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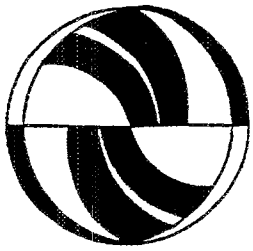
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Pricing Our Way Out of Traffic Congestion: Cash Out and HOT Lanes

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Jeffrey Brown

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Pricing Our Way Out of Traffic Congestion: Parking Cash Out and HOT Lanes

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The University of California Transportation Center
University of California at Berkeley

PRICING OUR WAY OUT OF TRAFFIC CONGESTION: PARKING CASH OUT AND HOT LANES

Donald Shoup and Jeffrey Brown

The first thing to understand about transportation in California is how grave the problems really are. In terms of both traffic congestion and air pollution, California's problems are the worst in the nation. Traffic congestion is difficult to compare among cities, but one attempt to rank American cities in terms of their traffic congestion found that Los Angeles is number 1, San Francisco-Oakland is number 3, and San Bernardino-Riverside and San Diego tie for number 8. Added travel time and added fuel consumption associated with reduced speeds in congested traffic are estimated to cost motorists in these four cities a total of $13 billion a year. Ninety percent of this cost is for the added travel time and 10 percent is for the added fuel consumption caused by delays in peak-hour traffic.[1] To put this $13-billion-a-year cost estimate in perspective, the total general revenue (property taxes, sales taxes, business license taxes, etc.) of *all* cities in California was $9.4 billion in 1994-1995.[2] Therefore, the estimated costs of traffic congestion in Los Angeles, San Francisco-Oakland, San Bernardino-Riverside, and San Diego alone are 38 percent more than the general revenues of all municipal governments in California combined.

The air pollution caused by transportation is also a serious problem. The United States Environmental Protection Administration categorizes regions by the severity of their air pollution, and Los Angeles is the only metropolitan area in the nation in the most-polluted category, labeled "extreme nonattainment" of air quality standards. Thirty-four of California's 58 counties fail to meet the national air quality standards.[3] Transportation accounts for most of the pollution emissions. In Los Angeles, transportation accounts for 75 percent of volatile organic compounds (VOCs), 98 percent of carbon dioxide (CO), 83 percent of oxides of nitrogen (NO_x), and 68 percent of oxides of sulfur (SO_x).[4]

Traffic congestion and air pollution are not the only transportation problems. Public transit also faces serious problems. Between 1989 and 1993, public transit ridership fell by 15 percent in Los Angeles, and by 7 percent in San Francisco. In Los Angeles, transit ridership has declined despite the opening of three new rail transit lines, including the MetroRail subway, which is the largest public works project in the western United States. Public transit ridership fell from 497 million passengers in 1985 to 361 million in 1995, a 27 percent decline during a decade of massive investment in rail mass transit.

Just as California leads the nation in the severity of its transportation problems, it also leads the nation in some of its attempts to solve these problems. The enormous problems we face suggest the enormous benefits available to us if we succeed in solving these problems. In a well-known, paradoxical description of problem solving, Melvin Webber and Horst Rittel said, "The information needed to *understand* the problem depends upon one's idea for *solving* it. . . . The problem can't be defined until the solution has been

found."[5] In the spirit of this statement, we will discuss some of the most promising options for solving California's transportation problems, not only to evaluate these proposals but also to help better understand the problems themselves.

The most effective way to solve our transportation problems, we believe, is to correct the severe distortions of prices for transportation. "Severe distortions of prices for transportation" here mean prices for transportation services that greatly diverge from the cost of providing these services, and correcting these distortions means bringing prices into line with costs. But California is a pioneer in two successful ways to correct the severe distortions in transportation prices: (1) cashing out employer-paid parking, and (2) high occupancy/ toll lanes. Analyzing these programs will not only help in evaluating their effectiveness as options to solve our transportation problems, but should also help in better understanding the problems themselves. We will also suggest options for improving and expanding these promising programs.

Cashing Out Employer-Paid Parking

Ninety-one percent of all commuters in the United States drive to work. Of all commuters who drive to work, 95 percent park free at work. Of all cars driven to work, 92 percent have only one occupant. When it comes to cars, commuters, and free parking, all percentages in the United States are in the 90s.[6] Ninety-three percent of automobile commuters park free at work in Southern California.[7] Even in the Los Angeles central business district where the average price of commuter parking is $174 a month, a survey found that 53 percent of automobile commuters pay nothing to park because they receive employer-paid parking.[8] Employer-paid parking, while delightful to receive, creates many serious problems, including traffic congestion and air pollution. Employer-paid parking creates these problems because it is a matching grant for driving to work. The employer pays part of the cost of commuting by car--the parking cost--only if the commuter pays the rest of the cost--the driving cost. Commuters who do not drive to work cannot benefit from employer-paid parking.

Because it is a matching grant for automobile commuting, employer-paid parking stimulates solo driving to work. How strong is this stimulus? We can answer this question by examining case studies that have compared the travel behavior of (1) matched samples of commuters with and without employer-paid parking, or (2) the same commuters before and after employer-paid parking was eliminated. In seven such studies, an average of 67 percent of commuters who could park free drove to work alone, while only 42 percent of commuters who paid to park drove to work alone.[9] This 25-percentage-point difference in the solo-driver share found in with-and-without and before-and-after case studies suggest that employer-paid parking is a powerful stimulus to solo driving.

State Legislation

In 1992, California enacted legislation--Assembly Bill 2109 (Katz)--that requires many employers who subsidize commuter parking also to offer a "parking cash-out program." 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* (California Health and Safety Code Section 43845). The cash-out law applies to employers who employ at least 50 persons; subsidize commuter parking in parking spaces they rent rather than own; can reduce the number of parking spaces they rent without penalty in any lease agreement; and are located in an air basin that is designated as "nonattainment" for any California air quality standard.

Offering commuters the choice between a parking subsidy and its cash value makes it clear that even free parking has a cost, which is the foregone cash. Commuters who forego the cash are in effect spending it on parking. The foregone cash is a new price for taking the free parking, a price that increases the perceived cost of driving to work. Therefore, some commuters who now drive to work alone will take the cash and begin to rideshare.

California's cash-out law does not require employers to subsidize ridesharing. The cash-out requirement is best understood as a test. Any employer's policy will pass the test if it subsidizes the alternatives to parking (such as transit, walking, or cycling) as much as it subsidizes parking. An employer's policy will fail the test only if it subsidizes parking more than it subsidizes the alternatives.

Statistical Evidence

California has not yet begun to require firms to comply with its parking cash-out requirement. Nevertheless, some employers have voluntarily complied, and the California Air Resources Board commissioned a set of eight case studies of firms that do comply. The results of these case studies show that cashing out employer-paid parking greatly benefited commuters, employers, taxpayers, and the environment.

For the 1,694 employees of the eight firms, the number of solo drivers to work fell by 17 percent after cashing out, the number of carpoolers increased by 64 percent, the number of transit riders increased by 50 percent, and the number who walk or bike to work increased by 39 percent. These mode shifts reduced the number of vehicle-miles driven to work by 12 percent, and also reduced vehicle pollution emissions from commuting by 12 percent.

These substantial changes result from letting commuters spend their income according to their own preferences, rather than tying subsidies to parking. Why would such

a simple, benign policy have such large, positive effects? Some simple comparisons help to explain why.

Incentive Effects

The average round-trip commute distance by car in the United States is 20.8 miles, and the average new car gets 28 1 miles per gallon of gasoline. Therefore, the average commute in the average new car consumes 0.74 gallons of gasoline a day. At this fuel consumption, a gasoline tax of $1 a gallon would raise the price of driving to work by 74¢ a day. In this case, a parking subsidy of 74¢ a day ($16.28 a month) reduces the price of automobile commuting by as much as a gasoline tax of $1 a gallon would increase it.

According to the Department of Energy, the average price of gasoline in the United States as of October 6, 1997 is $1.25 a gallon. At this price, the fuel cost of a commute that uses 0.74 gallons of gasoline a day is $.93 a day. In this case, a parking subsidy at work of $.93 a day ($20.46 a month) is worth the same as free gasoline for commuting.

Since the average price of commuter parking in downtown Los Angeles is $174 a month, it is not surprising that offering commuters to downtown the option to choose cash in lieu of free parking would reduce solo driving to work. A parking subsidy of $174 a month reduces the price of an automobile commute that uses 0.74 gallons of gasoline by as much as a gasoline tax of $10.69 a gallon would increase it. Although $174 a month may seem like a lot to pay for parking, it is not unusual for a parking space to cost that much to provide. For example, the debt service and operating cost for a 743-space parking structure now being built on the UCLA campus will be $170 per space per month.

The large shifts from solo driving to ridesharing at the eight case-study firms came at almost no cost. Because the state's cash-out requirement applies only to parking spaces that employers rent, rather than own, an employer saves money for renting a parking space whenever a commuter trades an employer-paid parking space for cash. The cash payment to the employee is a more flexible use of funds previously dedicated to subsidizing parking. The eight firms, considered together, reduced their parking subsidies by almost as much as they increased their cash payments in lieu of parking subsidies, and the eight firms' average commuting subsidy per employee rose from $72 to $74 a month, or by only $2 a month.

Positive Reactions

In addition to reducing solo driving, cashing out parking subsidies produced other benefits. In interviews, the firms' representatives all praised their experience with cashing out parking subsidies. For example:

The employees think it's fair.
It's a good hiring incentive for us
[Cashing out] is an excellent recruiting point because people count it as income

Employees are grateful and thankful and more motivated So, that's a plus for the company
[Cashing out] made employees happy It became a benefit we were offering to employees.
We emphasize it in our new employee orientation.
I would definitely recommend [cashing out] We've always found that cash works. Cash is always a good incentive
[Cashing out] has been a really good experience People really like it
People like the idea, they like the cash in hand, and it does add to their paycheck.
Compared to the previous policy, I think [cashing out] is fairer
Cash works very well for us

Federal Conflict

If there are substantial benefits from offering commuters the option to cash out parking subsidies, and if firms who have complied with the cash-out requirement report such positive results, why has California's cash-out requirement not been enforced for the past five years? Quite simply, the federal tax code has prevented California from enforcing its cash-out law

Section 132(f)(4) of the Internal Revenue Code provides that if an employer offers commuters the option to choose cash in lieu of a parking subsidy, the parking subsidy itself ceases to qualify as a tax-exempt fringe benefit. Just for offering commuters the option to choose cash in lieu of parking, employers owe payroll taxes on all the otherwise-tax-exempt parking subsidies they offer. Similarly, just for being offered the option to choose cash in lieu of parking, commuters owe income taxes on all the otherwise-tax-exempt parking subsidies they receive.

Naturally, businesses in California have not wanted to suffer the adverse tax consequences of offering employees the option to choose cash in lieu of a parking subsidy, but they have also been uncomfortable with violating the state's cash-out law. The adverse federal tax impact of cashing out employer-paid parking led California business interests to seek a repeal of the state's parking cash-out requirement in 1997.

Flags and Parking

Senator Rob Hurtt (R-Orange County) introduced a bill (SB 731) that had two goals: (1) to repeal the state's parking cash-out law, and (2) to establish an exemption from air quality regulations to permit "the burning, in a respectful and dignified manner, of an unserviceable American flag that is no longer fit for display." Although these two issues may seem unrelated, they were joined in one bill because both employer-paid parking and flag burning affect air quality. Perhaps joining these two issues was also meant to suggest that cashing out employer-paid parking is somehow un-American, and that repealing the state's parking cash-out requirement would be a patriotic gesture.

The flag-burning portion of the bill was a response to complaints about smoke that resulted from a flag burning ceremony at an American Legion Hall in Ventura County.

SB 731 - Air pollution: parking cash-out programs: American flag burning

by Senator Hurtt

LEGISLATIVE COUNSEL'S DIGEST

SB 731, as amended, Hurtt. Air pollution. parking cash-out programs . *American flag burning* .

(1) Existing law requires, in any air basin designated by the State Air Resources 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

This bill would repeal that provision

(2) Existing law governing nonagricultural burning generally prohibits the use of open outdoor fires for the purpose of disposal or burning of specified materials. Existing law exempts from that prohibition burning to dispose of the combustible or flammable solid waste of a single- or 2-family dwelling on its premises and outdoor fires used only for cooking food for human beings or for recreational purposes

This bill would provide that an unspecified article shall not prohibit the burning, in a respectful and dignified manner, of an unserviceable American flag that is no longer fit for display.

After an investigation, the legal staff of the California Air Resources Board advised the Legion that flag burning can be characterized as a recreational purpose, and is therefore exempt from air quality regulations that prohibit open outdoor fires for disposing waste materials. Although the law already permitted ceremonial flag burning as a recreation, SB 731 was intended to create a more dignified exemption.

According to a legislative analyst's summary, "This bill draws a distinction between what type of flag burning should be exempt from air pollution laws according to the condition of the flag and the manner in which it is burned, rather than its relative smoke emissions. Under this bill, a flag would need to have been burned 'in a respectful and dignified manner' and have been 'unserviceable' and 'no longer fit for display' in order to qualify for exemption. Presumably, an air pollution control officer would be charged with determining the condition of the flag and the intent of those who burned it. As a practical matter, it would seem difficult to judge from the remains of a flag what its condition had been and in what manner it had been burned. By specifically qualifying one class of flag burning as exempt from the prohibition of open burning, this bill effectively creates a second

class of flag burning which, although it is protected by the Constitution, may not enjoy equal protection under the state's air pollution laws. For example, an individual who is exercising his or her constitutional right to burn an American flag, but who does not meet the criteria described in this bill, may be cited for air pollution violations. This bill's exemption suggests that burning flags for purposes other than ceremonial disposal, such as demonstrating disagreement with a government policy, is less deserving of an air quality exemption. The line of Supreme Court decisions related to flag burning suggests that such a distinction may be constitutionally invalid."[10]

In the end, the Legislature divided the issues of parking cash out and flag burning into two separate bills. The Legislature passed the flag-burning bill despite doubts about its constitutionality, and Governor Wilson signed it. The Legislature did *not* pass the bill to repeal the state's parking cash-out law.

The parking cash-out repeal failed in Sacramento because, one month earlier in Washington, the Taxpayer Relief Act of 1997 had removed the federal tax barrier to offering taxable cash in lieu of a nontaxable parking subsidy. The irony of this federal-state relationship was that, just as the federal tax code was being changed to accommodate California's cash-out law, there was an attempt to repeal California's cash-out law because of problems posed by the federal tax code. Fortunately, the federal government moved first (although five years late).

California's inability to implement its cash-out law stimulated the change in the federal tax code by making clear the irrationality of prohibiting employers from offering taxable cash in lieu of a tax-exempt parking subsidy. The tax code was blocking the state from implementing a law that was designed to reduce traffic congestion, air pollution, and energy consumption. As with any proposed change in the tax code, the Joint Committee on Taxation estimated this amendment's revenue effects. Their estimate was that allowing employers to offer commuters the option to choose taxable cash in lieu of tax-exempt parking subsidies will increase federal income tax revenues by $118 million from 1998 to 2007. Social Security tax revenues will increase by $51 million.

This increase in federal tax revenue will result entirely from voluntary choices by commuters who prefer taxable cash to tax-exempt parking spaces. Therefore, tax revenues will increase without an increase in tax rates.

Now that (1) the Internal Revenue Code allows employers to offer commuters the option to cash out their parking subsidies, and (2) the California Legislature has rejected a proposal to repeal the state's parking cash-out law, there are several options open to California.

Option. Enforce the Parking Cash-Out Law. The California Air Resources Board (ARB) can begin to enforce the state's parking cash-out law. Understandably, the ARB has not previously moved to enforce the law because of the adverse tax consequences for every

employer that obeys the law. In lieu of enforcing the law, the ARB financed my research on what happened when employers who were ignorant of the tax consequences obeyed the law voluntarily. As described earlier, VMT and vehicle emissions for commuting fell by 12 percent among all commuters offered the cash option in the eight case studies, at almost no cost to employers.

One simple method would be to inform employers of the law, and their responsibilities under it. In Southern California, another approach would be for the South Coast Air Quality Management District (SCAQMD) to notify all employers subject to its Rule 2202 (which requires large employers to file annual reports on what they are doing to reduce vehicle trips for commuting) that parking cash out is a state requirement. The SCAQMD could announce that it will not approve trip-reduction plans that violate any state air-quality law, including the parking cash-out law.

Option. Expand Coverage of the Law. If in practice cashing out employer-paid parking reduces traffic congestion and air pollution, California could consider expanding coverage of the cash-out requirement to employers of fewer than fifty employees. Firms with fewer than 50 employees provide almost five times more free parking in rented spaces than do the firms with 50 or more employees (Shoup and Breinholt 1997). Because smaller firms should have no more difficulty in cashing out parking subsidies, and smaller firms rent many more parking spaces to subsidize commuter parking, exempting firms with fewer than 50 employees from the cash-out requirement seems inappropriate

The threshold of fifty employees to trigger the parking cash-out requirement seems completely arbitrary. Perhaps this number was picked by a false association with the size threshold of 100 employees for employer-based trip-reduction mandates. Requiring employers to offer commuters the option to cash out their parking subsidies is completely different from requiring employers to encourage carpooling among their own employees.

To encourage carpooling among its own employees, a firm must have many employees, and the economy-of-scale argument suggests exempting small firms. But cashing out employer-paid parking does not rely on ridesharing among fellow employees of a single firm. Commuters who cash out their parking subsidies can carpool with anyone they like, not just with fellow employees of the same firm. Cashing out *all* leased parking spaces--not only the 17 percent of all leased parking spaces that are offered free to employees of firms of with more than fifty employees--would greatly increase each commuter's probability of finding a carpool partner because it would greatly increase the number of commuters who are actively looking for a carpool partner.

Cashing out employer-paid parking can reduce the inappropriate subsidy given by employers for automobile commuting A second strategy for solving California's transportation problems is the construction of High Occupancy/Toll (HOT) lanes.

High Occupancy/Toll (HOT) Lanes

The full cost of an automobile trip includes not only the cost borne by the individual motorist (his or her personal time and vehicle operating cost) but also any external cost that the motorist imposes on all other highway users as a result of traffic congestion. When one more car enters a highway that is already near its carrying capacity, that additional car slows down all the other cars (and buses and trucks) already on the road. Slowing down these other vehicles increases everyone's travel time, imposes additional wear and tear on vehicles due to the constant acceleration and deceleration associated with "stop-and-go" traffic conditions, and increases vehicle emissions by causing vehicles to operate under less than optimal conditions. The new car merging onto an already-crowded highway imposes all of these costs on other motorists and on the general public, but the driver is probably unaware of or indifferent to these "external" costs.

Many attempts to estimate the external cost of automobile travel have focused on the value of time lost in congested traffic Focusing specifically on Los Angeles, Michael Cameron estimated that the external costs of congestion imposed by each motorist on all other motorists range between 10 cents and 37 cents per vehicle mile traveled (VMT) during peak periods.[11] This range of costs is in the mainstream of most estimates in California.

Motorists' neglect of the costs they impose on others leads to overuse of the highways and to traffic congestion. As a way to make individual motorists aware of the external costs they are imposing on others, economists have developed a sophisticated theory of "congestion pricing" A congestion price is a peak-period surcharge for driving on congested highways--very similar to the peak-period surcharges for telephone service, airline travel, and movie theaters at the time of peak demand.

Congestion prices should reduce congested conditions on crowded highways as some people begin to carpool or to use mass transit, choose alternative routes, switch travel to alternate times of day, or forego some trips altogether in response to the peak period charges. Even a small change in the number of cars on a highway can significantly increase highway speed and improve traffic flows. If only a few vehicle trips can be shifted out of the peak period, the existing capacity of the highway system can more efficiently handle the highway demand. That is, existing highway capacity can meet peak demands through more efficient management of the highways, without severe congestion and without costly capacity expansions.

The technology of charging congestion prices is no longer the primary barrier to the use of congestion pricing in the United States, because sophisticated electronic toll facilities are already in use on many toll bridges and toll roads. The true barrier is political. Motorists have been unwilling to embrace the unfamiliar concept of congestion pricing and have been skeptical of the claims that peak-period tolls might cause some people to alter their driving behavior. Congestion pricing has often been characterized as simply being a new tax for which the motorist will get no benefit. *After all, people have to drive their cars.*

In lieu of politically-difficult congestion pricing, high-occupancy vehicle (HOV) lanes have emerged as one potential remedy to highway congestion. An HOV lane is a separate lane on the highway reserved for buses, vanpools, and carpools. An HOV lane offers HOV travelers travel-time savings by guaranteeing uncongested traffic and higher speeds for everyone except solo drivers. In some cases HOV lanes have fulfilled their early promise--for example the El Monte Busway in Los Angeles is a notable success, one of the bright spots in urban transportation planning. Each of the El Monte Busway lanes typically carries as many passengers per hour as three adjacent conventional lanes, and at higher speeds for the HOV travelers.[12] The Busway also serves to reduce congestion on the conventional lanes by drawing solo drivers out of their cars and onto the HOV facility. In many other cases, however, HOV lanes have not fared as well.

The initial enthusiasm over HOV lanes has waned as studies have demonstrated their inability to solve the congestion problem. HOV lanes provide uncongested travel for carpools and buses, but many HOV lanes are severely underutilized. As the share of Americans who carpool has steadily declined over the past twenty years, from 20 percent in 1970 to 13 percent in 1990, so has the potential market for HOV lanes [13] But the under-use of HOV lanes has inspired an ingenious twist on the HOV lane concept--the high occupancy/toll (HOT) lane.

A HOT lane operates on the same principle as an HOV lane except that solo drivers can buy their way onto the facility. The HOT-lane concept involves letting HOVs travel free while charging solo drivers a toll to use the facility. The toll should be higher during the peak period (so the solo drivers will not congest the facility) and lower during the off-peak when congestion is not a problem. Later, if HOT lanes become a popular idea, additional lanes might be converted to HOT lanes For this reason Fielding and Klein subtitled their study of HOT lanes, "phasing congestion pricing in one lane at a time."[14]

Fielding and Klein stress the need for an incremental approach to phasing in congestion pricing on the highways. Successful demonstration projects of HOT lanes are needed to overcome public and political opposition to charging for something that was once free. Revenue from the HOT lane can be used to pay for the facility itself, to construct new highway capacity, to retrofit existing highways, to fund alternative modes of transportation, or to fund new rideshare programs.

While HOT lanes are a relatively new concept, California already has two fully operational HOT facilities. The first is the HOT lane on State Route 91 in Orange County, which has been dubbed the 91X (91 Express Lanes). 91X offers a glimpse into the future of highway finance not simply because it is a HOT lane but also because it is a public-private partnership. The second HOT lane is publicly-operated on Interstate 15 in San Diego County.

State Route 91 Express Lanes (91X)

The Express Lane facility on State Route 91 is the nation's first fully automated toll facility with time-of-day pricing. In addition to being a demonstration of the HOT-lane concept, 91X is also noteworthy as a symbol of the public-private partnership as a possible future in highway finance in the US. The HOT lanes were built in the median of an existing highway by a private company (California Private Transportation Corporation) which will operate the facility for thirty-five years before ownership reverts back to the state.[15] Motorists have been given a new HOV facility in a highly congested corridor at no additional cost to taxpayers.

The new facility has four lanes that are entirely separated from the rest of the existing freeway. Buses and carpools of three or more persons travel for free while other vehicles pay tolls that vary by time of day. Tolls for the ten-mile trip currently range between $.60 at the off-peak and $2.95 during the hours of peak demand (5 a.m. to 9 a.m. for westbound travel, and 3 p.m. to 7 p.m. for eastbound travel) Toll rates are adjusted periodically to ensure that the HOT lanes do not themselves become congested by single and two-occupant vehicles. Tolls are paid via electronic toll collection--dubbed "FasTrak;" overhead radio receivers communicate with a dashboard transponder in order to charge the toll. Autos continue driving at freeway speed as radio signals collect the toll. Toll enforcement is provided via overhead cameras and through traditional enforcement from the California Highway Patrol. The operation is smooth and efficient.

California State Polytechnic University at San Luis Obispo is currently evaluating the facility with the final report due in late 1997. At the time of this writing, the following interim evaluative findings can be offered.[16]

1. The HOT lanes serve approximately 25,000 vehicles daily, only 20% percent of whom are HOV-3s traveling for free. The other 80 percent of vehicles pay a toll for using the facility.[17]
2. Average vehicle occupancy on the HOT lanes is 1.65 persons per vehicle.
3. The average 91X user saves between 20 and 40 minutes per one-way daily commute.
4. Traffic congestion in the free lanes has decreased since the HOT lanes opened.
5. Surveys conducted in 1995 and 1996 revealed that a majority of motorists approved of the idea of providing additional toll-financed lanes to bypass congestion.The Route 91 HOT lanes have proven to be so successful that a planned HOV lane project running from the Los Angeles County line to the 91X facility will instead be constructed as a HOT- lane extension.

Interstate 15: Express Pass Program

The other operational HOT lane in California is Interstate 15 in Northern San Diego County. Unlike the SR 91 Express Lanes, the Interstate 15 HOT lanes are a publicly-operated conversion of existing HOV lanes. In December 1996, the existing HOV-2 lanes were opened to a limited number of paying solo drivers. Initially 500 monthly permits priced at $50 each were sold. In February 1997, 200 more permits were sold. One month later, the monthly permit price was raised to $70.[18] The planners and engineers chose to limit the number of permits sold in order to prevent the HOV lanes from being congested by solo drivers.

The HOT-lane experiment is an alternative to increasing the number of lanes on a highway that has consistently been rated at Level of Service F (35 mph or less peak-hour speeds). Recognizing the excess capacity available in the HOV lanes, state and local transportation officials introduced the Express Pass program as a three-year project to monitor changes in carpool formation, traffic flow on adjacent lanes, air quality, transit usage, and travel behavior.

Express Pass allows a limited number of solo drivers to buy monthly permits to use the lanes. The facility is thus not currently an example of congestion pricing. Motorists using the HOT lanes generally save 10 to 15 minutes on their one-way commute times.[19] In late 1997/1998, the facility's public operators plan to introduce variable congestion tolls after the distribution of electronic tolling and automated vehicle identification devices to motorists using the facility.

The two promising HOT-lane facilities in California have attracted worldwide attention. Their success suggests three policy options for California: 1) conversion of existing HOV lanes into HOT lanes; 2) construction of new HOT-lane facilities; and/or, 3) congestion pricing of the Bay Bridge as a larger-scale demonstration of the HOT-lane concept.

OPTION. Convert Existing HOV Lanes. The success of the Interstate 15 Express Pass program demonstrates that HOV lanes can be successfully converted into HOT lanes. Such conversions are an inexpensive way to increase the efficiency of California's roadways In 1993, California had more than 230 miles of HOV lanes in operation on its metropolitan freeways, with plans to construct over 400 miles more. Many of these HOV lanes are currently under-used even as adjacent lanes suffer from tremendous peak-period congestion. These lanes can be converted into HOT lanes at little additional cost to the state. Prices can be set and adjusted so that the HOV lanes themselves do not become congested.

This policy option would continue to give preferential treatment to carpools, vanpools, and buses by enabling them to use the lanes free. Motorists would still have an incentive to rideshare. At the same time, however, such a policy would demonstrate on a larger scale what the Express Pass project has shown to I-15 motorists: pricing roads correctly can raise revenue

from solo drivers without increasing travel time for HOVs. This revenue can then be used to operate and maintain the facility, as in the case of I-15, or to construct new HOT lanes.

OPTION. Construct New HOT Lanes. A second policy option open to California would be to construct new HOT lanes similar to those on Route 91. The lanes could either be privately or publicly-constructed with toll revenues dedicated to pay off construction bonds. Once the bonds were retired, the revenue could be used to fund additional HOT-lane construction.

The choice of HOT lane location, preferably in highly congested corridors with few alternate routes, would have to be made carefully to guarantee that the lanes would be self-financing. As with policy option 1, the toll would have to be carefully set and periodically adjusted to guarantee that solo drivers do not congest the facility. In a time of shrinking government resources, self-financing HOT lanes are an effective means of increasing roadway capacity without raising taxes.

OPTION. Reinvent Congestion Pricing for the Bay Bridge. The San Francisco-Oakland Bay Bridge currently carries over 280,000 vehicles per day and suffers from severe congestion, especially at the facility's eastern toll plaza. The severe congestion of the bridge was especially notable during the recent transit strike that turned rush hour into a nearly all-day affair. In its own way, the Bay Bridge is already a HOT-lane facility in the sense that vehicles with three or more persons use the bridge free while all other vehicles pay a toll. Perhaps the Bay Bridge can be considered the earliest HOT lane.

The recent debate over funding of a new eastern span of the bridge, due to earthquake concerns over the existing structure, seems the perfect opportunity to reinvent congestion prices as a means of financing the $1.5-$1.7 billion cost of the new construction.. A study was commissioned by Caltrans and the Metropolitan Transportation Commission to increase tolls to $3 during the peak period, from the present $1 all-day base toll, but the proposal found little support in the California Legislature, the body that sets bridge toll policy. Instead, the state has decided to increase tolls on all seven state-run bridges in the region in order to finance the project. Instead of Bay Bridge users financing construction of a facility that they use, motorists who use any of the area's bridges are being asked to pay the cost. Many commuters who never use the Bay Bridge will pay for its construction.

The Bay Bridge would seem to be the perfect place to extend the HOT-lane concept. It is a heavily traveled corridor subject to extreme congestion. It is the only link between San Francisco and Oakland via automobile. It is well-served by an alternative mode operating in the same general travel corridor, BART. Time-of-day pricing for solo drivers accompanied by electronic tolling could reduce congestion on the bridge, eliminate the queue that builds near the toll plaza, provide free travel for HOVs, and provide the revenue needed to finance construction of the new eastern span.

Conclusion

California's transportation problems are indeed grave--yet their gravity has led to the development of innovative strategies that will help to solve the problems. By necessity, Californians are at the forefront in the fight against traffic congestion and air pollution. The two strategies discussed in this paper--cashing out employer-paid parking, and creating HOT lanes--have already shown great promise in reducing automobile traffic, and we have suggested several options for their further development. Unless we can first deal with the inappropriate subsidies to cars and the underpricing of road use, other transportation strategies, such as building rapid rail transit, are doomed to failure. The strategies outlined in this paper address these critical problems.

California has become a laboratory for testing the suitability of market-based solutions to transportation problems. The world frequently looks to California for innovative solutions to seemingly intractable problems. Today, California's policy makers have the opportunity to do in transportation policy what Californians in numerous other pursuits have been doing for years--lead the world.

Endnotes

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