average travel distance to work than solo drivers from the same zip code, our procedure takes into account that shifting from solo driving to carpooling can increase the distance travelled to work. The average round trip distance to work for all commuters in the sample is 36 miles.

26. Note that this represents 77 extra gallons of gasoline used per employee who is offered free parking, not just per employee who drives to work.
percent of all the gasoline consumed by commuters who are offered free parking at work is consumed only because of the offer of free parking.

4. **Employer-Paid Parking Stimulates Spending on Transportation**

The figures for the additional annual VMT stimulated by employer-paid parking can also be used to estimate the additional annual cost of automobile use stimulated by employer-paid parking. The U.S. Department of Transportation estimated that in 1986 the average cost of using an automobile was 29 cents per mile of travel, including depreciation, insurance, and operating cost. Given this cost per mile of travel, Row 7 of Table 4 shows that when commuters must pay to park, the average expenditure for automobile commuting is $1,137 per year. Employer-paid parking stimulates a 33 percent increase in average automobile commuting expenditure to $1,517 per year.

There is one particularly surprising result that emerges from the data in Table 4: employers spend much more on parking subsidies than employees save on the cost of parking and driving. When an employer offers to pay for employees’ parking at work, more employees drive to work. The stimulus to parking demand inflates what employers have to pay, and the stimulus to driving diminishes what the employees save. Table 5, which is extracted from Table 4, highlights the implications of these two phenomena.

Table 4 showed that when employers offer to pay for employees’ parking at work, the offer stimulates an increase in the number of cars driven to work from 0.56 to 0.75 per employee. The first row of Table 5 shows that this increase in automobile use increases the average expenditure for parking from $563 per year when the employee pays for parking to $750 per year when the employer pays for parking. Therefore, employer-paid parking saves the employee $563 per year on parking, but also increases total expenditure on parking by $187 per employee per year. Similarly, the second row of Table 5 shows that the average expenditure for driving increases from $1,137 per year when the employee pays for parking to $1,517 when the employer pays for parking. That is, commuters respond to the free parking at work by spending $380 per year more on driving to work.

Note especially that when an employer pays for employee parking, on average the employee saves $563 on parking, but spends $380 more on driving (because of the higher solo share), and therefore saves only $183 per year on the total cost of parking and driving. Therefore, despite the employer’s spending an average of $750 per employee per year for parking subsidies ($563 in replaced employee spending, plus $187 in stimulated spending), the employee’s own total spending for parking and driving declines by only $183 per year. The net effect is that the employer must spend $4.10 on parking subsidies for every $1 the employee saves on the cost of parking and driving. Said the other way around, employees save only 24 cents on the cost of parking and driving for every $1 that employers spend to subsidize employee parking. This surprising disproportion between the large amount employers pay and the small amount employees save occurs because employer-paid parking strongly stimulates
# TABLE 5

**WHAT EMPLOYERS SPEND AND WHAT EMPLOYEES SAVE AS A RESULT OF EMPLOYER-PAID PARKING**

<table>
<thead>
<tr>
<th>Expenditure Category</th>
<th>Expenditure per Employee per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Driver Pays for Parking</td>
</tr>
<tr>
<td>1. Total Expenditure on Parking</td>
<td>$563</td>
</tr>
<tr>
<td>2. Total Expenditure on Driving</td>
<td>$1,137</td>
</tr>
<tr>
<td>3. Total Expenditure on Parking &amp; Driving</td>
<td>$1,700</td>
</tr>
<tr>
<td>4. Employees' Expenditure for Parking &amp; Driving</td>
<td>$1,700</td>
</tr>
<tr>
<td>5. Employer's Expenditure for Parking</td>
<td>$0</td>
</tr>
</tbody>
</table>
spending on both parking and driving: the stimulus to parking demand inflates what employers have to pay, and the stimulus to driving diminishes what the employees save.\footnote{Note that these calculations explicitly focus on the cost of parking and driving, and do not purport to measure all the benefits and costs of commuting.}

Table 5 also shows how employer-paid parking increases total spending (by employers \textit{and} employees) for both parking and driving. Employer-paid parking increases spending per employee on parking by $187 per year, and increases spending per employee on driving by $380 per year. Therefore, on average, the offer of employer-paid parking stimulates additional spending of $566 per employee per year for parking \textit{and} driving.

Figure 1 shows the same data in graphic form. The center column shows that the total expenditure for parking (paid by employers) and driving (paid by employees) is $2,267 per year for those who were offered employer-paid parking. The left-hand column shows that these same employees would have spent only $1,700 per year on parking and driving if they had paid for their own parking. The right-hand column shows that the offer of employer-paid parking stimulates a 33 percent increase in spending on parking \textit{and} driving of $566 per year per employee.

Finally, note that employer-paid parking \textit{replaces} $563 per year in payments that employees would have paid for parking, and \textit{stimulates} an additional $566 per year in total spending for parking \textit{and} driving. That is, employer-paid parking stimulates an extra dollar of total spending on parking \textit{and} driving (by employers \textit{and} employees) for every dollar of payment for parking it shifts from the employee to the employer.

\textbf{5. Adding Up the Private Costs of Employer-Paid Parking}

These numbers are estimates of how employer-paid parking increases the average cost \textit{per employee} for automobile commuting to the Los Angeles CBD. But to understand the magnitude of the problems created by employer-paid parking, and to put them into perspective, it is necessary to estimate how employer-paid parking increases the \textit{total} cost of travel by all commuters.

The total cost of employer-paid parking depends on how many employees are offered it. Therefore, to translate the previous estimates of the average cost \textit{per employee} into an estimate of the \textit{total} costs for all employer-paid parking, we first need an estimate of how many employees are offered free parking in the CBD. The Baseline Survey found that there were 173,283 office worker commuters to the CBD, and that there were 114,372 cars driven to work. Employers paid all of the cost of parking for 54,212 of these cars driven to work. Because there are 54,212 cars driven to work by those who park free, and because there are 0.78 cars driven to work per employee who is offered free parking, we can estimate that there are 69,503 employees (or 40 percent of all employees) who are offered free parking in downtown Los
Figure 1

Annual Parking and Automobile Use Cost
for Commuters to Downtown Los Angeles
CASHING OUT EMPLOYER-PAID PARKING

Angeles. Therefore, on the assumption that other commuters who are offered employer-paid parking respond in the same way as the commuters in the Baseline sample (which was drawn to represent accurately the entire population of office workers in downtown Los Angeles), we can examine the changes in the commuting behavior, and the related changes in the total cost of parking and driving, associated with the offer of free parking to these 69,503 employees.

Table 6 shows estimates that are parallel to Table 4, except that where Table 4 refers to estimates per-employee, Table 6 refers to the equivalent aggregate figures for all 69,503 employees who are offered employer-paid parking in the Los Angeles CBD. The first row of the table shows that employer-paid parking stimulates 13,200 extra vehicle commute trips per day, a 34 percent increase. It also stimulates a demand for 13,200 extra parking spaces occupied by these commuters. By comparison, there are about 125,000 off-street parking spaces in all of downtown Los Angeles. Therefore, the employer-paid parking that is offered to 40 percent of commuters to downtown Los Angeles stimulates approximately a 10 percent increase in the total number of parking spaces demanded in downtown Los Angeles.

Because of the large shift toward solo driving, employer-paid parking stimulates commuters to drive 417,000 extra VMT per day, or 91 million extra VMT per year, almost all of it at peak hours. To put this extra VMT in perspective, the estimated travel by all passenger cars in the 6,600 square mile South Coast Air Basin was 173 million VMT per day in 1986 (California Air Resources Board, 1991). Thus, employer-paid parking in the Los Angeles CBD alone stimulates additional vehicle travel in a year approximately equal to 53 percent of a day’s total vehicle miles travelled by all passenger cars in the entire South Coast Air Basin.

At the average fuel efficiency of 17 miles a gallon, these extra VMT stimulated by employer-paid parking consume 25,000 extra gallons of gasoline a day, or 5.3 million extra gallons of gasoline a year. To put this added gasoline stimulated by employer-paid parking into perspective, the estimated average fuel consumption per passenger car in the United States in 1986 was 526 gallons a year (MVMA, 1990, p. 51). Thus the additional fuel consumption stimulated by employer-paid parking in the Los Angeles CBD alone was approximately equal to the total annual fuel consumption of 10,077 additional automobiles.

The amount that employers spend on parking subsidies dwarfs the amount that employees save on the cost of parking and driving. Employers spend approximately $241,000 per day ($52 million per year) on parking subsidies, of which $180,000 per day ($39 million per year) replaces employees' own spending and $61,000 per day ($13 million per year) represents stimulated spending. This parking subsidy also stimulates a $121,000 per day ($26 million per year) increase in employees' spending for automobile commuting. Therefore, although employers spend $52 million per year on parking subsidies, their employees save only $13 million per year on the cost of parking and driving, compared to what they would have spent on parking and driving in the absence of employer-paid parking. Again, the explanation for this striking disparity between the employers' large cost and the employees' small saving is that employer-paid parking so strongly stimulates spending on both parking (paid by the employer) and driving (paid by the employee).
### TABLE 6

**ESTIMATED INCREASES IN TRAVEL COST CAUSED BY EMPLOYER-PAID PARKING IN THE LOS ANGELES CENTRAL BUSINESS DISTRICT**

<table>
<thead>
<tr>
<th>Travel Behavior or Travel Expenditure</th>
<th>Driver Pays for Parking</th>
<th>Employer Pays for Parking</th>
<th>Stimulated Increase</th>
<th>Percent Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Vehicle Trips to Work &amp; Parking Spaces Occupied</td>
<td>38,900</td>
<td>52,100</td>
<td>13,200</td>
<td>34%</td>
</tr>
<tr>
<td>2. Total Parking Expenditure</td>
<td>$180,000</td>
<td>$241,000</td>
<td>$61,000</td>
<td>34%</td>
</tr>
<tr>
<td>3. Vehicle Miles Travelled</td>
<td>1,258,000</td>
<td>1,675,000</td>
<td>417,000</td>
<td>33%</td>
</tr>
<tr>
<td>4. Gallons of Gasoline Consumed</td>
<td>74,000</td>
<td>99,000</td>
<td>25,000</td>
<td>33%</td>
</tr>
<tr>
<td>5. Auto Use Expenditure</td>
<td>$365,000</td>
<td>$486,000</td>
<td>$121,000</td>
<td>33%</td>
</tr>
<tr>
<td>9. Parking + Auto Use Expenditure</td>
<td>$545,000</td>
<td>$727,000</td>
<td>$182,000</td>
<td>33%</td>
</tr>
</tbody>
</table>

**Assumptions:**
- Days Worked per Year: 217
- Auto Fuel Efficiency (MPG): 17
- Auto Use Cost ($/Mile): $0.29
- Cost of Parking ($/Month): $83.82
- Number Offered Free Parking: 69,503
Finally, the last row of Table 6 shows that employer-paid parking stimulates an extra $182,000 per day ($39 million per year) in total spending for parking in and driving to downtown Los Angeles. Note that this $39 million in extra spending for parking and driving stimulated by employer-paid parking equals the $39 million in employees’ payments for parking that employer-paid parking replaces. Therefore, every dollar of spending for parking that employer-paid parking shifts from the employee to the employer stimulates a one dollar increase in total spending for parking and driving.

6. Adding Up the Social Costs of Employer-Paid Parking

These increased costs of parking and driving stimulated by employer-paid parking are only the private costs paid by commuters and by their employers. But because employer-paid parking so greatly increases VMT, it also increases the external costs of automobile travel, such as air pollution and traffic congestion, which are not included in the previous calculations. Measuring external costs is more difficult than measuring private costs, but there have been numerous attempts to estimate the external costs of urban automobile use, and we will draw on these previous estimates to give a rough figure for the external costs stimulated by employer-paid parking.

Traffic congestion is a major external cost of increased solo driving, because when one more car uses a roadway that is already near capacity, that additional car slows down all the other cars (and buses and trucks) already on the road. Slowing down these other vehicles increases total travel time, and this increased travel time for all other roadway users (including mass transit passengers and commercial vehicles) is an external cost of auto use that is not borne by the additional driver deciding to use the road. There are a variety of ways to estimate the cost of road congestion, usually based on the value of time lost in congested traffic or the cost of additional roadway capacity required. Lee (1989) and Morrison (1986) have summarized a number of attempts to estimate the congestion-related external costs of automobile use in peak periods; those estimates range from 1 cent to 38 cents per mile travelled, depending on the conditions and estimation method. DeCorla-Souza and Kane (1991) estimate that cost of new highway capacity to serve peak users in Los Angeles is 19.8 cents per peak period mile. Cameron (1991) provides additional estimates for Los Angeles ranging between 10 cents and 37 cents per mile. Because the routes leading to the Los Angeles CBD are among the most congested in Southern California, 20 cents per vehicle mile of travel seems a conservative estimate of the external congestion cost imposed by additional peak hour commute travel to downtown Los Angeles, and we have used this figure to estimate the congestion costs stimulated by employer-paid parking in downtown Los Angeles, as shown in Table 7.

The first row of Table 7 shows the VMT per employee per day for those who pay to park and those who park free, and the second row shows the congestion cost imposed by this travel if the congestion cost is 20 cents per mile. On average, those who pay to park impose a congestion cost of $784 per year on other travellers, and those who park free impose a congestion cost of $1,046 per year. Therefore, employer-paid parking raises this congestion cost by $262 per year per employee to whom it is offered.
TABLE 7
THE SOCIAL COSTS PER EMPLOYEE OF EMPLOYER-PAID PARKING
IN THE LOS ANGELES CENTRAL BUSINESS DISTRICT

<table>
<thead>
<tr>
<th>Travel Behavior or Travel Expenditure (per Employee per Year)</th>
<th>Driver Pays for Parking</th>
<th>Employer Pays for Parking</th>
<th>Stimulated Increase</th>
<th>Percent Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Vehicle Miles Travelled</td>
<td>3,919</td>
<td>5,230</td>
<td>1,311</td>
<td>33%</td>
</tr>
<tr>
<td>2. Congestion Cost Imposed</td>
<td>$784</td>
<td>$1,046</td>
<td>$262</td>
<td>33%</td>
</tr>
<tr>
<td>3. Pollution Cost Imposed</td>
<td>$157</td>
<td>$209</td>
<td>$52</td>
<td>33%</td>
</tr>
<tr>
<td>4. External Cost Imposed (Congestion + Pollution)</td>
<td>$941</td>
<td>$1,255</td>
<td>$315</td>
<td>33%</td>
</tr>
<tr>
<td>5. Private Cost of Auto Use (Driving + Parking)</td>
<td>$1,700</td>
<td>$2,266</td>
<td>$566</td>
<td>33%</td>
</tr>
<tr>
<td>6. Total Social Cost of Auto Use (Private + External)</td>
<td>$2,641</td>
<td>$3,521</td>
<td>$881</td>
<td>33%</td>
</tr>
</tbody>
</table>

Assumptions:
- Days Worked per Year: 217
- Fuel Efficiency (MPG): 17
- Auto Use Cost ($/Mile): $0.29
- Cost of Parking ($/Month): $83.82
- Congestion Cost ($/mile): $0.20
- Pollution Cost ($/mile): $0.04
Estimates of the other significant external cost of automobile use, air pollution, also vary widely. One technique of estimating this external cost is to estimate the value of the damage done by all air pollution, identify that portion related to transportation, and divide that damage by the number of automobile trips. Cameron (1991) estimated a cost of 46 cents per trip using this methodology. An alternative technique is to calculate a per mile cost of pollution by valuing it at the costs borne by stationary sources to reduce a unit of pollution. This technique produced a 4 cent per mile estimate (Cameron 1991). We use this estimate of 4 cents per mile for the present purpose of calculating the pollution cost of automobile commuting to downtown Los Angeles, and Row 3 of Table 7 shows these costs. On average, those who pay to park impose an air pollution cost of $157 per year, and those who park free impose a pollution cost of $209 per year. Therefore, employer-paid parking stimulates an increase of $52 per year in automobile pollution emissions cost for every employee to whom it is offered.

The sum of the external costs of congestion and pollution stimulated by employer-paid parking is $315 per year for every employee who is offered free parking (see Row 4). This compares to the additional private costs of parking and driving of $566 per year. That is, the external costs add another 56 percent to the private costs stimulated by employer-paid parking. Therefore, on average, the total additional cost (private plus external) of automobile use stimulated by employer-paid parking is $881 per year for every employee who is offered free parking.

The figures in Table 7 refer to the private and external costs per-employee for automobile commuting to downtown Los Angeles. We can now translate these per-employee costs into a rough estimate of the total private and external costs caused by the offer of employer-paid parking to the approximately 69,500 office workers to whom it is offered in downtown Los Angeles. Table 8 shows estimates that are parallel to Table 7, except that where Table 7 refers to average costs per employee, Table 8 refers to the equivalent aggregate costs for all 69,500 employees who are offered free parking in the CBD.

The first row of the table shows that employer-paid parking stimulates an additional 2,866,000 vehicle trips per year to the CBD, and the second row shows that these extra trips account for an additional 91 million VMT per year. Row 3 shows that this extra VMT creates an additional congestion cost, borne by other motorists, of $18 million per year. Similarly, Row 4 shows that employer-paid parking stimulates an additional air pollution cost, borne by all residents of the South Coast Air Basin, of $3.6 million per year. Thus, the cost of additional congestion is approximately five times greater than the costs of additional air pollution.\textsuperscript{28} The

\textsuperscript{28} Note that while the SCAQMD's Regulation XV trip reduction requirements have been justified on the grounds that they will reduce air pollution, the conventional values cited above for cost of congestion and pollution suggest that the resulting congestion relief will be five times more valuable than the resulting pollution reduction. Note also that the goal of Regulation XV is to reduce trips rather than VMT or emissions, so a reduced automobile trip of one VMT by a relatively clean car counts as much as a reduced trip of 50 VMT by a relatively dirty car.
## TABLE 8
TOTAL SOCIAL COST OF EMPLOYER-PAID PARKING
IN THE LOS ANGELES CENTRAL BUSINESS DISTRICT

<table>
<thead>
<tr>
<th>Travel Behavior or Travel Expenditure (Total per Year)</th>
<th>Driver Pays for Parking</th>
<th>Employer Pays for Parking</th>
<th>Stimulated Increase</th>
<th>Percent Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Vehicle Work Trips</td>
<td>8,446,000</td>
<td>11,312,000</td>
<td>2,866,000</td>
<td>34%</td>
</tr>
<tr>
<td>2. Vehicle Miles Travelled</td>
<td>272,406,000</td>
<td>363,480,000</td>
<td>91,074,000</td>
<td>33%</td>
</tr>
<tr>
<td>3. Congestion Cost Imposed</td>
<td>$54,481,000</td>
<td>$72,696,000</td>
<td>$18,215,000</td>
<td>33%</td>
</tr>
<tr>
<td>4. Pollution Cost Imposed</td>
<td>$10,896,000</td>
<td>$14,539,000</td>
<td>$3,643,000</td>
<td>33%</td>
</tr>
<tr>
<td>5. External Cost Imposed (Congestion + Pollution)</td>
<td>$65,377,000</td>
<td>$87,235,000</td>
<td>$21,858,000</td>
<td>33%</td>
</tr>
<tr>
<td>6. Private Cost of Auto Use (Driving + Parking)</td>
<td>$118,226,000</td>
<td>$157,713,000</td>
<td>$39,487,000</td>
<td>33%</td>
</tr>
<tr>
<td>7. Total Social Cost of Auto Use (Private + External)</td>
<td>$183,603,000</td>
<td>$244,948,000</td>
<td>$61,345,000</td>
<td>33%</td>
</tr>
</tbody>
</table>

Assumptions:
- Days Worked per Year: 217
- Fuel Efficiency (MPG): 17
- Auto Use Cost ($/Mile): $0.29
- Cost of Parking ($/Month): $83.82
- Congestion Cost ($/mile): $0.20
- Pollution Cost ($/mile): $0.04
- Number Offered Free Parking: 69,503
sum of this added external cost of congestion and pollution stimulated by the free parking offered to commuters to downtown Los Angeles is approximately $22 million per year. Finally, the sum of these estimated private plus external costs stimulated by employer-paid parking in downtown Los Angeles is approximately $61 million per year.

Figure 2 presents these data in graphic form. The center column shows the existing $245 million per year social cost of automobile commuting by the 69,500 commuters who are offered free parking; the left-hand column shows that the social cost of automobile commuting for these same 69,500 commuters would have been only $184 million per year if they had paid for their own parking. The right-hand column shows the offer of free parking to these 69,500 commuters stimulates a 33 percent increase in the total social cost of commuting to downtown Los Angeles of $61 million per year.

In addition to the social costs just estimated, there are a wide variety of other social costs for which per mile estimates are not readily available. For example road use causes unpriced losses to property value related to the noise, aesthetic degradation, and neighborhood disruption. Road use also causes unpriced road maintenance and operation costs, because gasoline taxes and vehicle fees do not cover the full cost of operating the automobile transportation system (Pucher, 1988). In addition to the time delay costs of congestion, there is increasing recognition of stress costs, although quantitative estimates are not available (Novaco, 1990). There are also significant costs of accidents not covered by automobile insurance, including medical costs that are paid by health insurers rather than automobile insurers. In addition to the direct health and property damage consequences of air pollution, there are uncertain and unmeasured potential costs relating to the automobile’s contribution to global warming. Finally, there are an number of other potential costs, such as dependence on foreign sources of energy, associated with the use of gasoline. Thus, there is every reason to believe that the figures in Table 8 underestimate the additional external costs of automobile use stimulated by employer-paid parking in downtown Los Angeles.

7. **Summary**

Because so many commuters respond to the offer of employer-paid parking by shifting from mass transit and carpools to solo driving, employer-paid parking increases the number of solo drivers to the Los Angeles CBD by 44 percent, and increases the number of vehicle miles driven to work by 91 million VMT per year. Although only three percent of all jobs in the South Coast Air Basin are located in the Los Angeles CBD, this added annual VMT stimulated by employer-paid parking in the Los Angeles CBD alone was approximately equal to half of a day’s total vehicle miles travelled by all passenger cars in the entire South Coast Air Basin. The added annual fuel consumption stimulated by employer-paid parking in the Los Angeles CBD alone was 5.3 million gallons of gasoline per year, which is approximately equal to the total annual fuel consumption of 10,000 additional automobiles. When all the costs of parking, driving, congestion, and pollution are taken into account, employer-paid parking the Los Angeles CBD stimulates an additional $61 million per year in the total social cost of automobile commuting.
The Social Costs of Automobile Travel
For Commuters to Downtown Los Angeles

Figure 2

Total Travel Cost per Year (Millions)
These estimates of employer-paid parking's stimulus to the social cost of driving do not take into account the separate effect that, even for those who do pay for their own parking, the custom of buying a monthly parking permit totally eliminates any parking cost from the employee's daily marginal expense of driving to work. The above estimates of parking subsidies on commuting behavior were made on the assumption that if the employer did not pay for the employee's parking, the employee would pay a monthly rather than a daily price for parking. Thus, even if the employee does pay for monthly parking, the underpricing (divergence between the private and social cost) of individual automobile trips remains, which makes it difficult, for example, to persuade employees to carpool one day a week, as many rideshare campaigns encourage. If employees who do pay for their own parking paid on a daily rather than a monthly basis, they would create even fewer automobile trips than estimated above for employees who pay to park, and employer-paid parking's stimulus to driving would appear even larger.

Although employers in downtown Los Angeles spend $52 million per year on parking subsidies, their employees save only $13 million per year on the cost of parking and driving, compared to what they would have spent on parking and driving without employer-paid parking. The net effect is that the employer must spend $4.10 on parking subsidies for every $1 the employee saves on the cost of parking and driving. The explanation for this striking disparity between the employers' large cost and the employees' small saving is that employer-paid parking so strongly stimulates spending on both parking (paid by the employer) and driving (paid by the employee).

If employer-paid parking simply shifted the cost of parking from the employee to the employer, without changing any commuter's mode choice, there would be no problem. But employer-paid parking is a matching grant--the employer pays for the parking if the employee pays all the rest of the cost of driving to work--and this matching grant formula stimulates a substantial mode shift toward driving alone. This stimulus to driving alone seems inevitable if employers continue to subsidize their employees' commuting only by subsidizing their parking. But what would happen if employers, by offering their employees the option to cash out their parking subsidies, effectively converted their matching grants for parking into blocks grant for commuting? The next section attempts to answer this question.
VII. HOW CASHING OUT EMPLOYER-PAID PARKING WILL REDUCE TRAFFIC CONGESTION, AIR POLLUTION, AND ENERGY CONSUMPTION

We have just estimated how employer-paid parking stimulates increased spending on both parking and driving, and thus stimulates increased social costs of traffic congestion, air pollution, and energy consumption. We can now use the same model to predict how offering employees the option to cash out their parking subsidies would alleviate these problems. Because cash in lieu of a parking subsidy would be taxable, commuters would forgo the after-tax cash value of their parking subsidy if they chose to continue receiving the parking subsidy. Although commuters could continue to park free at work, they would thus "pay" the after-tax value of their parking subsidy for the "free" parking. Therefore, to estimate commuters' responses to the cash option it is necessary to estimate how those now offered free parking would respond to a rise in the price of parking to a level equal to the after-tax cash value of the tax-exempt parking subsidy each commuter is offered.

1. Predictions From a Mode Choice Model

Each commuter in the sample reported his or her annual income, so we can use this reported income to calculate the marginal income tax rate (federal, state, and social security combined) that each commuter would have to pay on any taxable cash received in lieu of a parking subsidy. We assume that commuters react to an opportunity cost of $1 in the same manner as to an out-of-pocket cost of $1; that is, if a commuter foregoes the commute allowance in favor of free parking, that commuter has in effect "spent" the commute allowance on parking. Since the after-tax value of each commuter's parking subsidy is the "price" that commuter would "pay" for "free" parking, the after-tax value of each commuter's current parking subsidy (taking into account each commuter's marginal income tax rate) was used as the price of parking for that commuter to predict each commuter's probability of choosing each mode.29

Figure 3 shows the predicted commuter mode split resulting from parking prices varying between 0 and $5 a day, and it shows that the cash option reduces VMT by shifting commuters from solo driving to mass transit and carpools. Because there is very good transit access to downtown Los Angeles, many commuters choose mass transit if they must pay for their own parking at work, and the higher the parking price the greater the transit share. There is also an increase in carpooling when parking prices rise. It is this mode split information that has been used to predict commuters' reaction to the option of cash in lieu of employer-paid parking, with the after-tax value of the cash option used to represent the effective price of parking that each commuter would face if the cash option were made available.

Table 9 summarizes how offering employees the option to cash out their employer-paid parking would affect travel outcomes. The share of commuters who drive to work alone falls

---

Figure 3
Parking Prices Determine Mode Choices
For Commuters to Downtown Los Angeles

The graph shows the predicted mode share for solo
drivers, carpools, and transit as a function of parking
price ($/Day) for commuters to Downtown Los Angeles.

- Solo: Decreasing share as parking price increases.
- Transit: Increasing share as parking price increases.
- Carpool: Linear increase in share with parking price.

Legend:
- Solo Driver Share
- Carpool Share
- Transit Share
TABLE 9

TRAVEL BEHAVIOR AND TRAVEL EXPENDITURES OF COMMUTERS
TO THE LOS ANGELES CENTRAL BUSINESS DISTRICT

<table>
<thead>
<tr>
<th>Travel Behavior or Travel Expenditure</th>
<th>Driver Pays for Parking</th>
<th>Employer Pays for Parking</th>
<th>Effect of Cash Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Solo Driver Share</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>48%</td>
<td>55%</td>
<td>69%</td>
</tr>
<tr>
<td>2. Vehicle Trips to Work &amp; Parking Spaces Occupied (per Employee)</td>
<td>0.56</td>
<td>0.62</td>
<td>0.75</td>
</tr>
<tr>
<td>3. Parking Expenditure (per Employee per Year)</td>
<td>$563</td>
<td>$626</td>
<td>$750</td>
</tr>
<tr>
<td>4. Vehicle Miles Travelled (per Employee per Day)</td>
<td>18.1</td>
<td>20.2</td>
<td>24.1</td>
</tr>
<tr>
<td>5. Vehicle Miles Travelled (per Employee per Year)</td>
<td>3,919</td>
<td>4,383</td>
<td>5,230</td>
</tr>
<tr>
<td>6. Gasoline Consumed (Gallons per Employee per Year)</td>
<td>231</td>
<td>258</td>
<td>308</td>
</tr>
<tr>
<td>7. Auto Use Expenditure (per Employee per Year)</td>
<td>$1,137</td>
<td>$1,271</td>
<td>$1,517</td>
</tr>
<tr>
<td>8. Parking + Auto Use Expenditure (per Employee per Year)</td>
<td>$1,700</td>
<td>$1,897</td>
<td>$2,266</td>
</tr>
</tbody>
</table>

Assumptions:

- Days Worked per Year: 217
- Auto Fuel Efficiency (MPG): 17
- Auto Use Cost ($/Mile): $0.29
- Cost of Parking ($/Month): $83.82
from 69 to 55 percent, and the number of vehicle miles travelled to work falls by 3.9 VMT per employee per day, or by 17 percent.\textsuperscript{30} Gasoline consumption falls by 50 gallons per employee per year, and total expenditure on parking and automobile use fall by $369 per employee per year.

The data in Table 9 refer to how cashing out would reduce the \textit{per-employee} costs caused by employer-paid parking. To estimate how cashing out would reduce the \textit{total} costs caused by employer-paid parking we must multiply these per-employee effects by the 69,503 employees who are offered free parking in downtown Los Angeles. Table 10 summarizes and compares the \textit{total} costs of commuting to downtown Los Angeles under the same three scenarios (driver-paid parking, employer-paid parking with the cash option, and employer-paid parking without the cash option).

By shifting commuters from solo driving to ridesharing, offering commuters the \textit{option} to cash out their employer-paid parking would eliminate 9,000 vehicle round trips per day to the Los Angeles CBD. That is, the 69,503 employees who are offered conventional employer-paid parking commute to work in 52,100 automobiles. If offered the option to take their parking subsidies in taxable cash, they would travel to work in 43,100 automobiles. Ending employer-paid parking altogether would further reduce the number of automobiles to 38,900 but would, of course, also encounter fierce resistance from all those employees who would lose their subsidies. By contrast, employees should welcome the new option to cash out their parking subsidies.

The significance of the 9,000 automobile commute trips that would be reduced by cashing out parking subsidies can also be expressed in terms of reduced VMT and reduced gasoline consumption. Table 10 shows that cashing out parking subsidies would reduce automobile commuting travel to the CBD by 285,000 VMT a day, or about 60 million VMT a year, and would save 17,000 gallons of gasoline consumed for automobile commuting a day, or about 3.5 million gallons of gasoline a year. This reduction in VMT would also reduce the external costs these commuters create. The last two rows of Table 10 show that offering these employees the cash option would reduce the total social cost of automobile commuting to downtown Los Angeles by $192,000 a day, or about $40 million a year.

To summarize, for commuters to the Los Angeles CBD, we have estimated that offering employees the option to cash out their current employer-paid parking subsidies would:

- reduce the number of solo drivers to work by 20 percent.
- reduce the number of vehicle trips to work by 9,000 a day.
- reduce the number of parking spaces demanded by 9,000.

\textsuperscript{30} Note that allowing employees the option to cash out their parking subsidies would reduce average VMT by approximately two-thirds as much as would the politically unpopular although analytically superior policy of charging everyone the full market price for parking at work.
<table>
<thead>
<tr>
<th>Travel Behavior or Travel Expenditure (Total per Day)</th>
<th>Driver Pays for Parking</th>
<th>Employer Pays for Parking</th>
<th>Effect of Cash Option</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>With Cash Option</td>
<td>Without Cash Option</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Vehicle Trips to Work &amp; Parking Spaces Occupied</td>
<td>38,900</td>
<td>43,100</td>
<td>52,100</td>
</tr>
<tr>
<td>2. Vehicle Miles Travelled</td>
<td>1,258,000</td>
<td>1,390,000</td>
<td>1,675,000</td>
</tr>
<tr>
<td>3. Gasoline Consumed</td>
<td>74,000</td>
<td>81,765</td>
<td>98,529</td>
</tr>
<tr>
<td>4. Congestion Cost Imposed</td>
<td>$252,000</td>
<td>$278,000</td>
<td>$335,000</td>
</tr>
<tr>
<td>5. Pollution Cost Imposed</td>
<td>$50,000</td>
<td>$56,000</td>
<td>$67,000</td>
</tr>
<tr>
<td>6. External Cost Imposed (Congestion + Pollution)</td>
<td>$302,000</td>
<td>$334,000</td>
<td>$402,000</td>
</tr>
<tr>
<td>7. Parking Expenditure</td>
<td>$180,000</td>
<td>$200,000</td>
<td>$241,000</td>
</tr>
<tr>
<td>8. Auto Use Expenditure</td>
<td>$365,000</td>
<td>$403,000</td>
<td>$486,000</td>
</tr>
<tr>
<td>9. Private Cost of Auto Use (Driving + Parking)</td>
<td>$545,000</td>
<td>$603,000</td>
<td>$727,000</td>
</tr>
<tr>
<td>10. Total Social Cost of Auto Use (Private + External)</td>
<td>$847,000</td>
<td>$937,000</td>
<td>$1,129,000</td>
</tr>
<tr>
<td>11. Relative Cost</td>
<td>75%</td>
<td>83%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Assumptions:
- Days Worked per Year: 217
- Auto Fuel Efficiency (MPG): 17
- Auto Use Cost ($/Mile): $0.29
- Cost of Parking ($/Month): $83.82
- Congestion Cost ($/Mile): $0.20
- Pollution Cost ($/Mile): $0.04
- Number Offered Free Parking: 69,503
reduce vehicle miles travelled to work by 285,000 VMT a day.
reduce gasoline consumption for automobile commuting by 3.5 million gallons a year.
reduce the total cost of automobile commuting to downtown Los Angeles by $40 million a year, or by 17 percent.

2. Comparisons of Cost-Effectiveness

To put these results of cashing out employer-paid parking into perspective, we can compare the reduction of 9,000 vehicle-round-trips per day to the Los Angeles CBD to the results produced by the Metro Blue Line, a new light rail transit line between Long Beach and the Los Angeles CBD, the first link completed in a planned $78.2 billion rail mass transit system for Southern California. The Metro Blue Line opened in 1990 after four years of construction that cost $877 million. In addition to this large capital cost, the annual operating subsidy for the Blue Line is $37.6 million in Fiscal Year 1992-1993 (fare revenue covers only 11 percent of the $42.2 million annual operating cost). A recent study commissioned by the Los Angeles Rapid Transit District, which constructed and operates the Blue Line, found that it removes between 3,000 and 4,000 cars from the road per weekday (Facts Consolidated, 1991). Thus, the no-cost policy of offering downtown employees the option to cash out their employer-paid parking subsidies would remove more than twice as many, and perhaps three times as many, cars from the road than has a rail system that cost $877 million in capital subsidy plus another $38 million a year in operating subsidies.

The point here is not to criticize either the Blue Line or investment in rail mass transit projects. Indeed, if employees could cash out their parking subsidies, some of them would certainly shift to commuting on the Blue Line, thus increasing fare revenue and reducing the necessary operating subsidy. Employer-paid parking subsidies in downtown Los Angeles alone are $52 million a year, or 23 percent more than the entire annual operating cost of the Blue Line. And with the Blue Line available, more employees would cash out their parking subsidies than if the Blue Line were not available. Thus, cashing out employer-paid parking and providing mass transit are (in the long run) complementary, not competing policies. Rather, the point here is to criticize (1) massively subsidizing rail mass transit, and (2) even more massively subsidizing commuter parking, (3) simultaneously.

Another way to put into perspective the 9,000 vehicle trips a day that would be reduced by cashing out employer-paid parking is to value it at the cost of reducing trips by Regulation XV. As mentioned earlier, in complying with trip reduction requirements of the SCAQMD's Regulation XV, employers have spent an average of $3,000 per year per peak-hour automobile commute reduced. Therefore, the no-cost policy of offering employees in downtown Los Angeles the option to cash out their employer-paid parking subsidies would produce benefits that would cost $27 million a year to achieve by Regulation XV.

Table 11 compares the relative cost-effectiveness of the three ways to divert commute trips from automobiles into mass transit and ridesharing in Southern California. For the Blue Line, in the first column of the table, the RTD estimates that the Blue Line has reduced between
### TABLE 11

COMPARATIVE COST-EFFECTIVENESS OF THREE TRIP-REDUCTION MEASURES

<table>
<thead>
<tr>
<th></th>
<th>Blue Line Rail Transit</th>
<th>SCAQMD’S Regulation XV</th>
<th>Cashing Out Parking Subsidies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automobile Commute Trips Reduced</td>
<td>4,000</td>
<td>53,190</td>
<td>9,000</td>
</tr>
<tr>
<td>Annual Cost</td>
<td>$37,638,000</td>
<td>$161,727,000</td>
<td>$0</td>
</tr>
<tr>
<td>Annual Cost per Automobile Commute Trip Reduced</td>
<td>$9,410</td>
<td>$3,041</td>
<td>$0</td>
</tr>
</tbody>
</table>

**Sources:**

For rail transit, the annual cost is the Southern California Rapid Transit District’s operating subsidy for the Blue Line for Fiscal Year 1992-1993. The number of automobile trips reduced is the upper estimate from a report commissioned by the SCRTD (Facts Consolidated, June 1991).

For Regulation XV, the annual cost is the total annual cost of compliance for Regulation XV throughout the South Coast Air Quality Management District. The estimate of annual cost and the estimate of trips reduced are from a report commissioned by the SCAQMD (Ernst and Young, August 1992).
3,000 and 4,000 automobile commute trips, and that the annual operating subsidy is $38 million a year. Thus, if we use RTD’s own upper estimate (which is probably optimistic) of 4,000 automobile trips reduced, the operating subsidy per automobile trip reduced is $9,400 per year. Because this cost figure refers to operating subsidy alone, and neglects the even larger capital subsidy, and uses RTD’s own upper estimate of the number of automobile trips reduced, the cost of $9,400 per automobile trip reduced is surely a very low estimate of the real cost of reducing automobile trips by investing in this rail transit project.31

For Regulation XV, in the second column of the table, the SCAQMD’s survey produced estimates of 53,190 automobile trips reduced, at an annual cost of $162 million. Thus, it costs $3,000 a year for each automobile trip reduced by Regulation XV.

For cashing out employer-paid parking subsidies in downtown Los Angeles, in the third column, the estimate is that offering employees the option to cash out the parking subsidies they are now offered would reduce 9,000 automobile trips, at no public and little or no private cost. Indeed, whenever an employee voluntarily chooses taxable cash in lieu of a tax-exempt parking subsidy, tax revenues will increase. Thus, on simple grounds of cost-effectiveness, cashing out employer-paid parking subsidies is clearly far cheaper, far less intrusive on most employers and employees, and fiscally far superior to the other two major trip reduction measures now being pursued in Southern California.

3. Speculation on the National Consequences of Cashing Employer-Paid Parking

The total number of people employed in downtown Los Angeles accounts for only three percent of total employment in Southern California. Therefore, the consequences of offering all employees in Southern California the option to cash out their employer-paid parking subsidies would produce benefits that are far greater than these estimates for downtown Los Angeles alone. And although it is risky to extrapolate from one city to the rest of the country, it is at least instructive to explore the implications of what has been found in Los Angeles.

The estimates shown in Table 9 are that offering employees in downtown Los Angeles the option to cash out their parking subsidies would reduce average automobile travel per commuter by 3.9 VMT a day, or by 847 VMT a year, and would reduce average gasoline

31. James Moore calculated the Blue Line’s capital and operating subsidy at between $103 and $139 per drive-alone round trip reduced. At the average figure of 217 commute trips to work per year assumed earlier, the public subsidy to the Blue Line amounts to between $22,000 and $30,000 per year per commuter shifted from solo driving to the Blue Line (Moore, 1993). Because the Blue Line carries former bus riders as well as former automobile commuters, not all of the Blue Line’s cost should be attributed to reducing automobile trips. The avoided cost of carrying former bus riders by bus should be deducted from the total cost of the Blue Line in order to calculate the net cost of diverting automobile commuters to rail. However, much of the former bus service was not discontinued, but has been rerouted to feed passengers to the Blue Line, and there are no data on whether or by how much the Blue Line has reduced the cost of bus service for former bus riders.
consumption by 50 gallons per commuter per year. As estimated earlier, approximately 90 million commuters are offered some form of employer-paid parking. If all these commuters respond to the cash option as has been estimated for commuters in Los Angeles, offering all employees in the United States the option to cash out their parking subsidies could lead to a 76 billion VMT a year reduction in automobile travel for commuting, and save 4.5 billion gallons of gasoline a year consumed for automobile commuting. This 76 billion VMT a year reduction in automobile travel is equivalent to 3.5 percent of the total 2.1 trillion VMT traveled by motor vehicles in the United States in 1991. The 4.5 billion gallons of gasoline saved is equivalent to 3.5 percent of the total 130 billion gallons of gasoline and diesel fuel consumed by motor vehicles in the United States in 1991 (MVMA, 1992).32

If cashing out parking subsidies reduces 76 billion VMT and 4.5 billion gallons of gasoline consumption a year, the benefits would extend well beyond the transportation and energy sectors. If, as argued earlier, the external cost of automobile pollution emissions is 4 cents per VMT, reducing automobile travel by 76 billion VMT a year could reduce pollution damage by $3 billion a year. And given the likelihood that the commuter’s car and its fuel are both imported, cashing out employer-paid parking could improve the nation’s trade balance.

Combustion of each gallon of gasoline produces 19.7 pounds of carbon dioxide, so cashing out employer-paid parking subsidies could, by conserving 4.5 billion gallons of gasoline a year, eliminate 40 million metric tons of CO₂ emissions a year. This would make a significant contribution toward the United States’ efforts to reduce the risk of global warming. By comparison, research done for the Environmental Protection Agency estimated that all the transportation investments funded by the Intermodal Surface Transportation Act of 1991 will eliminate 39 million metric tons of CO₂ emissions per year (in the year 2000).33

Obviously, generalizing results from one city to the nation must be viewed with some caution, but there are reasons to believe cashing out employer-paid parking subsidies could be at least as effective in reducing solo driving elsewhere as has been found in Los Angeles. Table 22 in Section X shows that free parking is no more common in Southern California than in the rest of the country. Further, the clichés that “Californians love their cars” and “Los Angeles doesn’t have a good mass transit system” suggest that it is more difficult to get motorists out of their cars in Los Angeles than it would be elsewhere, so cashing out employer-paid parking might produce even greater benefits in the rest of the nation. Therefore, the annual reduction of 76 billion VMT and saving of 4.5 billion gallons of gasoline may underestimate, rather than overestimate, the national benefit of the option to cash out employer-paid parking. In any case, the methods used to estimate the results of cashing out parking subsidies in Los Angeles have

32. It is important to note, however, that the full benefits of cashing out parking subsidies would not materialize unless minimum parking requirements in municipal zoning ordinances are adjusted to the reduced demand for parking. This issue is discussed in Sections IX and X.

33. The 39 million ton reduction in CO₂ emissions is the "optimistic" estimate. The "conservative" estimate is 16.6 million tons (Apogee Research, 1991, p. 1).
been clearly spelled out, so a reader can judge the methods and if necessary modify the estimates for the rest of the country. To achieve national benefits of even one-tenth of these estimates would be a major feat, however, so a marginally more precise estimate should not alter anyone's evaluation of whether offering employees the option to cash out employer-paid parking is a good idea.

Although voluntary conservation of 4.5 billion gallons of gasoline a year would be a tremendous achievement, it would also reduce federal and state gasoline tax revenues. At the federal gasoline tax rate of 14 cents a gallon, the federal revenue loss would be $620 million a year. At the median state gasoline tax rate of 16 cents a gallon, the state revenue loss would be another $720 million a year. Therefore, total gasoline tax revenues would decline by $1.35 billion a year. This estimated gasoline tax revenue loss is roughly equal in size to the estimated income tax revenue gain of $1.2 billion a year caused by cashing out parking subsidies (see Table 3). Such a large reduction in gasoline tax revenue would be a major concern if the gasoline tax were not a user fee. But because the gasoline tax pays for road use costs, the gasoline tax revenue loss must be considered along with the 76 billion VMT decrease in road use. Cashing out employer-paid parking reduces tax revenue only because it reduces road use, so the net fiscal effect on highway finance should not be adverse. Further, there are many reasons to believe that the gasoline tax seriously underprices road use, especially at peak hours when cashing out would reduce VMT the most.\(^\text{34}\) Indeed, if the gas tax did pay the full cost of road use, there would never be any problem in financing new roads or repairing old ones. Therefore, the net positive fiscal impact of reduced peak-hour VMT and reduced gasoline tax revenue should be a significant additional benefit of cashing out employer-paid parking.

This argument about the net fiscal impact of cashing out parking subsidies can be clarified by comparing it to the very different net fiscal impact of increasing automobile fuel efficiency standards. Increased fuel efficiency reduces gasoline tax revenue without reducing VMT. Indeed, increased fuel efficiency makes driving cheaper, and so would increase VMT. Thus, increased fuel efficiency standards not only reduce gasoline tax revenue but also increase the demand for highway expenditure. By contrast, cashing out employer-paid parking reduces gasoline tax revenue only because it reduces the demand for highway expenditure. For this reason, it would be a serious error to object to cashing out parking subsidies on the grounds that the resulting gasoline conservation would imperil highway finance. Rather, by reducing the demand for peak-hour highway capacity, cashing out employer-paid parking could significantly improve highway finance.

Another fiscal perspective is gained by comparing cashing out parking subsidies to the frequently recommended policy of charging congestion tolls for road use at peak hours. Charging congestion tolls and cashing out parking subsidies are complementary, and in some ways similar, policies. But there is an important difference. The failure to charge motorists for

\(^{34}\) MacKenzie, Dower, and Chen (1992) estimate that gasoline taxes and user fees cover only about 60 percent of public spending on roads.
the congestion they create is a sin of omission—a failure to intervene to raise the price of driving to match its full social cost. In contrast, employer-paid parking is a sin of commission—an intervention that reduces the price of parking below its fair market rate, let alone its full social cost. Ceasing an existing intervention that reduces price below social cost (i.e., cashing out employer-paid parking) is as much of a reform as is introducing a new intervention designed to raise price to equal social cost (i.e., charging congestion tolls). As a matter of priority, is it sensible to introduce new and technically complex congestion tolls to raise the price of automobile trips without first cashing out existing employer-paid parking subsidies that reduce the price of those same automobile trips?

4. Speculation on the General Equilibrium Consequences of Cashing Out Employer-Paid Parking

The predictions in Tables 9 and 10 are based on comparing the observed differences in commuting behavior between individual employees who themselves differ only in that some park free at work while others pay for parking. But if the law is changed so that all employees are offered the option to cash out their employer-paid parking subsidies, all employees will suddenly "pay" for their parking, at least in the sense of foregoing cash or a rideshare subsidy if they take a "free" parking space. The aggregate behavioral changes that will occur when everyone begins to pay for parking may well differ from the results predicted from behavioral changes observed when individuals begin to pay for parking. For example, if many employees decide to cash out their parking subsidies, what will happen to all the vacant parking spaces deserted by those who quit driving? How can so many more commuters cram onto already overcrowded mass transit? And won’t driving become much faster and pleasanter with fewer cars on the road? In other words, is there a fallacy of composition in predicting the consequences of cashing out all employer-paid parking by observing the behavior of individuals who pay for parking?

Although it is not possible to answer all these questions regarding the general equilibrium results of cashing out all parking subsidies, it is possible to speculate on some of the more likely consequences. Cashing out parking subsidies will decrease the demand for parking among those who now park free, but their cutback on parking space use will increase the supply of parking for everyone else. Therefore, cashing out employer-paid parking may not immediately reduce the number of parked cars, but it will reshuffle cars and commuters in some surprising ways.

First, the option to cash out employer-paid parking will induce some free parkers to carpool, especially because so many current free parkers will simultaneously be offered a cash incentive to seek out a carpool partner. It is easier to find a carpool partner when everyone else is also seeking a carpool partner, so carpooling should benefit from economies of scale as a result of cashing out parking subsidies. Thus, more commuters should shift to carpools than would be predicted from either case studies or mode split models that do not take this benefit of economies of scale for carpooling into account.
Second, with a parking supply that is fixed in the short run, a reduction in parking demand will reduce the market price of parking, and this price reduction will attract other cars to fill the spaces emptied by commuters who cash out their parking subsidies. Parking spaces vacated by peak hour commuters will become available to off-peak visitors, including shoppers, business clients, and tourists, who will find downtown relatively cheaper and easier to visit. Because most work trips occur during peak hours, while other trips are spread more evenly through the day, cashing out employer-paid parking should reduce peak-hour congestion en route to and from work.

Third, if the shift to carpools increases the average number of occupants per car by more than it reduces the number of cars driven to work, cashing out can increase rather than decrease the number of commuters who travel to work by car. That is, more people will commute to work in fewer but higher occupancy cars; this phenomenon has been observed in case studies after employers began to charge for parking, because some former solo drivers formed carpools not only with other former solo drivers but also with former bus riders. Peak-hour transit ridership could fall as a consequence. The marginal cost of peak-hour commuter transit service far exceeds its farebox revenue, however, so reducing peak-hour demand for mass transit and leveling out transit demand throughout the day should reduce transit deficits and improve transit service.

Fourth, cashing out might redistribute parking spaces in other ways. For example, when the Canadian government began charging its employees for parking in Ottawa, more women began to drive to work; this result occurred because women were more willing to pay for the parking spaces that were vacated by men who had taken a space when it was allocated free on the basis of seniority, but who were not willing to pay the market price for it. Two commuters began ice-skating to work.

All these effects would occur in the short run, when the supply of parking spaces is fixed. There are more substantial benefits resulting from cashing out parking subsidies, such as reductions in off-street parking requirements and improvements in urban form, that would occur only in the long run, when the supply of parking spaces can be reduced in response to the reduced demand for parking. These longer run benefits are discussed in Section IX.

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35. For example, see Surber, Shoup, and Wachs (1984). In their evaluation of commuters' responses to Regulation XV, Wachs and Giuliano (1992b) found that the average solo driver share fell by six percent and the carpool share rose by 33 percent, but the bus share did not change at all.
VIII. HOW CASHING OUT WORKS IN PRACTICE

A natural question regarding the proposal to cash out employer-paid parking subsidies is "If it's such a good idea, why don't employers already do it?" One answer is that most of the important benefits--reducing traffic congestion and air pollution--are external to the employer. A second answer is that, as shown in Table 2, the tax code clearly stacks the deck in favor of parking subsidies and against cash. And a third answer is that, as argued in Section V, employer-paid parking is a discriminatory wage subsidy to automobile commuters, who are more mobile and who therefore have more alternative employment opportunities than do workers who walk, bicycle, carpool, or ride transit; that is, employers can offer a parking subsidy to attract highly mobile automobile commuters without having to offer an equivalent subsidy to other workers who have fewer employment options.

Despite these strong reasons for employers to subsidize only parking, some employers do offer their employees not only a parking subsidy but also the option of cash in lieu of the parking subsidy. How has it worked out in practice for these employers?

1. A Survey of Employers Who Offer Cash in Lieu of a Parking Subsidy

Spurred by the SCAQMD’s Regulation XV, employers in Southern California have been seeking ways to discourage solo driving, and a few of them have chosen to offer cash in lieu of parking subsidies. To explore the practical problems they encountered in cashing out their parking subsidies, and to assess how effective they have been, we conducted a survey of employers who have parking cash-out programs. Because so few firms have cashed out parking subsidies, the sample is not random. Rather, it is a "snowball" sample, in which we first asked ridesharing professionals if they knew of any employers who had cashed out their parking subsidies; we then asked the employers we interviewed if they knew of any other employers who had also offered cash in lieu of their parking subsidies. We interviewed major employers who were identified as having parking cash-out programs. All employers were guaranteed anonymity to encourage frankness in their responses, especially in regard to the tax consequences of their actions.

None of the employers had a program that exactly fits the proposal of offering employees the option of cash in lieu of their existing parking subsidies. Rather, most of these employers chose to give their employees cash travel allowances and to cancel the free parking entirely. That is, rather than give employees an option, they simply gave every employee the same cash allowance; employees could then make their own choice--either to buy a parking space and continue driving alone, or to keep some of the money by finding an alternate means of travel to work. The allowances for the firms interviewed ranged from $70 to $150 a month, which represented 40 percent to 95 percent of the firm’s prior cost of a parking space. While the allowances provided did not cover the full cost of parking within their own office buildings (which were all located in downtown Los Angeles, Century City, or Westwood), cheaper parking in peripheral lots was available. Thus, even some of those recipients who continued to
drive alone were able to benefit from the travel allowance program by shifting their parking location without altering their travel mode.

The taxability of the travel allowance was not cited as a serious obstacle, except by one accounting firm. Several firms, with very questionable legitimacy, determined that the travel allowance was not taxable. One firm treated the travel allowance as a reimbursement for employee business travel expenses, and thereby paid the allowance outside the regular payroll. Another (a law firm!) labeled the allowance as a transportation "allotment" and thereby decided it was not taxable. Each employee received two checks each month: a normal paycheck reported to the IRS, with all the normal deductions, and a separate transportation allotment check, not reported to the IRS and with no deductions. These unexpected responses—evading or denying the taxability of cash travel allowances—are somewhat puzzling, and suggest that any legislation requiring employers to offer the option of cash in lieu of a parking subsidy should be explicit about the tax consequences of cash travel allowances.

As required by Regulation XV, each employer of over 100 employees at one site has a designated Transportation Coordinator on the staff. These Transportation Coordinators conduct extensive educational and promotional activities to encourage the employees to switch from solo driving to some alternate mode. They also provide an array of services that are intended to support and reward ridesharing. The educational programs include producing company newsletters and posters extolling the virtues and benefits of reduced numbers of solo drivers. Promotional activities include raffles and assorted prizes for participating ridesharers (a common incentive for carpooling is the chance of a free trip to Hawaii).

The support services provided to accommodate alternative transit users include the following, which are provided by all employers:

- guaranteed ride home in case of emergency or overtime, via taxi vouchers or rental cars,
- free parking several days a month when employees must drive,
- car-pool match-lists and bus schedules from Commuter Transportation Services.

Other services and benefits offered by some but not all employers include: a downtown "shopping shuttle" at lunch hour, preferential parking for car-poolers, flexible hours, and showers and lockers for cyclists and walkers. Several of the larger employers arrange to provide van-pools, and one firm arranged a bus-pool, but participants paid a monthly fee for these services.

Despite this long list of rideshare incentives, which are now typical for all employers subject to Regulation XV, one Transportation Coordinator said that "Offering a transportation allowance makes the job of persuading employees to alter their commute habits much easier. The cash incentive speaks louder than any other program we've tried." The most positive response is reproduced as Appendix 3.
The direct tasks associated with operating a basic travel allowance program are: the initial identification of employees receiving free parking, bookkeeping entries to adjust the participants' gross payroll, monthly processing of changes in employee travel mode, and monitoring compliance of employees. The Transportation Coordinators were asked to estimate the amount of time they spend on administering the transportation allowance program. It was difficult for them to estimate the amount of time spent on the travel allowance program alone, since it was always done within the context of the larger job of promoting ridesharing, allocating parking spaces, and conducting surveys and reports in order to comply with SCAQMD's Regulation XV. In all cases they reported the time spent on the travel allowance program to be a very small part of their total duties. By contrast, a case study of firms subject to Regulation XV found that approximately half of all the employers' expenditure on complying with Regulation XV were consumed by administrative expenses, while the remaining half went to pay for the ridesharing incentives required by Regulation XV (Giuliano, Hwang, and Wachs, forthcoming).

Although the figures are necessarily quite approximate, Table 12 shows that the Transportation Coordinators' estimates of their time spent on administering the transportation allowance programs ranged from one to six minutes per employee per month, and averaged three minutes per employee per month. This wide range of "efficiency" is partly due to the great differences in level of service provided. The number of employees did not have a strong influence upon this measure. In all cases the administrative effort appears minor, and all of the Transportation Coordinators reported that the travel allowance was far simpler to manage than most other aspects of dealing with either ridesharing or Regulation XV. They were also surprised to learn that it was rare for firms to offer travel allowances in lieu of parking subsidies.

In the cases where employers unilaterally eliminated parking subsidies and replaced them with travel allowances that were less than the former parking subsidy, the Transportation Coordinators reported levels of resistance from employees which ranged from low intensity griping over the loss of a favored perk, to litigation over compliance with union contracts. The Transportation Coordinators indicated that many employees had strong attachments to driving to work, and that free parking also had a prestige value which they did not happily relinquish. Also, most of the travel allowance programs contained job-class biases that prompted resistance. For example, some executives were allowed continued free parking while support staff were not. Also, some executives objected to their secretaries' keeping to the strict schedule required for participation in vanpools and carpools (this last complaint relates to ridesharing in general, and not to the travel allowance itself).

Some firms were in the position of having long-term lease obligations for parking spaces. One firm had contracted a 30-year lease for 333 spaces. In this situation, the firm did not have an incentive to reduce parking demand below its contracted supply. While the firm did have the option of subleasing these spaces, in this particular instance there was not enough demand in the building for the unused spaces because the building was mostly vacant.
<table>
<thead>
<tr>
<th>Case</th>
<th>Number of Employees</th>
<th>Administrative Hours per Month</th>
<th>Minutes/Employee per Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>120</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>B</td>
<td>366</td>
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<td>H</td>
<td>8000</td>
<td>160</td>
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In summary, if employers unilaterally replace parking subsidies with a cash allowance that is less than the former parking subsidy, many employees are dissatisfied. This result suggests that there will be much less employee opposition to the alternative of cash as an option rather than as a compulsory replacement for employer-paid parking. Second, if there is no market for the parking spaces that employees give up in exchange for the cash allowance, offering cash in lieu of parking subsidies is a financial burden for the employer. This result suggests that the cash option should be set no higher than the fair market value of the existing parking subsidy. Finally, administration of cash travel allowances is simple and cheap, particularly in comparison with other ridesharing incentives. This result suggests that requiring employers to offer the cash value of a parking subsidy as an option in lieu of the parking subsidy itself does not impose a significant administrative burden on employers.

2. A Case Study of Cashing Out Parking Subsidies

Although none of the surveyed employers offered a parking cash-out program that is exactly the same as would be required by the legislation recommended in Section V, one employer’s program was very close, and was therefore selected as a case study to discover what might happen if other employers were required to offer their employees the option of cash in lieu of any offered parking subsidy. The firm is located in Century City, an office, shopping and residential subcenter ("edge city") on the Westside of Los Angeles.

In 1989, the firm offered free on-site parking to all of its 525 employees. At that time, the cost of on-site parking was $90 per space per month, and 460 employees (88 percent) took the offer of a free space. Thus, the firm’s cost of parking subsidies was $41,400 per month, or $78.86 per employee per month. Note that it cost the firm only $78.86 per employee per month to offer all employees a parking subsidy of $90 per month, because 12 percent of the employees did not drive to work and therefore did not take the parking subsidy.

In 1992 the cost of on-site parking had risen to $110 a month, so if the firm had continued to offer free on-site parking to all employees, and if 88 per cent had continued to accept the offer, the firm’s parking subsidy cost would have risen to $96.38 per employee per month.

As a result of Regulation XV, however, and as the result of the efforts of a particularly creative and persuasive Transportation Coordinator, the firm changed its travel subsidy policy. In 1992, staff solo drivers are offered a parking subsidy of $82.50 a month, which is less than the $110 a month for on-site parking but which is equal to the cost of parking off-site in a surface lot a short walk from the building. Transit riders, carpool passengers, bicyclists, or other ridesharers are offered $82.50 a month as a taxable cash allowance in lieu of the parking subsidy. Carpool drivers are offered a free on-site parking space that cost the firm $110 a month. Finally, all the firm’s officers are offered a free on-site parking space that costs the firm
$110 a month, but officers who choose to rideshare are offered the same $82.50 a month in cash as are the lower ranking staff.36

Table 13 presents the results of this cash-out program. The average travel subsidy, excluding payroll taxes on the cash allowances, is $94.07 per employee per month. When average payroll taxes of $1.72 per employee per month on the cash are added, the employer’s total cost is $95.79 per employee per month, which is 59 cents per employee per month less than it would have cost to continue to offer free parking to all employees who drive to work (and nothing to ridesharers). Thus, a major consequence of switching to the cash option was to reallocate the travel subsidy more evenly across all modes of travel, without any increase in the employer’s total travel subsidy.

Table 13 shows the overall costs of the firm’s parking cash-out program. We can also look more closely at the personal tax consequences when an individual employee chooses cash in lieu of a parking subsidy. Table 14 shows the tax payments by both the employer and the employee when an employee chooses the cash allowance. The Transportation Coordinator estimated that most of those who choose cash are in the 15 percent federal income tax bracket and the 9.3 percent state income tax bracket, so the employee’s total marginal income tax plus FICA tax rate would be 31.95 percent. Therefore, the employer would pay $9.53 in payroll taxes and the employee would pay another $26.36 in Social Security, Medicare, and federal and state income taxes, for a total tax payment of $35.89 in taxes on an $82.50 cash travel allowance (a combined 44 percent tax rate). Although the tax system heavily penalizes choosing cash in lieu of a tax-exempt parking subsidy, 18 percent of the employees still chose cash. This choice clearly proves that many employees value a parking subsidy at far less than the employer’s cost of providing it. Further, some officers (including three vice-presidents) who are entitled to a $110 a month tax-exempt parking subsidy have chosen to rideshare and take the $82.50 a month taxable cash allowance instead. This last finding clearly demonstrates the great inefficiency of offering employees the far more common choice between a parking subsidy or nothing, because, if offered the option, some employees prefer to take a smaller cash subsidy, pay taxes on it, and rideshare to work.

This last finding shows that employer-paid parking without the cash option is not only publicly harmful (because it stimulates solo driving) but also privately inefficient (because it wastes money). Therefore, it seems particularly surprising that this case study firm was one of only a tiny handful who offer their employees the option to choose cash in lieu of a parking subsidy. The only extra requirement that would be imposed on this firm by the parking cash-out proposal in Section V is that the officers who are now offered either a $110 a month parking subsidy or $82.50 in cash would have to be offered $110 in cash in lieu of their parking subsidy.

36. Officers are not offered the cash option of $110 in lieu of what their parking spaces cost. Rather, they are offered the same $82.50 cash option that staff are offered, on the grounds that the higher cash option for officers would appear "too unequal," while the identical inequality between staff and officer parking subsidies is considered acceptable.
<table>
<thead>
<tr>
<th>Travel Mode</th>
<th>Number of Employees</th>
<th>Monthly Subsidy per Employee</th>
<th>Total Subsidy per Month</th>
<th>Tax Status of Subsidy</th>
<th>Payroll Tax Rate</th>
<th>Payroll Tax per Month</th>
<th>Total Subsidy plus Tax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rideshare</td>
<td>66</td>
<td>$82.50</td>
<td>$5,445</td>
<td>Taxable</td>
<td>11.55%</td>
<td>$629</td>
<td>$6,074</td>
</tr>
<tr>
<td>Staff Solo Driver</td>
<td>146</td>
<td>$82.50</td>
<td>$12,045</td>
<td>Nontaxable</td>
<td>0</td>
<td>$0</td>
<td>$12,045</td>
</tr>
<tr>
<td>Carpool Driver</td>
<td>18</td>
<td>$110.00</td>
<td>$1,980</td>
<td>Nontaxable</td>
<td>0</td>
<td>$0</td>
<td>$1,980</td>
</tr>
<tr>
<td>Officer Solo Driver</td>
<td>136</td>
<td>$110.00</td>
<td>$14,960</td>
<td>Nontaxable</td>
<td>0</td>
<td>$0</td>
<td>$14,960</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>366</strong></td>
<td></td>
<td><strong>$34,430</strong></td>
<td></td>
<td></td>
<td><strong>$629</strong></td>
<td><strong>$35,059</strong></td>
</tr>
</tbody>
</table>

**AVERAGE PER EMPLOYEE**

|                  |                    |                              | $94.07                  | $1.72                 | $95.79           |
### TABLE 14

**TAX CONSEQUENCES OF CHOOSING $82.50 IN LIEU OF A PARKING SUBSIDY**

<table>
<thead>
<tr>
<th>Employer's Tax Payments</th>
<th>Employee's Tax Payments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tax</strong></td>
<td><strong>Tax Rate</strong></td>
</tr>
<tr>
<td>FICA</td>
<td>7.65%</td>
</tr>
<tr>
<td>FUTA</td>
<td>0.80%</td>
</tr>
<tr>
<td>UI</td>
<td>3.00%</td>
</tr>
<tr>
<td>ETT</td>
<td>0.10%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11.55%</strong></td>
</tr>
</tbody>
</table>

**TOTAL TAXES** = $9.53 + $26.36 = $35.89

Notes:
- FICA is Federal Insurance Contribution Act (Social Security and Medicare)
- FUTA is Federal Unemployment Tax
- UI is Unemployment Insurance
- ETT is Employment Training Tax
(the new California legislation described in the next section will require that higher cash offer beginning in 1993).

Table 15 summarizes the results of this case study. The estimates of what would have happened without the cash option are taken from the employer's costs and the employees' travel choices when the employer offered free parking to all employees in 1989, with parking prices updated to 1992 levels. The figures for what happened with the cash option are taken from the employer's costs and the employees' travel choices in 1992. If the differences can be attributed to the cash option, the cash option reduced the number of cars driven to work from 88 to 82 per hundred employees. This nine percent reduction in the number of vehicles driven to work is smaller than the typical difference found in the case studies summarized in Table 1, but it is close to the difference found in the 1980 study of the effects of employer-paid parking in Century City itself. As Table 1 shows, the earlier Century City study found 94 cars driven to work per 100 employees when the employer pays for parking, and 80 cars when the employee pays for parking (compared to 88 and 82 in the present case).

There is, of course, one very important reason why the option to cash out employer-paid parking should cause a smaller reduction in the number of cars driven to work than found in the earlier Century City study, which compared the behavior of those who receive employer-paid parking and those who pay for their own parking. When an employer does not subsidize parking at all, employees must pay the full market price for parking if they drive to work. But if the employer offers to pay for employee parking or pay the equivalent cash alternative, the employee receives the cash alternative after taxes. In the present case, the employees' estimated marginal tax rate on the cash alternative is 32 percent, so the employee who takes the parking foregoes only $52.10 in after-tax income. Therefore, the firm's staff employees "pay" only $52.10 in foregone income to secure a parking space that costs $82.50, and the firm's officers pay only $52.10 in foregone income to secure a parking space that costs $110. There is still a substantial tax incentive to take the parking rather than the cash. Taxes reduce the incentive to take the cash option, so the smaller nine percent reduction in cars driven to work associated with the cash option compared to the larger 15 percent reduction found in the 1980 Century City study may in part be due to the attenuating effects of taxes on incentives in the present case.

Table 15 also shows that the employers total travel subsidy cost did not change as a result of the cash option, which demonstrates that employers can cash out their parking subsidies without increasing their costs. Most employees who rideshare are offered the same subsidy as those who drive to work (only officers are offered a cash option smaller than their parking subsidy), which seems clearly fairer than the typical practice of offering automobile commuters a large parking subsidy and others nothing. Finally, because 18 percent of the employees have chosen taxable cash in preference to a tax-exempt parking subsidy, tax revenues increased by $6.47 per employee per month, or $77.64 per employee year, without any increase in tax rates. As argued earlier, this increased tax revenue arises from the increased efficiency that results

37. See Shoup and Pickrell for the details of the original 1980 study.
TABLE 15

HOW OFFERING THE OPTION OF CASH IN LIEU OF PARKING SUBSIDIES AFFECTS EMPLOYER'S COSTS, EMPLOYEES' TRAVEL BEHAVIOR, AND TAX REVENUE

<table>
<thead>
<tr>
<th></th>
<th>Without Cash Option</th>
<th>With Cash Option</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employer’s Cost per Employee per Month</td>
<td>$96.38</td>
<td>$95.79</td>
<td>-$0.59</td>
</tr>
<tr>
<td>Cars Driven to Work per 100 Employees</td>
<td>88</td>
<td>82</td>
<td>-6</td>
</tr>
<tr>
<td>Average Vehicle Ridership</td>
<td>1.14</td>
<td>1.3</td>
<td>+0.16</td>
</tr>
<tr>
<td>Tax Revenue per Employee per Month</td>
<td>0</td>
<td>$6.47</td>
<td>+$6.47</td>
</tr>
</tbody>
</table>
when an employee is allowed the option to cash out a tax-exempt parking subsidy that is worth less to the employee than its after-tax cash value. Whenever an employee voluntarily chooses after-tax cash in lieu of a tax-exempt parking space the government captures part of the increased efficiency in the form of increased tax revenue.

3. **Cashing Out Parking Subsidies Compared to Conventional Ridesharing Incentives**

One of the chief advantages of cashing out employer-paid parking subsidies is its conceptual simplicity and transparency compared to most other ridesharing incentives. To demonstrate this, it may help to examine a well-studied ridesharing program that is superficially similar to cashing out, but which contains important flaws common to many conventional ridesharing programs. The firm that developed the program is nationally recognized as a leader in the promotion of ridesharing, and actively promotes carpooling, vanpooling, and transit use.

Mehranian, Wachs, Shoup, and Platkin (1987) examined this acclaimed ridesharing program, and compared its results to that of a similar company that provided no financial assistance to ridesharers. Both companies are located in downtown Los Angeles, and the market price of parking was $100 a month in the building where the two companies were located. The rideshare program operated as follows: solo drivers pay $50 per month to park, two-person carpools pay $25 per month to park, and three-(or more)-person carpools park free. Employees who ride in ten-person vanpools receive free parking plus a $15 per person per month vanpool subsidy. Transit riders receive a $15 per month transit subsidy. Although this program seems as though it certainly should promote ridesharing, a closer look shows that the result is just the opposite.

Table 16 reveals the perverse incentives of this well-meant but seriously flawed ridesharing program. The market price of parking is $103 a month, so if solo drivers pay $50 a month to park, the parking subsidy per solo driven car, and therefore per solo driver is $50 a month. Two-person carpools pay only $25 a month to park, so the parking subsidy per two-person carpool is $75 a month, but since two people split this $75 subsidy, the subsidy per carpooler is only $37.50 a month. Three-person carpools pay nothing to park, so the subsidy per three-person carpool is $100 a month, but since three people split this $100 subsidy, the subsidy per carpooler is only $33.33 a month. A ten-person vanpool also receives a parking subsidy of $103 a month, and each vanpooler receives an additional subsidy of $15 a month, so the total subsidy per vanpooler is only $25 a month. Finally, each transit rider receives only $15 a month. Therefore, as Table 16 shows, the subsidy per person uniformly declines as vehicle occupancy increases. Although the intent is to subsidize ridesharing, the result is exactly the opposite. The explanation for this perverse result is that the employer is trying to manipulate parking subsidies because parking subsidies are tax exempt, and it is hard to use parking subsidies to encourage ridesharing.

When the mode split of this employer was compared to the mode split of the adjacent employer that did not promote any ridesharing, they both had the same share of solo drivers,
TABLE 16

DISTRIBUTION OF SUBSIDIES IN A "MODEL" RIDESHARE PROGRAM

<table>
<thead>
<tr>
<th>Travel Mode</th>
<th>Market Parking Price</th>
<th>Parking Charge</th>
<th>Subsidy per Vehicle</th>
<th>Subsidy per Employee</th>
<th>Share of Employees</th>
<th>Share of Subsidy</th>
<th>Subsidy Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive Alone</td>
<td>$100</td>
<td>$50</td>
<td>$50</td>
<td>$50.00</td>
<td>48%</td>
<td>65%</td>
<td>135%</td>
</tr>
<tr>
<td>2-Person Carpool</td>
<td>$100</td>
<td>$25</td>
<td>$75</td>
<td>$37.50</td>
<td>6%</td>
<td>6%</td>
<td>100%</td>
</tr>
<tr>
<td>3-Person Carpool</td>
<td>$100</td>
<td>$0</td>
<td>$100</td>
<td>$33.33</td>
<td>11%</td>
<td>10%</td>
<td>91%</td>
</tr>
<tr>
<td>Vanpool</td>
<td>$100</td>
<td>$0</td>
<td>$100</td>
<td>$25.00</td>
<td>16%</td>
<td>11%</td>
<td>69%</td>
</tr>
<tr>
<td>Mass Transit</td>
<td></td>
<td>$15.00</td>
<td></td>
<td></td>
<td>18%</td>
<td>7%</td>
<td>39%</td>
</tr>
</tbody>
</table>

Source: Mehranian, Wachs, Shoup, and Platkin (1987)
but the employer with the ridesharing program had far fewer transit riders and many more carpoolers. Although the activist employer spent $44,000 per month on its ridesharing program, its substantial expenditure simply increased carpooling and vanpooling at the expense of transit riding, and therefore increased rather than decreased the number of vehicles driven to work. On close analysis this result is not surprising, because, as Table 16 shows, 48 percent of the employees drive alone to work, and receive 65 percent of the total transportation subsidy. Eighteen percent of the employees ride the bus to work, but receive only seven percent of the total transportation subsidy. Each solo driver receives 35 percent more than the average subsidy per employee, and each transit rider receives 61 percent less than the average. That is, in this ridesharing program, one solo driver receives a larger subsidy than three transit riders.

After this analysis was published, the authors were invited to present the results to a group of executives at the company that operated the ridesharing program. When we tried to point out that the program gave a smaller subsidy to the employees who commuted in higher occupancy vehicles, we were told that we must have misunderstood the program, because the higher subsidy obviously went to the higher occupancy vehicles. We tried to argue that, yes, the higher occupancy vehicles received higher subsidies, but the people in them did not. Eventually we agreed to disagree. During the discussion it emerged that it was the firm's tax lawyer who had devised the ridesharing program, and he said that he devised it to be "tax efficient" for the firm; because parking subsidies were tax exempt, the firm did not want to abandon them, and the tax-exempt subsidies were manipulated as skillfully as possible within the constraint that parking subsidies were tax-exempt but cash was taxable. An interesting postscript was that the tax lawyer who devised the ridesharing program rode the train to work from Orange County, and thus received the smallest possible subsidy, the $15 a month transit allowance that was then the maximum tax-exempt transit subsidy.

Several further disadvantages also plague this acclaimed ridesharing program, and most programs like it. First, there is no subsidy at all for bicycling or walking to work, which are the most environmentally benign of all transportation modes. This lack of any support for the socially most desirable type of commuting continues and completes the perverse relationship of smaller subsidies for higher occupancy vehicles shown in Table 16.

A second disadvantage of this type of rideshare program is that the employer-based nature of the carpool parking subsidy restricts commuters to searching for carpool partners within their own firm. There were 1,200 employees of this particular firm, but even that large a source of potential carpool partners is tiny when compared to the 175,000 office workers who commute to downtown Los Angeles. If employees were offered cash in lieu of a parking subsidy, they could carpool with employees from any other company, and use the cash to split the cost of a market-priced parking space. For example, the adjacent comparison company had 2,000 employees who might be potential carpool partners, but carpooling with an employee of another company does not earn a carpool parking subsidy in a company that rewards carpooling only with fellow employees of the same company.
Cashing out employer-paid parking

Carpooling benefits from economies of large scale: the more people who are searching for a carpool partner, the easier it is to find one. Cashing out all employer-paid parking subsidies would greatly increase the possibility of finding a carpool partner, and would lead to a much greater increase in carpooling than can occur when each employer tries to stimulate carpooling only among its own employees. Because employer-based carpool parking subsidies restrict the pool of potential carpoolers to fellow employees of the same employer, they inevitably lead to less carpooling than could be achieved by simply offering employees the option to cash out their parking subsidies.

A third disadvantage of most employer-based carpool parking subsidies is that they encourage dishonesty. Solo drivers can form "phantom carpools" by persuading a cyclist, pedestrian, or transit rider to sign up as a carpool member, and the solo driver then gets a free or discounted parking space. Everyone familiar with rideshare programs knows about this problem, especially in Washington, D.C. where numerous federal agencies have devised schemes to allocate free parking spaces to carpools. One day several years ago when I made a presentation on parking subsidies at the U.S. Department of Transportation, I was given a ride home by a staff member of what was then the Urban Mass Transportation Administration, and when we walked to his underground parking space I asked him how much he paid to park. He blushed and admitted to getting his Department of Transportation parking space free by forming a phantom carpool with two transit riders (who were then offered no transportation subsidy). "Everyone does it," he said.

The reason for mentioning these problems with conventional ridesharing schemes is not to say that ridesharing programs are a bad idea, but to point out that the proposed parking cash-out requirement would help to solve most of these problems, and would make ridesharing programs more effective. For example, in the rideshare program described above, if employees could cash out their parking subsidies, those who walked or cycled to work would receive the same $50 a month subsidy that solo drivers do. The subsidy per person would not decline with higher occupancy vehicles; for example, a two-person carpool would be entitled to a $100 a month subsidy, or free parking. Those who want to carpool would have the option to take the subsidy in cash and use it to carpool with any employee of any other company. And no one would have any incentive to cheat, because anyone who walked to work, for instance, would have to give up a $50 a month cash option by signing up with a phantom carpool. Finally, the required cash option is minimally intrusive on the employer's and employees' decisions, because the employer could continue to subsidize parking, as long as it offers employees the option to choose cash instead.

The ridesharing policy summarized in Table 16 is clearly superior when compared to the more usual policy of a free parking space or nothing, and it clearly deserves some of the praise it has won. Although solo drivers receive a disproportionately large share of the total employer's subsidy, their share is small when compared to most other employer-paid transportation subsidy programs. For example, the Greater Hartford Ridesharing Corporation conducted a survey of employee transportation programs provided by 11 major downtown employers who together employed 50 percent of the downtown population in Hartford.
Connecticut. The purpose of the survey was to estimate the employers' expenditures on subsidies to each mode of employee transportation. Employers reported their expenditures for parking facilities (including the ownership cost, leasing cost, and maintenance cost), for carpool incentives, for vanpool services, and for bus programs. They also reported payments made by employees for each of these categories. The difference between the employers' cost and the employees' payment was then calculated as the employers' subsidy for each mode.

The results of the survey showed that although only 36 percent of employees drove to work alone, they received 86 percent of the total subsidy, with an annual subsidy per solo driver of $716. By contrast, 26 percent of employees rode the bus to work, but they received only 4 percent of the total subsidy, with an annual subsidy of only $50 per bus rider. Solo drivers received the lion's share of employer transportation subsidies because six of the employers offered free employee parking, four employers offered subsidized employee parking, and only one employer did not subsidize employee parking. The average market price for parking in downtown Hartford was $58 a month. The employers' total annual expenses for employee parking were $10.7 million, but employees paid only 7 percent of that amount; employers subsidized the other 93 percent of the cost of parking (Greater Hartford Ridesharing Corporation, 1983).

The distribution of travel subsidies in the model ridesharing program summarized in Table 16 is more sensible than the distribution found in Hartford, but when ridesharing programs are straightjacketed by the desire to use tax-exempt parking subsidies, the methods are bound to be complicated, and the results disappointing. As a practical matter, cashing out employer-paid parking is much simpler than most existing ridesharing programs. Many employers' schemes for subsidizing employee parking are often far more difficult to administer than simply charging market prices for the same parking. For example, at UCLA the Campus Parking Service administers 240 different types of parking permit, all very carefully tailored and graded according to the status of each administrator, faculty member, staff member, or student. Major donors to the University are also awarded campus parking permits, which are graded according to the size of the donation. Despite the UCLA faculty's carefully tended reputation for championing egalitarian social policies, UCLA's own parking permit system makes the Titanic look like a one-class ship. Assigning parking spaces according to employment status has led to an almost feudal pattern, with everyone put in the proper place. Therefore, quite aside from any trip reduction benefits, cashing out employer-paid parking would, by reducing the sphere of administered hierarchy, in many cases simplify life, not complicate it.

Non-market means of allocating parking spaces are not only difficult for employers to administer, they are also often confusing to the employees. As just one example, consider the parking space lottery announced in The Gazette of the Library of Congress, reproduced below, which I happened to notice on a recent visit to the Library. Quite a few valuable hours of Library staff time must have been devoted to devising and administering this lottery, and even more valuable staff time must have been spent trying to understand it, deciding whether to enter, and then attending the lottery (along with a representative from each labor organization). The announcement even explicitly acknowledges that the parking lottery conflicts with the Library's
After-4 p.m. Parking Lottery

Library staff may compete for 100 available parking spaces through a lottery process no later than noon on June 15 by completing and returning the coupon printed here. Permits allowing previous lottery participants to park after 4 p.m. in the Madison Garage were set to expire on June 5; however, the expiration date has been extended to June 19.

Integrated Support Services (ISS) will conduct the semiannual lottery drawing for LC employees to park in the Madison Garage after 4 p.m., Monday through Friday, beginning June 22, through Dec. 11. The drawing will be held in the ISS office (LM 327) at 2 p.m., June 15. All staff members are invited. Staff members selected to participate for after 4 p.m. parking will retain parking privileges for a six-month period beginning June 22 through Dec. 11.

Each staff member may submit his/her name only once for each drawing. A representative from each labor organization will be invited to participate in the drawing.

All permanent, indefinite, and indefinite not-to-exceed employees with LC identification cards are eligible to participate in the lottery. However, an employee who is subsequently offered a parking space or already in a carpool during the regular six-month parking permit period must choose whether to remain with the carpool, and, in so doing, forfeit privileges received through the lottery.

The information (Library ID #, etc.) submitted will be coded to permit access into the Madison Garage.

Staff members selected will then be authorized, with supervisory approval, to leave their workstations and exit Library buildings in order to move their vehicles into the Madison Garage. Staff members, regardless of their work schedules, are in a nonpay, nonduty status during the time they are away from Library buildings or grounds in order to move their vehicles.

Staff may choose to flex and work the additional time required at the end of their work day, use annual leave, or use earned compensatory time to move their vehicles. Staff members must sign out on the flextime register indicating which of the above options applies, and sign in upon their return.

LCR 2014-7 is amended to allow participating staff to leave the Library buildings for the purpose of moving their vehicles into the Madison Garage. In addition, the Library's procedures governing mid-day flex (as per Library policy and the collective bargaining agreements) are amended to allow an afternoon flex to allow participating staff to move their vehicles into the Madison Garage.

Staff will be notified of results during the week of June 15 for additional vehicle information that needs to be forwarded to ISS.

Lottery for after-4 p.m. Parking
In the Madison Garage
Integrated Support Services, LM 327

(Please print or type)

Name: __________________________

Division: _________________________

Extension: _________________________

Presently in carpool:

☐ Yes  ☐ No

Note: All coupons must be returned to ISS before noon, June 15.

Complete, clip and return to ISS (LM 327) no later than noon, June 15.
own carpooling program. The obviously well-intentioned attempt to be "fair" by using a lottery to allocate scarce parking spaces on Capitol Hill seems, to me at least, quite absurd when compared to a more straightforward policy of cashing out employer-paid parking subsidies and using market prices to allocate parking spaces. If employees were able to cash out the parking subsidies they won in lotteries such as the one organized by the Library of Congress, the absurdity and futility of holding such lotteries in the first place should become obvious to everyone.
IX. A FIRST STEP: CALIFORNIA'S CASH-OUT LEGISLATION

The Federal Internal Revenue Code creates a strong incentive for employers to pay for their employees' parking, and thus a strong incentive for commuters to drive to work alone. States and localities then face the enormous problem of devising policies to deal with the resulting traffic congestion and air pollution. The State of California has recently enacted legislation that directly addresses the problems caused by employer-paid parking, and that serves as a model of how the Federal government could address the same problems.38

1. The California Cash-Out Requirement

Briefly, the new California cash-out legislation requires that, in any air basin designated by the State Air Resources Board as a "nonattainment" area, employers of 50 or more persons who provide a parking subsidy to employees must offer a "parking cash-out program."39 As defined in the law, a parking cash-out program means

an employer-funded program under which an employer offers to provide a cash allowance to an employee equivalent to the parking subsidy that the employer would otherwise pay to provide the employee with a parking space. "Parking subsidy" means the difference between the out-of-pocket amount paid by an employer on a regular basis in order to secure the availability of an employee parking space not owned by the employer and the price, if any, charged to an employee for the use of that space. (Assembly Bill No. 2109, pp. 2-3. See Appendix 1.)

The employer must offer an employee the option to take a cash allowance in lieu of a parking subsidy only if the employer makes an explicit cash payment to a third party to subsidize the employee's parking. Therefore, the employer clearly saves the cash paid for the parking subsidy if the employee takes the cash allowance. The employer's avoided parking subsidy directly funds, dollar for dollar, the employee's cash allowance, so there is no net cost increase for the employer when an employee foregoes the parking and takes the cash. The employer must offer the cash allowance only to each employee who is offered a parking subsidy, not to all other employees. And each employee's cash allowance is equal to the parking subsidy offered to that employee, so if some employees are offered smaller parking subsidies than other employees, their required cash allowance would also be smaller. Thus, the law is written as tightly as possible to avoid increasing the employer's cost of subsidizing employees' commuting.

38. Assembly Bill 2109 (effective January 1, 1993) was sponsored by Assemblyman Richard Katz. It is reproduced in the Appendix 1. The research reported in this study was used in drafting Assembly Bill 2109.

39. A "nonattainment" area is one that does not meet the state's ambient air quality standard. Because all major metropolitan areas in California are nonattainment areas, the cash-out requirement applies to almost all employers of 50 or more persons in the state.
As discussed earlier in Section V, the cash option could increase costs for employers who (1) offer parking subsidies to solo drivers, (2) do not offer an equivalent subsidy to ridesharers, and (3) nevertheless have a significant number of employees who turn down the offer of a parking subsidy and rideshare to work instead. In this case, the added cost of offering cash to current ridesharers who are offered but have turned down a parking subsidy must be considered the inevitable and wholly justified cost of moving to a commute subsidy policy that removes inequities among employees. Arguing against the required cash option on the grounds that the employer must pay current ridesharers as much as solo drivers is the same as arguing that employers should continue to offer smaller subsidies to ridesharers than to otherwise identical solo drivers. What employer would be shameless enough to make this argument? Anyway, the case study in the previous section proved that a firm can offer all its employees the option to cash out their parking subsidies at no increase in the firm's total cost of subsidizing employee travel. Also see Appendix 3 for further evidence of another firm's positive experience with cashing out parking subsidies.

It is understandable that legislators would be cautious about imposing any unnecessary cost on employers in the first test of a cash-out requirement. As enacted, the law applies only in the clearest "win-win" situations where employees will benefit, where there is no obvious additional cost to the employer, and where there are clear environmental benefits of reduced traffic congestion and air pollution. It seems entirely reasonable to require that an employer who offers to pay for an employee's parking if the employee drives to work must also offer to pay the same amount if the employee rideshares to work.

As proposed in the initial draft legislation, a parking subsidy was defined as the difference between (1) the market price of parking and (2) the price charged to the employee for parking, including cases where the parking was owned by the employer or was provided "free" to the employer as part of the lease for office space. As a result of legislative negotiations, the cash-out requirement was subsequently restricted to situations where the employer makes a separate, out-of-pocket cash payment to subsidize the employee's parking. Further, in cases where an employer makes cash payments for parking under an existing (as of January 1, 1993) lease for the parking, the cash-out requirement does not apply until the lease expires or unless the lease permits the employer to reduce, without penalty, the number of parking spaces leased. Thus employers can continue to provide below-market parking to employees without having to offer the cash equivalent if they (1) own their own parking, or (2) receive it bundled in an office space lease without separate payment, or (3) have pre-existing long term parking leases committing them to pay for the parking spaces. In creating these exceptions, the Legislature made clear that it intended the cash-out requirement to apply only to employers who can reduce their payments for employee parking and use the cash saved thereby to fund the alternative cash allowance.

There was a political advantage in limiting the cash-out requirement only to parking spaces that the employer rents on a monthly basis, but this partial coverage will create anomalies for some employers. For example, consider the case of the City of Los Angeles, which has 38,000 employees at over 500 work sites. The City is subject to the cash-out legislation, and
CASHING OUT EMPLOYER-PAID PARKING

it wants to set an example to other employers for responsible behavior. But complying with the law will require major changes in the way it subsidizes its employees' parking. In the Civic Center, some employees park in city-owned spaces where the market price is $120 a month. The City does not own enough spaces for all its employees, so it leases additional spaces for employee parking from private operators at prices up to $165 per space per month. In both the owned and leased spaces, employees who drive to work alone pay $25 a month to park, and two- (or more) person carpools park free; transit riders receive a $15 a month transit subsidy; cyclists and those who walk to work receive nothing.

As a result of the new legislation, employees who pay $25 a month to park in spaces that the City leases for $165 a month must be offered the option of $140 a month in cash if they give up their $140 a month parking subsidy. Employees who park in spaces that the City leases at lower prices will presumably be offered a smaller cash option. Employees who park in City-owned spaces will not have to be offered any cash option. Employees who are eligible for a leased parking space but who now ride transit, cycle, or walk to work will presumably have to be offered something more than they now get. The City has over 300 separate leases with private parking operators, at a wide range of prices; some of these leases are for a fixed number of spaces, some are for a variable number of spaces, and some are for a variable number of spaces with either a floor or a cap on the number of spaces that the City can take. Obviously, it will require some research to determine the size of each employee's current parking subsidy and thus how much to offer to each employee in lieu of the current parking subsidy. Even the total amount of such subsidies is now unknown.

One interpretation of this complicated situation is that the California cash-out requirement will create serious problems for the City. A more realistic interpretation is that the cash-out requirement reveals serious problems that the City already had, but has not wanted to face. For example, consider the case where an employee who drives to work alone pays $25 a month to park in a space that the City pays $165 a month to lease. The City clearly pays a parking subsidy of $140 a month for the solo driver. If two employees carpool, they park free and split a subsidy of $165 a month, so the City pays a parking subsidy of $82.50 a month for each carpooler. The City pays a transit subsidy of $15 a month for each bus rider. Therefore, the City subsidizes a solo driver 70 percent more than a carpooler, and almost 10 times more than a transit rider. Is this a ridesharing program or a solo driving program? If you listen to what the City says it is doing, it subsidizes ridesharing; if you look at what the City does, it subsidizes solo driving much more.40

The situation is far more complicated than can be sketched in this short space. Some employees have "earned" their choice parking spaces by seniority. There is understandable pressure to keep employees' parking charges down in a time of pay freezes. Union contracts

40. Each year the SCAQMD has approved the City's Trip Reduction Plans for its employees as reasonably certain to achieve the required AVR target, but, as might be expected in such a complex environment, the result has consistently fallen short of the target. For 1991, the target for Civic Center employees was 1.75 and the City's achieved result was 1.55 persons per car.
and pecking orders must be respected. The City is short of funds. Despite all these complications, it is almost impossible for any City official to argue publicly that it would be unwise to subsidize a ridesharer as much as a solo driver, especially since all employers in the private sector will have to do it.

When he was explaining the complications caused by the requirement to cash out parking subsidies for spaces the City leases, but not for spaces the City owns, the City’s Rideshare Program Administrator reported that he would personally have preferred the initial form of the legislation that required cashing out all parking subsidies, regardless of whether the employer owns or leases the spaces. This would reduce many inequities between employees (for example, two workers holding identical jobs, with one eligible for a cash-out, the other not, based on whether they worked in a leased or owned building). In implementing this full cash-out, it would be possible to give equal treatment to all commuters by increasing the fees on solo drivers (to reflect the value of the parking spaces) and passing the increased revenue to ridesharers (through higher transit subsidies, etc.). His argument was that this would be a "no-cost" option to the City, and would punish the "bad guys" (solo drivers who pollute the air and add to traffic congestion) while rewarding the "good guys" (ridesharers). Recall that this no-cost option was in fact chosen by the firm described in the case study in Section VIII, and the resulting parking price increase for solo drivers was small.

Another advantage of the full cash-out requirement is that it would sidestep some thorny labor negotiation issues because the City could say that state law requires it to cash out all parking subsidies.41 Still, the current legislation that applies only to leased parking spaces may be what will finally overcome the legendary forces of accretion and inertia in municipal government, because the City will be able to blame the State for having to rationalize its morass of parking subsidies. Perhaps the clear need to do something will begin to break the logjam of entrenched interests in parking subsidies that have developed over many years. The City Council may be unhappy with the inequities that will be exposed as the City tries to implement a program to cash out its existing subsidies for leased parking spaces; the result may be a reform that reaches far beyond the simple requirements of the new state legislation.

The important point here is not to criticize any failing in the City’s current ridesharing efforts. Rather, the important point is that unless employers are required to offer their employees the option to cash out their parking subsidies, it is unrealistic to expect much change in employers’ subsidy policies, even with the 1992 Energy Act’s new $60 a month income tax exemption for vanpool and transit subsidies. The City now offers parking subsidies of up to $140 a month to employees who drive to work alone. The City (along with most other employers) has consistently failed to meet its trip reduction goal mandated by Regulation XV. The City’s own transit subsidy ordinance (described in Section IV) pioneered in requiring private

41. This desire to blame some higher power for doing what one secretly believes is the right thing is similar to a professor’s telling a student that, although the professor would personally be willing to let the student take an “Incomplete” in a course for no good reason, strict University regulations unfortunately prohibit it.
employers to offer a $15 a month transit subsidy to all employees if they offer a parking subsidy to any employee. The Los Angeles Civic Center is at the epicenter of a planned $78 billion dollar regional rail transit system now being constructed (the Blue Line has already operated for two years, the Red Line is ready to open, and the Green Line is being built). It is well served by dozens of bus routes that converge on downtown. Despite all this, the City did not even raise the transit subsidy it offers to its own employees from $15 a month when the allowable federal income tax exemption for transit subsidies was raised to $21 a month in 1991. This outcome clearly suggests that many employers will also fail to leap at the opportunity to offer their employees the available option of a $60 a month tax-exempt transit subsidy unless employers are required to offer employees the option to take the fair market value of any offered parking subsidy as a transit or ridesharing subsidy or as cash.

Other employers all over the state will undoubtedly encounter some of the same problems the City of Los Angeles is encountering in dealing with the cash-out requirement for its own employees. But the new legislation is merely exposing, not creating, most of these problems. The real challenge for many employers will be to progress beyond the outdated notion that the best way to help employees get to work is to pay for their parking.

It seems only common sense to require that an employer should subsidize a ridesharer as much as a solo driver. This is all that the new California legislation requires. And as a first step it seems sensible to proceed cautiously, as the California legislature chose to do when it limited the cash-out requirement to cases where the employer pays out-of-pocket cash to a third party to subsidize an employee’s parking. But if the results of the first step prove successful, the way to obtain the full benefits of a market pricing policy for parking would be eventually to extend the cash-out requirement to all employer-paid parking subsidies.

If employers are given sufficient advance notice to plan for the market pricing of parking, and if they are able to learn from the experience of those who are the first to cash out employer-paid parking subsidies (such as the City of Los Angeles), it does not seem a necessary feature of the California legislation to permanently exempt employers who own their own parking but who could put that parking on the market if their employees do not use it. Where employers who own parking spaces can put them on the market, the employer could earn the market parking price if an employee does not take a “free” parking space. Therefore, it is a logical next step to say that where an employer could earn money if an employee does not take a “free” parking space that the employer owns but could lease to someone else, then the employer should offer the employee the money that the employee thereby enables the employer to earn. (If parking is so abundant at the work-site that there is no market for parking, then the employer would not have to offer any cash in lieu of the owned parking.)

The legislation also exempts employers from the cash-out requirement if they receive parking “bundled” with office space, at no extra charge for the parking. But parking space leases can be “unbundled” from office space leases, so that there are separate charges for
parking and for office space.⁴² Office space rents are lower when parking is separately charged for rather than provided "free" with the office space. Thus, in the long run, it would make sense to eliminate the cash-out exemption for bundled parking and to work toward a situation where there is both a parking market and an office space market, without any conventional assumption that parking spaces and office space must come in fixed proportions at a single, all-inclusive price.

Finally, employers of fewer than 50 employees are exempt from the cash-out requirement, but this does not seem to be a necessary feature of the legislation. Why should any employee be denied the option to cash out a parking subsidy and begin ridesharing? Although it makes sense to exempt a variety of parking subsidies from the first trial of the parking cash-out requirement, moving to a genuine market policy for all commuter parking will, in the long run, serve both the employers’ and the employees’ interests, and will also significantly reduce traffic, save fuel, and improve the environment.

Despite the limited nature of the cash-out requirement, early reports from ridesharing professionals suggest that it will have important benefits for California. Regulation XV requires every regulated employer in the South Coast Air Quality Management District to have an Employee Transportation Coordinator (ETC), but most of these transportation coordinators work only part of their time at their ETC duties, and have usually had little access to decision makers at the top (Wachs and Giuliano, 1992). The new legislation will give these ETCs a way to get the attention of the top decision makers, because most employers will need to do something, soon, to comply with the law. Commuter Transportation Services, which is the regional ridesharing agency, has distributed a public information announcement (reproduced as Appendix 2) to call its employer clients’ attention to the legislation. And because Regulation XV has greatly assisted in creating an active, informed, and well-connected community of ridesharing professionals throughout Southern California, there are now many highly committed people who are in a good position to ensure that the law will not be ignored.

2. Protecting Neighborhoods from Spillover Parking

A possible objection to cashing out parking subsidies is that employees may take the cash and park on the nearby streets, thus congesting surrounding areas with parking spillover. The California cash-out legislation addresses this issue in the following way:

A parking cash-out program may include a requirement that employee participants certify that they will comply with guidelines established by the employer designed to avoid neighborhood parking problems, with a provision that employees not complying will no

⁴² Interviews with leasing agents in Southern California suggest that in 80 percent of multi-tenant office building leases, parking spaces are leased independently from the office space. That is, most parking is now unbundled. However, the exemption for bundled parking gives employers who now separately rent parking for their employees an incentive to renegotiate their office space leases to bundle the parking into the office lease if they want to escape from the cash-out requirement.
longer be eligible for the parking cash-out program. (Assembly Bill No. 2109, p. 3. See Appendix 1.)

It may take some experience with this provision of the law to see how successfully it prevents parking spillover, but it seems preferable to the current policy of offering employees the choice between employer-paid on-site parking or nothing as the way to prevent parking spillover into adjacent neighborhoods.

It must be recognized, however, that the fear of parking spillover is an important reason for providing free employee parking, and some zoning ordinances explicitly prohibit any charge for employee or guest parking for this very reason. For example, the Park Mile Specific Plan for Wilshire Boulevard in Los Angeles contains the astonishing provision that:

In order to mitigate traffic congestion on public right-of-way, for office and other commercial uses, there shall be at least three parking spaces provided for each 1,000 square feet of gross floor area available at no charge to all patrons and employees of those uses (City of Los Angeles, Planning and Zoning Code, 1989 Edition, p. 616).

Note that the express purpose of this requirement to provide three parking spaces per 1,000 square feet (50 percent more parking than required elsewhere in the city), and to provide these parking spaces free of charge to all patrons and employees is "to mitigate traffic congestion." That is, increasing the required parking by 50 percent and making it all free is supposed to mitigate traffic congestion! Presumably the real concern is with the problem of spillover parking from new office and commercial development. Given this example of the drastic measures to which cities will resort to prevent parking spillover, it is obviously important to review other less harmful ways to prevent parking spillover.

Time Limits for Curb Parking. Parking spillover is not a concern in most central business districts because there is no unmetered curb parking available for all day use. This solution to the parking spillover problem is what permits cities such as Boston, Chicago, New York, Portland, San Diego, and San Francisco to place a cap, not a minimum, on the number of parking spaces in new development. Where there are no unregulated curb parking spaces onto which parking demand from new development can spill over, there is no need to require developers to provide parking to prevent spillover. Likewise, if employers offer employees the option to cash out their existing parking subsidies in central business districts, employees cannot simply take the cash and park free on the street. Thus, parking spillover is no objection to cashing out parking subsidies in these locations.

Residential Parking Permits. Parking spillover is also not a concern in suburban employment centers where residential permit parking (RPP) districts reserve on-street parking spaces for residents and their guests in the surrounding neighborhoods. For example, in Century City and Westwood in Los Angeles, there are high-rise office buildings and hotels directly adjacent to, sometimes literally across the street from, single-family residential neighborhoods, but the establishment of RPP districts has eliminated parking intrusion into these residential
neighborhoods. The practice of issuing permits that reserve curb parking for residents of the adjacent property has spread rapidly throughout the United States since the U.S. Supreme Court upheld the constitutionality of Arlington, Virginia's statute setting up the first RPP district in the United States (County Board of Arlington County, Virginia, et al. v. Rudolph A. Richards, et al.; October 11, 1977).

Olsson and Miller (1979, p. 6) describe a typical early RPP program in Alexandria, Virginia:

In order to qualify as part of a district, [owners of] at least 75 percent of the structures on the block must sign a petition requesting this designation. A parking survey is then conducted by the city (on a weekday). If at least 25 percent of the parked cars belong to non-residents of the potential district, the block qualifies as part of the district. Within the parking districts, only residents' vehicles with permits . . . can be parked for more than three hours in the same street space. These regulations are in effect during weekdays, from 8:00 a.m. to 5:00 p.m. Special temporary permits are available for vehicles belonging to guests of residents and to people doing business with the residents.

Like many other older cities, Alexandria depends upon its curb parking to accommodate visitors to shops, restaurants, historic sites, and offices located in the old town center. Alexandria's time limit for non-resident parking is designed to allow visitors, but not commuters, to park free on the streets. The time limit designed to prevent commuter parking has sometimes been difficult to enforce, however. For example, Olsson and Miller report that one school's custodian regularly moved teachers' cars to a new curb space every three hours. In one San Francisco RPP district that contained only 7,000 registered vehicles, residents applied for 12,000 residential parking permits (Di Renzo, Cima, and Barber, 1979, p. III.14).

Many of the problems encountered with the earlier RPP districts have since been solved by creative adaptations. For example, West Hollywood, California, relies on its curb parking supply to serve residents, commuters, and visitors. In its RPP districts the City sells a limited number of permits allowing daytime parking by employees of the nearby commercial areas, and the permit fees paid by these commuters are used to lower the permit fees charged to residents. Because most residential permit holders drive to work during the daytime and park on their own streets only in the evening, commuters who work in the area and residents who live in the area are able to use the RPP spaces on a time-share basis. Similarly, Vancouver, British Columbia, has RPP districts that reserve spaces in the middle of the block for residents, with spaces at both ends of the block available to others either on a time-limited or a metered basis.

Other creative adaptations will undoubtedly occur if cashing out employer-paid parking increases the demand for RPP districts. For example, when a major hospital in Oakland, California wanted to expand but did not have the space (or funds) to add the conventionally required number of parking spaces, it provided fewer spaces and used some of the money saved thereby to solve the problem of spillover parking by paying the full cost of establishing and maintaining an RPP district in the surrounding neighborhood.
Pricing Curb Parking. When curb parking is not controlled by time limits or RPP districts, the fundamental reason for fearing that cashing out employer-parking will flood the surrounding streets with commuters' cars is that curb parking is both scarce and free. Thus, offering a free off-street parking space for everyone who drives to work is the only way to ensure that commuters won't park on the street. In this environment, if commuters who now park free are offered cash in lieu of their off-street spaces, many would be tempted to take the cash and park on the street for free, while continuing to drive to work alone.

Stated in this conventional way, the problem is that unless employers provide free off-street parking, employees will park on the street. Rather than provide free off-street parking, however, another way to deal with the problem of commuter parking spillover is to charge for curb parking. Indeed, charging for curb parking, and limiting the length of stay, is what allows some cities to impose a cap (rather than a minimum) on the amount of off-street parking in central business districts in order to reduce congestion on the routes to downtown without creating curb parking congestion in downtown. But is there a role for pricing curb parking to prevent parking spillover in areas other than central business districts? Some recent developments suggest that charging for curb parking will become increasingly feasible as another means (in addition to RPP districts and parking time limits) to prevent excessive parking intrusion from commercial neighborhoods into nearby residential neighborhoods.

Traffic engineers usually recommend that at least one in seven curb parking spaces should remain vacant at all times to ensure easy parking access and egress (Witheford and Kanaan, 1972; Brierly, 1972; May, 1975). Thus, the appropriate price to charge for curb parking would be that which leaves at least one in seven spaces vacant (commercial off-street parking lot operators also aim for this vacancy rate). Although the conventional image of charging for curb parking is a parking meter at every space, there are several alternative technologies now in use that show how curb parking can be efficiently priced without unsightly or inconvenient meters. The most sophisticated parking charge systems use personal in-vehicle meters that operate like a debit card and are similar in size and appearance to a small pocket calculator. Motorists pre-pay a municipal parking authority for a total value of parking (typically up to $100) that is programmed into the motorist's personal meter. After parking, the motorist keys in the code of the parking zone, switches on the meter, and hangs it inside the car's window, with its LCD display visible. The meter displays the maximum time available for the zone, and begins counting down from that maximum allowable time for parking in the space until the motorist returns and switches the meter off. If the motorist over-stays the time limit, the time display becomes negative and the excess time is shown; traffic enforcement officers can then issue a ticket just as they do when a conventional parking meter shows a violation. If there is no time limit on the space, the timer counts up from zero until switched off. Enforcement personnel can easily see whether a parked car's meter is running because they can see both the zone code and the declining value displayed in the LCD window. The motorist can see the remaining pre-paid value both at the beginning and the end of each use, and is thus constantly made aware of the cost of parking.
Arlington, Virginia (again) was the first local government to introduce these personal electronic meters in 1989, and it has received overwhelming positive response from the commuters who use them (Public Technology, November/December 1990, p. 4). Fort Lauderdale in Florida, Morgantown in West Virginia, and Syracuse in New York also use them, and Santa Monica, California, has just begun to use them. Some of the advantages of these in-vehicle parking meters are:

- Motorists need no coins, tokens, or exact change.
- Motorists are charged only for the exact length of time parked. There is no "left-over" time on the meter that the motorist pays for but doesn't use (or uses because it is already paid for), as with conventional coin-operated parking meters.
- The City collects parking revenue in advance without any manual collection, transfer, and counting of coins, or risk of vandalism.
- The system avoids the use of unsightly conventional parking meters in neighborhoods where parking is priced.
- Different rates can be charged during different times of the day.
- Different rates can be charged depending on the length of stay, so that higher rates are charged for longer stays. If the motorist parks longer than the allowed time limit, the meter can automatically charge at an accelerated rate to penalize for overstaying the limit.
- Motorists can use their in-vehicle meters as an alternative way to pay for parking at conventional meters.
- Residents can be exempted from parking charges in RPP districts.
- Theft and vandalism are discouraged because the meters have a personal identification number (PIN) entered by the user before it can be turned on at each use. Without the PIN, the meter is useless to a thief.
- Parking turnover is encouraged because the motorist pays for parking by the minute.
- With adequate fines for violation, motorists who have prepaid for parking will always find it cheaper to use their in-vehicle meters than to risk a ticket.

In addition to the in-vehicle meters, there are other ways to charge for curb parking without having a meter at every space. A wide variety of electronic multispace parking meters can charge prices for parking at up to 90 spaces from one meter. One simple type accepts coins, bills, or charge cards and delivers a ticket imprinted with the time of issue, fee paid, and date for which parking has been purchased; the motorist displays the ticket inside the windshield of the parked car. One inexpensive and unobtrusive ticket-issuing meter usually controls 20 or 30 parking spaces.

These are just two examples of a wide variety of sophisticated, unobtrusive technologies, many first introduced in Europe and now also manufactured in the United States, that should help to resolve any aesthetic or practical objection to charging for curb parking as a means to prevent parking spillover. Although cashing out employer-paid parking can cause parking spillover in the absence of any attempt to prevent it, there are several effective ways to prevent it. In any case, the problem of parking spillover is better understood as being caused by a
failure to manage curb parking properly (whether by time limits, residential parking permits, or parking charges), rather than by a "failure" to subsidize employee parking.

3.  **Cashing Out Employer-Paid Parking Will Reduce Parking Requirements**

Another important feature of the new California cash-out legislation is that it reduces the burden of parking requirements on new development. The parking required by local zoning ordinances is a major part of the cost of new development, and a rule of thumb in Southern California is that the required parking accounts for about a third of the total cost of a new office building. Therefore, if cashing out employer-paid parking reduces parking demand, the reduced requirement for parking should reduce the cost of new construction. The new legislation addresses this issue in the following way:

*The city or county in which a commercial development will implement a parking cash-out program . . . shall grant to that development an appropriate reduction in the parking requirements otherwise in effect for new commercial development.*

*At the request of an existing commercial development that has implemented a parking cash-out program, the city or county shall grant an appropriate reduction in the parking requirements otherwise applicable based on the demonstrated reduced need for parking, and the space no longer needed for parking purposes may be used for other appropriate purposes.* (Assembly Bill No. 2109, p. 5. See Appendix 1.)

The legislation refers to an "appropriate" reduction in parking requirements based on a "demonstrated reduced need" for parking, but there is an almost limitless range of possible ways to interpret these terms, because parking requirements in zoning ordinances are almost entirely without theoretical foundation. What, then, is a city planner to do when told to grant an "appropriate" reduction in parking requirements if developers offer to cash out all parking subsidies in a new or existing development?

The case studies that are summarized in Table 1 can be used to suggest how cashing out parking subsidies would reduce parking demand. The case studies included sufficient information to estimate how employer-paid parking affected the number of cars driven to work per 100 employees. For office buildings, parking requirements are usually expressed in terms of parking spaces per 1,000 square feet of office space. Therefore, we need to translate the figure for cars per 100 employees into cars per 1,000 square feet. Although there is no recognized methodology for estimating parking requirements, it is possible to piece together scraps of information and bits of evidence from various sources to suggest how planners might estimate the "need" for parking. Estimates of an office occupancy density of 4.2 employees per 1,000 square feet, an employee absenteeism rate of 14 percent, and a peak parking occupancy factor (the maximum number of cars parked at any one time divided by the total number of cars parked during the day) of 94 percent were derived from the *Los Angeles Central Business District Employee Travel Baseline Survey* and a Wilbur Smith and Associates 1981 study of downtown Los Angeles parking. For example, if there are 4.2 employees per 1,000 square feet,
and if 14 percent are absent on any day, there will be 3.6 employees present per 1,000 square feet \((4.2 \times 0.86 = 3.6)\). Table 1 showed that there are 0.70 cars driven to work per employee when the employer pays for parking, so there would be 2.5 cars driven to work per 1,000 square feet \((3.6 \times 0.70 = 2.5)\). If only 94 percent of those who drive to work park at work during the peak parking accumulation period, the peak parking demand is thus 2.4 parking spaces per 1,000 square feet of office space if the employer pays for parking \((2.5 \times 0.94 = 2.4)\). Table 1 showed that there are only 0.51 cars driven to work per employee if the driver pays for the parking, so the resulting parking demand is 1.7 parking spaces per 1,000 square feet of office space if the employer does not pay for parking.\(^{43}\)

The method just described was used to develop Table 17, which shows the number of parking spaces demanded per 1,000 square feet of office space when the employer pays for parking and when the driver pays for parking. For these case studies, the data suggest that, on average, employer-paid parking creates a demand for 2.4 parking spaces per 1,000 square feet, while driver-paid parking creates a demand for 1.7 parking spaces per 1,000 square feet. Thus, the evidence from these case studies suggests that shifting responsibility for paying for parking from the employer to the driver would reduce the "need" for parking spaces by an average of 29 percent.

The figures in Table 17 show (for these case studies and given the assumptions noted in the table) how many parking spaces are demanded when the driver pays for parking, and when the employer offers free parking, but do not show the number of parking spaces that would be demanded if the employer offers free parking or its cash equivalent. The taxability of cash, and of transit or vanpool subsidies over $60 a month, reduces the after-tax opportunity cost of taking the free parking, and thus increases the number of parking spaces demanded in comparison with the case where drivers pay the full cost for parking. Given this complication of the taxability of cash in lieu of a tax-exempt parking subsidy, how much would offering employees the option to cash out their parking subsidies reduce the number of parking spaces "needed" for an office building?

To answer this question, we can refer back to the data in Table 9, where a mode choice model was used to estimate the effect of price on parking demand. For the sample of commuters to downtown Los Angeles, the probability of choosing each mode was estimated for each commuter at both the market price and a zero price; these probabilities were then averaged over all commuters to obtain an estimate of parking demand per employee at both the market price and a zero price. Parking demand was also estimated at a price representing the after-tax value of the cash option for each commuter, taking into account each commuter's marginal tax bracket and then averaging over all commuters. The first row of Table 18 reproduces these results, showing that, on average, commuters demand 0.56 spaces per employee when drivers

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\(^{43}\) Unfortunately, even these crude empirical estimates are far more elaborate than the typical "analysis" involved in setting parking requirements in actual zoning ordinances, where the influence of employer-paid parking is never explicitly considered. See Shoup and Pickrell (1978), Shoup and Willson (1990) and Willson (1991, 1992) for further discussion of parking requirements in zoning ordinances.
TABLE 17

EMPLOYER-PAID PARKING INCREASES PARKING REQUIREMENTS

<table>
<thead>
<tr>
<th>Case Study</th>
<th>Driver Parking</th>
<th>Employer Parking</th>
<th>Increase in &quot;Required&quot; Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid Wilshire</td>
<td>0.2</td>
<td>0.3</td>
<td>60%</td>
</tr>
<tr>
<td>Warner Center</td>
<td>0.4</td>
<td>0.5</td>
<td>44%</td>
</tr>
<tr>
<td>Century City</td>
<td>0.4</td>
<td>0.5</td>
<td>17%</td>
</tr>
<tr>
<td>Civic Center</td>
<td>0.3</td>
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<td>56%</td>
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<td>Downtown Ottawa</td>
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<td>0.2</td>
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<tr>
<td>Average</td>
<td>0.3</td>
<td>0.4</td>
<td>37%</td>
</tr>
</tbody>
</table>

Sources: see Table 1

Assumptions:
- Employees/1,000 sq ft: 4.20
- Absenteeism factor: 0.14
- Peak parking factor: 0.94
pay for their parking, 0.75 spaces per employee when employers offer free parking, and 0.62 spaces per employee when employers offer free parking or its taxable cash equivalent.

The data on parking demand per employee in the first row of Table 18 are then converted into parking demand per 1,000 square feet in the second row, using the same method and assumptions described for the construction of Table 17. Although the data in Table 17 are derived from case studies and the data in Table 18 are derived from a mode choice model, the results are similar. When employers offer free parking, the demand for parking is 2.5 spaces per 1,000 square feet estimated from the model, and 2.4 spaces per 1,000 square feet estimated from the case studies. When drivers pay for parking, the demand for parking is 1.9 spaces per 1,000 square feet estimated from the model and 1.7 spaces per 1,000 square feet estimated from the case studies. Of more particular interest here, when employers offer free parking or its cash value, parking demand is 2.1 spaces per 1,000 square feet, or 17 percent less than when employers offer free parking without the cash option. Because the taxability of cash in lieu of a parking space reduces the "price" of taking the free parking, this 17 percent reduction in parking demand is smaller than the 24 percent reduction that would occur if parking subsidies were ended altogether. Nevertheless, the data clearly show that cashing out employer-paid parking should allow planners to reduce parking requirements in zoning ordinances.

How do these estimates correspond to actual parking requirements in zoning ordinances? Table 19 presents the results of a survey of parking requirements for an assumed 10,000 square foot, three-story office building in 66 different cities in Southern California. One notable feature of the table is that all but nine of the 66 cities required more than one square foot of parking per one square foot of building (that is, more space must be devoted to parking than to the office building it serves). Another notable feature is that all but eight of the 66 cities required more parking spaces than the demand estimated at a zero price in Tables 17 and 18. This observation is consistent with Willson's recent findings that the parking requirement at typical office developments in Southern California is 4.1 spaces per 1,000 square feet, that all parking is provided free, and that even though parking is free the peak parking demand is only 51 percent of the number of parking spaces supplied at these developments (Willson, 1992).

Willson's findings confirm the suspicion that the minimum parking requirements in many zoning ordinances exceed even the demand for free parking. This is not surprising, given the atheoretical, ad hoc methods that city planners use to set parking requirements. No city planning schools or planning textbooks teach the theory of parking requirements, because there is none. This lack of academic attention to parking requirements is surprising, given the amount of urban space devoted to parking. The Planning Advisory Service, which is the technical advice-giving branch of the American Planning Association, commented in its most recent report on parking requirements in zoning ordinances that:

The American Planning Association's Planning Advisory Service (PAS) receives hundreds of requests each year about off-street parking requirements for different land uses--in fact, we receive more requests year after year on this topic than on any other. Drafting off-street parking requirements is clearly one of the most important tasks of a
**TABLE 18**

**CASHING OUT EMPLOYER-PAID PARKING DECREASES PARKING REQUIREMENTS**

<table>
<thead>
<tr>
<th>Travel Behavior</th>
<th>Driver Pays for Parking</th>
<th>Employer Pays for Parking</th>
<th>Effect of Cash Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Parking Spaces Demanded</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(per Employee)</td>
<td>0.56</td>
<td>0.62</td>
<td>0.75</td>
</tr>
<tr>
<td>2. Parking Spaces Demanded</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(per 1,000 square feet)</td>
<td>1.9</td>
<td>2.1</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Sources: see Table 9

Assumptions:
- Employees/1,000 sq ft: 4.20
- Absenteesim factor: 0.14
- Peak parking factor: 0.94
TABLE 19

OFFICE BUILDING PARKING REQUIREMENTS IN SOUTHERN CALIFORNIA

<table>
<thead>
<tr>
<th>Number of Cities</th>
<th>Office Building Parking Requirement</th>
<th>Spaces Required per 1,000 SqFt</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8 spaces per 1,000 square feet</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>1 space per 150 square feet</td>
<td>6.7</td>
</tr>
<tr>
<td>1</td>
<td>6 spaces per 1,000 square feet</td>
<td>6</td>
</tr>
<tr>
<td>1</td>
<td>1 space per 300 square feet plus 1 space per each 2 employees</td>
<td>5.3</td>
</tr>
<tr>
<td>1</td>
<td>Minimum of 6 spaces plus 1 space per each 175 square feet above 1,000</td>
<td>5.1</td>
</tr>
<tr>
<td>13</td>
<td>1 space per 200 square feet</td>
<td>5</td>
</tr>
<tr>
<td>1</td>
<td>6 spaces per first 1,000 square feet plus 4 per 1,000 square feet above</td>
<td>4.2</td>
</tr>
<tr>
<td>32</td>
<td>1 space per 250 square feet</td>
<td>4</td>
</tr>
<tr>
<td>1</td>
<td>4 spaces plus 1 space per 300 square feet</td>
<td>3.7</td>
</tr>
<tr>
<td>1</td>
<td>3.5 spaces per 1,000 square feet</td>
<td>3.5</td>
</tr>
<tr>
<td>1</td>
<td>1 square foot of parking per 1 square foot of building</td>
<td>3.1</td>
</tr>
<tr>
<td>1</td>
<td>1 space per 200 square feet of first floor plus 1 space per 500 square feet above</td>
<td>2.6</td>
</tr>
<tr>
<td>5</td>
<td>1 space per 500 square feet</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>1 space per 1,000 square feet</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Shoup and Pickrell (1978). The parking requirement is calculated for an assumed 10,000 square foot, three-story office building. Rex Link carried out the survey.
planning agency. There is typically tremendous citizen concern about the availability of parking, its effect on the transportation network, and ultimately on the quality of life in a community. There are also, of course, significant effects on developers and their projects, often with serious cost implications (Planning Advisory Service, 1991, p. 1).

The previous PAS survey of parking requirements in zoning ordinances was published in 1971. The Planning Advisory Service publishes eight PAS reports a year, so it seems (again) surprising that, given the admitted importance of the topic, 20 years elapsed since the previous attempt was made to answer planners' most frequently asked question: how many parking spaces should be required for each land use? Both publications, however simply report examples of existing parking requirements in a number of surveyed cities (and thus provide planners an opportunity to copy what some other city has done), but neither publication describes a rational, analytic method to set parking requirements. Indeed, the most compelling reason for publishing the 1991 report was not to provide a new analysis, but to organize the presentation in a new way:

Perhaps the most compelling reason for the update of the 1971 report, however, was that it has been difficult to use for some because of the way it is organized. In this new report, standards are segregated by land use rather than by the amount of required parking, as in the case in the 1971 report. Within each land use category, we arranged the standards from those that require the least amount of parking to those that require the most. This criteria was adhered to as closely as possible despite the fact that, in some cases absurd twists of logic in the way the standards were drafted might make such hierarchies impossible (Planning Advisory Service, 1991, p. 1).

The first PAS report on parking requirements in zoning ordinances, published in 1964, was admirably frank in admitting the theoretical vacuum in which planners work:

The underlying assumptions used in drafting local regulations are unknown (Planning Advisory Service, 1964).

The 1971 PAS report on parking requirements was also scrupulously honest in explaining the ad hoc method planners use to set parking requirements in zoning ordinances:

Since the establishment of the principle that zoning ordinances may legally require the provision of off-street parking, ordinance drafters have been asking questions like: "How many spaces should be provided for a drive-in restaurant?"—or any other land use for that matter. The question is typically answered by relying upon what ordinances for other jurisdictions require. Two options are then open: first, to go through the ordinances in the agency's files and second, to consult nationally published surveys. The implicit assumption is that other areas must know what they are doing (the ordinances were adopted, after all) and so it is a relatively safe bet to adopt a parking standard "close to the average." This may simply result in a repetition of someone else's mistakes. Nevertheless, the planner who needs to present a numerical standard by the
next planning commission meeting can’t answer the original question by saying, “I don’t really know.” He must unavoidably use comparative statistics, coupled with his judgment and knowledge about the characteristics of the use at issue.

When standards are insufficient, planners as public officials are first aware of it as complaints about traffic congestion pour in. When standards are excessive, the private developer is first aware of the problem. The latter is illustrated by shopping center developers faced with rising parking requirements which, after a certain point, are considered excessive. A 1965 survey of shopping center parking lots in the busiest shopping day of the year (before Christmas) showed requirements were substantially higher than actual demand.

The fact that parking requirements differ markedly from city to city suggests that there is no firm base upon which the requirements are founded. Experience also suggests that parking requirements tend to be arbitrary, at times insufficient, at other times excessive (Planning Advisory Service, 1971, pp. 1-2).

The Planning Advisory Service’s next report, written by Thomas Smith, gives numerous best-practice examples of how parking requirements have been calculated, but Smith candidly admits that:

For every land use whose parking demand we know something about, there are at least a dozen that remain mysteries (Planning Advisory Service, 1983, p. 15).

Note the site-specific rather than the city-wide nature of the parking complaint in the 1971 report. The chief concern of parking requirements in zoning ordinances is to prevent new development from creating parking spillover onto nearby streets, and to prevent motorists from congesting the streets by cruising in search of scarce (but free) curb parking spaces. Requiring a sufficient number of spaces to accommodate all the parking demanded at a zero price can prevent new development from creating local parking spillover, but the parking requirements slowly force up the city-wide density of off-street parking spaces, and of cars. With the same street pattern, a higher density of cars creates more traffic congestion, and leads to calls for street widening (i.e., sidewalk narrowing and street tree removal), intersection flaring, computerized traffic signals, and the like. As a result, planners must then require (or perhaps, in desperation, eventually prohibit) more off-street parking.

When the whole city is considered as the patient, forcing up the supply of off-street parking will never cure traffic congestion, or reduce air pollution, decrease energy consumption, or improve the quality of life. Rather, minimum parking requirements are an addiction masquerading as a cure. If three parking spaces per 1,000 square feet no longer accommodate parking demand at a zero price, a stronger dose of four spaces per 1,000 square feet can temporarily quiet the neighbors’ complaints, but every jab of the parking needle relieves only the local symptoms. It is as though a doctor treated every pain with an addictive local anaesthetic that ultimately worsens the real disease.
The Planning Advisory Service realistically and sympathetically describes the dilemma of a planner who is asked to draft a new parking ordinance before an upcoming planning commission meeting. The problem is even worse than one might imagine, however, because no planning school teaches and no planning text tells how to establish a parking requirement. It is a talent learned only on the job. Perhaps it is this lack of a "firm base" that leads to the often "absurd twists of logic" in parking ordinances as planners try to deal with what seems to be the immediate problem at hand before the next planning commission meeting. Table 20 presents a selection of actual parking requirements in zoning ordinances to illustrate the problems planners face (or create). Do these parking requirements suggest that four clergymen travel in three cars to visit one gunsmith? Or that ten nuns travel in one car to swim in 2,500 gallons of water. Funeral parlors seem to puzzle planners the most. The question is, how many parking spaces to require per--per what? Table 21 shows the bizarre answers to this question from a 1968 survey of parking requirements in 66 cities. The responses should raise grave doubts about the theory of off-street parking requirements.

Table 20 shows but a tiny fraction of the myriad of land uses for which planners must set minimum parking requirements in their zoning ordinances. Appendix 4 shows a dizzying list of other land uses for which there are off-street parking requirements. Comprehensive urban planning is supposed to coordinate numerous individual actions toward a desired overall outcome, but who has considered the cumulative and interactive consequences of numerous individual minimum parking requirements that have collectively contributed to the outcome of almost total dependency on automobiles? Could minimum parking requirements help to explain why the United States has 1.1 motor vehicles per licensed driver, and 0.95 vehicles per person of driving age? 44

Perhaps the only common element among the parking requirements in Table 20 is that (except for ecclesiastical uses) the assumption seems to be that there should be at least one parking space per person. If parking requirements are based on observing the number of cars parked at existing developments where parking is free (and 90 percent of commuters pay nothing to park), parking requirements for commuters are implicitly based on the quantity demanded at a zero price, without regard to what it costs to provide the parking spaces or what commuters are willing to pay for them. When all development is required to provide enough parking to satisfy demand at a zero price, the market price will be zero (as at many suburban developments where there is so much required parking that all parking is free and fifty percent of the spaces are still vacant even at peak hours). The result is a vicious circle of parking subsidy, required oversupply of parking, and ubiquitous free parking.

To illustrate the circular logic used to set parking requirements, consider the study of parking requirements for shopping centers conducted for the Urban Land Institute (1982). The high cost of providing "enough" parking for shopping centers justified an unusually thorough

44. Motor vehicles here means personal-use vehicles: cars plus light trucks that are used for personal transportation. See Lave (1992) for a discussion of the demography of cars.
<table>
<thead>
<tr>
<th>Land Use</th>
<th>Minimum Parking Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult Entertainment</td>
<td>1 parking space per patron plus one space per employee on the largest working shift</td>
</tr>
<tr>
<td>Auto graveyard</td>
<td>2 parking spaces per employee</td>
</tr>
<tr>
<td>Automatic teller machine</td>
<td>2 parking spaces per machine</td>
</tr>
<tr>
<td>Barber shop</td>
<td>2 parking spaces per barber</td>
</tr>
<tr>
<td>Beauty shop</td>
<td>3 parking spaces per beautician</td>
</tr>
<tr>
<td>Bicycle repair</td>
<td>3 parking spaces per 1,000 square feet</td>
</tr>
<tr>
<td>Botanical Garden</td>
<td>2 parking spaces per acre</td>
</tr>
<tr>
<td>Golf course</td>
<td>10 parking spaces per hole</td>
</tr>
<tr>
<td>Gunsmith</td>
<td>3 parking spaces per 1,000 square feet</td>
</tr>
<tr>
<td>Heliport</td>
<td>5 parking spaces per touchdown pad</td>
</tr>
<tr>
<td>Houseboat</td>
<td>2 parking spaces per dwelling unit</td>
</tr>
<tr>
<td>Mausoleum</td>
<td>10 parking spaces per maximum number of interments in a one-hour period</td>
</tr>
<tr>
<td>Nunnery</td>
<td>1 parking space per 10 nuns</td>
</tr>
<tr>
<td>Pool hall</td>
<td>2 parking spaces per employee</td>
</tr>
<tr>
<td>Rectory</td>
<td>3 parking spaces per 4 clergymen</td>
</tr>
<tr>
<td>Swimming Pool</td>
<td>1 parking space per 2,500 gallons of water</td>
</tr>
<tr>
<td>Taxi Stand</td>
<td>1 parking space for each employee on the largest shift, plus 1 space per taxi, plus sufficient spaces to accommodate the largest number of visitors that may be expected at any one time</td>
</tr>
<tr>
<td>Tennis court</td>
<td>1 parking space per player</td>
</tr>
<tr>
<td>Yacht harbor</td>
<td>3 parking spaces per 4 boat slips</td>
</tr>
</tbody>
</table>

Sources: Planning Advisory Service (1971, 1991); Witheford and Kanan (1972)
<table>
<thead>
<tr>
<th>Parking Spaces Required</th>
<th>Number of Requiring Cities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Per Each 100 Sq. Ft.</td>
<td>3</td>
</tr>
<tr>
<td>1 Per Each 200 Sq. Ft.</td>
<td>1</td>
</tr>
<tr>
<td>1 Per Each 250 Sq. Ft.</td>
<td>1</td>
</tr>
<tr>
<td>1 Per Each 100 Sq. Ft. + 1 Per Each Dwelling Unit</td>
<td>1</td>
</tr>
<tr>
<td>1 Per Each 100 Sq. Ft. or 1 Per Each 6 Seats</td>
<td>1</td>
</tr>
<tr>
<td>1 Per Each 5 Seats or 1 Per Each 35 Sq. Ft. Seating Area, 1 Per Each 400 Sq. Ft. Other Areas</td>
<td>1</td>
</tr>
<tr>
<td>1 Per Each 3 Seats</td>
<td>1</td>
</tr>
<tr>
<td>1 Per Each 4 Seats</td>
<td>1</td>
</tr>
<tr>
<td>5 + 1 Per Each 5 Seats in Largest Chapel</td>
<td>1</td>
</tr>
<tr>
<td>1 Per Each 6 Seats in Chapel</td>
<td>1</td>
</tr>
<tr>
<td>1 Per Each 3 Seats + 1 Per Each Funeral Vehicle</td>
<td>1</td>
</tr>
<tr>
<td>1 Per Each 4 Seats + 1 Per Each Funeral Vehicle + 1 Per Each Employee</td>
<td>1</td>
</tr>
<tr>
<td>1 Per Each 5 Seats + 1 Per Each Funeral Vehicle + 1 Per Each Dwelling Unit</td>
<td>1</td>
</tr>
<tr>
<td>1 Per Each 25 Sq. Ft. Parlor Area</td>
<td>1</td>
</tr>
<tr>
<td>1 Per Each 50 Sq. Ft. Parlor Area</td>
<td>4</td>
</tr>
<tr>
<td>3 Per Each Parlor</td>
<td>2</td>
</tr>
<tr>
<td>4 Per Each Parlor</td>
<td>1</td>
</tr>
<tr>
<td>5 Per Each Parlor</td>
<td>3</td>
</tr>
<tr>
<td>15 + 5 Per Each Parlor Over 3 Parlors</td>
<td>1</td>
</tr>
<tr>
<td>5 Per Each Parlor or 1 Per Each 4 Seats</td>
<td>1</td>
</tr>
<tr>
<td>5 Per Each Parlor + 1 Per Each Funeral Vehicle</td>
<td>2</td>
</tr>
<tr>
<td>8 Per Each Parlor + 1 Per Each Funeral Vehicle</td>
<td>9</td>
</tr>
<tr>
<td>10 Per Each Parlor + 1 Per Each Funeral Vehicle</td>
<td>4</td>
</tr>
<tr>
<td>5 Per Each Parlor + 1 Per Each Funeral Vehicle + 1 Per Each Family on Premises</td>
<td>1</td>
</tr>
<tr>
<td>5 Minimum</td>
<td>1</td>
</tr>
<tr>
<td>30 Minimum</td>
<td>1</td>
</tr>
<tr>
<td>1 Per Each 4 Persons of Design Capacity</td>
<td>1</td>
</tr>
<tr>
<td>No Specific Requirements</td>
<td>19</td>
</tr>
<tr>
<td>TOTAL</td>
<td>66</td>
</tr>
</tbody>
</table>

Source: Planning Advisory Service (1971, p. 36)
study (certainly the most comprehensive ever conducted on parking for a single land use) because it was suspected that many cities' parking requirements were excessive. The ULI noted that:

The community, for example, should avoid the environmental consequences from an unnecessarily large pavement area; the consumer should not be burdened by higher indirect costs from an excessive number of parking spaces (ULI, p. 12).

Data were gathered on parking occupancy at 506 participating shopping centers in 41 states and six Canadian provinces. Detailed parking accumulation counts were obtained from 135 centers, and daily counts for an entire year were obtained from 22 shopping centers. The resulting recommendations were that:

To provide adequate parking for a typical shopping center today, the number of spaces required is:
- 4.0 spaces per 1,000 square feet of gross leasable area (GLA) for centers having a GLA of 25,000 to 400,000 square feet;
- from 4.0 to 5.0 spaces in a linear progression, with an average of 4.5 spaces per 1,000 square feet of GLA, for centers having from 400,000 to 600,000 square feet; and
- 5.0 spaces per 1,000 square feet of GLA for centers having a GLA of over 600,000 square feet.

The provision of parking based on these standards will serve patrons and employee needs at the 20th busiest hour of the year, and allow a surplus during all but 19 hours of the remainder of the more than 3,000 hours during which a typical center is open annually. During 19 hours of each year, which are distributed over 10 peak shopping days, some patrons will not be able to find vacant spaces when they first enter (ULI, p. 2, italics added).

For shopping centers smaller than 60,000 square feet, the number of free parking spaces "needed" at the 20th busiest hour is only five percent fewer than at the busiest hour (p. 10). Therefore, basing the parking requirement on the 20th busiest hour for these centers is almost the same as basing it on the yearly peak-hour "need" for free parking, which occurs on the afternoon of the Saturday before Christmas.

Because the observations on parking occupancy were taken in shopping centers where all parking was free, the implicit assumption is, of course, that the "required" parking will also be free. No economic or marketing reason is given for basing the requirements on the 20th busiest hour of the year (the "design hour"). Basing the standard on the twentieth busiest hour leaves half or more of the parking spaces vacant at least 40 percent of the time (ULI, p. 12). The authority cited for using the "design hour" criterion was a then-fifteen-year-old textbook by Wohl and Martin (1967), which took a highly critical attitude toward the concept. The basic criticisms of the design-hour approach are that (1) it is improper to assume that the size of the parking facility provided will not influence the demand for the facility, and (2) it is improper to assume that the parking facility provided for the design-hour is the optimum economic
solution without examining the costs and benefits of the specific facility. To these two criticisms should be added (3) it is improper to assume that the price charged for the facility will not affect the demand for the facility. Wohl and Martin conclude that:

While [it] may seem frustrating, and while use of simpler and more straightforward concepts, such as... the thirtieth highest hour, may seem more practical to the "real world" engineer, the fact remains that proper engineering design techniques require more detailed and more comprehensive analysis (Wohl and Martin, 1967, p. 176).

Given their harsh criticism of the design-hour criterion, it is surprising to see Wohl and Martin cited as authorities to bless the application of the concept to parking requirements. Note also that Wohl and Martin criticize the use of the thirtieth highest hour, which had been used as the design-hour for highways. The 1982 ULI study adopted the parking "needed" at the twentieth highest hour as the appropriate minimum parking requirement for shopping centers, and a 1965 ULI study of parking requirements for shopping centers had adopted the tenth highest hour. These design-hour choices for parking requirements were not justified by estimating the resulting cost and benefits either to the owner of the shopping center or to the community in which it is located.

City planners usually cite this ULI study as the ultimate authority when setting the parking requirements for shopping centers in their zoning ordinances. It is by far the most sophisticated empirical investigation of parking ever carried out for shopping centers, and far more comprehensive than any city planning department could ever conduct. But if municipal zoning ordinances require developers to provide the number of parking spaces based on studies of the parking "demanded" at a zero price at the 20th busiest hour of the year, the resulting supply will be so large that there will be more than enough spaces to provide free parking for all employees and shoppers during the remaining 99.3 percent of the time that a shopping center is open for business.

Requiring developers to supply "ample free parking" eliminates any incentive for cities to be creative in dealing with peak parking demands. Older cities that have to cope with an inherited built environment without ample free parking must invent alternative ways to deal with peak parking demands, and the results often seem far superior to requiring 5 spaces per 1,000 square feet. For example, the residential neighborhoods surrounding the commercial center of Beverly Hills, California, are protected from spillover parking by Residential Parking Permit Districts that reserve curb parking for residents and their guests. But during the peak Christmas shopping season between Thanksgiving and New Year's Day, the RPP signs on one side of each residential street are covered over with seasonal parking signs permitting three-hour parking by non-residents. The other side of the street remains restricted to residents. There are several advantages of this arrangement: (1) the shoppers' seasonal surge in parking demand is accommodated without incurring the cost of constructing off-street spaces that are empty the rest of the year; (2) the residents benefit from the sales tax revenue generated by the shoppers whose cars are temporarily accommodated at their curbs for a few weeks of the year; and (3) the
community avoids the blight of excessive and unsightly parking structures needed only during five or six weeks of the year.

Compared to this creative solution, the circular logic of conventional parking requirements becomes self-evident when the following sequence of events is noted:

1. The parking requirement affects parking supply.
2. The parking supply affects the price of parking.
3. The price of parking affects parking demand.
4. Parking demand affects the parking requirement.
   (return to 1)

Planners usually enter this circle of causality by assuming that parking is free, and then they require enough parking spaces consistent with the resulting demand expressed at a zero price. In other words, minimum parking requirements make parking free. Shouldn't the relevant question be how many parking spaces will be demanded at a price that covers the cost of providing the spaces? If planners instead estimate demand at a zero price, the resulting requirement provides the parking spaces at a 100 percent subsidy, and with no inkling of how large this parking subsidy is, or whether the parking subsidy is justified by the resulting benefits.

One thing is clear about the size of parking subsidies at shopping centers, however. For peak-period parkers during the 20 busiest hours of the year, the subsidy is enormous. Because some spaces are occupied only during the 20 busiest hours of the year, and are not occupied during the remainder of the more than 3,000 other hours of the year that a shopping center is open, the full capital and operating cost of those spaces are incurred only to provide parking for 20 hours a year. If, for example, it costs $1,200 a year ($100 a month) to provide a parking space that is "needed" only 20 hours a year, the cost of providing that space is $60 for every hour it is "needed." Is it really sensible for city planners to require so much parking that shoppers and shopping center employees receive a $60-per-hour parking subsidy during the 20 busiest hours of the year?

The high cost of providing peak-hour parking is not limited to money alone. In arguing the case that the earlier 1965 ULI recommendation of 5.5 spaces per 1,000 square feet was too high, Barton-Aschman Associates clearly explained the benefits of reducing parking requirements at shopping centers, especially the parking required for employees:

A significant conservation of land could be achieved by reducing the parking ratio from 5.5 to 5.0. This land savings as a result of matching surface parking area to demand could be . . . as much as 10 acres for some of the larger centers which have or approach 2,000,000 square feet of GLA. The land and construction cost savings by not having to provide excess and little or unused surface parking is significant. The cost savings by eliminating excessive parking becomes even more significant if surface parking land is not available and a parking deck must be considered. The adoption of a lower parking ratio would be especially beneficial in the case of existing centers, and
in particular those centers which are to be expanded or modified to include ancillary urban center facilities such as libraries, museums, hotels, general purpose offices, and governmental offices.

At existing centers, lower parking ratios would permit not only the development of additional retail sales space or other compatible uses, but also the replacement of bleak, dirt-collecting, costly-to-maintain sections of the parking area with expanded landscaping or other amenities. Similar advantages would be possible for new developments.

Grants of narrow strips of land along site boundaries could be made to public authorities for the purpose of widening roads and improving the landscaped interface between the center and the rest of the community. In many cases, this would not only contribute to an improved relationship between the center and the community but also result in the improved visual impact of, and more efficient access to, the center itself.

On peak days, with employee parking moving outside of a shopping center's contiguous parking areas, the peak parking demand generated at the center could be reduced by another 1.0 to 1.5 spaces per 1,000 square feet of GLA. This single modification would reduce the peak parking ratio for customers only to between 3.5 and 4.0 spaces per 1,000 square feet of GLA (Barton-Aschman Associates, 1977, pp. 8-9, italics added).

From the above quote, it seems clear that reducing peak parking demand would provide important benefits. But when setting parking requirements, planners implicitly think about the demand for parking as the demand at a zero price at the busiest time of the year. Unless planners explicitly consider the price that people pay for parking as a variable in predicting the number of parking spaces "needed" for new development, off-street parking requirements are perfectly circular and wholly unscientific. Predicting demand without prices is planning without science, or at least without economics.

California's new cash-out legislation may finally break this vicious circle by requiring planners to consider the price of parking in predicting the demand for parking. The required reduction in parking requirements is not merely an additional but is rather an essential feature of the legislation, because without it many employers will not be able to offer any significant cash allowance in lieu of a parking space. Because zoning ordinances have in the past required so much parking that there is often enough to satisfy demand at a zero price, many employers now have no economic incentive to promote ridesharing. The parking spaces are already a sunk cost, and if they are vacated by former solo drivers, they will sit empty, and can't legally be used for anything other than parking. Indeed, in the legislative hearings on the parking cash-out bill, the strongest argument against the bill was that local governments require developers to provide parking at great expense, and sometimes explicitly prohibit any charge for it; therefore it would be irrational for the state government now to require employers to pay their employees not to use the expensive parking spaces that the local government has required to be provided. This persuasive argument led to limiting the cash-out requirement to cases where the employer makes an explicit out-of-pocket payment to a third party to subsidize the employee's parking. Thus, the full benefits of cashing out parking subsidies will not be revealed until reduced (or
better still, abolished) off-street parking requirements allow the parking supply to shrink to where its market price covers the total cost of providing parking spaces.
X. CASHING OUT PARKING SUBSIDIES WILL IMPROVE URBAN FORM

Cashing out parking subsidies and reducing off-street parking requirements could, in the long run, significantly improve urban form. Off-street parking requirements have evolved to prevent parking demand for new land uses from spilling over onto the nearby supply of free or cheap curb parking. But most urban planners have understood the parking problem in a way that prevents them from ever solving it, except by using minimum parking requirements that force up the supply of off-street parking until there are enough free parking spaces for everyone. Urban planners are supposed to think in comprehensive terms, to think in terms of interactions, to think of the big picture, to see the forest as well as the trees. But the number of cars per household, the number of people per car, and therefore urban form, are surely not independent of the price of parking.

1. Regulating Each Tree but Neglecting the Forest

Every city has extraordinarily detailed parking requirements for almost every land use (see Appendix 4). These parking requirements have a profound but almost totally undiscussed effect on what gets built, what it looks like, what it costs, how people travel, and the quality of the air they breathe. Minimum parking requirements are not designed to reduce overall traffic congestion or improve air quality; rather, they are designed only to reduce spillover parking in the immediate vicinity of new development. This practice is the very opposite of a comprehensive planning approach. It completely neglects the phenomenon that the cumulative, regional consequences of a policy can be very different from the incremental, local consequences.

If, by requiring "enough" parking for each land use, minimum parking requirements force up the off-street parking supply to the quantity of parking demanded at a zero price, the resulting market-clearing price of parking is reduced to zero. When all the validated parking, guest parking, customer parking, employer-paid parking, valet parking, unmetered curb parking, and required residential parking spaces are considered, almost all parking is free to the parker. Even in areas where the posted price of parking appears prohibitively high, the validation of parking charges means that parking is free to the driver, and thus is no disincentive to driving. High market prices for parking encourage ridesharing only if the driver personally pays for the parking. Most parking charges, where they exist, are validated for the driver, so planners who base their parking requirements on the observed peak "accumulation" of vehicles are still requiring enough spaces to satisfy the demand for parking at a zero price, regardless of how astronomical the market price may appear to be. As one personal example, I served for several years on committees of a civic organization, Los Angeles 2000, which met at the Bank of America tower in downtown Los Angeles. The Bank of America validated our parking, of course. After one particularly long meeting, a group of us were waiting for our cars to be delivered by the valet parking attendants (we had all driven solo). UCLA's Chancellor Young pointed out to us with horror that the posted price of parking was $2.50 for every 20 minutes (all of us had parked long and often in that underground garage, but no one had ever seemed to notice the posted parking prices). Although none of us had ever paid a penny to park,
everyone instantly agreed how expensive it was to park downtown. Those high parking prices never prevented any of us from driving alone.

Indeed, where the market price of parking is high, it is usually driven up by the huge demand-side subsidies of employer-paid and validated parking. In these cases, the function of high posted parking prices is apparently to limit the willingness of building owners and tenants to validate their guest and employee parking. Given the fact that few drivers pay anything to park no matter how high the posted price, it should not be surprising that many observers have been led to the false conclusion that the price elasticity of demand for parking is close to zero, and that parking is therefore a "necessity."

What is the evidence that most drivers pay nothing to park? The 1990 Nationwide Personal Transportation Survey provides information from telephone interviews of 48,400 persons in 22,300 households. For the NPTS "travel day file," each respondent was asked about trips taken during the previous day. One of the questions asked about each automobile trip was "Did you pay for parking during any part of this trip?" Table 22 shows the responses to this question. Nationwide, motorists reported receiving free parking for 99 percent of all automobile trips. In Southern California, a region with notoriously high land costs, motorists reported receiving free parking for 98 percent of all automobile trips. For work trips, 99 percent of the respondents reported paying nothing to park in both Southern California and the rest of the country.

Another section of the NPTS, the "person file," provides responses from the same 48,400 persons to the question "Do you pay for parking at work?" (not on the previous day, but in general). In response to this question only 95 percent (rather than 99 percent) of automobile commuters reported paying nothing to park. The explanation for this small discrepancy between the "person file" and the "travel day file" is not clear. Some respondents to the "travel day" question may have paid for a monthly parking pass at work, and thus reported paying nothing to park during a work trip on the previous day. Even if some who do pay for monthly parking reported free parking for a particular day's work trip, however, this result still indicates that almost all motorists perceive parking to be free when considering the day's trip. For non-work trips there is no reason to suspect any over-reporting of free parking related to a monthly rather than daily charge for parking, yet almost all travelers still reported paying nothing to park.

45. The Southern California data refer to the Los Angeles, Anaheim, and Riverside Metropolitan Statistical Areas. The great similarity of the Southern California to the nationwide data suggest that it is not unjustified to extrapolate results of research conducted in Los Angeles to predict consequences of cashing out employer-paid parking elsewhere in the nation.

46. Visitors to former President Ronald Reagan's office in Century City are apparently among the few motorists in Southern California who do not receive free guest parking (Los Angeles Times, May 13, 1989). It is reassuring to find that President Reagan privately practices the market-oriented policies that he publicly advocates.
TABLE 22

SHARE OF ALL AUTOMOBILE TRIPS WITH FREE PARKING

<table>
<thead>
<tr>
<th>Trip Purpose</th>
<th>Share of Trips with Free Parking</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Southern California</td>
</tr>
<tr>
<td>To or From Work</td>
<td>99%</td>
</tr>
<tr>
<td>Family/Personal Business</td>
<td>98%</td>
</tr>
<tr>
<td>Shopping</td>
<td>100%</td>
</tr>
<tr>
<td>Social/Recreational</td>
<td>97%</td>
</tr>
<tr>
<td>Visit Friends/Relatives</td>
<td>99%</td>
</tr>
<tr>
<td>School/Church</td>
<td>94%</td>
</tr>
<tr>
<td>Work Related Business</td>
<td>90%</td>
</tr>
<tr>
<td>Doctor/Dentist</td>
<td>100%</td>
</tr>
<tr>
<td>Other</td>
<td>100%</td>
</tr>
<tr>
<td>Pleasure Driving</td>
<td>100%</td>
</tr>
<tr>
<td>Vacation</td>
<td>100%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>98%</td>
</tr>
</tbody>
</table>

Source: 1990 Nationwide Personal Transportation Survey. All data are from the "travel day file."
Surely this ubiquity of free parking has affected urban form, but planning studies for parking requirements almost never look beyond the simple "accumulation" of vehicles in estimating how many parking spaces are "needed" for each specific land use. Given the evidence from the NPTS data, it is clear that parking "demand" is implicitly being estimated at a zero price, without any reference either to what parking spaces cost or to what motorists are willing to pay for them.

An essential feature of minimum parking requirements in zoning ordinances is their ad hoc application to each specific land use. There is always the attempt to tailor the requirement to a specific land use. As a result, parking requirements in zoning ordinances implicitly set the ratio of cars to people for every land use, and are indeed often explicitly stated in terms of parking spaces per person (for example, per nun, per barber, per tennis player, or per employee). Zoning ordinances thus lock cars to people at a ratio based on the assumption that parking is free, no matter how much it costs to provide the parking or by how much it drives up the cost of development and decreases density. Having set the car-to-people ratio, zoning must then hold down development density to prevent intolerable traffic congestion that accompanies more people. That is, cars replace people or buildings as zoning's real density concern.

2. Parking versus Housing

Surprisingly, the only research I have been able to find that links parking requirements to urban form was done not by an urban planner but by two housing economists whose central concern was not parking requirements at all. In a unique study, Brian Bertha and Wallace Smith show how powerfully parking requirements raise housing costs and reduce the density of development. Before 1961, Oakland's zoning ordinance didn't even mention off-street parking in residential districts. But in 1961 the zoning was changed to require one off-street parking space per dwelling unit for all apartments developed after that date. Bertha and Smith (1964, p. 104) say that Oakland's intention was "to facilitate a reduction in traffic congestion caused by on-street parking in medium and high density areas." But what was the result for housing?

Bertha and Smith collected data for 45 multifamily rental housing projects developed within four years before and 19 projects developed within two years after Oakland introduced the parking requirement. Table 23 summarizes the changes caused by the parking requirement. The density of dwelling units per acre fell by 30 percent for apartments developed after the parking requirement was imposed. The construction cost per dwelling unit rose by 18 percent.

Why did an innocent-seeming requirement of one parking space per dwelling unit cause developers to build fewer but more expensive dwelling units? One reason is that enlarging a dwelling unit doesn't require another parking space, but adding a dwelling unit does. Bertha and Smith explain:
### TABLE 23

**THE OBSERVED EFFECTS OF INTRODUCING A PARKING REQUIREMENT OF ONE PARKING SPACE PER DWELLING UNIT IN OAKLAND, CALIFORNIA**

<table>
<thead>
<tr>
<th>Measured Variable</th>
<th>Before Requirement</th>
<th>After Requirement</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>#</td>
<td>%</td>
</tr>
<tr>
<td>Housing Density</td>
<td>77</td>
<td>54</td>
<td>-23</td>
</tr>
<tr>
<td>(dwelling units/acre)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction Cost</td>
<td>$6,613</td>
<td>$7,805</td>
<td>$1,192</td>
</tr>
<tr>
<td>per Dwelling Unit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>($/dwelling unit)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction Cost</td>
<td>$10.63</td>
<td>$10.23</td>
<td>($0.40)</td>
</tr>
<tr>
<td>per Square Foot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>of Dwelling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>($/square foot)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction Cost</td>
<td>$513,000</td>
<td>$421,000</td>
<td>($92,000)</td>
</tr>
<tr>
<td>per Acre</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>($/acre)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land Value</td>
<td>$217,000</td>
<td>$145,000</td>
<td>($72,000)</td>
</tr>
<tr>
<td>($/acre)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The zoning change made prior densities impossible without underground garages. This increased the cost of development if the same density were to be achieved before and after the zoning change (p. 108).

Size or square footage of the units increased after the June, 1961 change. Larger units were developed because of the economies of construction costs. Costwise, it was to the advantage of the developer to build fewer large units in a development by adding 50 to 100 square feet per bedroom than to add additional units to the development where he would sustain greater additional costs, due to the expensive fixed costs each additional unit has in bathroom and kitchen facilities [and parking spaces]. The developers interviewed stated that the increased pre-development land costs encouraged development of an apartment with a higher rent structure, and in order to able to receive higher rents in the market, the developer tried offering the tenants larger units (p. 120).

Oakland's parking requirement increased the number of parking spaces, but it also reduced the supply and increased the cost of housing. Because the number of dwelling units per acre fell by more than the construction cost per dwelling unit rose, the total investment in construction per acre fell by 18 percent. That is, even including the cost of the newly required parking spaces, housing investment per acre declined as a result of the parking requirement. Land values fell even more (by 33 percent) because the land suddenly came loaded with a new requirement (to provide parking spaces that residents did not pay for). As another result, property tax revenues per acre must also have declined because both land values and construction investment declined.

What is achieved by incurring these heavy costs? More free parking, of course. The data in Table 23 demonstrate that this "free" parking is extremely expensive, even though the costs are hidden. Beyond these hidden costs in the real estate market, there are further costs in the transportation market. For example, what were the consequences for transit ridership, automobile ownership and use, energy consumption, and air pollution?

If Oakland's modest 1961 requirement of one parking space per dwelling unit had such dramatic effects on Oakland's land use, try to imagine the far more serious effects of the earlier quoted Specific Plan for Wilshire Boulevard in Los Angeles, which contains the provision that "For dwelling units, there shall be at least two and one-half parking spaces for each dwelling regardless of the number of habitable rooms contained therein." Because the cost of providing parking facilities is included in the development cost, such a heavy burden of 2.5 parking spaces per dwelling unit (regardless of its size) certainly must raise housing costs, depress housing density, and reduce housing investment, all to the purpose of providing more parking for which no price is charged.

Zoning ordinances almost never grant a reduction in parking requirements for low-income housing, although low-income households own far fewer cars. The *Residential Transportation Energy Consumption Survey* (1987, p. 30) found that households with income below $10,000 a year owned an average of 1.3 cars, while households with income above $35,000 a year owned
an average of 2.2 cars. Nevertheless, new housing must come equipped with the same required number of parking spaces, regardless of household income. This is clearly an unnecessary burden to the 28 million households who own only one car or none, because the requirement is almost always more than one parking space per dwelling unit.\(^47\) Thus, minimum parking requirements not only aggravate the serious problems of traffic congestion, air pollution, and energy consumption, but also raise the cost of low-income housing. Reducing the parking requirements for rental housing, and charging separately for housing and parking, could significantly improve housing affordability and design. It would also remove the burden of paying for residential parking spaces from the many families who own fewer than the average number of cars, or who, if it would reduce their rent, would be willing to own fewer cars. As argued earlier, however, efficient management of the curb parking supply is a prerequisite for reducing off-street parking requirements.

In addition to raising the cost of urban development, minimum parking requirements also spread out development and reduce its density. When there is a high density land use, the result of the high parking requirement is to surround it with the large number of parking spaces "needed" to serve that use. Thus, parking requirements push high density activities apart from one another, and the physical separation of one from another by the required parking makes driving more attractive and walking less attractive. When parking requirements don't push people apart, they push people high into the air. For example, consider an office building in Westwood Village near UCLA, designed by Helmut Jahn, who was selected as the architect in a nationwide competition. It has 2.4 parking spaces per 1,000 square feet (less than now required for new buildings) in 3 1/2 levels of underground self-park spaces and 6 levels of elevated valet-served parking. All the elevated parking is fully concealed behind marble and glass walls. Because of the above-grade parking, the actual office space begins 120 feet above ground, the equivalent to being on the 11th floor of a standard office building (Los Angeles Times, August 14, 1984).

Better than any tables or graphs, the novelist Alison Lurie tells how automobiles and their support structures influence urban life:

The air was still; the street empty except for the line of huge cars parked along the curb, glittering and grinning with chrome and polish and enamel. They seemed larger, or at least on a larger scale, than the houses. They were designed for luxurious giants; the houses for international midgets. Paul had noticed already that in Los Angeles automobiles were a race apart, almost alive. The city was full of their hotels and beauty shops, their restaurants and nursing homes--immense, expensive structures where they could be parked or polished, fed or cured of their injuries. They spoke, and had pets--stuffed dogs and monkeys looked out of their rear windows, toys and good-luck

\(^47\) The Residential Transportation Energy Consumption Survey (p. 32) reported that 5 percent of households do not own a car, 31 percent of households own only one car, and 64 percent of households own more than one car.
charms hung above their dashboards, and fur tails waved from their aerials. Their horns sang in varied voices . . .

Few people were visible. The automobiles outnumbered them ten to one. Paul imagined a tale in which it would be gradually revealed that these automobiles were the real inhabitants of the city, a secret master race which only kept human beings for its own greater convenience, or as pets (The Nowhere City, pp. 7 and 232).

In one of the few analytical studies that have attempted to explain the rationale for minimum parking requirements (which help to produce the reality that Alison Lurie captures), Weant and Levinson (1990) say:

Most local governments, through their zoning ordinances, have a parking supply policy that requires land uses to provide sufficient off-street parking space to allow easy, convenient access to activities while maintaining free traffic flow. The objective is to provide enough parking space to accommodate recurrent peak-parking demands (p. 35).

For the purpose of zoning ordinance applications, parking demand is defined as the accumulation of vehicles parked at a given time as the result of activity at a given site (p. 37).

Planners can count the peak number of cars parked at existing land uses, and say that this "demand" or "peak accumulation" is the minimum number of spaces "needed" to serve that land use. That is pretty much what happens, although Willson's finding that parking requirements are twice the peak accumulation of vehicles at suburban office sites in Southern California suggests that even the counting isn't always done correctly. But counting parked cars (even when correctly done), noting the highest number counted, calling that highest number the "demand" for parking, and then requiring that number of parking spaces to be supplied in no way resembles what an economist would call estimating the demand for anything.

Even worse, parking requirements are in some cases deliberately set high in order to discourage some particular land uses. For example, if fast food restaurants are considered an undesirable land use, the parking requirement for fast food restaurants can be set so high that it becomes physically and financially more difficult to develop new fast food restaurants. A serious problem with this approach is that the fast food restaurants that do get built then have so much parking that they are even more of a blight on the landscape then they would otherwise be. Further, the resulting ample free parking makes driving even more convenient than before, and having to walk past the parking lots makes street life less pleasant.

Whether it is a fast food restaurant, a low income housing project, a hotel, or a brothel, one sturdy argument against the proposal is always that the developer hasn't provided enough parking, in the hope that if the developer is required to provide more parking the project won't be built at all. Unfortunately, most developers eventually do provide all the required parking, and the only result is that the city becomes more automobile friendly, less transit friendly, less pedestrian oriented, more expensive, less compact, and more polluted. Some observers will look
at the result and say the market shows that this is what citizens want. But this is not a market result, it is a planned result. The result is planned inadvertently by minimum parking requirements.

When questioned about the possible harm done by high minimum parking requirements, practicing planners often respond that minimum parking requirements don't have any effect because "lenders require even more parking than the code requires." Willson carefully investigated this issue; after interviewing both developers and lenders in his detailed case studies he concluded that:

\textit{the primary factor influencing lenders' parking supply requirements was local zoning ordinance requirements.} Most lenders interviewed indicated they simply ensured that the development met local parking requirements (Willson, 1992, p. 39, italics in the original).

Another predictable defense of minimum parking requirements is that the concept is fundamentally sound, but that existing standards are obsolete and need to be "updated" to meet current conditions. This argument implies that updating the parking standards will solve the problem. As discussed earlier, if it is shown that a shopping center now "needs" only 5 rather than 5.5 parking spaces per 1,000 square feet on the twentieth busiest hour of the year, then reducing the minimum parking requirement to 5 spaces per thousand square feet should solve the problem. But this "solution" neglects the more fundamental problem that the new standard still requires developers to provide expensive and environmentally harmful parking spaces that are "needed" for only 20 hours a year and are not "needed" for the remaining 99.8 percent of the year. When planners impose their own judgments to force the supply of parking above what the market would otherwise provide, it means that more automobiles will be owned and used, there will be more traffic and air pollution, and more land will be devoted to parking. These undesirable outcomes help to explain why a growing number of cities limit rather than require off-street parking.

Yet another argument for minimum parking requirements is that their purpose is not to make parking free, but rather to ensure that new development does not raise the market price of parking. If new urban development removes surface parking lots without providing both replacement parking and additional parking for the new development, the new development will simultaneously increase the demand for parking and decrease its supply. Thus, the minimum parking requirement will, by balancing additions to the demand for parking with equal additions to the supply of parking, prevent the market price of parking from jumping up as surface parking lots are converted to higher uses. Miraculously, city planners perform this balancing act without any explicit reference to the price of parking, or any recommendation regarding what a desirable market price would be. In effect, the minimum parking requirement is a form of hidden tax on new development to subsidize the required parking (which, if it paid its own way, would not have to be required). Why, if they want to encourage development and reduce automobile dependency, should city planners want to tax new development in order to subsidize additional parking?
A final argument in defense of minimum parking requirements is that they work. Americans are pragmatists who believe that if something works, it must be right. Planners are simply adapting to the inevitable, rather than hastening the avoidable. Citizens want cars, and through their elected officials demand minimum parking requirements to accommodate their preferred automobile-oriented lifestyles. But this argument is refuted by the trend toward imposing parking caps rather than parking minimums, and not just in large cities like New York, Boston, Chicago, and San Francisco, but also in smaller cities such as Portland, Oregon, and Bellevue, Washington, that are admired for their creativity in reducing automobile dependency. Minimum parking requirements in zoning ordinances do set the floor on the amount of parking supplied. The "need" for minimum parking requirements does not result from the market's failure to provide enough off-street parking. Instead, the "need" for minimum off-street parking requirements results from the government's failure to manage its own curb parking correctly. Weant and Levinson, whose book on parking is by far the most comprehensive available, make exactly this case when they say:

An uncontrolled approach to off-street parking need not necessarily be harmful, as long as adequate curb parking controls are enforced. Most businessowners and land developers have clear incentives to provide adequate parking to ensure successful enterprises (p. 39).

Thus, the "need" to require off-street parking stems from the constraint that public agencies do not enforce adequate controls on curb parking. Aaron Wildavsky's words (1979, p. 59) fit this case perfectly: "Constraints are not mere obstacles, but are opportunities asking (daring, pleading) to be shown how they can be overcome."

The government's failure to regulate its own supply of curb parking is the tail that wags the dog of minimum off-street parking requirements. Minimum off-street parking requirements were invented and proliferated in an era when there were no Residential Parking Permit Districts, and when it was difficult to charge for curb parking. Given the constraint that almost all curb parking was unregulated and free, it made some sense for zoning ordinances to require new development to provide off-street parking. But the parking requirement approach disguises the cost of the intervention because the expense of complying does not appear in any public budget. It is now easy to regulate or price curb parking, and public concern is focussed on reducing traffic, reducing air pollution, conserving energy, and increasing the supply of affordable housing. The argument that minimum parking requirements are "needed" to prevent parking spillover simply ignores the environmentally and economically superior alternative methods now available to prevent parking spillover. Given the harm done by minimum parking

48. Columbus, Ohio introduced the first off-street parking requirements for multifamily dwelling units in 1923 (Witheford and Kanaan, 1972). Oklahoma City introduced the world's first parking meters on July 16, 1935. The first person cited for overstaying a parking meter's time limit was the Reverend C. H. North: the pastor's then-novel explanation that he "had gone to get change" persuaded the judge to dismiss the charge (Allright Parking News, Summer 1985, p. 5).
requirements, and by the resulting parking subsidies they engender, minimum off-street parking requirements are an anachronism.

3. The Analogy to Bloodletting

Minimum parking requirements in the planning profession are closely analogous to bloodletting in the medical profession. For over two thousand years doctors prescribed bloodletting to cure most diseases, and medical textbooks contained elaborate parking-requirement-like tables telling exactly how much blood should be let from exactly which part of the body, and when, for every disease.\(^49\) One famous physician's succinct recommendation was: "Generally speaking, as long as bloodletting is required, it can be borne; and as long as it can be borne, it is required." (Hall, 1836, p. 280). Even William Harvey, who discovered that blood circulates in the body, said that "Daily experience satisfies us that bloodletting has a most salutary effect in many diseases, and is indeed the foremost among all the general remedial means." (Harvey, 1847, p. 129).

One strong similarity between bloodletting and minimum parking requirements is the general public acquiescence to both practices without any scientific research on their effects. One physician noted that:

People are so familiarized to bleeding that they cannot easily conceive any hurt or danger to ensue, and therefore readily submit, when constitutional fear is out of the question, to the opening of a vein, however unskillfully advised (Dickson, 1765, p 1.)

Another similarity between bloodletting and minimum parking requirements is the harm caused by both practices. In the case of bloodletting, the problem was magnified because physicians didn't clean their instruments before proceeding to the next patient. In the case of parking requirements, the problem is magnified when planners require far more parking than is demanded even when all parking is free. Recall here that Willson (1992) found that the number of parking spaces required by zoning ordinances was double the peak accumulation of cars parked at suburban office sites in Southern California.

A final similarity between bloodletting and minimum parking requirements is that the practice of bloodletting gradually fell out of use, and minimum parking requirements in zoning ordinances are gradually being replaced by parking caps.\(^50\) If doctors at the UCLA Medical School prescribed the precise amount of bloodletting to treat specific diseases, while doctors at the UC San Francisco Medical School prescribed blood transfusions to treat the very same diseases, any scientist would question what is going on. Yet city planners in Los Angeles (and most other cities) prescribe the minimum number of parking spaces for every land use, while city

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49. For a fascinating account of the history of bloodletting, see Davis and Appel (1979), from whom I have drawn most of my information regarding this parking-requirement-like practice.

50. Medical journals continued to publish articles advocating bloodletting until the 1920s.
planners in San Francisco, Portland, San Diego, Boston, Chicago, and a few other cities prescribe the maximum number of parking spaces for some of these same land uses, both with the goal of reducing traffic congestion. No one questions what is going on.

The planning profession's approach to minimum parking requirements is strikingly similar to how Lewis Thomas characterizes the medical profession's approach to the treatment of most diseases less than a hundred years ago. Describing a leading medical text written in 1896, he says:

The public expectation then, as now, was that the doctor would do something. There was no disease for which a treatment was not recommended . . . looking through the textbook must have caused the learner's heart to sink. Every other page contains a new, complex treatment always recommended by the admonition that the procedure be learned by rote (since it rarely made any intrinsic sense) and be performed precisely as described. Acute poliomyelitis had to be treated by subcutaneous injections of strychnine; the application of leeches; the administration by mouth of belladonna, extract of ergot, potassium iodide, and purgative doses of mercury; the layering of thick ointments containing mercury and iodine over the affected limbs; faradic stimulation of the muscles; ice-cold shower baths over the spine; and cupping. The standard remedy for tuberculosis was an arsenic solution, administered in doses gauged to have an effect just short of outright arsenic poisoning. One was advised also to add digitalis, strychnine, morphine, caffeine, and a long list of other formidable substances: creosote by mouth and also inhalation, ichtyol, aspiring, quinine, bismuth, lead acetate, mercury, argot, atropine, dilute hydrochloric acid, salicylates, and camphor, each of these with a dosage schedule to be followed precisely, some of them singly, others in various combinations . . .

All of this has the appearance of institutionalized folly, the piecing together of a huge structure of nonsensical and dangerous therapy, and indeed it was. The pieces were thought up and put together almost like thin air, but perhaps not quite. Empiricism made a small contribution, just enough in the case of each to launch it into fashion (Thomas, 1981, pp. 40-41).

If this sort of textbook caused the medical student's heart to sink less than a hundred years ago, imagine the plight of today's idealistic young planning students who imagine that they will make a career of developing low-income housing or child care centers. They quickly learn that the first hurdle they must overcome to make their projects "pencil out" is to obtain a (usually denied) planning variance to reduce the minimum parking requirement. If they work in a planning department, they find themselves administering the ramshackle house of cards that constitutes their city's zoning code for parking (refer again to Tables 19-21 and Appendix 4). Fortunately for medicine (and one hopes for planning), Thomas says that "At last, most of these blind but determined therapies were given up."

There are, of course, other examples in history where inappropriate standards have had unintended consequences. Before the Titanic sank, lifeboats on passenger liners were required
in proportion to the ship’s gross tonnage, not the number of passengers. Before the *Challenger* exploded, the required minimum temperature at launch time was calculated on a misunderstanding of the thermal properties of something as small as an O-ring. Sometimes it takes a catastrophe to stimulate the re-examination of customary and widely accepted standards. But with minimum parking requirements, there is no single catastrophic event to point to, although the evidence is all around us. The event is more a creeping catastrophe of high housing costs, traffic congestion, air pollution, and an automobile dependency so great that American motor vehicles alone now consume *one-eighth* of the world’s entire oil production. Minimum parking requirements do not *cause* all these ailments, of course, but they do mightily *contribute* to them.

4. **Problems Caused by Ignoring Price and Cost**

Having initially misdiagnosed the parking problem, planners moved quickly to exacerbate it with minimum parking requirements. Now, city planners abruptly and unashamedly amend zoning ordinances directly from minimum parking requirements to parking caps, with the new caps typically lower than the previous minimums. There is never an interim period of *laissez-faire* during which the planners admit that they don’t really know how many parking spaces should be required or allowed. After all, if city planners don’t even know how many parking spaces are appropriate, what *do* they know? As they lurch from high minimum parking requirements to low parking caps, city planners seem to cling to the old Soviet maxim that “What is not compulsory must be prohibited.”

By its mandate that local governments grant a reduction in parking requirements to developments that implement parking cash-out programs, the new California cash-out legislation will, for the first time, force planners to examine carefully how the price of parking affects the demand for parking. And, by requiring employers to offer cash-out programs, the legislation will force cities to deal with the resulting spillover parking by implementing some new controls on curb parking, or at least make better use of the controls they already have. These new curb parking controls will in the long run help to overcome the fundamental constraint (scarce but free curb parking) that motivates all minimum parking requirements. Although cashing out parking subsidies will have some significant benefits in the short run when the supply of parking spaces is fixed, the major improvements in urban form can occur only in the long run when the supply of parking spaces can be reduced in response to the reduced demand for parking. These longer-run benefits associated with the reducing or eliminating parking requirements can significantly unburden new development in several ways:

- Reduced parking requirements will reduce the cost and increase the profitability of new development, because real estate developers will not have to provide so many

51. The United States consumes a quarter of the world’s oil production, and one half of this is consumed by motor vehicles, so motor vehicles in the United States consume one-eighth of the world’s total oil production (McKenzie, Dower, and Chen, 1992, p. 3).
unremunerative parking spaces. If parking pays its way, there is no reason to require its provision.

Reduced parking requirements will improve the appearance of new development by shrinking the sea of asphalt and multistory parking structures surrounding each new building.

Reduced parking requirements will reduce the number of automobile trips associated with new development. A greater volume of development can then occur for any given volume of traffic allowed. Because much of the opposition to new development centers around the traffic that it will create, the traffic reduction associated with cashing out employer-paid parking will allow an increase in development without any increase in traffic.

Finally, there are numerous interesting possibilities created by the new California legislation’s mandate that cities and counties retroactively reduce parking requirements for existing developments that implement a parking cash-out program. Owners of existing commercial developments who reduce trip demand by cashing out employer-paid parking will be able to increase the size of their existing development or undertake adjacent development without providing extra parking spaces.

The possibility of additional development without new parking spaces will be especially valuable for infill development on small parcels of vacant land in older areas of the city. On these tightly constrained sites it is usually difficult and sometimes impossible to construct a new building or expand an old one and provide the required parking. All architects and real estate developers know of situations where the parking required by a zoning ordinance determines what can be built, and what it looks like (form follows function, form follows fashion, form follows money, form follows parking). The parking is supposed to serve the building, but instead the building serves the parking requirement. Recall that the failure to regulate the curb parking supply was the tail that wagged the dog of minimum parking requirements, which in turn becomes the tail that wags the dog of urban development. Thus, much of the harm done by minimum parking requirements can be traced back to the initial mismanagement of curb parking.

It may seem far-fetched to speculate that reducing parking requirements would significantly unburden enterprise, but minimum off-street parking requirements do stifle enterprise in subtle ways. High minimum parking requirements, based on the assumption of free parking, often prevent the expansion of firms at their existing sites, because the expansion would increase the number of required parking spaces, an impossible burden on many sites. For example, suppose a restaurant is built to the parking requirement of one space per three seats in the dining area, and the restaurant becomes popular and wants to add tables (say on an outdoor terrace during the summer). The parking requirement makes this impossible without
adding another parking space for every three new seats. Similarly, once a barber shop, restaurant, or furniture store is built, minimum parking requirements often make it difficult to use the building for another purpose. For example, suppose a furniture store is built to meet the parking requirement of one parking space per 1,000 square feet. The furniture store goes out of business, and someone wants to open a bicycle repair shop in the vacant space. The bicycle repair shop cannot get an occupancy permit because the parking requirement for that use is three spaces per 1,000 square feet. In situations like these, cashing out parking subsidies, by reducing the demand for parking, can improve the profitability of expanding existing businesses, and opening new businesses, on old sites.

Minimum parking requirements and employer-paid parking also encourage employers to substitute capital for labor in their production decisions. Providing parking for all employees raises the cost of employing workers, but does not raise the cost of employing capital (computers, machines, etc.), and thus tilts choices toward labor-saving capital investment. For example, if the cost of providing parking spaces is $100 a month, and if the employer offers free parking to all employees, the employer-paid parking effectively raises labor costs by $100 a month for every worker who accepts the offer. Thus, not only do minimum parking requirements directly limit the amount of office space that will be developed on any piece of land, employer-paid parking, by encouraging employers to replace labor with capital, further reduces the number of workers who will be employed in whatever amount of office space does get built.

Excessive parking requirements place the heaviest burden on new development in places where density and land prices are highest, so cashing out employer-paid parking can attract both development and employment to central locations that are well served by mass transit. In the long run, cashing out employer-paid parking and reducing parking requirements will reduce both the demand for and supply of parking spaces, and will therefore shift valuable land and capital from parking to land uses that employ more workers and pay more taxes.

The full benefits of cashing out employer-paid parking would not occur overnight, of course. The full long-run benefits would occur only after the parking supply has adjusted downward to meet the reduced demand for parking, and when user-paid parking charges cover the full cost of constructing, maintaining, and operating parking spaces. But some of these long-run benefits should begin to materialize rather quickly if new construction is unburdened from conventional parking standards.

52. For example, the parking requirement for restaurants in Long Beach, California, is five spaces plus one space per three seats in the dining area, or 10 spaces per 1,000 square feet of gross floor area, whichever is greater.

53. These are the actual parking requirements for bicycle repair shops and furniture stores in Hillsborough County, Florida. Why a bicycle repair shop "needs" three times as much parking as a furniture store is anyone's guess.
For example, consider the case of Disney Hall. As a result of what is reported to be the largest private donation ever made to a cultural institution in the United States (from the heirs of Walt Disney), Los Angeles County is ready to build a new 2,380 seat concert hall in downtown Los Angeles, at a cost of $110 million. In 1988-1989 a major international architectural competition selected Frank Gehry's proposal for Disney Hall, and Gehry has spent three years since then in refining the highly praised design. With no public debate or attention whatever, a County-financed 2,500 space parking garage will be built underneath Disney Hall, at a cost of another $110 million, or $44,000 per parking space (Los Angeles Daily News, October 29, 1992). Thus, the parking garage below will cost as much as the world's most expensive concert hall being built above.\footnote{Disney Hall is by no means unique in its 1-to-1 building cost/parking cost ratio. When UCLA built its $8 million Wooden Center athletic facility in 1983, the two levels of underground parking beneath it cost another $8 million. At that time the operating cost per space (for lighting, ventilation, elevators, staffing, etc.) was $16.50 per month, and the price of a campus parking permit was $15 per month. Thus, user fees for these spaces didn't even pay for their operating cost, let alone their $20,000 per space capital cost.}

Who is to dispute the "need" for these expensive subterranean parking spaces? As everyone who hasn't studied the problem knows, we obviously "need" more parking. But recall the estimate that cashing out existing employer-paid parking subsidies in downtown Los Angeles would reduce the demand for parking by 9,000 spaces. Thus, by putting 9,000 vacated parking spaces onto the market, and also by reducing the demand for parking spaces in new development, cashing out employer-paid parking subsidies could significantly lower the cost (and often improve the appearance) of new developments like Disney Hall.

Finally, the argument that cashing out-employer paid parking will improve urban form can be linked to the more common argument that the increasing cost of energy will lead to a more compact, economical urban form. Every oil shortage brings with it urgent discussions of how higher energy prices will reduce urban sprawl, and how reducing urban sprawl will reduce energy consumption.\footnote{For example, see Gomez-Ibáñez (1991), Gordon et al. (1991), and Newman and Kenworthy (1992) for a lively debate over the causes and consequences of automobile-oriented cities. Regardless of their differences on other issues, I am sure that all the participants deplore employer-paid parking and minimum parking requirements.} But recall that the average employer-paid parking subsidy for commuters to downtown Los Angeles is almost 50 percent greater than the \textit{total} cost of gasoline for the entire journey. Thus, employer-paid parking decreases the cost of driving to work alone by even more than would free gasoline. The average parking subsidy was 16 times greater than the federal gasoline tax paid for the average commute trip. So even a huge increase in the federal gasoline tax would discourage solo driving to work by much less than employer-paid parking already encourages it. Given these cost comparisons, it seems reasonable to say that cashing out parking subsidies should reduce urban sprawl by as much as any foreseeable increase in the price of gasoline.
5. Using the Revenue from Spillover Parking

I have argued that if cashing out employer-paid parking subsidies creates spillover parking problems, these problems are best dealt with by creating Residential Parking Permit Districts or by charging a market-clearing price for curb parking, or by some combination of these two. But if solving the spillover parking problem by pricing curb parking at its market value is as simple as just described, why wasn’t it done long ago? There would then be no need for off-street parking requirements, and cashing out employer-paid parking would not cause a spillover parking problem. The answer to this important question lies, I believe, with the geographic and functional distribution of curb parking revenue. Market-rate prices for curb parking have many opponents and few friends because voters see themselves primarily as users who pay for parking, and not as potential owners who receive the revenue. Parking meters appear to suck money into a mysterious void, as though down a tube into the earth; everyone pays to park, but no one seems to receive the income.

The only source I have been able to locate on the use of curb parking revenue is a survey conducted by the National League of Cities. It found that 60 percent of all cities deposited curb parking revenue into their General Fund, and 40 percent deposited it into special Parking Funds that are typically used to purchase or provide public off-street parking (Robertson, 1972). Neither of these fund uses is politically so popular that residents of any neighborhood will argue for market prices for their own curb parking. If the curb parking revenue goes into the general fund, the neighborhood pays for parking and the whole city benefits. If the money goes into an off-street parking fund, many residents will not perceive this as a sufficiently high-priority to justify charging high prices for their own curb parking. Instead, it seems easier to require developers to provide "enough" off-street parking as the way to limit the demand for free curb parking.

Charging for formerly free curb parking in an urban society is like enclosing a commons in an agricultural society. It is a political act that creates insiders and outsiders, and most voters would have to see themselves as insiders before they would support it. Unless those who have come to rely on free access to curb parking can see themselves as exempted from the parking charges, and as clearly benefitting from the resulting curb parking revenue, why would they advocate charging for curb parking?

But suppose charges for curb parking were introduced as a modification of existing Residential Permit Parking Districts. Residents could still be offered permits to park free and with no time limit, but outsiders could be charged the market price. And the revenue, instead of going into the general fund, could be retained in the neighborhood, or even on the block, where it is collected, and used to pay for additional spending on the neighborhood's highest priority, such as:

1. Supplemental neighborhood public services; examples are extra street cleaning, street lighting, or police patrol.
2. Supplemental neighborhood public investments; examples are sidewalk and street repair, or putting overhead utility wires underground.

3. Property tax relief.

The point of mentioning these possible uses of curb parking revenue is to suggest that if curb parking revenue directly benefitted the place where it is collected, citizens would see themselves not only as users, but also as owners of curb parking. The political acceptability of charging for curb parking depends on a politically acceptable distribution of the revenue. A commitment to spending the revenue in the neighborhood where it is collected, and on the neighborhood’s highest priority, could be the key to creating a constituency for desubsidizing off-street parking, and then dealing with the resulting parking spillover by charging a market price for curb parking.

As argued earlier, the market price for curb parking must be stated in terms of a target vacancy rate. The “ideal” curb space vacancy rate depends on the circumstances, but traffic engineers usually recommend that no less than 1 in 7 parking spaces should remain vacant to ensure easy parking entry and exit. Some neighborhoods might prefer to maintain considerably higher vacancy rates, although this would result in lower revenue for the neighborhood. Because the demand for parking varies during the day or week, the price must also vary to keep the vacancy rate near or below the desired level. The demand for parking on any one block also depends on parking prices nearby, but there is a system of market prices, varying both by time and location, that, if known in advance, should produce the desired minimum number of curb vacancies everywhere. Experience alone could guide curb parking prices to their market-clearing level, just as it now does for commercial off-street parking. Short-term demand shifts can cause the vacancy rate to vary about its average, but the cure for systematic overoccupancy or underoccupancy would be evident, and simple: adjust the price.

The simplest form of charging for spillover parking in residential neighborhoods would be the existing arrangement in West Hollywood, mentioned earlier in Section IX, whereby commuters are offered daytime parking permits in Residential Permit Parking Districts. The only modification would be to dedicate the commuter parking permit revenue to fund neighborhood-serving purposes. Another unobtrusive way to charge for non-resident parking would be the in-vehicle parking meters described in Section IX. In non-residential areas, conventional parking meters could be used, with all the revenue used to fund public services to the adjacent property.

56. For a particularly ingenious method of charging for curb parking in residential districts, see Roth (1965, pp. 42-43). Briefly, Roth proposed that households would control the parking meters in front of their homes, and could either collect the revenue or reserve the spaces for personal use. Roth proposed that households would pay the local government the full market value of all potential parking revenue from the meter, so households would, in effect, pay a local government for the right to park in front of their own homes. If, however, residents were allowed a limited number of permits to park free, and if all the remaining revenue from the “householder’s parking meter” were dedicated to paying for neighborhood services, Roth’s proposal might find readier acceptance.
Neighborhoods that now suffer from close proximity to land uses that generate large amounts of traffic and spillover parking would be compensated with the greatest parking revenue resulting from that spillover. Spillover parked cars that now congest these neighborhoods would be turned into paying guests, and the number of paying guests would be kept down to a manageable size by charging prices high enough to limit demand below capacity (just as commercial parking operators charge prices high enough to maintain vacancies). Some neighborhoods close to intense commercial activity might become almost as wealthy as silent screen star Norma Desmond (Gloria Swanson) in *Sunset Boulevard,* who explained with pleasure the sources of her income:

> I own three blocks downtown. I've got oil in Bakersfield, pumping, pumping, pumping. What's it for but to buy us anything we want?

Each outsider's car would become a new resource "pumping, pumping, pumping" revenue into the neighborhood's enhanced public services, with the price set high enough that there would always be a vacant space for any resident or paying guest.

Could curb parking really yield significant revenue? At a price of only fifty cents per hour for only eight hours each day, one parking space would yield $1,460 per year, which is greater than the average property tax on a single-family house in the United States. Another way to suggest the revenue potential of curb parking is to relate it to the value of the land that it fronts. Curb parking spaces extend seven feet into the street, and property lines typically extend between 100 to 140 back from the curb. Therefore, the curb parking in front of a property occupies about five to seven percent as much land as the lot it fronts. If curb parking yielded the same rent per square foot as the land it fronts, curb parking would thus yield from five to seven percent of total urban land rent.

Using curb parking revenue to pay for supplementary public services to the adjoining property would in many ways be similar to using a special assessment for the same purpose. A special assessment is a charge assessed against specific properties to pay for public services that specially benefit those properties, such as street lighting or sidewalk repair. Special assessments are often levied so that each property pays in proportion to its front footage facing the street, which is very similar to the way that curb parking would provide revenue for supplemental public services. Thus, the type of financial accounting system necessary to allocate curb parking revenue to fund neighborhood public services already exists in almost all cities.

If curb parking revenue were used to pay for neighborhood public services, anyone who parked at the curb without paying the price would be stealing from the neighborhood's residents. Therefore, residents would have an important incentive to support strict enforcement of parking regulations. A reputation for vandalism would deter curb parkers and reduce the revenue for

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57. See Shoup (1980, 1990) for a description of how special assessments based on front-foot charges are used to pay for neighborhood public services.
the neighborhood's public services, and this funding link between public safety for paying guests and public services for residents would encourage residents to take a proprietary interest in discouraging vandalism of parked cars.

Quite aside from the revenue associated with curb parking, neighborhoods nearest to commercial development would also benefit most from the reduced traffic associated with the reduced parking requirements. Off-street parking requirements are the city planner's usual response to the spillover parking problem. But if curb parking were market priced and the revenue spent for the benefit of fronting residents, planners would no longer have to worry that new development with "insufficient" off-street parking would congest nearby curb parking. Rather, new development with insufficient off-street parking would simply raise the market price of curb parking, and thereby increase the neighborhood's fund for supplemental public services, without increasing the number of parked cars. This arrangement would make it easier for residents to see the advantage of a cap rather than a minimum for off-street parking in new development. A cap on off-street parking would not only reduce both the cost of urban development and the number of automobile trips generated by it, but would also increase the funds available for public services in the vicinity of the development.

The purpose of this digression on curb parking is to point out that the fear of spillover parking is a legitimate but not unanswerable objection to cashing out employer-paid parking and reducing off-street parking requirements. With proper management, spillover parking could become an important source of public revenue and enhanced neighborhood services, rather than a source of annoyance. That is, spillover parking could be turned into an additional benefit, rather than a cost, of cashing out employer-paid parking.
XI. WHY CALIFORNIA'S CASH-OUT LEGISLATION WAS NECESSARY

California's cash-out legislation requires employers who subsidize employee parking to offer employees the option to take their parking subsidies in cash. Other states could enact similar legislation. But it should be obvious that the Internal Revenue Code's special tax exemption for employer-paid parking is the root cause of the employer-paid parking problem. It should not be left for every state to enact complicated legislation that is designed solely to counteract an acknowledged and easily remedied flaw in the Internal Revenue Code.

The case has been argued here for amending the Internal Revenue Code's definition of tax-exempt "qualified parking" to require that an employer who offers an employee a parking subsidy must also offer that employee the option to take, in lieu of the parking subsidy, the fair market value of the parking subsidy, either as a taxable cash commute allowance or as a mass transit or a ridesharing subsidy. Employers could continue with any existing parking subsidy arrangement, so long as they broaden the offer to include the option of using the cash value of the parking subsidy for mass transit, ridesharing, or any other purpose the employee prefers.

The political bargaining that led to the passage of California's cash-out legislation suggests that, at the Federal level, it may be appropriate to implement the cash-out requirement in stages, beginning first with the clearest "win-win" case where the employer pays out-of-pocket cash to a third party to subsidize employee parking. In this case the employer's avoided parking subsidy directly funds, dollar for dollar, the employee's cash allowance, so there is no net cost increase for the employer when an employee foregoes the parking and takes the cash. Later, after employers have been given sufficient advance notice to adjust to the emergence of a market where parking spaces are allocated by prices rather than by subsidies, the cash-out requirement could be extended to all employer-provided parking. To repeat, however, the proposal is not to prohibit, tax, or even discourage employer-paid parking. Rather, the proposal is simply that an employer who offers to pay for an employee's parking if the employee drives to work must also offer to pay the same amount if the employee rideshares to work.

Because a cash payment in lieu of a parking subsidy is taxable income to the employee, offering employees the option to cash out a parking subsidy would reduce solo driving to work by less than would ending parking subsidies altogether. The research on commuters in Los Angeles, however, suggests that the taxable nature of cash does not seriously diminish commuters' response to cash. Requiring employers to offer employees the option to cash out their parking subsidies will reduce traffic congestion, improve air quality, conserve gasoline, enhance employee welfare, and increase tax revenue without increasing tax rates. All these benefits will derive simply from subsidizing people, not parking.
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CASHING OUT EMPLOYER-PAID PARKING

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APPENDIX 1: California Assembly Bill No. 2109
Assembly Bill No. 2109

CHAPTER 554

An act to amend Sections 65088.1, 65089, and 65089.3 of the Government Code, to add Article 5 (commencing with Section 43845) to Chapter 4 of Part 5 of Division 26 of the Health and Safety Code, to amend Section 24343.5 of, and to add Sections 17090 and 17202 to, the Revenue and Taxation Code, relating to transportation.

[Approved by Governor August 26, 1992. Filed with Secretary of State August 27, 1992.]

LEGISLATIVE COUNSEL’S DIGEST


(1) Existing law requires agencies responsible for the preparation of regional transportation improvement programs to develop and annually update a congestion management program, containing specified elements, for every county that contains an urbanized area.

This bill would impose a state-mandated local program by requiring those agencies, during the development and annual update of a congestion management program, to consider employer-sponsored parking subsidy programs ("parking cash-out programs") which give the employee the option of receiving subsidized parking or an equivalent cash allowance, and by requiring cities and counties to grant reductions in the parking requirements applicable to a commercial development with a parking cash-out program.

(2) The existing Personal Income Tax Law and Bank and Corporation Tax Law authorize a deduction for trade or business expenses.

This bill would expressly allow as a deduction under those laws the expenses of an employer in carrying out a parking cash-out program, as defined, for employees.

(3) The existing Personal Income Tax Law provides for the specific inclusion of certain items in gross income.

This bill would provide under that law for the inclusion in gross income of cash allowances received by an employee under a "parking cash-out program," as defined, except any portion thereof used for a ridesharing purpose and excluded from gross income by other provisions of existing law.

(4) Under existing law, the State Air Resources Board, in consultation with air pollution control districts and air quality management districts, is required to identify and classify each air basin in the state which is in attainment or in nonattainment for any state ambient air quality standard.

This bill would require, in any air basin designated by the state board as a nonattainment area, each employer of 50 persons or more
who provides a parking subsidy for employees, to offer a parking cash-out program, as defined.

(5) This bill would make additional changes in Sections 65089 and 65089.3 of the Government Code, proposed by AB 3093, to be operative only if AB 3093 and this bill are both enacted and become effective and this bill is enacted after AB 3093.

(6) The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement, including the creation of a State Mandates Claims Fund to pay the costs of mandates which do not exceed $1,000,000 statewide and other procedures for claims whose statewide costs exceed $1,000,000.

This bill would provide that, if the Commission on State Mandates determines that this bill contains costs mandated by the state, reimbursement for those costs shall be made pursuant to those statutory procedures and, if the statewide cost does not exceed $1,000,000, shall be made from the State Mandates Claims Fund.

The people of the State of California do enact as follows:

SECTION 1. The Legislature hereby finds and declares all of the following:

(a) Existing local, state, and federal policies tend to encourage the provision of subsidized parking by employers.

(b) Subsidized parking creates a strong incentive for employees to commute to work in a single occupancy vehicle.

(c) Commuting in a single occupancy vehicle contributes to traffic congestion and air pollution.

(d) In Los Angeles and Orange Counties, more than 90 percent of the commuters receive free worksite parking, but less than 10 percent of employers provide an employee ridesharing or transit benefit.

SEC. 2. Section 65088.1 of the Government Code is amended to read:

65088.1. As used in this chapter the following terms have the following meanings:

(a) Unless the context requires otherwise, "regional agency" means the agency responsible for preparation of the regional transportation improvement program.

(b) Unless the context requires otherwise, "agency" means the agency responsible for the preparation and adoption of the congestion management program.

(c) "City" includes a city and county.

(d) "Commission" means the California Transportation Commission.

(e) "Department" means the Department of Transportation.

(f) "Parking cash-out program" means an employer-funded program under which an employer offers to provide a cash allowance to an employee equivalent to the parking subsidy that the employer would otherwise pay to provide the employee with a parking space. "Parking subsidy" means the difference between the out-of-pocket amount paid by an employer on a regular basis in order to secure the availability of an employee parking space not owned by the employer and the price, if any, charged to an employee for use of that space.

A parking cash-out program may include a requirement that employee participants certify that they will comply with guidelines established by the employer designed to avoid neighborhood parking problems, with a provision that employees not complying with the guidelines will no longer be eligible for the parking cash-out program.

(g) "Urbanized area" has the same meaning as is defined in the 1990 federal census for urbanized areas of more than 50,000 population.

(h) "Interregional travel" means trips that have neither origin nor destination within the boundary of the congestion management program.

SEC. 3. Section 65089 of the Government Code is amended to read:

65089. (a) A congestion management program shall be developed, adopted, and annually updated for every county that includes an urbanized area, and shall include every city and the county. The program shall be adopted at a noticed public hearing of the agency. The program shall be adopted in consultation with, and with the cooperation of, the transportation planning agency, regional transportation providers, local governments, the department, and the air pollution control district or the air quality management district, either by the county transportation commission, or by another public agency, as designated by resolutions adopted by the county board of supervisors and the city councils of a majority of the cities representing a majority of the population in the incorporated area of the county.

(b) The program shall contain all of the following elements:

(1) (A) Traffic level of service standards established for a system of highways and roadways designated by the agency. The system shall include at a minimum all state highways and principal arterials. No highway or roadway designated as a part of the system shall be removed from the system. All new state highways and principal arterials shall be designated as part of the system. Level of service (LOS) shall be measured by Circular 212, (or by the most recent median methodology adopted by the agency which is consistent with the Highway Capacity Manual. The determination as to whether an alternative method is consistent with the Highway Capacity Manual shall be made by the regional agency, except that the department
shall make this determination instead if either (i) the regional agency is also the agency, as those terms are defined in Section 65088.1, or (ii) the department is responsible for preparing the regional transportation improvement plan for the county.

(B) In no case shall the LOS standards established be below the level of service E or the current level, whichever is farthest from level of service A, except where a segment or intersection has been designated as deficient and a deficiency plan has been adopted pursuant to Section 65088.3.

(2) Standards established for the frequency and routing of public transit, and for the coordination of transit service provided by separate operators.

(3) A trip reduction and travel demand element that promotes alternative transportation methods, such as carpools, vanpools, transit, bicycles, and park-and-ride lots; improvements in the balance between jobs and housing; and other strategies, including flexible work hours and parking management programs. The agency shall consider parking cash-out programs during the development and annual update of the trip reduction and travel demand element.

(4) A program to analyze the impacts of land use decisions made by local jurisdictions on regional transportation systems, including an estimate of the costs associated with mitigating those impacts. In no case shall the program include an estimate of the costs of mitigating the impact of interregional travel. The program shall be credit for local public and private contributions to improvements to regional transportation systems. However, in the case of toll road facilities, credit shall only be allowed for local public and private contributions which are unreimbursed from toll revenues or other state or federal sources. The agency shall calculate the amount of the credit to be provided.

(5) A seven-year capital improvement program to maintain or improve the traffic level of service and transit performance standards developed pursuant to paragraphs (1) and (2), and to mitigate regional transportation impacts identified pursuant to paragraph (4), which conforms to transportation-related vehicle emissions air quality mitigation measures.

(c) The agency, in consultation with the regional agency, cities, and the county, shall develop a uniform data base on traffic impacts for use in a countywide transportation computer model and shall approve transportation computer models of specific areas within the county that will be used by local jurisdictions to determine the quantitative impacts of development on the circulation system that are based on the countywide model and standardized modeling assumptions and conventions. The computer models shall be consistent with the modeling methodology adopted by the regional planning agency. The data bases used in the models shall be consistent with the data bases used by the regional planning agency. Where the regional agency has jurisdiction over two or more counties, the data bases used by the agency shall be consistent with the data bases used by the regional agency.

(d) (1) The city or county in which a commercial development will implement a parking cash-out program which is included in a congestion management program pursuant to subdivision (b), or a deficiency plan pursuant to Section 65088.3, shall grant to that development an appropriate reduction in the parking requirements otherwise in effect for new commercial development.

(2) At the request of an existing commercial development that has implemented a parking cash-out program, the city or county shall grant an appropriate reduction in the parking requirements otherwise applicable based on the demonstrated reduced need for parking, and the space no longer needed for parking purposes may be used for other appropriate purposes.

SEC. 3.5. Section 65089 of the Government Code is amended to read:

65089. (a) A congestion management program shall be developed, adopted, and updated biennially, consistent with the schedule for adopting and updating the regional transportation improvement program, for every county that includes an urbanized area, and shall include every city and the county. The program shall be adopted at a noticed public hearing of the agency. The program shall be developed in consultation with, and with the cooperation of, the transportation planning agency, regional transportation providers, local governments, the department, and the air pollution control district or the air quality management district, either by the county transportation commission, or by another public agency, as designated by resolutions adopted by the county board of supervisors and the city councils of a majority of the cities representing a majority of the population in the incorporated area of the county.

(b) The program shall contain all of the following elements:

(1) (A) Traffic level of service standards established for a system of highways and roadways designated by the agency. The system shall include at a minimum all state highways and principal arterials. No highway or roadway designated as a part of the system shall be removed from the system. All new state highways and principal arterials shall be designated as part of the system. Level of service (LOS) shall be measured by Circular 212, (or by the most recent version of the Highway Capacity Manual), or by a uniform methodology adopted by the agency which is consistent with the Highway Capacity Manual. The determination as to whether an alternative method is consistent with the Highway Capacity Manual shall be made by the regional agency, except that the department shall make this determination instead if either (i) the regional agency is also the agency, as those terms are defined in Section 65088.1, or (ii) the department is responsible for preparing the regional transportation improvement plan for the county.

(B) In no case shall the LOS standards established be below the
level of service F, or the current level, whichever is farthest from level of service A, except where a segment or intersection has been designated as deficient and a deficiency plan has been adopted pursuant to Section 65089.3.

(2) Standards established for the frequency and routing of public transit, and for the coordination of transit service provided by separate operators.

(3) A trip reduction and travel demand element that promotes alternative transportation methods, such as carpools, vanpools, transit, bicycles, and park-and-ride lots; improvements in the balance between jobs and housing; and other strategies, including flexible work hours and parking management programs. The agency shall consider parking cash-out programs during the development and annual update of the trip reduction and travel demand element.

(4) A program to analyze the impacts of land use decisions made by local jurisdictions on regional transportation systems, including an estimate of the costs associated with mitigating those impacts. In no case shall the program include an estimate of the costs of mitigating the impacts of interregional travel. The program shall provide credit for local public and private contributions to improvements to regional transportation systems. However, in the case of toll road facilities, credit shall only be allowed for local public and private contributions which are unreimbursed from toll revenues or other state or federal sources. The agency shall calculate the amount of the credit to be provided.

(5) A seven-year capital improvement program to maintain or improve the traffic level of service and transit performance standards developed pursuant to paragraphs (1) and (2), and to mitigate regional transportation impacts identified pursuant to paragraph (4), which conforms to transportation-related vehicle emissions air quality mitigation measures.

(c) The agency, in consultation with the regional agency, cities, and the county, shall develop a uniform data base on traffic impacts for use in a countywide transportation computer model and shall approve transportation computer models of specific areas within the county that will be used by local jurisdictions to determine the quantitative impacts of development on the circulation system that are based on the countywide model and standardized modeling assumptions and conventions. The computer models shall be consistent with the modeling methodology adopted by the regional planning agency. The data bases used in the models shall be consistent with the data bases used by the regional planning agency. Where the regional agency has jurisdiction over two or more counties, the data bases used by the agency shall be consistent with the data bases used by the regional agency.

(d) (1) The city or county in which a commercial development will implement a parking cash-out program which is included in a congestion management program pursuant to subdivision (b), or a deficiency plan pursuant to Section 65089.3, shall grant to that development an appropriate reduction in the parking requirements otherwise in effect for new commercial development.

(2) At the request of an existing commercial development that has implemented a parking cash-out program, the city or county shall grant an appropriate reduction in the parking requirements otherwise applicable based on the demonstrated reduced need for parking, and the space no longer needed for parking purposes may be used for other appropriate purposes.

SEC. 4. Section 65089.3 of the Government Code is amended to read:

(65089.3. (a) The agency shall monitor the implementation of all elements of the congestion management program. Annually, the agency shall determine if the county and cities are conforming to the congestion management program, including, but not limited to, all of the following:

(1) Consistency with levels of service and performance standards, except as provided in subdivisions (b) and (c).

(2) Adoption and implementation of a trip reduction and travel demand ordinance.

(3) Adoption and implementation of a program to analyze the impacts of land use decisions, including the estimate of the costs associated with mitigating these impacts.

(b) (1) A city or county may designate individual deficient segments or intersections which do not meet the established level of service standards if, prior to the designation, at a noticed public hearing, the city or county has adopted a deficiency plan which shall include all of the following:

(A) An analysis of the causes of the deficiency.

(B) A list of improvements necessary for the deficient segment or intersection to maintain the minimum level of service otherwise required and the estimated costs of the improvements.

(C) A list of improvements, programs, or actions, and estimates of costs, that will (i) measurably improve the level of service of the system, as defined in subdivision (b) of Section 65099, and (ii) contribute to significant improvements in air quality, such as improved public transit service and facilities, improved nonmotorized transportation facilities, high occupancy vehicle facilities, parking cash-out programs, and transportation control measures. The air quality management district or the air pollution control district shall establish and periodically revise a list of approved improvements, programs, and actions which meet the scope of this paragraph. If an improvement, program, or action is on the approved list and has not yet been fully implemented, it shall be deemed to contribute to significant improvements in air quality. If an improvement, program, or action is not on the approved list, it shall not be implemented unless approved by the local air quality management district or air pollution control district.

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(D) An action plan, consistent with Chapter 5 (commencing with Section 65000) of Division 1 of Title 7, that shall be implemented, consisting of improvements identified in paragraph (B), or improvements, programs, or actions identified in paragraph (C), that are found by the agency to be in the interest of the public’s health, safety and welfare. The action plan shall include a specific implementation schedule.

(2) A city or county shall forward its adopted deficiency plan to the agency. The agency shall hold a noticed public hearing within 60 days of receiving the deficiency plan. Following the hearing, the agency shall either accept or reject the deficiency plan in its entirety, but the agency may not modify the deficiency plan. If the agency rejects the plan, it shall notify the city or county of the reasons for that rejection.

(c) The agency, after consultation with the regional agency, the department, and the air quality management district or air pollution control district, shall exclude from the determination of conformance with level of service standards, the impacts of any of the following:

(1) Interregional travel.
(2) Construction, rehabilitation, or maintenance of facilities that impact the system.
(3) Freeway ramp metering.
(4) Traffic signal coordination by the state or multijurisdictional agencies.
(5) Traffic generated by the provision of low and very low income housing.

(d) For the purposes of this chapter, the impacts of a trip which originates in one county and which terminates in another county shall be included in the determination of conformance with level of service standards with respect to the originating county only. A roundtrip shall be considered to consist of two individual trips.

SEC. 4.5. Section 65089.3 of the Government Code is amended to read:

65089.3. (a) The agency shall monitor the implementation of all elements of the congestion management program. Annually, the agency shall determine if the county and cities are conforming to the congestion management program, including, but not limited to, all of the following:

(1) Consistency with levels of service and performance standards, except as provided in subdivisions (b) and (c).
(2) Adoption and implementation of a trip reduction and travel demand ordinance.
(3) Adoption and implementation of a program to analyze the impacts of land use decisions, including the estimate of the costs associated with mitigating these impacts.

(b) (1) A city or county may designate individual deficient segments or intersections which do not meet the established level of service standards if, prior to the designation, at a noticed public hearing, the city or county has adopted a deficiency plan which shall include all of the following:

(A) An analysis of the causes of the deficiency.
(B) A list of improvements necessary for the deficient segment or intersection to maintain the minimum level of service otherwise required and the estimated costs of the improvements.
(C) A list of improvements, programs, or actions, and estimates of costs, that will (i) measurably improve the level of service of the system, as defined in subdivision (b) of Section 65089, and (ii) contribute to significant improvements in air quality, such as improved public transit service and facilities; improved nonmotorized transportation facilities, high occupancy vehicle facilities, parking cash-out programs, and transportation control measures. The air quality management district or the air pollution control district shall establish and periodically revise a list of approved improvements, programs, and actions which meet the scope of this paragraph. If an improvement, program, or action is on the approved list and has not yet been fully implemented, it shall be deemed to contribute to significant improvements in air quality. If an improvement, program, or action is not on the approved list, it shall not be implemented unless approved by the local air quality management district or air pollution control district.

(D) An action plan, consistent with Chapter 5 (commencing with Section 65000) of Division 1 of Title 7, that shall be implemented, consisting of improvements identified in paragraph (B), or improvements, programs, or actions identified in paragraph (C), that are found by the agency to be in the interest of the public’s health, safety and welfare. The action plan shall include a specific implementation schedule.

(2) A city or county shall forward its adopted deficiency plan to the agency. The agency shall hold a noticed public hearing within 60 days of receiving the deficiency plan. Following the hearing, the agency shall either accept or reject the deficiency plan in its entirety, but the agency may not modify the deficiency plan. If the agency rejects the plan, it shall notify the city or county of the reasons for that rejection.

(c) The agency, after consultation with the regional agency, the department, and the air quality management district or air pollution control district, shall exclude from the determination of conformance with level of service standards, the impacts of any of the following:

(1) Interregional travel.
(2) Construction, rehabilitation, or maintenance of facilities that impact the system.
(3) Freeway ramp metering.
(4) Traffic signal coordination by the state or multijurisdictional agencies.
(5) Traffic generated by the provision of low and very low income housing.

(6) (A) Traffic generated by high density residential development located within one-fourth mile of a fixed rail passenger station.

(B) Traffic generated by any mixed use development located within one-fourth mile of a fixed rail passenger station, if more than half of the land area, or floor area, of the mixed use development is used for high density residential housing, as determined by the agency.

(c) For the purposes of this section, the following terms have the following meanings:

(1) "Employee" means an employee of an employer subject to this section.

(2) "Parking subsidy" means the difference between the out-of-pocket amount paid by an employer on a regular basis in order to secure the availability of an employee parking space not owned by the employer and the price, if any, charged to an employee for use of that space.

(3) Subdivision (a) does not apply to any employer who, on or before January 1, 1993, has leased employee parking, until the expiration of that lease or unless the lease permits the employer to reduce, without penalty, the number of parking spaces subject to the lease.

(e) It is the intent of the Legislature, in enacting this section, that the cash-out requirements apply only to employers who can reduce, without penalty, the number of paid parking spaces they maintain for the use of their employees and instead provide their employees the cash-out option described in this section.

SEC. 6. Section 17090 is added to the Revenue and Taxation Code, to read:

17090. Gross income includes cash allowances received by an employee under a parking cash-out program, except any portion used for a ridesharing program and excluded from gross income by Section 17149.

SEC. 7. Section 17202 is added to the Revenue and Taxation Code, to read:

17202. There shall be allowed to an employer as an ordinary and necessary expense paid or incurred during the taxable year in carrying on any trade or business (as provided in Section 162(a) of the Internal Revenue Code), the expenses involved in carrying out a parking cash-out program, as defined by subdivision (f) of Section 65088.1 of the Government Code.

SEC. 8. Section 24343.5 of the Revenue and Taxation Code is amended to read:

24343.5. (a) In addition to the deduction allowed by Section 24343, a deduction shall be allowed to an employer as an ordinary and necessary expense paid or incurred during the income year in carrying on any trade or business for those expenses involved in any of the following ridesharing arrangements:

(1) Subsidizing employees commuting in vanpools.

(2) Subsidizing employees commuting in private commuter buses or busspools.

(3) Subsidizing monthly transit passes for its employees or for use by the employee's dependents, except that no deduction shall be allowed for transit passes issued for the use of elementary and secondary school students.

(4) Subsidizing employees commuting in subscription taxipools.

Article 5. Employee Parking

43945. (a) In any air basin designated as a nonattainment area pursuant to Section 306(d), each employer of 50 persons or more who provides a parking subsidy to employees, shall offer a parking cash-out program. "Parking cash-out program" means an employer-funded program under which an employer offers to provide a cash allowance to an employee equivalent to the parking subsidy that the employer would otherwise pay to provide the employee with a parking space.

(b) A parking cash-out program may include a requirement that employee participants certify that they will comply with guidelines established by the employer designed to avoid neighborhood parking problems, with a provision that employees not complying with the guidelines will no longer be eligible for the parking cash-out program.
(5) Subsidizing employees commuting in a carpool.

(6) In the case of an employer who offers free parking to its employees, offering a cash equivalent to employees who do not require parking, including a parking cash-out program, as defined by subdivision (1) of Section 15080.1 of the Government Code.

(7) Providing free or preferential parking to carpools, vanpools, or any other vehicle used in a ridesharing arrangement.

(8) Making facility improvements to encourage employees, for the purpose of commuting from their homes, to participate in ridesharing arrangements, to use bicycles, or to walk. These facility improvements may include, but are not limited to, any of the following: the construction of bus shelters; the installation of bicycle racks and other bicycle-related facilities, such as showers and locker rooms; and parking lot modifications to provide carpools, vanpools, or buspools with preferential treatment. The cost of these facility improvements shall be allowed as a depreciation deduction. Notwithstanding subdivision (c), the depreciation deduction shall be allowable over a 36-month period.

(9) Providing company commuter van or bus service to its employees and to others for commuting from their homes, but not for transportation required as part of the employer’s business activities, except as otherwise provided in this section. The capital costs of providing this service shall not be an eligible deduction under this section.

(10) Providing to employees transportation services which are required as part of the employer’s business activities to the extent that the transportation would be provided by employees without reimbursement in the absence of an employer-sponsored ridesharing incentive program. The capital costs of providing this service shall not be an eligible deduction under this section.

(b) For purposes of this section:

(1) “Employer” means either of the following:

(A) A taxpayer for whom services are performed by employees, except entities which are not subject to tax under this part.

(B) A taxpayer which is a private or public educational institution which enrolls students at a level higher than the secondary level.

(2) “Employee” means either of the following:

(A) An individual who performs service for an employer for more than eight hours per week for remuneration.

(B) Any commuting student, as defined in paragraph (3).

(3) “Commuting student” means a registered full-time student at a college, university, or other postsecondary educational institution, who lives apart from the property which is designated as the “employment site” for the purpose of this section, and who travels between his or her residence and the designated employment site on a regular, though not necessarily daily, basis.

(4) “Employer-sponsored ridesharing incentive program” means a program undertaken by an employer either alone or in cooperation with other employers to encourage or provide, or both, fiscal other incentives to employees to make the home-to-work commute trip by any mode other than the single-occupant motor vehicle.

(5) “Company commuter bus or van” means a highway vehicle which meets all of the following criteria:

(A) Has at least seven or more persons commuting on a daily basis to and from work.

(B) At least 50 percent of the mileage of which can be reasonably expected to be used for the purpose of transporting employees to and from work.

(C) Is acquired by the taxpayer on or after the date of enactment of this section.

(D) “Vanpool” means seven or more persons commuting on a daily basis to and from work by means of a vehicle with a seating arrangement designed to carry 7 to 15 adult persons.

(7) “Monthly transit pass” means any bulk purchase of transit rides that entitles the purchaser to 40 or more rides per month, whether at a discount rate or the base fare rate.

(8) “Taxi” means transportation service for use by the general public that utilizes buses, railcars, or ferries with a seating capacity of 16 or more persons.

(9) “Subscription taxpool” means a type of service in which employers or groups of employees contract with a public or private taxi operator to provide daily commuter service for a group of preassembled subscribers on a prepaid or daily-fare basis, following a relatively fixed route and schedule tailored to meet the needs of the subscribers.

(10) “Ridesharing arrangement” means the transportation of persons in a motor vehicle where that transportation is incidental to another purpose of the driver. The term includes ridesharing arrangements known as carpools, vanpools, and buspools.

(11) “Carpool” means two or more persons commuting on a daily basis to and from work by means of a vehicle with a seating arrangement designed to carry less than seven adults, including the driver.

(12) “Buspool” means 16 or more persons commuting on a daily basis to and from work by means of a vehicle with a seating arrangement designed to carry more than 15 adult passengers.

(13) “Private commuter bus” means a highway vehicle which meets all of the following criteria:

(A) Has a seating capacity of at least seven adults, including the driver.

(B) At least 50 percent of the mileage of which can be reasonably expected to be used for the purpose of transporting employees to and from work.

(C) Is acquired by the taxpayer on or after the date of enactment of this section.

(D) With respect to which the taxpayer makes an election under
this paragraph on its return for the income year in which the vehicle is placed in service.

SEC. 9. Section 3.5 of this bill incorporates amendments to Section 65089 of the Government Code proposed by both this bill and AB 3093. It shall only become operative if (1) both bills are enacted and become effective on or before January 1, 1993, (2) each bill amends Section 65089 of the Government Code, and (3) this bill is enacted after AB 3093, in which case Section 3 of this bill shall not become operative.

SEC. 10. Section 4.5 of this bill incorporates amendments to Section 65089.3 of the Government Code proposed by both this bill and AB 3093. It shall only become operative if (1) both bills are enacted and become effective on or before January 1, 1993, (2) each bill amends Section 65089.3 of the Government Code, and (3) this bill is enacted after AB 3093, in which case Section 4 of this bill shall not become operative.

SEC. 11. Notwithstanding Section 17610 of the Government Code, if the Commission on State Mandates determines that this act contains costs mandated by the state, reimbursement to local agencies and school districts for those costs shall be made pursuant to Part 7 (commencing with Section 17500) of Division 4 of Title 2 of the Government Code. If the statewide cost of the claim for reimbursement does not exceed one million dollars ($1,000,000), reimbursement shall be made from the State Mandates Claims Fund. Notwithstanding Section 17580 of the Government Code, unless otherwise specified in this act, the provisions of this act shall become operative on the same date that the act takes effect pursuant to the California Constitution.
APPENDIX 2: Public Information Announcement of AB 2109
STATE PARKING
CASH-OUT PROGRAM

As Per Chapter 554, 1992 California State Statutes (AB2109)

This bill adds section 43845 to the Health and Safety Code, relating to employee parking. It affects employers who:

- are located in an air quality area in non attainment, such as the South Coast Air Basin and most of Southern California
- have at least 50 employees
- subsidize employee parking

It does not apply to employers who own their parking or whose parking is subject to a lease as of January 1, 1993, until the expiration and renegotiation of that lease or unless the lease permits the employer to reduce without penalty the number of parking spaces it leases.

PARKING CASH-OUT

Employers who meet the above criteria must implement a parking "cash-out" program in which they offer cash to employees in lieu of parking. The cash amount must be equal to the out-of-pocket cost the employer pays to provide the employee with work site parking, minus any charges made to the employee for the use of that space.

As part of the parking cash-out program, an employer may require an employee to certify that he or she will comply with guidelines designed by the employer to avoid spillover parking onto neighborhood streets.

Employers may claim a business deduction for the cost involved with offering a cash-out program. For employees, the cash-out must be included in gross income subject to all federal and state income and payroll taxes. Only the amount used for ridesharing purposes is exempt, and only from state income tax.

This section becomes effective on January 1, 1993.

OTHER SECTIONS OF THIS BILL REQUIRE:

- congestion management agencies (CMAs) to consider parking cash-out when developing and updating the trip reduction and travel demand elements of their congestion management plans.
- cities or counties to grant appropriate reductions in parking requirements to new and existing commercial developments if they offer parking cash-out plans.

For more information call the government relations department or your account executive at Commuter Transportation Services, Inc.

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APPENDIX 3: Memo on Regulation XV and Cashing Out Parking Subsidies
INTERCOMPANY MEMORANDUM

TO: PHC Murdock Plaza Employees - 16th Floor  DATE: 12 Oct. 92
FROM: John Anzulis
       Former Employee Transportation Coordinator
SUBJECT: SCAQMD Regulation XV

Effective 16 September 1992 the PHC/Murdock companies were exempted from attempting to comply with our mandated Employee Trip Reduction (ETR) plan. This was because our site employee population dropped below the AQMD threshold of 100. Therefore all ridesharing incentives are withdrawn effective immediately.

Our most successful incentive was the offer to "cash out" monthly paid parking here at Murdock Plaza. Several of our employees found that they did not need this as they could use public transportation or carpooling efficiently, i.e. at less cost than the taxable net of the current $115 monthly parking cost here. It is our intention, as there is very little administrative burden and "the right thing to do", to continue to offer this benefit subject to Mr. LaFleur's approval.

Eligible employees wishing to continue or who may wish to "cash out" paid parking here must understand that there WILL NOT be the supporting programs as before, e.g. guaranteed ride home, subsidized parking on PA, flex-time, etc. Your transportation requirements will be your own responsibility as they always are.

cc: Gerald W. LaFleur, EVP
APPENDIX 4: Selected Land Uses with Minimum Parking Requirements
SELECTED LAND USES WITH MINIMUM PARKING REQUIREMENTS

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<tr>
<td>Community Center</td>
<td>Marina</td>
<td>Stadium</td>
</tr>
<tr>
<td>Consulate and Consular Office</td>
<td>Massage Parlor</td>
<td>Stockyard</td>
</tr>
<tr>
<td>Contractor's Yard</td>
<td>Mausoleum</td>
<td>Subsidized Housing</td>
</tr>
<tr>
<td>Convalescent Center or</td>
<td>Miniature Golf Course</td>
<td>Swimming Pool</td>
</tr>
<tr>
<td>Nursing Home</td>
<td>Mining and Mineral Extraction</td>
<td>Taxi Stand</td>
</tr>
<tr>
<td>Convenience Store</td>
<td>Motorcycle Service and Sales</td>
<td>Telecommunications Facility</td>
</tr>
<tr>
<td>Convent</td>
<td>Movie Theater</td>
<td>Tenunz Club</td>
</tr>
<tr>
<td>Correctional Facility</td>
<td>Museum</td>
<td>Transit Terminal</td>
</tr>
<tr>
<td>Crematorium</td>
<td>Newspaper Stand</td>
<td>Travel Agency</td>
</tr>
<tr>
<td>Dance Hall</td>
<td>Night Club</td>
<td>Truck Terminal</td>
</tr>
<tr>
<td>Day Care Center</td>
<td>Nursery or Greenhouse</td>
<td>Ultra-Light Flight Park</td>
</tr>
<tr>
<td>Diet Clinic</td>
<td>Office</td>
<td>Utility</td>
</tr>
<tr>
<td>Dormitory</td>
<td>Office, Dental</td>
<td>Veterinarian</td>
</tr>
<tr>
<td>Drive-In Facility</td>
<td>Office, Medical</td>
<td>Warehouse</td>
</tr>
<tr>
<td>Dry Cleaning</td>
<td>Oil Change Shop</td>
<td>Wastewater Treatment</td>
</tr>
<tr>
<td>Drug and Alcohol Treatment Center</td>
<td>Outdoor Storage</td>
<td>Zoo</td>
</tr>
<tr>
<td>Elderly Housing</td>
<td>Outdoor Theater</td>
<td></td>
</tr>
<tr>
<td>Emergency Medical Services</td>
<td>Park</td>
<td></td>
</tr>
<tr>
<td>Employment Agency</td>
<td>Pawn Shop</td>
<td></td>
</tr>
<tr>
<td>Exterminator</td>
<td>Pet Shop</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pet Cemetery</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Photography Studio</td>
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</tbody>
</table>

Source: Planning Advisory Service (1991, p.3)