REFORMING HIGHWAY FINANCE: CALIFORNIA'S POLICY OPTIONS[1]

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Since 1923 motor fuel taxes have been the principal instrument by which revenues are raised for the construction and maintenance of the California highway system. Fuel taxes are distinguished from most other taxes because they have been conceived of as a "user fee" rather than as a general tax. Federal and state motor fuel taxes, largely levied as charges per gallon of fuel purchased, were originally adopted as the functional equivalent of tolls. Drivers who pay a tax per gallon of motor fuel consumed are paying in rough proportion to their use of the system: those who drive more tend to pay more. In keeping with the user fee principle, the funds collected in fuel taxes traditionally have not been mixed with other government revenues in general revenue funds, but have been isolated in transportation "trust funds" to be used only for specifically designated transportation purposes.

As an instrument of taxation, motor fuel taxes have much to recommend them fiscally, politically, and administratively. First, as motor fuel consumption has soared over the past eight decades, so have tax proceeds. Federal and state fuel taxes yielded $4.3 billion in California alone in fiscal year 1996-1997. Second, the tax is paid in small increments, and the current 36.4 cents per gallon levy (18.4 cents of federal tax plus 18 cents of California state tax) is relatively hidden in the price of motor fuel. This particular feature of the tax has tended to minimize organized public opposition to it. Finally, the tax is easy to administer and collect, from both the taxpayer's and the government's point of view. The gasoline tax is collected from gasoline distributors rather than directly from retailers or consumers, which minimizes the opportunities for evasion and reduces the cost of collection to an historical average of one-half of one percent of tax proceeds (Crawford 1939; *Highway Statistics* 1945-1995; State Board of Equalization 1923-1997).

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[1] This chapter synthesizes parts of a larger report entitled *The Future of California Highway Finance: Detailed Research Findings*, published in 1999 by the California Policy Research Center in Berkeley, California. The report's authors are (alphabetically): Jeffrey Brown, Michele DiFrancia, Mary C. Hill, Philip Law, Jeffrey Olson, Brian D. Taylor, Martin Wachs, and Asha Weinstein.

A Tax Shortfall?

Faced with a growing population and an expanding economy, state transportation officials expect a significant increase in vehicle traffic on California roadways in coming years. This expected traffic will undoubtedly prompt calls for increased highway and public transit capacity. At the same time, the excellent highway infrastructure built over the past forty years is aging, and maintenance and rehabilitation needs are growing. But while increased revenues may be needed to keep up with growing use of the highway system in the coming years, three trends are limiting the ability of motor fuel taxes to cover costs: increasing vehicle fuel efficiency, the fact that per-gallon fuel taxes do not increase with inflation, and the repeated funding of new programs from fuel tax revenues. Collectively, these trends call into serious question the future financial stability of California's highway finance system and suggest that substantial changes might be required in order to sustain the state's extensive and vitally important road network.

First, vehicle fuel efficiency has increased significantly over the past few decades. As measured by overall passenger car fuel economy, national vehicle fuel efficiency has improved from 14.3 miles per gallon in 1960 to 22.6 miles per gallon in 1995 (Gross and Feldman 1996).[2] Newer automobiles achieve approximately twice as many miles per gallon of fuel as did cars fifteen or twenty years ago, and thus drivers pay much less per vehicle mile traveled than they used to (assuming a constant fuel tax rate). Looking ahead, plans to promote conversion of the automobile fleet to alternative fuels or electric power further threaten these revenues since alternative fuel and electric powered vehicles use roadways to the same extent as traditional gasoline and diesel-powered vehicles but they do not produce fuel tax revenues.[3]

Second, inflation has diminished the purchasing power of the motor fuels tax. Many taxes -- such as sales, property, and income taxes -- maintain their productivity in the face of inflation because the tax base rises with inflation. Thus, revenues from these instruments tend to increase in rough proportion to rising costs. Motor fuel taxes, however, are usually levied on a per gallon basis, and their proceeds therefore do not increase in response to inflation. To make matters worse, the cost of materials used in transportation projects and the cost of land for transportation facilities have historically risen faster than the general rate of inflation, so the buying power of fuel tax revenues is actually eroding even faster than the inflation rate would indicate. In order to keep pace with rising costs, therefore, the gas and diesel fuel taxes must be increased periodically by act of the legislature and approval of the governor.

Despite public concern over congestion and, to a lesser extent, maintenance, it is becoming increasingly difficult to achieve the political consensus necessary to raise fuel taxes. Between 1947 and 1963 the California gasoline tax was increased three times, as was the federal gas tax.

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[2] Of course, it is also true that the proportion of vans, light trucks, and sports-utility vehicles in the national vehicle fleet is rising. In 1970 the ratio of cars to vans, light trucks, and sports-utility vehicles was about six to one, while in 1995 it was about two to one. For vans, light trucks, and sports-utility vehicles, average miles traveled per gallon has risen less, from 10.2 in 1960 to 15.3 in 1995 (Gross and Feldman 1996).

[3] Efforts to promote the adoption of alternative sources of automotive power for air pollution reasons cause legislators to avoid taxing them, and even to offer tax credits and subsidies as inducements.

After 1963 neither the state nor federal tax was changed for nearly twenty years until 1982, when the federal tax was increased by five cents and the state tax by two cents per gallon. Even though gasoline taxes have historically been popular with voters who saw and benefited from the projects built with their proceeds, legislators have recently become wary of potential voter hostility toward tax increases of any sort.

These two structural shortcomings of fuel taxes have been exacerbated by government's tendency to add new programs without adding new taxes to support them. Even as inflation-adjusted gas tax proceeds per vehicle mile of travel have fallen, the highway finance system as a whole has been asked to absorb new program financing responsibilities (such as environmental mitigation) with few corresponding adjustments in motor vehicle tax rates. Thus, the highway finance dollar is being stretched thin. The problem is not necessarily the addition of these programs, which may benefit society greatly, but legislative reluctance to raise money to pay for them.

The result of these three trends is that tax revenues have grown much more slowly than use of the highway system. Maintenance needs are clearly rising on our aging highway system and, in the view of some, the need for new construction is rising as well (Figure 1). While California spends more on highways in absolute terms than any other state ($9.2 billion in 1995), a comparison of expenditures per 1,000 vehicle miles of travel (VMT) shows that California ranked 36th among states in the late 1990s, nearly $9 below the national average of $42/1,000 VMT (*Highway Statistics* 1996). One of the reasons that highway expenditures have fallen per VMT is that highway user revenues are increasingly used for non-highway purposes. The Federal Highway Trust Fund was originally set up to fund the construction of highways, but now highway user revenues are spent on other transportation and non-transportation projects.

Highways, which are defined here to include local streets and roads, account for only 54 percent of the expenditure of highway-user revenues[4] in California by federal, state, and local governments. Mass transit expenditures accounted for another 15 percent of highway-user revenues generated in 1995, and approximately 16 percent of highway-user revenues are used for state and local general (non-highway) purposes. The final 9 percent is revenue collected at the federal level (i.e. the federal fuel tax) that is used for general purposes or transferred to other states. General purposes included, until recently, 4.3 cents of the federal fuel tax that was used towards deficit reduction. Transfers, on the other hand, result from Californians paying more in federal user fees than the state receives back in federal transportation funds.[5]

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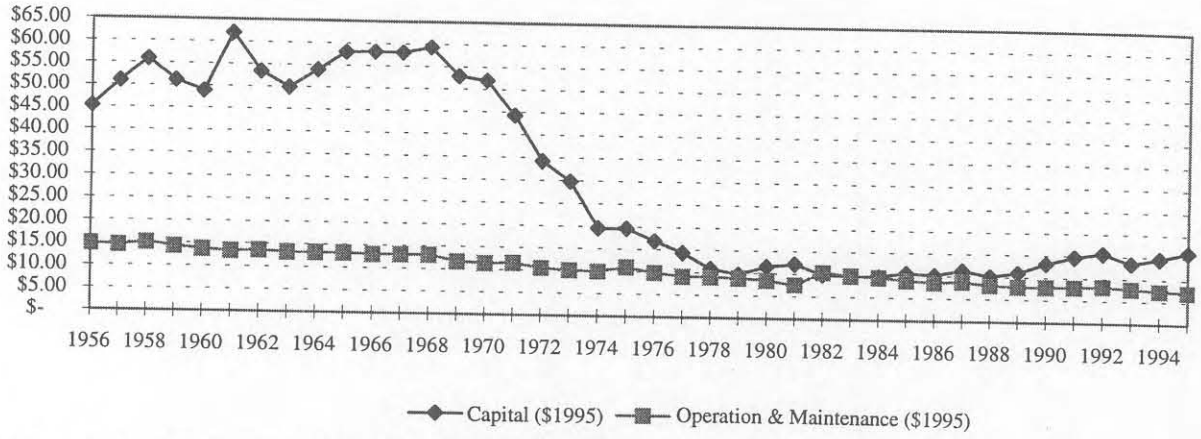
[4] Highway user revenues include federal, state, and local motor fuel and vehicle taxes as well as state and local tolls.

[5] Californians clearly pay more in federal transportation taxes than they receive back in federal transportation expenditures, though the rate of return has increased in recent years. Some argue, however, that California, in the aggregate, receives more in *overall* federal expenditures than its residents pay in federal taxes.

Figure 1
Highway Expenditures per 1,000 VMT in California 1956-1995



Source: *Highway Statistics* 1956-1996; Caltrans 1956-1995.

The state has responded to transportation revenue shortfalls in recent years by (1) scaling back on planned highway improvements and (2) by enacting periodic stopgap revenue enhancement measures. But there have been few meaningful structural reforms to stabilize the highway finance system. Gas taxes have been periodically increased since the early 1980s, but the tax increases have failed to keep the buying power of revenues constant in the face of the combined effects of inflation, increasing vehicle fuel efficiency, and new program responsibilities. This inability of motor fuels tax to keep pace with both inflation and system use has led to a new reliance on non-user based financing mechanisms to maintain the highway system's financial stability. The principal revenue sources for highways today are summarized in Table 1.

Table 1. Principal California Highway Revenue Sources 1996-1997		
Source	**Current Rate**	**Revenue* ($ millions)**
State Fuel Taxes	Gas and diesel: 18.0 cents/gallon	1,800
Federal Fuel Taxes	Gas: 18.4 cents/gallon; diesel 24.4 cents/gallon	1,520
Vehicle Registration Fees	$22 or $27/year based on vehicle type	869
Motor Vehicle Weight Fees	Varies based on weight and number of axles	600
Sales Taxes	Up to ½ cent in 18 counties	432**
Tolls	Varies by facility	230
Driver's License Fees	$12; five-year renewal is $15	112
Total		**5,565**

Source: Brown, *et.al.*, 1999.
* These numbers are approximate. In some cases not all revenue raised is spent directly on highways.
** The precise contribution of county transportation sales tax revenues to the state highway system in 1996-1997 is not available. This figure is estimated based on the average proportional contribution to state highways of all county transportation sales taxes since their inception in the 1980s.

Obtaining New Revenue

Faced with the decline in state revenues for highways, eighteen counties in California have turned to local sales taxes to augment their transportation revenues. However, sales taxes are a far more indirect levy for highways than motor fuel taxes, since they do not charge only those who benefit from the use of roads.[6] The sales tax measures are required by state law to include lists of projects that must be undertaken with the funds they raise, and this limits the flexibility with which local transportation agencies can approach the task of meeting their future needs. Although maintenance and rehabilitation are increasingly needed, fragmentary evidence suggests that voters are less inclined to support tax increases for such expenditures than they support new roads and public transit facilities. Also, there has been ongoing litigation over the question of whether or not transportation sales taxes require voter approval by a simple or two-thirds majority. At the time of writing, the California Supreme Court had upheld a strategy whereby Santa Clara County succeeded in obtaining a transportation sales tax with only a simple majority,[7] and other counties are likely to follow suit. While voters have recently approved transportation sales taxes by a 2/3 majority in some counties, should the two-thirds requirement return, far fewer additional sales taxes may pass.

In the face of growing needs for maintenance and some capacity increases, the eroding buying power of fuel tax revenues, and the uncertain future of sales taxes, how can California

[6] Sales tax revenue has been used to fund transit, paratransit, and nonmotorized transportation as well as roads and highways.

[7] Santa Clara County recently used a system requiring only a simple majority for approval whereby two ballot measures were put to voters. One raised the sales tax, and the other stated that the voters wished the county to spend the new revenue on a specified list of transportation projects.

fund its highway system in the new century? This chapter considers a variety of finance approaches, including raising fuel tax rates, indexing fuel taxes to inflation, restructuring the state's system of charging heavy vehicles for their use of the highways, implementing tolls, instituting annual charges based on miles of driving, and reducing reliance on sales tax revenue.

An Optimal Finance Program

Choosing the best finance mechanism is a difficult balancing act. Today citizens demand that the highway finance system not only raise revenue, but also that it promote a transportation system that supports economic activity, provides access to transportation to people of all ages and income, and discourages environmentally damaging behavior. Intentionally or not, finance instruments profoundly affect the way highway services are provided and the way citizens use them. Fares, fees, tolls, and taxes paid by travelers influence their decisions on where to travel, when to travel, how to travel, and even whether to travel. Use of the highway system in turn greatly influences the maintenance and new capacity "needs" of the system, which affects the finance system. Thus, the highway finance system and the performance of the highway system are mutually reinforcing.

Our concern for how the supply of, and demand for, highways are mediated by the cost to the user is neither abstract nor trivial. The issue of truck-weight fees provides an example. The road pavement damage caused by heavy trucks increases significantly with the weight per axle, yet the current system of truck weight fees in California encourages truckers to load heavy weights onto as few axles as possible. Therefore, our truck-weight fee system increases maintenance and rehabilitation costs above the level they would be if the state used a different system that encouraged truckers to reduce axle weights. California is currently contemplating significant changes to the way we levy fees on trucks; such changes could substantially lower maintenance costs and thus reduce revenue needs. This relationship between revenue collection and highway system performance, however, has not typically been highlighted in recent policy debates over highway finance.

We contend that an optimal finance program as much as possible charges users the *marginal social cost* they impose on the system.[8] The term *marginal* refers to the cost of providing for one additional trip, given that others are already using the system at the same time. For example, when a car enters the freeway, it takes up space that other automobiles can no longer occupy, it imposes some delay on vehicles upstream, and it also causes some amount of pavement damage. If there are very few vehicles already on the freeway, then the cost of providing for that one additional car is very small. On the other hand, if there are many cars already on the freeway, that one additional car slows down other cars upstream and increases congestion to a surprising degree. Thus, the marginal cost of that one car is large.

The term *social* refers to the costs that society at large pays for providing for that one additional vehicle. These social costs, resulting from road wear and tear, congestion, pollution,

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[8] For a summary of the literature on estimating the social costs of motor vehicle use, see Murphy and Delucchi 1998.

noise, and accidents, are substantial. For example, the 1997 Federal Highway Cost Allocation Study (US DOT, FHWA) calculates that congestion, crash, and noise costs borne by non-highway users will total $50 billion in the year 2000.[9]

A large body of research shows that the current highway finance program does not adequately charge users the marginal social cost of vehicle use. The current road finance program generally charges users according to the "average" cost of using the highway system, excluding many environmental and, especially, delay costs. That is, when a vehicle gets on the highway and contributes to congestion or an overloaded truck damages a roadway, the "cost" of that delay or road damage is paid by *everyone* experiencing the delay or rough road. The cost is averaged out so that individual drivers are not aware of the total costs they impose on everyone else, and thus have no incentive to alter their travel choices. There is overwhelming agreement in the literature that prices paid for use of the highway system are not related closely enough to the costs of using the system (Forkenbrock and Schweitzer 1997; Deakin and Harvey 1996; National Cooperative Highway Research Program 1994; Pozdena 1995; Puget Sound Regional Council 1997).

Of course, in reality implementing absolutely precise marginal cost pricing in California or anywhere else is not feasible. It is too difficult to calculate all the social costs of a single trip and to create a system that charges those exact costs for each trip. However, it is quite feasible to move in the direction of that ideal through policies like charging tolls based on the level of congestion.

Restructuring Motor Fuel Taxes

Without regular adjustments to the tax rates, motor fuel taxes are not stable revenue generators. Maintaining revenue-generating stability can be achieved, however, if the state legislature examines revenues on a regular, ongoing basis to see if they have changed enough in real terms to warrant an adjustment in the tax rate. If the legislature is unable or unwilling to make such regular reviews, an acceptable alternative might be to "index" the motor fuel tax rates, or adjust them regularly using a formula that ties the rates to some measure of inflation such as the Consumer Price Index.

An advantage of relying on periodic legislative increases to keep real revenues constant is that it allows the legislature to review regularly how those revenues are being spent. Given the substantial sums of money involved and the importance of the transportation system to all state residents and businesses, it is desirable to monitor transportation expenditures carefully. However, in the last few decades the legislature has been reluctant to increase motor fuels levies, even when there has been relatively widespread agreement on the need for increased transportation revenues. In the first few decades of the fuel tax many of the interest groups which today regularly oppose tax increases (such as the auto industry and automobile clubs) were among the tax's most vocal supporters. Today, increasing the gas tax is an extremely hard sell

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[9] This figure does not include normal operation and maintenance costs or environmental damage such as air pollution from vehicle emissions.

unless voters and legislators believe the transportation system faces a financial crisis. Also, the legislature is increasingly loath to raise motor fuel taxes without voter approval. However, voter initiatives are costly and time consuming efforts in which the idea of "keeping up" with inflation is likely to be lost on voters.

If political conditions make regular legislative adjustments to the tax rate impossible, then indexing fuel taxes is a possible alternative. An "indexed" or "variable" tax rate is regulated by a formula that pegs the rate to some changing scale, such as a measure of inflation. Most simply, as already noted, motor fuel tax rates could be linked to the Consumer Price Index (CPI), a general measure of consumer prices.[10] The legislature could authorize regular changes to the per gallon levies by pegging them to an indexing formula for a trial period. The chief advantage of indexed taxes is that they maintain total, long-term real revenue without the political battles and uncertainty that accompany legislative or voter-approved increases in a fixed tax.[11] Another benefit of indexing fuel tax rates to the CPI is that future real revenue streams would be more predictable than future revenues that depend on legislative action.

In recent years politicians in a number of states have shown interest in indexing fuel taxes as state legislatures have become more and more reluctant to enact regular tax rate adjustments. While indexed fuel taxes have never been common, they do exist. Before 1977 all state motor fuels taxes were fixed, per-gallon rates, but since then at least 15 states have experimented with different types of variable-rate gasoline taxes. As of 1998 four states had fuel taxes that vary automatically: Florida, Nebraska, North Carolina, and Wisconsin. For example, since 1984 Wisconsin has had a two-tier gas tax that includes a fixed portion of two cents per gallon and a variable portion indexed to the Consumer Price Index.[12] Several other states, including Kentucky, Massachusetts, Ohio, and Rhode Island, have statutes that allow for variable rates, even though intricacies in the formulas have kept the rates constant in recent years. Rhode Island and Massachusetts, for example, have a required minimum tax level that is higher than the rate would be under the indexing formula, so the tax levels have remained at the mandated minimum.

Why has indexing not proven to be more popular? Some of the policy leaders interviewed as part of this study thought that legislators oppose these proposals on the grounds that any fuel

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[10] We chose the CPI to adjust for inflation because it is relatively easy to obtain, and is commonly used. Other measures that better reflect the costs of transportation projects, such as construction and maintenance cost indexes, are not published on a consistent basis.

[11] It is still true that even indexed gas taxes are not guaranteed to keep up with rising costs; they will still be subject to some of the political demands that accompany any tax increase. Legislators may be pressured to suspend or eliminate the indexing in times of recession or high gas prices. For example, when Wisconsin's economy was in a recession in 1992, the state blocked the automatic increase in the gas tax for that year. (Similarly, high growth rates and a backlog of road projects could lead the legislature to enact rate increases ahead of the indexing formula.) Also, for the last decades, highway costs have risen faster than inflation and the CPI.

[12] From 1984 to 1998 the variable component was directly proportional to the percent change in the CPI during the previous year, and inversely proportional to the percent change in the state fuel sales of the previous year. As of 1998 the tax varies with the CPI alone. Also, until 1993 Wisconsin used the FHWA's Highway and Construction Cost Estimate instead of the CPI. In 1993 the FHWA stopped releasing its cost index, and Wisconsin turned to the CPI instead.

tax adjustment should be justified on the basis of need. Opponents do not believe that automatic adjustments in the tax rate are warranted unless it is conclusively demonstrated that costs are changing at the same rate. An indexed tax would be undesirable because it takes the oversight responsibility—and power—out of the hands of state legislators. Other interviewees decried waste in government and did not want a mechanism that might increase (nominal) revenues without improving accountability. These interviewees felt that the public has little confidence that Caltrans works efficiently and fears that if the agency knew its budget would rise with any inflation, this could encourage yet more wastefulness. Others expressed a dislike for indexing fuel taxes because they see it as a "silent" tax increase in the sense that it is a tax increase that occurs without legislative action and the accompanying publicity.

Despite the political obstacles to indexing motor fuel taxes, there may be ways to refine the tax formula that would increase popular support. One alternative to indexing the entire state gasoline tax is to index only a portion of the tax. North Carolina adopted such a tax in 1986, raising the fixed per-gallon levy to 14 cents per gallon and adding a supplemental tax indexed to three percent of the average wholesale price of gasoline. In North Carolina's case this didn't eliminate the need for periodical legislative increases, but such a strategy could prove a useful approach for California. Indexing only a portion of the tax might seem less objectionable to legislators and the public. (Of course, revenues would not keep up with inflation as well as they would with the full tax indexed.) Another key to gaining political acceptance might be to limit the rate at which fuel taxes can rise, even in times of high inflation. The experience of other states which have tried variable-rate fuel taxes suggests that the tax should have a maximum annual increase of about one cent per gallon. Automatic increases of several cents in one year have caused political backlashes that contributed to the discontinuation of several variable rate gas taxes (Ang-Olson, Wachs, and Taylor, 1999).

Linking Revenues to Increasing Travel and Annual VMT Fees

Even if revenues change in step with inflation, they will not necessarily rise and fall with changes in highway use. As use of the system changes, revenues probably need to change correspondingly. As noted earlier, one significant problem with the gas tax is that, with increasing vehicle fuel efficiency over time, drivers pay less and less in fuel taxes per mile traveled, but costs imposed on the highway system do not drop accordingly.

One suggested solution to the problem of falling revenues per VMT is to replace fuel taxes with an annual tax on VMT. Such a tax would charge drivers a fee based on a regular (probably annual) odometer reading of each vehicle. Like motor fuel taxes, this would be a direct user fee charged to drivers based on their total use of the road system. An annual VMT fee could be implemented either as a supplement to the gas tax, or else as a replacement for the gas tax. If the VMT fee and gas tax were both collected, the levels of each could be set to generate total revenues at any level—below, equal to, or greater than current revenue

In many ways, however, annual VMT fees are actually no better than—or even inferior to—motor fuel taxes. Like fuel taxes, the annual VMT fee does not charge higher fees for those trips which increase pressure for expensive increases in road capacity: a peak-hour trip on jammed

freeways will cost a driver the same amount as a trip of the identical length on an empty rural highway. Also, VMT fees are even less able than fuel taxes to charge heavier vehicles higher rates for the extra damage they cause to the pavement (fuel use tends to be higher in heavier vehicles). Also, annual VMT fees communicate to drivers very little information about the social cost of their travel. While fuel taxes send only indirect signals about the cost of a trip, payment of an annual VMT fee would be even more disconnected from tripmaking. Large lump sum payment may send drivers a temporary message that driving is expensive (and raise their collective ire over transportation taxes). But for most of the year, drivers would probably see little relationship between their driving and the cost it imposes on society.

If the VMT fee were collected annually as a lump sum, it would require careful household budgeting. For low-income households, this could prove a serious hardship. A final potential drawback to annual VMT fees is that, unlike the gas tax, they do not provide any economic incentive to drive more fuel-efficient vehicles. (Though this issue could be indirectly solved if the charge per mile for each vehicle varied with the average fuel efficiency of the make, model, and year.) There are also substantial difficulties in administering and collecting an annual VMT fee. From a technological standpoint, such a fee would require the development of an acceptably tamper-proof odometer. However, the greatest hurdles are ones of administrative expense, inconvenience for drivers, and potential evasion.

The political appeal of an annual VMT fee is currently low. Among the legislators and staff we interviewed for this study, three were adamantly opposed, three had not yet heard of the concept, and two gave no personal opinion but said that VMT fees were not politically viable. Among the transportation professionals and interest group representatives interviewed, reactions were more mixed. Nobody predicted that annual VMT fees would be implemented soon, but many thought such fees were appealing in principle. Focus groups conducted for the state of Minnesota found that the public worried about preventing fraud and did not see that a VMT fee would be superior to fuel taxes (Lari and Buckeye 1996). Clearly one major political advantage of an annual VMT fee could be that it is a simple concept the public could grasp without much difficulty. On the other hand, it is almost certain that voters would object to the idea of a large annual payment.

In the long run, it is possible that VMT fees could be made more sophisticated with new electronic technologies, so that the fee per mile would vary according to the conditions in which the vehicle was driven. For example, miles driven on congested roads might be assigned a higher charge than those driven on free-flowing roads. Some environmental organizations as well as some senior Caltrans staff have shown interest in long-term use of this more sophisticated type of VMT fees. Truck weight-related fees that vary with vehicle miles driven on roads of different types also hold promise for achieving a more efficient and equitable system of user charges for heavy vehicles.

Increasing Reliance on Tolls

With recent technological innovations that for the first time make electronic tracking and billing possible, vehicles no longer have to stop at tollbooths to pay tolls. Therefore, increased use of tolls is now a much more viable option for improving the state's transportation finance system. Tolls are a direct user fee since they can be precisely linked to distance traveled (VMT). Further, if toll rates vary over the course of the day so that they are highest during rush hour, they can reduce congestion by spreading travel over a longer period of time. They are preferable to VMT fees because they charge out of state vehicles for their travel on California roads, but do not charge California residents for out-of-state travel. Tolls' biggest liability is that they are not popular with the public. The most common objection is that tolls are "double taxation" because the roads have already been paid for through fuel taxes. However, tolls have proven to be a publicly acceptable method to finance new facilities.

The bulk of existing tolls in California are on bridges. In 1996-1997, tolls raised $230 million for the state. In recent years California has broken with its long tradition of avoiding tolls on roads: five toll roads are currently in operation. On a stretch of Interstate 15 in San Diego, single-occupant vehicles can opt to purchase an electronic transponder that permits them to use the carpool lanes and pay a toll, which varies based on the level of congestion in the parallel free lanes. On part of Orange County's State Route 91, a private company has added new lanes and charges tolls that vary by time of day for their use.[13] Also in Orange County, two other new toll roads in south and eastern parts of the county have begun operation.[14] (see Table 2).

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[13] SR 91 was developed under legislation approved as part of the 1989 *Transportation Blueprint*. The Legislature passed Assembly Bill 680 (Baker), which authorized Caltrans to enter into agreements for four innovative financing demonstration projects financed by the private sector. Under the bill, a firm builds the facility for the state and leases it from Caltrans for up to 35 years. All revenue beyond that needed to cover construction costs, payments on debt, and a specified return on investment go into the State Highway Account. The private sector must fund all costs, including design, environmental review, right of way acquisition, construction, operations, and maintenance. Of the four projects designated by AB 680, only State Route 91 is in operation. Two others are in development: State Route 125 in San Diego and the Santa Ana Viaduct (State Route 73). The fourth has never materialized due to opposition on the grounds that the road would promote sprawl (CTI 1996).

[14] The Orange County projects are being constructed and managed by the Transportation Corridor Agencies, joint powers agencies representing the county and eleven cities. In 1987 the state legislature gave the Transportation Corridor Agencies the right to collect tolls. The roads built are Caltrans property, but the TCA retain the right to collect tolls. The $2.2 billion in costs are primarily financed with toll revenue bonds, with some use of development impact fees and state gas taxes to help pay design, administrative, and a small portion of construction costs (CTI 1996).

Table 2. California's Toll Roads in 1999				
Facility	**Length**	**Completion Date**	**Variable Pricing?**	**Toll rate**
State Route 91 "HOT" Lanes	10 miles	1995	yes	$0.60 - $3.20
Interstate 15 "HOT" Lanes	6 miles	1998*	yes	$0.50 - $4.00 (maximum of $8.00 in extreme cases)
San Joaquin Hills Corridor (SR 73)	15 miles	November 1996	no	$0.25 - $2.00
Foothill- North Corridor (SR 241)	12 miles	1999	no	$0.25 - $2.00
Eastern Corridor	24 miles	1999	no	NA

* From December 1996 to March 1998 it was possible to buy a non-electronic monthly pass.

A key reason for the most recent interest in toll roads is that new technologies allow for the elimination of that age-old bane of tolls: the tollbooth. Tollbooths are problematic because they both inconvenience motorists and entail high administrative costs. For every dollar of revenue collected from traditional (non-electronic) toll roads, as much as 15 to 20 cents goes to administrative costs (Forkenbrock and Schweitzer 1997). To put this figure in perspective, it has been 40 times more expensive to collect a dollar of revenue from tolls on roads than it has been to collect a dollar of gas tax revenue, making the latter a much more efficient finance mechanism (Pozdena 1995). However, it is now possible to collect tolls electronically, as vehicles drive by at highway speeds. Electronic toll collection (ETC) allows traffic to flow smoothly, accommodating about 1,000 vehicles per hour, compared to 350 - 400 vehicles per hour for manual collection (Forkenbrock and Schweitzer 1997). Furthermore, these toll systems can be quite cheap to administer. The Oklahoma Turnpike Authority, for example, lowered its annual toll collection costs from $176,000 to $15,800 per lane by switching from manual toll collection to ETC (TRB 1997). ETC was first introduced in the United States in 1987, and by 1995 almost half of the 180 tolled highways in the country had ETC capabilities.

To use the ETC systems currently in place in the United States, the driver places a special debit card on the vehicle's dashboard or windshield. As the vehicle passes designated points, tolls are electronically deducted from the card's pre-paid value. Conceptually the system works like pre-paid telephone cards or an ATM card that allows the user to withdraw money up to the account limit. Enforcement is handled with cameras that automatically snap a photo of the license plate of any vehicle not paying. Today this system is used on State Routes 73, 91, and 241 in Orange County, Interstate 15 in San Diego County, and the Carquinez Strait Bridge in the Bay Area. Except for SR 91 and I-15, drivers also have the option of paying manually.

A well-designed toll system can add greatly to the efficiency of the transportation system. Tolls are an excellent user fee, since they provide a direct link between user payments and benefits received. Indeed, tolls are probably a more exact user fee than any other finance

mechanism currently in use. Toll roads are also able to charge heavy trucks higher fees that compensate for the extra damage they inflict on roads (currently bridge tolls in California vary by vehicle class). Finally, tolls can be collected from out-of-state vehicles that do not pay registration, license, or weight fees.

Another potential advantage of toll roads is that they are attractive investments to the private sector, and thus can be a method for bringing in capital revenue beyond what the public sector can provide. Since 1989, more than 12 states have passed legislation allowing private investments in partnership with public agencies on state transportation facilities. Tolls provide a solution to one of the major dilemmas transportation planners face: how to accommodate heavy traffic yet avoid the enormous expense of building new highways. By charging motorists a visible fee for every trip, tolls can ease congestion by encouraging people to carpool, take transit, or use the facility only for important trips. When toll rates are variable, they can ease congestion by spreading traffic over the day. In this way congestion improves without reducing the number of vehicles or building additional capacity. This concept is variously known as variable pricing, value pricing, congestion pricing, or time-of-day pricing. In the pure form of variable pricing, toll rates are constantly reset on the basis of current traffic levels to keep the lanes always free flowing. As congestion increases the tolls go up enough to keep traffic flowing at a reasonable speed, and when traffic lightens they fall. Traffic congestion is eliminated. In practice, a useful proxy for these constantly shifting toll rates is to set the rates higher during known rush hours and lower during other times.

A modeling exercise done for the Bay Bridge found that a simple variable-pricing scheme where the normal one-dollar toll is raised to three dollars during the morning rush hour would reduce delay by 40 percent, lowering the peak waiting time from 20 minutes to 12 minutes. This improvement in congestion would also be achieved with only a seven percent reduction in one and two passenger vehicles (Frick et al 1996). The capacity to reduce congestion and spread trips over time so that facilities are well used for a longer period of the day is one of the biggest advantages of variable pricing and something that no other finance mechanism achieves.

High-Occupancy/Toll (HOT) Lanes

Though variable tolls have a long history in the economics and transportation policy literature, it is only recently that they have appeared in the United States. California now has the first two highways in the United States with variable tolls: the "HOT" Lanes on State Route 91 and Interstate 15.

The HOT lanes on SR 91, which run through a ten-mile stretch of Orange County, opened in late 1995. In the early 1990s Caltrans entered into an agreement with the California Private Toll Road Company to build and operate four lanes in the median of the existing freeway. Upon completion Caltrans took ownership of the lanes, but the company will operate the lanes for 35 years, during which it can charge tolls to recoup its costs and make a profit. The lanes are known as High Occupancy Toll or "HOT" lanes because they function both as carpool or "HOV" lanes and as toll lanes. While single occupant vehicles must pay a toll to use them, carpools either

travel free or pay a reduced toll. The amount charged varies according to the time of day. At times of day when congestion is generally higher the operators set the price higher so that the HOT lanes always remain free flowing. During rush hour the charge may be as high as $3.20, but when the lanes are uncrowded, the toll falls to $0.60. The tolls are collected with an ETC system, and observers are stationed to verify that vehicles traveling as carpools indeed are.

San Diego's HOT Lanes run along eight miles of the Escondido Freeway (Interstate 15). Because existing carpool lanes were underused, in the early 1990s the San Diego Association of Governments (SANDAG) conceived the idea of selling the excess capacity to non-carpools. In 1998, the facility began electronic tolling on a per-trip basis. Furthermore, the toll rate is based on the actual level of congestion during a trip, with the rate changing every six minutes as needed. This is the first implementation of "real-time" congestion pricing. The toll ranges from $0.50 to $4.00, though in extreme conditions (predicted to occur a couple of times a year) it could rise to $8.00. For a week early in April of this year, the average price per trip in the morning rush hour was $3.50. The revenue from the tolls is being used to pay for the *Inland Breeze*, an inter-city express bus service that connects with the local trolley system.

The Pros and Cons of Tolls

An advantage of toll-based transportation finance is that to the extent that tolls are used only to fund self-financing new facilities, they may impose a useful financial discipline on capital investment decisions. By choosing to finance only those projects that have a reasonable expectation of repayment through tolls, the state can generally be sure it is investing in worthy projects. Our current system, which does not directly relate financial costs and benefits, lacks such discipline. Of course, there may be times when for special reasons the state does not wish to build a project even though it could cover its costs, or perhaps the state wishes to build a road despite the fact that it cannot be self-financing. Such decisions may be appropriate, but looking at whether a project is self-financing is still useful because it forces decision-makers to articulate the reasons behind a decision that goes against the logic of the self-financing test.

Tolls have their weaknesses as well. First, unlike motor fuel taxes tolls provide little incentive for people to buy energy-efficient vehicles. However, this weakness is partially offset by the fact that, since tolls reduce congestion, they reduce fuel consumption (vehicles in traffic consume more fuel). Also, tolls may encourage some people to ride-share or use transit, which could also reduce congestion, air pollution, and energy consumption. A second problem with tolls is that in some locations they may divert vehicles onto non-tolled routes. If enough people move off toll highways, traffic may overwhelm local streets. It is even possible that overall congestion along a corridor could increase if the time lost by people on local streets is greater than that gained by the people who remain on the tolled facility. In addition, from a broader social welfare standpoint, traffic is generally more disruptive on city streets than on freeways. Accidents are more common on city streets, and traffic makes the streets much less pleasant places to shop, do business, stroll, or live. Enough traffic can even push a healthy neighborhood over the edge into marginality.

Despite their weaknesses, tolls can play a highly useful role within our transportation finance system. A publication from the World Resources Institute in Washington, D.C (quoted in Blake 1997) summarized the benefits of variable tolls this way:

> What other transportation policy would reduce congestion, raise economic productivity, decrease pollution levels, preserve drivers' freedom of choice, save governments the construction costs of increasing capacity and, as an extra bonus, generate significant revenues in a way that imposes no excess burden on the economy?

Conventional wisdom has been that Californians are proud of their "free" highways and would oppose any use of tolls. Such views, however, are not supported by recent experience with the new toll roads, which to date have not generated much outcry. It is still early to come to any firm conclusions on public reaction, but so far the signs are encouraging. Many commuters report being very pleased to have the option of paying extra for a smooth commute, even if others grumble. In San Diego the 5,000 transponders offered to the public were all distributed quite quickly.[15] The HOT lanes on SR 91 are attracting over 30,000 commuters on weekdays. Continuing to monitor use of the toll lanes, and also public attitudes, will be an important step in learning more about how toll lanes can best be made to fit public needs and preferences.

The standard argument against tolling existing facilities is that people believe they have already paid for them through fuel taxes, and so adding tolls would amount to double taxation. However, this argument makes less sense if one accepts that we already collect fees for transportation projects in multiple ways and that there is no reason not to continue doing so. After all, nobody has complained that sales taxes and fuel taxes are double taxation. Seen in this light, using tolls would simply be an alternative to reliance on revenue from existing sources of transportation revenue.

The Fairness Issue

Questions of fairness and distributional equity are frequently raised in conjunction with tolls. Public opinion polls have suggested that the public thinks variable tolls are fair in the sense that user fees are fair. However, respondents predict that most travelers do not have the flexibility to change their time or mode of travel and will thus be unfairly "forced" to pay the peak hour tolls. Congestion pricing is seen as fair because it is a user fee, but not necessarily fair to low-income people or those with inflexible work schedules (Higgins 1997).

Three different studies estimating the impact variable tolls would have on people of different incomes found no significant impact on the poor. The results should not be taken as the last word on the issue, but they suggest that there is no reason to assume that variable pricing would place an undue burden on the majority of poor people. Elliot (1997) made calculations

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[15] SANDAG is limiting the number of transponders offered to prevent so many single occupancy vehicles from using the toll lanes that it becomes necessary to charge extremely high rates to keep a free flow of traffic. The transponders were made available on a first-come first-serve basis.

based on a simulation of variable tolls in Southern California.[16] He concluded that, "congestion is not a problem which every class inflicts equally on every other class, far less a problem inflicted on the rich by the poor. It is overwhelmingly a problem inflicted by the nonpoor on each other." The simulation found that the only travelers who came out financially behind were those who continued to drive alone more than 25 miles in the morning peak hour. Of these people, only one to two percent had low incomes.

Another equity analysis was performed for an official task force studying ways to manage congestion in Southern California.[17] The study found that if drivers were charged variable tolls on all freeways, plus a per-mile emission fee, the system would benefit all income groups. However, the wealthiest 40% of the population would pay a higher than average portion of the tolls and also receive more of the benefits (Wilbur Smith Associates 1997). Finally, an investigation into the option of raising the Bay Bridge toll to three dollars during the morning rush hour found that only four percent of the commuters who pay the toll in morning have low incomes (Frick et al 1996).[18] Further, the study found that it would be feasible to offer this small number of commuters a reduced or "lifeline" toll rate. The reason that wealthier drivers would probably both pay more and benefit more with congestion tolls is that relatively few poor people are long-distance, peak-hour commuters (Pisarski 1996). However, this is not to imply that variable pricing would make peak-hour freeways the province only of the rich and middle class. Early results from studies of SR 91 in Orange County have found a mix of income ranges in both the free and tolled lanes, though there is no doubt that those who pay the tolls are on average wealthier than those in the free lanes. In a survey of travelers in the SR 91 HOT lanes corridor, over 20 percent of households earning less than $40,000 a year reported using the toll lanes for at least 40 percent of their trips (ARDFA 1997).

Restructuring Truck Weight Fees

Truck weight fees are a major part of California's transportation finance system, and have been the object of repeated unsuccessful efforts to remedy perceived defects in their structure. The principal flaw in the long-established system of truck weight fees is that the fees have increased with unladen vehicle weight and the number of axles, a formula that has encouraged truckers to load as much weight as possible onto as few axles as possible. This type of loading can result in rapid pavement deterioration because heavy axle loading is the source of most of the damage trucks cause to the roads. Over the years careful research into the pavement damage caused by trucks has found that, depending on pavement-type, imposed damage can increase exponentially with axle weight. The overall per-mile cost responsibility of a typical 80,000-pound truck on a given pavement type, for example, can be twice that of a typical 50,000-pound truck (Merriss and Henion 1983).

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[16] He used the results of simulations from Giuliano 1994.

[17] The group was the "Reduce Emissions and Congestion on Highways" or REACH Task Force. It consisted of 70 people from the public, private, and academic sectors. The three-year study received federal funding.

[18] The study used a definition of "low-income" that parallels those used by Pacific Bell and Pacific Gas & Electric to identify households eligible for reduced-rate lifeline services.

Six states currently impose weight-distance taxes—Arizona, Idaho, Kentucky, New Mexico, New York, and Oregon. Another five states had weight-distance taxes that were repealed around 1990 (Arkansas, Colorado, Nevada, Ohio, and Wyoming). In three of these latter cases the system of fees was functioning well but were removed for legal reasons, while the other two states found the fees too difficult and expensive to administer. The experiences of these eleven states provide useful examples that suggest a carefully designed system of weight-distance fees can significantly improve the performance of the transportation system without placing too onerous a burden on truckers.

One common objection to reforming the weight fee schedule is that such a change will increase shipping costs and thus consumer costs. However, this argument ignores the fact that even if introducing weight-distance fees raised industry costs (which it shouldn't, if the change is kept revenue neutral), society would still be better off in a trade-off in which slightly higher consumer prices were more than off-set by reduced road maintenance costs. In other words, keeping a certain form of taxation in order to lower trucking industry costs is inefficient if it costs society more in damage to roads than it benefits consumers in the form of lower prices. Another argument is that the administrative costs will be prohibitively high and place an unreasonable data-collection burden on the trucking industry. Compliance is of special concern to the larger trucking companies who feel they will be monitored more closely than smaller companies. There are also concerns over the effects of weight-distance taxes on reciprocity agreements with other states: to what extent will affected states institute retaliatory taxes on California-based shipping? Experience from other states with weight-distance fees, however, shows that these issues would not likely hinder the adoption of weight-distance taxes in California.

The cost of administration has been a significant barrier to the adoption of weight-distance taxes. When they were initially introduced in the 1930s, many states repealed them almost immediately because at that time collecting and processing the data was costly and time consuming. Additionally, the data were not reliable, and technology was not yet advanced enough to handle huge data collection and numerous complex calculations (Varma and Sinha 1990). Sixty years later, however, such concerns are of far less concern.

A federally funded study concluded that the administrative and compliance costs of weight-distance taxes based on axle weight and distance should be "little more than for the current federal heavy vehicle use tax, since mileage records are already kept by the carriers" (Small, Winston, and Evans 1989, 114). Recent experience in eleven states that have or had weight-distance fees suggest that administration costs are quite low if the fee structure is simple, but rise to unacceptable levels if the state attempts to charge for the weight of each trip. Arkansas, which charges 2.5 cents per loaded mile for trucks weighing over 73,000 pounds, reported that only 2.8 percent of revenues went to administration and enforcement costs. Nevada's costs are even lower, at 2.2 percent. Oregon, which has a more complicated structure in that it varies the per-mile fee based on registered axle weight, reported costs at between 3.8 and 4.4 percent of collections. On the other hand, Wyoming and Colorado, which charged on the basis of actual weight and mileage per trip, reported administrative costs of about 20 percent of revenues collected (GAO 1994).

Depending on their form, weight-distance fees may actually require less bookkeeping than the existing diesel fuel taxes paid by trucks. Because trucks often carry enough fuel to cross one or more states without refueling, trucks must record their fuel use in each state so that fuel tax revenues can be equitably distributed across states. Calculating fuel use requires records of both distance traveled and the number of gallons consumed so that the average fuel use per mile is known for each truck. This number is then multiplied by the number of miles traveled in each state. In addition, fuel tax receipts must be produced for compliance audits. By contrast, a simple weight-distance tax like that in Arkansas only requires records of distance traveled (Russell 1995).

Regarding compliance concerns, the experience of the states again demonstrates a range. In Nevada and Oregon, evasion was reported at 5 percent and 6.8 percent respectively. Idaho in 1994 reported "relatively little evasion." In Colorado, Ohio, and Wyoming, states that discontinued their weight-distance taxes, studies found evasion ranging from ten to forty-five percent of revenues collected. When considering these figures, it is worth noting that diesel tax evasion is quite high. The FHWA estimated diesel tax evasion at 15 to 25 percent in 1993 (GAO 1994).

Future improvements in automatic vehicle identification (AVI) and weigh-in-motion (WIM) technologies will make administration and enforcement of weight-distance taxes yet cheaper and more effective. With AVI technology the state can identify passing trucks and determine whether they are registered. WIM equipment determines the axle and gross weights of a vehicle driven over sensors imbedded in the pavement. Oregon uses both these technologies, and officials say that they have been instrumental in reducing compliance and administrative costs (GAO 1994). Additionally, it may become possible to vary per-mile charges based on the quality of the pavement of each road. Since the pavement damage trucks cause is closely correlated to pavement quality, such fees would much more tightly link truck fees to costs imposed.

At this writing, California is in the midst of a potentially comprehensive restructuring of its system of heavy vehicle fees. In year 2000, California was on the verge of losing membership in the International Registration Program (IRP), a program whereby the 48 contiguous states, the District of Columbia, and 3 Canadian provinces all collect regulation fees for trucks based in their jurisdictions and then share those fees with other members. Under the system, the home state collects all fees from a truck, and then distributes those fees to other states based on the amount the truck drives in each state. All IRP members except for California charge a gross weight vehicle fee and, in some cases, an additional *ad valorem* tax comparable to California's Vehicle License Fee. California joined the IRP in 1985, but has always been considered a provisional member because its system of heavy vehicle fees has (1) been levied on the basis of unladen weight and (2) because California registers trailers and charges them weight and other annual fees. All other members of the IRP charge a one-time or multi-year fee for the identification of trailers. Thus, the other member jurisdictions of the IRP have been forced to keep a separate accounting system to track and assess California's fees. The Intermodal Surface Transportation Efficiency Act of 1991 mandated that all states be members of the IRP and

administer the IRP agreement in a uniform manner. Accordingly, the IRP ruled that, as of 1 January 2001, the other member jurisdictions will no longer maintain a separate accounting system for California. If California fails change to an IRP-compatible system, it must leave the IRP. This would cost the state a minimum of $50 million per year in trailer fees uncollected by other states, and many millions more lost because trucks registered in other states would not pay fees for operating on California highways.

At this writing, the state has been moving rapidly to bring its system of heavy vehicle fees into IRP compliance. The final form of this revised system has yet to be determined, though it is likely to (1) shift to from unladen weight fees to a gross vehicle weight system and (2) eliminate the current registration program for trailers with a permanent trailer identification plate. In almost any case, however, it is likely that, on both efficiency and equity grounds, the system of heavy vehicle fees in California will be substantially improved.

Bonds

Bond finance is a good way to finance large public capital investments with high up-front costs that provide benefits to users for years, even generations. Common examples of bond-financed projects are schools, dams, and sewage treatment plants. Borrowing money by issuing low-interest, tax-exempt bonds spreads the cost for a new public facility over time in rough proportion to the actual benefits from that facility. The low interest costs of tax-exempt bonds and the rough matching of costs and benefits to users over time make bond finance of public facilities appealing in many respects. It is important to keep in mind, however, that bonds are tool used by governments to borrow money, and are not a revenue source *per se*.

At the beginning of the century, California relied heavily on bonds to develop its road infrastructure. As the road system expanded, however, the cost of new road projects constituted a smaller and smaller share of the ongoing cost of building and maintaining the entire system. As such, the cost of the road system became more regularized from year to year and less like the irregular, "lumpy" expenditures on schools or water treatment facilities traditionally financed with bonds. In addition, there emerged in the 1920s a simple, straightforward way to directly charge drivers for their use of the expanding road system: motor fuel taxes. Thus, in the 1920s the regular, ongoing nature of road expenditures and the opportunity to directly charge road users led to the adoption of a "pay-as-you-go" philosophy in California road finance. Between the introduction of the gas tax in 1923 and 1990, the state government held to this pay-as-you-go user fee approach, using bonds only to pay for tolled bridges.

In June of 1990, however, voters approved Proposition 108, which authorized the state to issue a billion dollars in general obligation bonds to fund rail transportation. Voters also approved Proposition 192 in 1996, which authorized the sale of two billion dollars in general obligation bonds to pay for seismic upgrading of roads and bridges. Two additional bond measures were put before voters (Proposition 156 in 1992 and Proposition 181 in 1994) as part of the 1989 *Transportation Blueprint* to fund rail transit, but both failed to pass.

In spite of the advantages of "pay-as-you-go" road finance, bonds are a politically appealing way to finance transportation. Bonds raise revenues without directly increasing taxes (though, of course, long-term debt service obligations do increase) and they generate this revenue immediately. Also, the large, visible public capital projects paid for with bonds tend to be popular with voters.

Despite some advantages, a substantial reliance on bonds to pay for the transportation system was not a sound approach to public finance in 1923, nor is it today. The long-established pay-as-you go system provides a useful fiscal discipline which bonds do not; it is all too easy for public officials to promise popular transportation projects without specifically committing the tax revenues needed to retire the bonds. And despite the advantages of tax-exemption, interest payments make bond-financed projects considerably more expensive than those paid for with current revenues. In Texas an evaluation of the benefit of financing roads with bonds found that overall benefit to the state would be reduced if bonds were issued. Bonds were expected to improve pavement and operating conditions during the few years just after issue, but conditions were then expected to deteriorate later when available highway revenues were reduced to cover debt service obligations (McFarland et al 1995). In addition, in California bond issues have recently been accompanied by lists of projects. As with the sales taxes, these lists often include economically inefficient projects chosen for political reasons. Thus, while bond financing may have merit for selected and specific projects like major toll bridges, bonds are generally a costly way to finance transportation.

Devolving Finance to Local Governments

California has seen control over transportation finance and planning shift increasingly from the state to the local level. Part of this shift results from the introduction in the 1980s of county sales taxes dedicated to transportation. In 1996-97 county sales taxes generated $1.2 billion for transportation in California, or roughly 15 percent of all transportation revenue raised in California that year.[19] The introduction of transportation sales taxes marks a dramatic change in California transportation finance, since for the first time in decades it adds a new source of funds which is not a user fee. While sales taxes have performed well in terms of political acceptability and revenue-generating ability, by most other measures of effectiveness and equity sales taxes are highly unsatisfactory. They do not relate taxes paid to use of the system. They are imposed on everybody, regardless of use of the transportation system, and are therefore less equitable than user-based levies.

In the 1980s the California legislature passed legislation enabling county supervisors to put before the voters a proposed sales tax supplement to be spent on transportation improvements. In 1984 Santa Clara County put such an initiative on the ballot, asking voters to approve adding a half percent to the local sales tax. The measure passed with 54 percent of the vote. Since then, sales taxes have become a very important source of transportation revenues in California. Seventeen other counties have passed similar "local option" sales tax initiatives, and Santa Clara

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[19] On a statewide basis the percent of these sales taxes which is spent specifically on highways is not known.

has extended its own another 10 years (Table 3). In recent years sales taxes have generated 10 to 15 percent of all revenue for transportation-related purposes in California (CTI 1996), and even a higher percentage of the revenue available for capital projects.

Table 3.
Sales Tax Measures Approved*

County	Date Approved	Percent Approval	Sunset Date	% of State Population (1995)
Santa Clara	1984	56%	1995	5.0%
Alameda	1986	56%	2002	4.2%
Fresno	1986	57%	2007	2.3%
San Diego	1987	53%	2008	8.3%
San Benito	1988	83%	1998	0.1%
San Mateo	1988	62%	2009	2.1%
Contra Costa	1988	57%	2009	2.7%
Riverside	1988	79%	2009	4.2%
Sacramento	1988	57%	2009	3.5%
Imperial	1989	65%	2009	0.4%
San Bernardino	1989	60%	2009	4.9%
San Francisco	1989	65%	2010	2.4%
Santa Barbara	1989	55%	2009	1.2%
Madera	1990	62%	2005	0.3%
Los Angeles	1990	51%	None	29.2%
Orange	1990	54%	2011	8.1%
San Joaquin	1990	60%	2010	1.6%
Santa Cruz	1990	52%	1996	0.1%
Santa Clara	1996	52%**	2006	5.0%

Source: CTI 1996; Caltrans Division of Highways 1995.
*These sales tax measures do not include those passed solely to fund a single project, such as the taxes passed by Alameda and San Francisco counties to fund the regional commuter rail system, BART.
**Measure B, the tax, passed by 52%. The advisory Measure A passed by 80%.

The chief attraction of sales taxes has been their apparent political acceptability. To date, voters have approved well over half of the measures put before them, and the counties which have approved the taxes contain 82 percent of the people in the state (Caltrans Division of Highways 1995). In part this popularity probably stems from the fact that sales taxes are a very simple concept already familiar to most voters. People are always more comfortable with a known quantity than something new and unfamiliar. Local elected officials like the sales taxes because voter approval prevents anybody from accusing them of raising taxes. State legislators have also been reasonably supportive, perhaps because when localities raise money themselves it reduces pressure on the state to find additional revenues. The business community has supported the sales taxes enthusiastically, leading the campaigns for many of them.

As for voters, extensive public polling has shown that they prefer sales taxes to raising local gas taxes. Of particular importance is their belief that a sales tax increase is less onerous than a gas tax increase. Apparently, even when voters are told that a half cent sales tax raises roughly as much money as a ten cent increase in the gas tax, they say that the half-cent sounds much less burdensome than a gas tax increase of even a few cents. A poll of Santa Clara County voters taken in 1992 found a high level of support for raising the sales tax by half a cent, but 90 percent opposition to a 15-cent gas tax increase that would have produced as much revenue as the half-cent sales tax (Richards 1998). The explanation for this preference for the sales tax may be that voters tend to like small levies, even if they come more often, than large levies paid less frequently. A final reason for the great popularity of the existing sales taxes has been the use of project lists on the ballot initiatives.

The use of project lists has seriously compromised the value of the sales taxes measures. While current law requires the inclusion of project lists to give voters a clear picture of what the tax increase will buy, the lists have a downside in that the county is less able to change its priorities as conditions and needs change over the ten- or twenty-year lifetime of the taxes. Even more worrisome, the way projects are selected for the lists does not promote good planning. Instead of aiming to develop the most efficient, effective, or equitable projects, the lists are crafted with the primary goal of appealing to a broad cross-section of voters, regardless of merit. Because most voters are not aware of the nuances of transportation finance or the relative effectiveness of particular projects, the question of project merits gets lost in the process.

Residents are frequently polled on what projects they like. From these preferences a list is created so that almost every voter will find at least one project from which s/he would personally favor. This has proven a highly effective political strategy, but the result is often a less efficient transportation system. Finally, another problem is that public input – apart from marketing surveys – in the construction of the project lists is severely limited. Normal planning procedures require public input before transportation projects are selected, but with the ballot lists there is less room for constructive public debate as projects evolve.

Despite the many problems with sales taxes, policy makers have shown little inclination to discontinue their use, given their popularity with voters. An ongoing court battle between Santa Clara County and anti-tax groups on the question of whether transportation sales taxes must win a half or two-thirds of votes to pass has been resolved in favor of the county. If, however, in the future anti-tax groups succeed in forcing counties to win support from two-thirds of voters, more sales taxes may not pass. In only 2 of the 18 counties with transportation sales taxes did the initiative win two-thirds of the vote, and few people believe that many more sales taxes could do so in the future.[20]

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[20] Though two such measures were approved by two-thirds majorities in Alameda and Santa Clara Counties in the November 2000 election.

Regional Gas Taxes

California has no experience with local gas taxes, but the idea of enacting such taxes has a certain appeal to local transportation officials and some state legislators. Given the fact that fuel taxes are user fees and have low administrative costs, it is worth pursuing them as an alternative to local sales taxes. At least 15 states allow local governments to impose local fuel taxes, and three states make significant use of local gas taxes. In Florida, for example, every county but one currently imposes a gas tax, with rates ranging from 4 to 11 cents per gallon. In Nevada every county has a local per-gallon gas tax, ranging from 5 to 10 cents. County gas taxes can be quite high. For example, in Hawaii county gas taxes range from 10 to 16.5 cents per gallon. In other states such as Alabama, Illinois, and Mississippi, local gas taxes exist but are less common and generally smaller.

In 1997, the legislature granted the San Francisco Bay Area Metropolitan Transportation Commission (MTC) the authority to impose a regional gasoline tax if it is approved by a supermajority of voters. The MTC may submit to voters a ballot proposition for a regional tax of up to ten cents per gallon on gasoline[21] sold in the region. The tax may last up to 20 years. MTC must adopt an expenditure plan with a list of projects to be funded with the revenues derived from the tax. The tax and expenditure plan would then be placed on the ballot in Bay Area counties.

The currently low levels of political interest in regional gas taxes might rise if at some point it should be decided that local sales taxes require a supermajority. Also, even if voters are not currently in the mood to pass regional gas taxes, this may have more to do with a sense that local funds are not needed than with a particular dislike of gas taxes. As demand grows for improved transportation options, or in times of perceived crisis, regional gas taxes will likely become more popular.

Vehicle License Fees

California first established its vehicle license fee (VLF) in 1935. The annual 1.75 percent tax on the value of the vehicle was in lieu of the tax assessed at the time on all personal property. The revenues were initially spent by the state, but later allocated to city and county governments. Eventually the state eliminated the personal property tax, but the vehicle license fee remained because of its revenue-generating capacity. In 1948 the tax rate was raised to two percent and did not change until it was reduced by 25% in 1999.

Unlike both motor fuels and sales taxes, the VLF is highly income-progressive, and today most of the revenue is allocated to city and county governments. They may spend three-fourths of it for any purposes, while the remaining quarter must be spent on various health and social service programs. The recent move to lower the fees raises the possibility of making major changes to their use, as well. One alternative to the current plans is a smaller reduction, with

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[21] Diesel fuel would not be taxed.

some percentage of the remaining fees dedicated to local transportation needs. Under such a policy the revenue would still go to local governments, but it would be restricted to transportation uses. Since the current fees raised approximately $3.6 billion in revenues in fiscal year 1996-97, an amount comparable to the state and federal fuel taxes combined, even a fraction of this money would substantially augment existing local transportation revenues.

Conclusions and Policy Recommendations

Based on the foregoing analysis of the current state of highway finance in California and an examination of both the functional and political strengths and weaknesses of reforms to our current system of finance, we conclude with the following recommendations:

1. ***California does not today face an immediate highway finance crisis. However, the potential for repeated crises is a serious problem that must be addressed.***

Recommendation: Because state highway revenues will not keep pace with growing obligations, and are actually decreasing in relation to the cost of living, it will be necessary to increase revenues beyond those that will occur simply as a consequence of the increased travel (and thus increased fuel tax revenues) due to demographic and economic growth. To avoid inevitable fiscal crises and the need for repeated stopgap revenue measures, the state should develop a highway finance program that will insure revenues that keep pace with changes in the costs and use of the highway system.

2. ***The trend in highway finance toward decreasing reliance on user fees and increasing reliance on county sales taxes should not be continued. Instead, the state should return to a highway finance system emphasizing user charges.***

Recommendation: The state should finance its highway system primarily through user fees. Travelers should pay in proportion to their travel and in proportion to the costs they impose on the system. Consequently, the state should increase reliance on fuel taxes, tolls, and truck weight fees, while relying less on sales taxes to support highway investments. Where possible, tolls should vary by vehicle type, from one facility to another, and with time of day or congestion level in order to fairly reflect the significant differences in costs imposed on the highway system.

3. ***Gasoline taxes and tolls are preferable on political and administrative grounds to directly levied charges on vehicle miles of travel.***

Recommendation: The fuel tax should continue to be the central component of the California highway finance system over the mid-term, and fuel tax rates should be raised or lowered in accordance with financial need as the basis for system maintenance and operations. No other current financing mechanism works as well as this core system, and additional funding approaches should be used to complement this base. Major new expansions in the highway system should be financed by even more direct user fees, such as electronically collected tolls on particular facilities that are dedicated to their financing. Annual vehicle-mile fees are an inferior

alternative, because of increased administrative expense, potential for fraud, and citizens' concerns that odometer readings by the state intrude into personal privacy.

4. ***The trend toward the devolution of transportation decision-making authority will likely continue, but need not reduce reliance upon user-based approaches to highway finance.***

Recommendation: The devolution of transportation authority to county and regional governments need not weaken the traditional reliance on user fees as the basis of highway finance. County and regional gasoline taxes and tolls should replace local county transportation sales taxes because they are both more equitable than sales taxes in that they charge only users, and more efficient than sales taxes in that they encourage travel patterns that reflect the cost of using the highway system.

5. ***As general instruments of taxation, local transportation sales taxes are more appropriately targeted to primarily local- or community-serving transportation facilities and services – like local streets and roads and public transit services – and not to facilities more appropriately financed with user fees.***

Recommendation: Just as the clear benefits highways and freeways confer on their users justify user fee finance, the property-serving character of local streets and roads has long justified property tax finance. But since Proposition 13 rolled back property taxes in 1978 and made it difficult for local governments to increase property taxes, local governments in California have struggled to fund local services and facilities – including streets and roads – with property tax revenues. Given these real constraints on property tax revenues, local transportation sales taxes are ideally suited to provide "backfill" funding for local streets and roads construction and maintenance. Such funds should replace the motor fuel tax revenues California currently transfers to local governments to help fund local streets and roads. Thus, local transportation sales taxes – and not transportation user fees – are most appropriately used to fund property-serving streets and roads and community-serving public transit services.

6. ***Consideration should be given to using part of California's vehicle license fee as a highway user fee.***

Recommendation: California should consider using a portion of its vehicle license fee (VLF) as a highway user fee, to be returned to county governments for the funding of highway programs, and perhaps public transit, and for the mitigation of environmental impacts of highways and automobiles. While the VLF is inferior to tolls and fuel taxes as a direct user fee, it is more closely associated with vehicle ownership and use than county general sales taxes. As county transportation sales taxes sunset, an alternative more in keeping with the principle of user fee finance of highways would be the replacement of the sales taxes with allocations from VLF revenues.

7. ***California is in the midst of revising its inefficient and inequitable system of user fees for heavy vehicles. In implementing this long-overdue revision, the state should strive to develop a system that both reduces wear and tear on our road system and raises sufficient revenue in more equitable and efficient ways.***

Recommendation: Following the implementation of a new system of heavy vehicle fees to comply with the mandates of the International Registration Program (IRP), California should undertake a study of this new system of user fees to determine the extent to which various classes of heavy vehicles are now taxed in proportion to the costs they impose on the highway system. Representatives of the California trucking industry and other interested stakeholders should participate in the study, and the economic interests of the state should be the primary criterion in the evaluation of the new system of truck weight fees.

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