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**Financing Transportation in California: Strategies for
Change (Final Draft)**

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Wachs and Asha Weinstein**

RESEARCH REPORT
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EXECUTIVE SUMMARY

Quality of life in California depends in many ways on the freedom of people and goods to move safely from place to place when they want to do so, in a timely manner, at reasonable cost, and with reasonable choices among modes and routes of travel. However, our desire for mobility must be tempered by due concern for the natural and built environment, and like all aspects of public policy, the provision of mobility must be framed by realistic consideration of available financial resources. This report examines the system by which California raises money for transportation and assesses its adequacy and appropriateness for current and future needs.

Many in the state believe that current transportation revenues are likely to be insufficient to meet the challenges of the coming years. While the type of investments and overall level of need are subjects for debate, it is sensible for the state to prepare itself to provide the financial resources needed to support the continued provision of mobility.

An ideal transportation finance program balances several objectives. It should raise adequate revenues, encourage efficient use of the system, and be easy to understand and administer. The system should also be equitable across a number of dimensions such as linking charges to those receiving benefits or imposing costs, being sensitive to ability to pay, being spatially and environmentally sensitive, and not compromising future generations. And finally, because decisions about transportation finance are reached through legislative processes, alternative finance mechanisms must be evaluated according to their political acceptability.

Annually California raises and spends nearly \$15 billion on transportation. By far the largest source is per-gallon fuel taxes (state and federal), which raise nearly \$6 billion per year. Fuel taxes, which have historically been the primary mechanism for financing highways and a major source for local streets and roads, are an excellent mechanism for funding transportation because they are user fees that vary roughly in proportion to use of the road and highway systems, and they are cheap and easy to collect. Other *user charges* include sales taxes on fuel, tolls, and transit fares. California also uses a series of *property access charges* to finance transportation, including property taxes, benefit assessment districts, and developer exactions. While not necessarily paid by users of the transportation system, the charges are paid by residents and establishments who benefit from the transportation system. We also use *subsidies*, primarily general fund revenues and sales tax revenues, to finance transportation. These sources have the weakest link to use of the transportation system and also draw funds away from other nontransportation demands such as libraries, parks, schools, and hospitals.

In a disturbing trend, California has evolved away from charging users and beneficiaries to fund the transportation system. This is true in each transportation sector—local streets and roads, transit, and highways. One key development was the passage of Proposition 13 in 1978, which restricted growth in property taxes. Also, fuel taxes have declined as a source of money for highways and local streets and roads because their buying power is reduced by inflation and increased fuel efficiency. These are the repercussions of fuel taxes being charged on a cents-per-gallon basis and a legislature that has been willing to increase the charge only in times of

perceived crisis. For transit, the increased use of general funds and sales taxes for capital expenditures and system expansion has enlarged the need for operating subsidies.

Driven by their political popularity, locally enacted retail sales taxes have grown in importance in financing each transportation sector since the mid-1980s. When enacted, most of these taxes required approval by a simple majority of voters; however, they will now need a supermajority (66.7 percent) to continue beyond their current expiration dates. With many of these sales taxes expiring in the coming decade, the two-thirds threshold represents a threat to an increasingly important source of transportation funds.

When considering improvements to California's revenue-raising system for transportation, it is useful to distinguish between long-distance travel facilities, such as highways, and local transportation facilities, which are a combination of streets and roads, plus the transit network. It is appropriate that California continue to rely on per-gallon fuel taxes as the primary finance mechanism for highways, although shortcomings regarding the effects of inflation and fuel efficiency should be addressed. New systems of user fees, particularly charging drivers on the basis of vehicle miles traveled, should be researched but not enacted in the short term until concerns regarding administration are resolved.

Tolls, which are used on a relatively limited basis in California, represent an ideal way for financing both new highway capacity and managing the current stock. New electronic toll collection technologies have reduced the administrative costs of tolls (in both time and dollars) and made feasible the practice of varying toll prices. However, because tolls remain politically unpopular, increasing their use must be done judiciously, strategically, and sensitively. Those asked to pay tolls must receive tangible benefits like shorter travel times, and attention should be paid to low-income users by potentially offering a reduced toll rate.

Given Proposition 13 and related restrictions on local governments' taxing options, use of locally-enacted transportation sales taxes should be continued with the approval threshold returned to a simple majority. However, this source is inappropriate for funding highway projects, which are best funded by user charges. Additionally, the practice of using project lists on the ballot initiatives of local sales taxes should be made optional, as the lists often inhibit efficient local transportation planning and reduce the flexibility of agencies to respond to changes in underlying conditions.

In addition to changing how California raises revenue, it is appropriate to consider increasing the use of debt financing as a way of improving how we fund transportation. Despite some perceptions to the contrary, debt is not a generator of revenue, but simply a tool that allows entities to spend immediately revenues that they will not collect until later. Historically, California has used debt for transportation only occasionally, instead opting to spend revenues as they are received, which is known as pay-as-you-go financing. A benefit of this system is that revenues are not used to pay interest costs. However, under debt financing, certain benefits can be obtained that might outweigh interest costs: delivering projects sooner, avoiding the higher construction costs that may exist in the future, and forcing future beneficiaries to contribute to the cost of long-lived infrastructure. An important consideration when using debt financing is the need in every transportation sector for significant expenditures on operations, maintenance, and

eventual replacement, retrofit, or upgrading. If future revenues are committed to repaying the principal and interest on debt, these needs are at risk of being ignored.

In the 1990s, the state government increased the use of debt finance, issuing general obligation bonds that were popular primarily because of the perception that the funds come without an increase in taxes. However, future general revenues which could be used for the state's many programmatic needs must now be earmarked to repay the borrowed principal and interest costs. The increase in general obligation bond financing for state-financed highways is a dangerous precedent, as it abandons both the user-charge and pay-as-you-go traditions that have efficiently served California for so many decades.

A second type of debt financing has reemerged in the 1990s, which is debt issued by a local government for use on a specific project or set of projects. These projects are typically tolled highways in which debt is issued against the anticipated receipt of future toll revenues. General taxpayers are not obligated to repay the debt. This finance system mimics the one used to finance the toll bridges that were built in California from the 1920s to the 1960s. It is a fair and efficient system in theory; however, experience raises concerns regarding the potential for future project-based debt financing. The example of the toll roads built by the Transportation Corridor Agencies in Orange County illustrate particular risks such as inaccurate usage forecasts, lack of political consensus around the project, and questions of who bears the costs of a project that is not a financial success.

There is considerable optimism for the future of debt financing in transportation, and a myriad of tools and programs are evolving to facilitate it under the collective banner of "innovative finance." While debt financing has some potential for helping California deliver new highway infrastructure and facilitate increased user-charge financing (via tolls), the state should not abandon its tradition of pay-as-you-go financing because the large operation and maintenance needs related to transportation facilities are not suitable for debt financing.

Public-private partnerships are gaining increasing attention as a way of introducing debt finance in transportation. Under this method, responsibility for construction and operation of new infrastructure is given to private companies. Potential benefits from these arrangements include faster and less expensive project delivery, additional technical expertise (especially in introducing new technologies like electronic toll collection), and more efficient allocation of financial risks. While a mainstay in international transportation infrastructure finance, public-private partnerships have only recently, and on a limited scale, played a role in California. A short stretch of privately built and operated toll lanes along State Route 91 in Orange County represents the only project delivered under this mechanism, although another, State Route 125 in San Diego, is about to begin construction.

Experience in public-private partnerships from California as well as other places illustrates the limitations and barriers to this financing methodology. First, it appears that the private sector may not be as interested in operating infrastructure as in building it. Also of concern is the apparent need for noncompetition clauses, which restrict the public sector's right to build new infrastructure that might divert traffic from pre-existing private projects. This

creates potentially troubling trade-offs between better public safety and reduced congestion on the one hand and financial feasibility and return on investment on the other hand.

The combination of economic and population growth in the state that will increase transportation needs, combined with an evolution away from a beneficiary-financed transportation system, should concern Californians. Ensuring a system of transportation finance that is fair, efficient, and able to meet the operating and expansion needs of the state requires careful deliberation. While crisis may not be currently upon us, the time is ripe to avert one in the future.

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This report draws heavily upon the final report of a study completed in 1999 that was entitled *The Future of California Highway Finance*, by Jeffrey Brown, Michele DiFrancia, Mary C. Hill, Philip Law, Jeffrey Olson, Brian D. Taylor, Martin Wachs, and Asha Weinstein. That study was funded by the California Policy Research Center and the Energy Institute, both of the University of California. It investigated highway finance alone, while the current study also addresses public transit and local streets and roads, as well as adding more recent data and reformulations of many policy issues. Where appropriate, this study selectively incorporates some of the findings included in the final report of the earlier study.

The contents of this report reflect the views of the authors, who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the State of California or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation.

CHAPTER 1

INTRODUCTION

1.1 TRANSPORTATION FINANCE IN CALIFORNIA

Quality of life in California depends in many ways on the freedom of people and goods to move safely from place to place when they want to do so, in a timely manner, at reasonable cost, and with reasonable choices among modes and routes of travel. Our desire for mobility must be tempered by due concern for the natural and built environment, and like all aspects of public policy, the provision of mobility must be framed by realistic consideration of available financial resources. Transportation has traditionally been provided through partnerships between local, state, and federal governments and private and corporate citizens. Households and businesses, for example, purchase, maintain, and operate their own private vehicles. Governments, acting in what is hopefully the public interest, regulate the use of private vehicles and, using the proceeds of a variety of taxes and charges, provide roadways, transit services, and intermodal terminal facilities. Over time, as social and technological changes occur, society must reconsider the mix of services, regulations, charges, and fees to insure that they will continue to provide adequate mobility in the future.

This report aims to contribute to current debates about how California can and should address the financial burden of providing transportation facilities and services in the early part of the new century. Californians have inherited from earlier programs and historic commitments a particular form of transportation financing based on user fees that has served us well for many decades. This provides us with a solid base from which to plan for the future.

Nevertheless, in the coming years our current finance system will require refinement at the least, and possibly major changes. This is true in part because changing conditions may not allow the finance system itself to function as well as it has in the past, and also because Californians may decide to adopt revenue collection systems that are more efficient and equitable. In addition, Californians might decide to spend more money to upgrade our existing transportation system and meet the new demands predicted for coming decades. Some modes of transportation are not up to current standards or the expectations of the populace. Some of the excellent infrastructure built years ago is aging and in poor condition. Furthermore, over the coming twenty years California's population is expected to increase by about ten million people, and the pace with which we have been constructing transportation infrastructure has been slowing rather than expanding. Many believe that it will be difficult to sustain mobility for future residents unless there are some fundamental changes in the state's programs.

Our surface transportation systems must provide the capacity for mobility to new residents and provide them with a growing range of goods and services. But it must also accommodate the growth in travel that has accompanied the rising standard of living among people already living in California, and the increase in international business travel and tourism

that is essential to the economy, fueled by new international trade agreements and the growth of internet commerce.

1.1.1 Transportation Needs are Growing

While this report presents findings about how the state might improve its system of raising transportation funds regardless of whether current revenues are adequate, a major motivation for the report is the sense among many in the state that current transportation revenues are likely to be insufficient to meet the challenges of the coming years.

Whether or not transportation revenues are adequate depends on how much money is needed to operate, maintain, and expand the state's multi-modal transportation system. The concept of transportation needs is highly political, and there are differences of opinion among well-informed people and interest groups about appropriate funding levels. Some environmentalists would like to see transportation expenditures slowed, for example, while the state's trucking industry might advocate spending more on road maintenance.

While it is difficult to arrive at an objectively determined estimate of needs for a given year, there are many reasons to believe that transportation expenditures in California will grow over the coming decade, perhaps dramatically. Recent public opinion polls show that concerns about traffic congestion and mobility are among the most pressing issues for citizens in several of the state's metropolitan areas. The population of California is forecast to grow by ten million during the first twenty years of the century, and tripmaking rates by all citizens continue to rise. The extensive transportation network that we already have will demand far more funding for maintenance and operations than will be sought for expansions and new construction. In addition, over the years, state, federal, and local governments have added new spending requirements that must draw upon existing transportation funds. Environmental mitigation, seismic improvement, extension of transit service, and other such requirements may be worthy goals in themselves, but they must often be financed out of already strained transportation budgets rather than from new sources of revenue.

The most recent estimate of California's funding needs across all categories of transportation is the "SR 8 Report" (California Transportation Commission 1999a). In 1999 the California Senate enacted Senate Resolution 8, which directed the California Transportation Commission (CTC) to report on the needs of California's transportation systems over the next ten years. Specifically, the commission was directed to provide: "a catalog of unfunded rehabilitation and operations needs for state highways, local streets and roads, the state's intercity rail programs, and urban, commuter, and regional transit systems (including ferry systems) over the next ten years; a list of high-priority projects; estimated staffing needs for the completion of both sets of projects; and performance measures to facilitate timely and cost-effective project delivery."

**Table 1.1
Condensed Summary of Funding Shortfall Estimates in the SR 8 Report**

Item	Unfunded Need (billions)
Local Streets and Roads: Pavement Rehabilitation	\$ 10.5
Local Bridge Rehabilitation and Replacement	\$ 0.6
Native American Reservation Roads and Access Roads	\$ 0.2
Regional Agencies:	
Highways	\$ 19.6
Arterials	\$ 13.1
Urban and Commuter Rail	\$ 19.6
Bicycle and Pedestrian	\$ 1.3
State Highways:	
Interregional Improvements in Rural Areas	\$ 5.8
Interregional Improvements in Urban Areas	unspecified
Bridge and Highway Rehabilitation	\$ 5.5
Safety Improvements	\$ 1.1
Recurrent Problems	\$ 4.3
Operational Improvements	\$ 2.7
Storm Drainage Retrofit	\$ 6.0
Retrofit Soundwalls	\$ 0.6
California Alliance for Advanced Transportation Systems (CAATS)	\$ 2.0
Airports: Ground Access Improvements	\$ 2.9
Seaports: Ground Access Improvements	\$ 1.1
Bus and Rail Transit:	
Operating Shortfall (3 levels of service)	\$ 0.7-3.8
Rolling Stock (3 levels of service)	\$ 0.7-2.4
Capital Improvements (3 levels of service)	\$ 1.0-6.2
ADA Operations (3 levels of service)	\$ 0.1-0.2
ADA Capital Improvements (3 levels of service)	\$ 0.1
Elderly and Disabled Paratransit Nonprofit Providers	\$ 0.1
North American Free Trade Agreement Transportation Infrastructure	\$ 0.4
Los Angeles Basin Rail Consolidation and Grade Separation Needs	\$ 2.3
Short Line Railroads	\$ 0.2
Intercity Passenger Rail Service	\$ 4.3
Total	\$106.8-\$116.9

Source: California Transportation Commission 1999a.

The CTC responded by surveying all cities, counties, transit operators, regional transportation planning agencies, seaports, and commercial airports in California about transportation needs in their jurisdictions. The commission also analyzed existing Caltrans data on state highway and passenger rail needs. In all, nearly 1,000 transportation agencies were contacted, and over 80 percent of them responded. Across all categories of need, the study

estimates that the state will experience a total of \$106 to \$117 billion in unfunded needs over the next ten years. (See Table 1.1 for estimated needs, by spending category.)

While this study informs us of needs as perceived by the responding agencies, the results must be interpreted cautiously. Survey respondents understood that it was in their interest to over-report the size of funding shortfalls. Thus, to a certain extent, the projects and programs can be interpreted as “wish lists,” rather than carefully established needs. Furthermore, accounting and reporting practices varied among respondents, and the responses to the surveys were not normalized to account for these differences. In some cases, it is possible that more than one jurisdiction reported the same project, resulting in some double counting in the report.

Because of these possible shortcomings, the CTC warns that “the reader of this report should resist the temptation to simply add up the cost estimates for each section and reach a precise bottom-line conclusion as to the total need for transportation investment over the next ten years. In effect, the report represents a series of snapshots rather than a well-crafted mosaic.” Nevertheless, the CTC claims to have completed an informal cross-check of a sample of the responses, and the authors feel confident that the order of magnitude of the funding shortfall estimates in the report are generally correct.

Aside from technical questions about the accuracy of the SR 8 report, it is also important to remember that fundamental premises about what transportation facilities are “needed” remain open to interpretation. There are major disagreements about the best ways for us to provide mobility in the future. Many advocate “compact growth” and “smart” transportation plans that employ land use strategies for efficient use of transportation capacity, thereby lessening urban sprawl as well as the need to invest in capital projects. Others expect “intelligent transportation systems” to accommodate more travel on existing systems through enormously enhanced capacity resulting from sophisticated management strategies. Undoubtedly, both of these types of improvements will play central roles in the future of California transportation, as will the maintenance and remodeling of existing facilities and some growth in our traditional highway and transit networks.

Rather than argue about which investments are needed or about the overall level of need, this report concentrates on ways in which the state can prepare itself to provide the financial resources needed to support the continued provision of mobility.

1.2 THE LIMITS OF TRADITIONAL REVENUE SOURCES

The transportation finance program in California is enormous and complex. A variety of property taxes, sales taxes, and transportation user fees such as fuel taxes, tolls, and vehicle registration fees are levied by different levels of government. Together, they provide the bulk of the financial support for transportation programs. They also have statutory and programmatic limits on the uses to which they may be put. This section provides an overview of the key reasons why the revenues from many of these traditional sources cannot be considered certain in the future. The volatility of transportation revenue creates a risk of not meeting future transportation needs unless new policies are devised. Later, this report will provide greater detail

about many of these sources of transportation revenue, and explore options for expanding and stabilizing revenue to support the state's transportation programs.

1.2.1 Local Property Taxes

In California, the primary responsibility for local streets and roads has rested with local governments, which have traditionally used property tax and other general revenues. In addition, many local jurisdictions support their transit services through the same revenue sources. However, property tax revenues have become more limited over the past thirty years due to the passage of Proposition 13 and a variety of related measures. Under the terms of these measures, local property taxes have increased at a far slower rate than formerly, while the costs of construction labor and materials continued to increase more rapidly than inflation. Local governments have always had to choose between filling pot holes and keeping libraries and parks well staffed, but the competition is more intense in the post-Proposition 13 era. Looking toward the future, it seems unlikely that local governments will see a dramatic reversal of the tight fiscal environment that has characterized California over the last several decades, and it is reasonable to expect that the proportion of public support for transportation from local property tax revenues will continue to decrease.

1.2.2 Local Transportation Sales Taxes

In part as a response to the declining availability of property tax revenues for transportation, counties have turned to local transportation sales taxes. San Francisco, for example, has a proportion of its local sales tax permanently dedicated to the support of its Muni transit service, and voters in the County of Los Angeles in 1980 and 1990 enacted two permanent half-cent sales tax measures in support of public transit.

In the 1980s the California legislature passed laws enabling counties to enact limited-term sales tax supplements for transportation improvements. The legislation allows county supervisors to place sales tax referenda on the ballot, and permits voters to enact sales tax measures that earmark funds for specific projects, enumerated in the ballot propositions. In 1984 Santa Clara County enacted the first such measure, a ten-year half-percent sales tax, and since then fifteen other counties have also enacted similar transportation sales tax measures, all having "sunset dates," which means they will expire after a specified length of time. These measures have become a significant source of transportation finance in California, approaching fifteen percent of all state revenue expended on transportation. The future viability of the county sales taxes has been brought into question by court decisions upholding claims from anti-tax groups that these taxes should be considered "special" rather than general taxes, and therefore must be approved by two-thirds of voters. Four of the taxes enacted to date have won two-thirds of the vote, including two in the election of 2000. Nevertheless, this requirement will surely reduce the proportion of sales taxes that receive approval in the future.

1.2.3 Fuel Taxes

Since 1923 the major source of revenue for state transportation programs and projects has been fuel taxes levied at the state and federal levels. Presently, the California fuel tax is set at 18 cents per gallon, and the federal fuel tax is 18.4 cents per gallon. Together they produce roughly \$6.1 billion per year for California—over forty percent of the transportation revenue available to the state government.

Since the tax is levied on the basis of gallons sold, revenue increased as car and truck use grew, providing appropriate support for expansion of the road system. Three interacting trends, however, suggest that the fuel tax is becoming less effective as a source of revenue than it has been in the past. First, because the fuel tax is levied on the basis of gallons sold and not on the price of gas, it does not automatically produce more revenue in response to inflation. Higher price levels cause income tax and sales tax proceeds to rise, but fuel taxes must be increased by specific act of the legislature, and in recent decades elected officials have chosen to increase the fuel tax much more slowly than the rate of inflation, thus diminishing the availability of funds for transportation programs. State legislators have for the past several years been more reluctant to raise fuel taxes than at any other time in history. Second, vehicle fuel efficiency has increased significantly over the past few decades. As measured by overall passenger car miles per gallon ratings, fuel economy has improved from 14.3 miles per gallon in 1960 to 22.6 miles per gallon in 1995. Despite the growth in popularity of sport utility vehicles, newer automobiles drive about twice as many miles per gallon as did cars thirty years ago, meaning that drivers today pay far less in fuel taxes per vehicle mile of driving. Third, for reasons of environmental quality and energy efficiency, the State of California has been promoting the adoption of electric and other alternative-fuel vehicles. Under current regulations, as of 2003 auto manufacturers will be required to sell increasing numbers of vehicles that produce either no or extremely low tailpipe emissions. To the extent that alternative-fuel vehicles are successfully marketed in the future, the fuel tax will be a less dependable producer of revenues for state highway and transit programs.

The fuel tax has been the mainstay of transportation finance and the means by which the California highway system became world renowned for excellence in design, quality of materials and construction, and level of service. While the fuel tax is likely to remain the principal source of transportation revenue in the near future, California may well find it difficult or impossible to rely on fuel taxes in coming decades to the same extent as historically. Later sections of this report will consider some promising alternative approaches for generating transportation revenues.

1.3 TRANSPORTATION FINANCE IMPROVEMENT PRINCIPLES

Despite widespread disagreements over priorities and strategies, it is certain that California will face growing needs for maintenance and operation of the existing transportation system, that future proceeds of fuel taxes are uncertain, that the future of local sales taxes is not at all guaranteed, and that local property taxes will have limited capacity to finance transportation improvements. New approaches to highway finance are needed, but how should California policymakers choose among the many possibilities? Some advocate increasing fuel taxes and others propose relying to a far greater extent on tolls, especially because electronic toll

collection is now feasible. In the future, California could rely on electronically administered user fees based on vehicle miles of travel. It is also possible that California could employ bonded indebtedness for transportation finance to a far greater extent than it has in the past, or follow the lead of other states to increase participation in transportation finance by private institutions. Choosing the best finance mechanism is a difficult task that requires balancing many criteria and considerations.

Drawing on the history of transportation finance in the United States and on theoretical literature from the fields of economics and public finance, this section offers five principles of transportation finance. These principles are meant to guide discussions and evaluations of alternative financing mechanisms. They express ideals or goals toward which all transportation finance programs should strive. It may not be possible to achieve all of these ideals in each finance program, but they frame the discussions in this report by identifying criteria by which all transportation revenue programs should be evaluated.

1.3.1 The Principle of Financial Effectiveness

A key aspect of any finance program is how well it generates revenue. For a finance program or a particular fiscal instrument or charge to be undertaken, it should be capable of producing adequate revenue to address the financial needs to which it is to be applied. The revenue stream should also be stable and predictable over time to allow sound long-range program planning.

1.3.2 The Principle of Transportation Efficiency

Financial policies are not only about raising sufficient money. The way charges are levied influences the use of transportation systems by travelers and shippers, and this means that charges can be levied in ways that induce more efficient or less efficient use of the system. This principle may best be illustrated by two examples. A charge for a truck to cross a bridge might be levied per vehicle per crossing, or it might be levied on the basis of the weight imposed by that truck. A flat charge per truck per crossing might constitute an incentive for truckers to overload their trucks in order to save money, which would increase the cost of fixing damage to the bridge and lower the useful life of the structure. On the other hand, charges based on weight could encourage truckers to load vehicles in ways less likely to damage the bridge.

Similarly, if we lowered the toll on a transportation facility, we might encourage more people to use that facility and fewer people to choose an alternate free route. If the toll facility is underutilized and the free route is crowded, this decision might lead to more efficient use of both roads. On the other hand, if the toll road is already overcrowded while there is unused capacity on the parallel free road, then the shift of traffic induced by a lower toll could increase congestion and delay on the toll road and lessen the overall efficiency of both roads.

This principle asserts that the transportation finance system and the performance of the transportation system should be mutually reinforcing. The fees and charges that we employ to fund transportation improvements should be designed to induce efficient use and operation of the system.

1.3.3 The Principle of Fiscal Efficiency

The fees and charges that finance the transportation system should have low administration costs, be easy to understand and administer, and relatively free of opportunities for fraud and evasion. The fuel tax was chosen seventy years ago in preference to toll roads because of this principle. Tolls were considered more appropriate than fuel taxes because they levied charges at the exact time and place of use and thus contributed most to the satisfaction of the principle of transportation efficiency. However, at the time tolls required manual collection, and collection costs amounted to as much as 25 percent of toll proceeds. In addition, toll plazas were high accident locations and caused delay to travelers queuing up to pay. By comparison, the costs of fuel tax collection were typically one half of one percent of the proceeds collected, and because they could be collected at the refinery there was little opportunity for fraud and evasion. Motorists did not have to form queues to pay these fees, and since the fees were already included in the prices charged at by gas stations, the payment of the fee was hardly noticed as an intrusion. Technological changes like electronic toll collection may soon toll collection as efficient as fuel taxes, so applications of this principle in the future may lead to different conclusions than in the past.

1.3.4 The Principle of Equity

Equity is often taken to mean fairness, and fairness has many dimensions. Equity is one of the most important considerations in transportation finance, but it is also a complex issue, and debates over equity sometimes become very contentious. Three common ways of addressing equity are in terms of the “benefit criterion,” the “cost criterion,” and the “ability-to-pay criterion.” The benefit criterion asserts that to the extent possible one should pay for service in proportion to the benefits one receives from it. If one motorist, for example, saves much more time than another by using a new transport facility, it is reasonable to expect the former to pay more than the latter. The cost criterion asserts that one should be charged for the use of the transportation system in proportion to the costs one imposes on the system. It is deemed appropriate, for example, for heavy trucks to pay more to use highways than light-duty vehicles because trucks require greater public investment in construction and maintenance of the facilities. The third component of equity is ability to pay. Following the benefit and cost principles strictly might require us to charge poor people as much or more than rich people, and there is a broad consensus that an equitable system of transportation charges would place a greater burden of payment on the rich than the poor. In keeping with the ability-to-pay criterion, transportation fees and charges, like those in other sectors, are often evaluated in terms of their progressivity or regressivity. A progressive fee or charge is one that charges a lower proportion of income among the poor than among the rich, and a regressive fee does the opposite. Sometimes it is difficult to estimate whether or not a tax is regressive when the revenues are spent in ways that benefit different income groups differently, but progressive programs are generally more desirable than regressive ones.

Equity may also be viewed from many other perspectives. Transportation programs are often evaluated in terms of their effects on different economic or ethnic groups, and they are also frequently evaluated from the perspective of spatial equity. If one geographic area or community gains from a program while another loses, a spatial inequity may exist, and many transportation

programs have adopted “return to source” provisions requiring that monies be spent in the jurisdictions in which they were raised. While such provisions may, on the surface, be advocated for reasons of spatial equity, they may at times exacerbate the difficulty of satisfying the benefit, cost, or ability-to-pay criteria. Another consideration is “intergenerational equity,” which is the extent to which benefits and costs are distributed over time. For example, bonded indebtedness may be an equitable means by which to finance a transportation improvement if the flow of benefits and costs over time is similar. It might, however, be unfair if the benefits of a project are experienced in the present, while future users of the system bear a larger share of the costs of interest and principal.

Balancing the many dimensions of equity are among the most important and challenging considerations in transportation finance, and there will be more discussion of these issues later in this report.

1.3.5 The Principle of Political Acceptability

Because decisions about transportation finance are reached through legislative processes and are embedded in our democratic government system, an extremely important principle by which to evaluate alternative finance mechanisms is their political acceptability. Legislators and other public officials can be expected to consider very seriously the relative popularity of different finance mechanisms among voters and among major interest groups. While political acceptability is sometimes a function of the extent to which measures satisfy or violate the other criteria reviewed above, there are often political considerations beyond those embodied in the other principles. And the political attractiveness of finance measures may change over time. In past decades, the use of fuel taxes as the most common means of transportation finance was politically popular and supported by many different interest groups. Today, few legislators wish to be identified with efforts to raise fuel taxes, while county sales taxes have gained in political popularity. It would be a mistake to favor or oppose a finance measure exclusively because of its political acceptability, yet it would also be a mistake to ignore this principle, as it has often proven quite important.

1.4 OVERVIEW OF THE REPORT

This report examines past transportation finance programs in California and assesses their adequacy and appropriateness for current and future needs. The next chapter presents an historical overview of transportation revenue sources and their uses in California. Following that, future revenues from existing sources are evaluated on the basis of equity, efficiency, and political acceptability. Later in the report, options for improving transportation finance are recommended, including the possibility of increasing reliance on bonded indebtedness as well as relying on a wide variety of instruments for increasing revenue flows from such methods as tolls, vehicle-mile fees, and greater participation by the private sector. Based on the issues and principles discussed in this chapter, recommendations are also made regarding the most promising directions for research and planning regarding future approaches to transportation finance in California.

PART I

IMPROVING CALIFORNIA'S REVENUE RAISING SYSTEM

CHAPTER 2

OVERVIEW AND EVALUATION OF TRANSPORTATION FUNDING SOURCES AND THEIR ANTICIPATED FUTURE REVENUES

In fiscal year 1998-99 approximately \$14.5 billion was raised from local, state, and federal sources for California's transportation system — local streets and roads, transit, and highways.¹ Table 2.1 provides a summary of all the major revenue sources and the relative contribution of each to the total amount raised. This chapter discusses the major sources of that revenue, describing them and evaluating them in terms of how well they meet the criteria set out in Chapter 1. It concludes with an estimate of how much money the current transportation finance system would generate over the next twenty years, given no major changes.

To facilitate the evaluation of each revenue source, we have categorized the sources into three types, distinguishing among them on the basis of how closely payment is linked to use of the transportation system.

- *User charges.* These include fuel taxes, tolls, transit fares, and miscellaneous other fees levied on vehicles and drivers. These revenue sources are considered user charges because they are directly linked to use of the transportation system.
- *Property access charges.* Access charges, which include property taxes and developer fees, are transportation-related charges paid in exchange for access to the transportation system.
- *Subsidies.* Subsidies are those revenues used for transportation but not generated through use of the transportation system. The principal subsidies in transportation come from general funds and local sales taxes.

¹ It is important to note that this figure is only approximate. For example, in many cases the amount of revenue collected by local governments for local street and road expenditures is not available. Also, data on local sales tax revenues are only an estimate. Thus, the \$14.5 billion should be taken as a *minimum* rather than as an exact estimate of total expenditures. As for state and federal sources of revenue, we have mostly relied on revenues collected, but in a few cases we have had to rely on expenditure data.

**Table 2.1
Principal Transportation Revenue Sources 1998-99**

Source	Revenue (\$millions)	% of Total
<i>User Charges</i>		
Federal Fuel Taxes	\$ 3,072	21%
Federal Tire Taxes, Sales Taxes on Trucks, Weight Fees	\$ 262	2%
State Fuel Taxes	\$ 3,026	21%
State Registration, [†] Weight, and Driver's License Fees	\$ 1,960	14%
Transit Fares	\$ 896 *	6%
Sales Tax on Gasoline and Diesel (portion to PTA only)	\$ 169	1%
Local Tolls	\$ 84 *	1%
State Tolls	\$ 209	1%
	\$ 9,678	67%
<i>Property Access Charges</i>		
Local Property Taxes	\$ 274 *	2%
Developer's Fees	unknown	-
	\$ 274	2%
<i>Subsidies</i>		
Local Sales Taxes		
Permanent Sales Taxes	\$ 1,325	9%
Expiring Sales Taxes	\$ 1,035	7%
Local Transportation Fund	\$ 890 *	6%
Local General Fund	\$ 450 *	3%
State General Fund	\$ 730	5%
Federal General Fund	\$ 61 *	<1%
	\$ 4,491	31%
Total	\$ 14,443	100%
Note: Sources explained in text.		
† Includes an estimated \$115 million from local registration fees.		
* Data from 1997-98 adjusted to \$1999 using the Consumer Price Index.		

2.1 USER CHARGES

In fiscal year 1998-1999 user charges accounted for over \$9.6 billion, or two-thirds of the revenue California raised for transportation. User charges are fees and taxes paid in exchange for direct use of the transportation system. The revenues generated by these charges are used to build and operate the transportation system. This link between use and payment means that user fees fare well under the cost and benefit concepts of equity discussed in the previous chapter. The most precise user fees increase in rough proportion to the level of use of the transportation system. Tolls and transit fares are perhaps the most exact user fees currently in use in that they provide a direct link between user payments and benefits received. Fuel taxes are also a relatively direct user fee, as the amount of fuel tax paid increases in proportion to distance traveled. Other user charges include fixed fees that do not vary with use, but are paid, usually on an annual basis, in exchange for use of the system. Weight, registration, and driver licensing fees are the primary examples. These annual fees are less precise as user charges, since the fees are the same regardless of distance, location, and time of travel.

2.1.1 Per-Gallon Fuel Taxes

2.1.1.1 State Fuel Taxes

State fuel taxes have been California's primary transportation revenue source since 1923, when half of what was then a two-cent-per-gallon levy on gasoline went to the state for highway maintenance and reconstruction and half went to the counties for county roads. Today, both gasoline and diesel fuel² are taxed at the same rate of 18 cents per gallon. In fiscal year 1998-99, total state motor fuel tax revenues were over \$3 billion, accounting for one-fifth of the state's transportation revenue.

Revenue from fuel taxes is spent by both state and local governments, and used to fund highways as well as local streets and roads. Of the 18-cent fuel tax, about two-thirds (11.54 cents) goes to the state for highway purposes, and the remaining one-third (6.46 cents) is split between cities and counties for local streets and roads. In 1998-99 this translated into \$1.9 billion for state highways and nearly \$1.1 billion for local roads (Legislative Analyst's Office 2000c).

2.1.1.2 Federal Fuel Taxes

The federal government first began collecting fuel taxes in 1932, when it assessed a one-cent-per-gallon tax on gasoline. Today's federal gas tax rate is 18.4 cents per gallon, and diesel fuel is taxed at a rate of 24.4 cents per gallon. Californians paid a total of just over \$3 billion in federal fuel taxes in 1998-99,³ which represents about 21 percent of all transportation revenues raised in California for that year.

Revenues from the federal fuel taxes are deposited into a special fund, the Federal Highway Trust Fund,⁴ which contains two accounts, the Highway Account and the Mass Transit Account. Currently 15.44 cents of the total gas tax and 21.44 cents of the diesel tax are deposited into the Highway Account. The remainder of each tax is split between the Mass Transit Account (2.86 cents) and the Leaking Underground Storage Tank Trust Fund (0.1 cent).

Revenues paid into the Highway Trust Fund and disbursements paid out to California in any single year will not match, for two reasons. The first is that the federal government reimburses states for actual expenses after they are incurred, rather than returning to a state the tax money collected from it in that year. Second, the federal government does not simply return to each state the revenues it paid in. Instead the revenues are distributed in accordance with various formulas which leave some states paying slightly more than they receive (donor states), and some states receiving more than they paid. Historically, California has been a donor state. For example, in 1997-98, California paid nearly \$3.27 billion to the trust fund,⁵ but received

² The state began taxing diesel fuel in 1937.

³ This amount does not include the 0.1 cents per gallon that is contributed to the Leaking Underground Storage Tank Trust Fund.

⁴ Other federal transportation user fees are also deposited into the Highway Trust Fund, but they were less than ten percent of the total revenues Californians paid into the fund in 1998-99. They will be described in more detail later.

⁵ This amount includes both fuel taxes and other miscellaneous federal fees. It is not possible to separate out fuel taxes for this analysis because of the way the federal government provides accounting information for the Highway Trust Fund.

back only \$2.44 billion; the remaining \$824 million was transferred to other states⁶ (*Highway Statistics* 1998, Table HDF).

2.1.1.3 Evaluation of Fuel Taxes

Fuel taxes fare very well when evaluated against the criteria set out in Chapter 1. Particularly noteworthy are two facts: fuel taxes are user fees that vary in proportion to use, and they are cheap and easy to collect. Fuel taxes are likely to continue providing substantial revenue streams, though their revenue-generating ability suffers from several weaknesses discussed below.

When fuel taxes were first implemented in the 1920s, they were chosen as the most practical way to charge drivers for use of the road system. Policy makers saw universal tolling as the ideal user fee, but acknowledged that widespread toll collection was impractical. In the 1920s, vehicle fuel efficiency didn't vary too much among different vehicles, making fuel consumption an excellent proxy for miles traveled. In essence, the fuel tax was designed as a charge for each mile driven.

Today fuel taxes are less precise per-mile user fees because the close correlation between fuel consumption and miles driven has deteriorated. Nowadays vehicles vary greatly in terms of their fuel efficiency, meaning that drivers of fuel-efficient vehicles pay less than drivers of gas guzzlers, though they may impose quite similar costs on the road system in the form of road wear and delay to others. Nevertheless, fuel taxes still function as user taxes, even if imperfect ones. They are equitable in the sense that only users of the road system pay them, and that drivers pay in rough proportion to how much they use the system.

A second advantage of fuel taxes is their low administrative and collection costs. Historically these costs have averaged around one-half of one percent of tax proceeds (Crawford 1939; *Highway Statistics* 1945-1995). The gas tax is collected directly from gasoline distributors — rather than from retailers or motorists — which helps keep collection costs low and reduces the potential for payment evasion.⁷ Also, paying fuel taxes does not inconvenience drivers since the tax is incorporated directly into the price of fuel.

Ever since California first enacted its gas tax in 1923, fuel taxes have been excellent revenue generators. They have raised tens of billions of dollars for California's highways, and provided a relatively predictable revenue stream. This predictability facilitates efficient and effective project planning. Fuel taxes do have several weaknesses as revenue generators, though. Despite their ability to raise large sums of money, over time fuel taxes will likely raise less and less revenue in terms of "real" or inflation-adjusted dollars and in terms of revenue per vehicle mile traveled (VMT).

Fuel tax revenues fail to keep pace with inflation because the tax is a flat rate (i.e., 18 cents per gallon at the state level) which loses purchasing power when inflation lowers the relative value of that 18 cents. For example, when the gas tax was not raised between 1963 and

⁶ California received \$1.77 billion for highways and \$674 million for transit.

⁷ Evasion does occur, however. A 1992 FHWA study estimated that gas tax is evaded for 3-7 percent of gallons consumed; for diesel, it's 15-25 percent (Denison et al. 2000).

1982, the rate in real 1999 dollars fell almost two-thirds, from 32.6 cents in 1963 to 12.1 cents in 1982. Thus, unlike sales or income tax revenues, which keep pace with inflation automatically,⁸ fuel tax revenues only keep pace with inflation if legislators routinely vote to raise the tax rate.

Over time, revenues have also fallen per vehicle mile traveled as the overall vehicle fleet has gradually become more fuel efficient. There is, of course, no guarantee that fuel efficiency will continue to improve, but given state and federal policies to encourage energy conservation and reduce air pollution, it is quite likely that average fleet efficiency will continue to increase. Fuel taxes paid per VMT may fall even further if California's policies to promote vehicles powered by alternative fuels are successful. These policies raise the possibility that in the next ten to twenty years a small but significant fraction of the vehicle fleet will no longer pay any fuel taxes at all. If this happens, it will reduce the ability of fuel taxes to raise revenue and raise questions about the equity of a user tax that, for the first time in history, some users will be able to avoid altogether. Under a scenario where alternative fuel vehicles begin to replace gasoline light duty vehicles, and new vehicle efficiency is assumed to improve, revenue collected per VMT would drop an estimated 29 percent in real terms between 1999 and 2010.⁹

The only feasible way for Californians to keep fuel tax revenues stable in terms of real dollars and/or real dollars per VMT is for the legislature to adjust the tax rate regularly. An advantage of relying on periodic legislative increases to keep real revenues constant is that it forces the legislature to review how those revenues are spent. Such close monitoring may be desirable, given public concern about keeping government spending efficient. However, past experience shows that legislators have been loath to vote to increase the fuel tax — much as they are hesitant to raise any tax. In the last few decades, especially, the legislature has been reluctant to increase motor fuel 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 that now regularly oppose tax increases (such as the automobile, trucking, and petroleum industries) were among the tax's most vocal supporters. Today, increasing the gas tax is an extremely hard sell unless voters and legislators believe the transportation system faces a financial crisis. Also, the legislature is loath to raise fuel taxes without voter approval, and ballot initiatives are costly and time-consuming efforts in which the idea of "keeping up" with inflation is likely to be lost on voters.

In sum, fuel taxes will continue to provide large streams of revenue for transportation, but the revenues raised are unlikely to maintain their current value unless the public and legislature undergo a radical shift in their willingness to raise taxes.

⁸ Most of the taxes in the United States are calculated on a percentage basis. For example, as incomes and prices rise with inflation, sales and income tax revenues keep pace in terms of buying power because they are assessed against those higher incomes and prices.

⁹ The revenue forecasts are based on the California Energy Commission's "low" growth gasoline demand scenario (1999). The forecasts assume a 10 percent alternative fuel vehicle penetration level (for new sales) by 2003 and remaining constant thereafter. Fuel economy for conventional vehicles is assumed to grow by 15 to 28 percent between 1997 and 2015, depending upon vehicle class.

2.1.2 Sales Tax on Fuel

In California both the state and counties levy sales taxes on retail purchases. The state levies a basic five percent tax, and counties have the option of adding supplemental local taxes.¹⁰ In general, these retail sales taxes are not a transportation user charge. However, in California gasoline and diesel are included as goods subject to retail sales taxes. A portion of the revenue from the statewide five percent sales tax on fuel is dedicated to transportation purposes, and thus does indeed constitute a user fee. (A later section of this chapter discusses other sales taxes used for transportation purposes but not collected specifically from transportation system users and thus not classified as “user fees” in this report.)

In 1971 the state legislature passed the Transportation Development Act, which established a state account called the Public Transit Account (PTA).¹¹ The law stipulated that part of the five-cent statewide sales tax *on gasoline and diesel* would be deposited in the PTA.¹² The tax on diesel fuel is expected to generate \$112.5 million for the PTA in 1999-00, while the sales tax on gasoline will generate \$60.7 million¹³ (Legislative Analyst’s Office 2000d, Figure 1).

The funds in the PTA are spent in two different ways. Approximately half of the funds deposited into the PTA go to the State Transit Assistance Fund (STAF), which was created in 1979 as part of legislation that modified the Transportation Development Act.¹⁴ In 1997-98 the STAF received \$84.7 million (Caltrans 2000b; Caltrans 2000c; Legislative Analyst’s Office 2000d; State Controller’s Office, *Transit Operators and Non-Transit Claimants Annual Report*, 1999). Funds in the STAF are allocated to transit operators through regional transportation planning agencies and county transportation commissions. The remainder of the PTA money is controlled by the state legislature and may be used for other public transportation purposes such as capital improvements, planning and administration, and high-speed rail.

Until fiscal year 1999-2000, the remainder of the estimated \$1 billion in state sales tax annually collected on fuel was deposited into the state’s general fund. However, this changed as of July 7, 2000, when Governor Davis signed into law a new Traffic Congestion Relief Program (TCRP). For 2000-01, the portion of the sales tax on gasoline that has historically gone to the general fund will go to the TCRP. The TCRP also anticipates using revenue from the sales tax on gasoline for fiscal years 2001-02 through 2005-06, but this must be authorized by an act of the legislature. Since this source effectively reduces the current General Fund, future legislative

¹⁰ With county supplemental taxes added in, the sales tax rate varies between 7.25 percent and 8.75 percent throughout the state.

¹¹ This account was formerly known as the Transportation Planning and Development Account.

¹² The portion of the five-cent general sales tax deposited into the PTA is calculated differently for diesel and gasoline. For diesel, 4.75 percent of the sales price (including the federal tax of 18.4 cents per gallon but not the state fuel tax of 18 cents per gallon) goes to the PTA. For gasoline, only the most recent nine-cent increase in the state gasoline tax is included in the price used to calculate the 4.75 percent for the PTA.

¹³ There is a third funding source for the PTA called the “spillover.” This occurs when revenue from the statewide 4.75 percent general sales tax on all sales including gasoline exceeds revenues from the 5 percent sales tax on all sales *except* gasoline.

¹⁴ The STAF was created by Senate Bill 322 in 1979 and later revised by Assembly Bill 2551 in 1982 and Senate Bill 300 in 1989.

approval would be less likely in the case of a budget deficit, where it would be seen as taking funds from other state programs.

When evaluated, the sales taxes on fuels perform in the same way as fuel taxes with two important exceptions. First, because the sales taxes are levied as a fraction of the price of gasoline, they don't lose their value in the face of general inflation.¹⁵ The second difference lies in the way the revenues are spent. Fuel tax revenues are largely spent on streets and roads and highways, while the sales tax revenue is mostly devoted to transit.

2.1.3 Tolls

California has a small number of tolled highway facilities — ten bridges, three new highways in Orange County, a ten-mile stretch of privately operated toll lanes in the median of State Route 91, and a demonstration HOT lane (high occupancy/toll lane) on Interstate 15 in San Diego.¹⁶ The privately-managed State Route 91 raised \$20.1 million in tolls in 1998. The bridges and the three Orange County highways generated approximately \$293 million in toll revenues in 1998-99.¹⁷ The way the tolls are spent varies according to who collects them. Most of the revenue is spent on operating and capital expenses for the facility on which it was raised. However, revenue from the HOT lane demonstration on I-15 has subsidized bus service along the I-15 corridor, and the Golden Gate Bridge Authority uses some of its revenue to subsidize transit services crossing the bridge. In 1997-98, nearly \$26 million — 31 percent of the \$83 million the Authority collected in local tolls — went towards mass transit. At the state level, toll revenues are used almost exclusively for highways (*Highway Statistics* 1998, Tables SF-3B, LGF-3B, LDF, and SDF).¹⁸

A well-designed toll system adds greatly to transportation efficiency. Tolls are an excellent user fee when the revenue is spent on the specific corridor from which it is collected, with a direct link between user payments and benefits received. Indeed, tolls are probably a more exact user fee than any other finance mechanism currently assessed against drivers. Toll facilities charge all users equally for the same trip,¹⁹ unlike fuel taxes, which assess different charges for vehicles of differing fuel efficiency. (Of course, the fact that tolls do not vary by vehicle fuel efficiency also means that tolls fail to provide an incentive for consumers to purchase fuel efficient vehicles.) If tolls are structured to charge different classes of vehicles different toll rates, toll roads are also able to charge heavy trucks higher fees that compensate for the extra damage they inflict on roads. This is the case with current bridge tolls in California, which vary by

¹⁵ Note that changes in the price of gasoline do not necessarily vary with general inflation. Also, fuel prices have recently been very volatile, moving up and down for reasons unrelated to inflation. There are often calls for the repeal of sales taxes on fuels when fuel prices rise rapidly, as they have recently.

¹⁶ California also has a privately owned toll road called "The 17-Mile Drive," located near Monterey. We have not included this facility in our discussion, as it functions more as a tourist experience than as a transportation facility.

¹⁷ These figures do not include additional money collected by toll authorities from concessions and investments. When all sources of revenues are added up, total receipts for state-administered facilities reached nearly \$328 million in 1998-99, while local facilities collected nearly \$267 million in 1997-98. Also note that the figure for bridge and Orange County toll road revenues includes revenue from the Vincent Thomas bridge in Los Angeles, on which the toll has since been removed.

¹⁸ In 1998-99, over 99 percent was spent on highways.

¹⁹ Except when different classes of vehicles pay different rates.

vehicle class. An additional advantage of tolls is that — unlike registration, license, or weight fees — they are collected from out-of-state vehicles.

Until recently tolls suffered from two major drawbacks: they were very expensive to administer and collect, and they caused delay because motorists have to stop to pay the 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.

For every dollar of revenue collected from traditional (nonelectronic) 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 forty times more expensive to collect a dollar of revenue from tolls 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 (Transportation Research Board 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 attaches a special debit card to 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 by cameras that automatically snap a photo of the license plate of any vehicle not paying. In California this system is currently used on the private toll lanes on State Route 91 in Orange County, State Routes 73 and 241 in Orange County, and the high-occupancy/toll lanes on Interstate 15 in San Diego County. In addition, the system is either operating or being installed on all the bridges in the San Francisco Bay Area. In all cases except for SR 91 and I-15, drivers also have the option of paying manually.

Recently California has experimented for the first time with “variable pricing,” a system of adjustable toll rates that vary according to the time of day and/or level of traffic on the facility. The HOT lanes on State Route 91 and on Interstate 15 both currently use a form of variable pricing. In a variable pricing scheme, toll rates rise when traffic is heavy, and fall during off-peak times. Variable tolls introduce exciting possibilities for managing the transportation system more efficiently and reducing the pressure to build new capacity. These possibilities will be discussed further in Chapter 4.

One argument made against tolls is that they are regressive, or inequitable in an “ability-to-pay” sense. Toll critics see tolls as an unfair burden on low-income drivers. However, there are several reasons that this argument is not as significant as it might at first appear. For one thing, tolls are easier to avoid than any other user fee (no motorist can legally avoid paying fuel taxes or registration fees). To the extent that there are alternate routes, people can choose to avoid toll roads. Providing a transit option in the same corridor as the toll facility further

increases the options for drivers who don't want to pay tolls. More importantly, the way toll revenue is spent will greatly influence distributional equity. If most toll payers are middle- and upper-income people, and part of the revenue is spent to support transit used by low-income riders, then the toll system might even be progressive with regard to income distribution. In addition, it is important to remember that even if tolls are regressive, they are probably more equitable than many alternative sources of revenue which are not user fees, such as sales taxes, which *all* low-income people must pay — including those who don't drive at all, let alone drive on the route in question. Finally, of course, if equity issues are of concern, it is possible to offer discount tolls to low-income drivers.²⁰

2.1.4 Transit Fares

Revenues from transit fares reached \$877 million in fiscal year 1997-98, accounting for six percent of all transportation revenues in California. Fare proceeds are used directly for transit operations by the transit agency that collects them (State Controller's Office, *Transit Operators and Non-Transit Claimants Annual Report*, 1999). Like tolls, transit fares are direct user charges. Riders pay a fare for each transit trip, and the link between the payment of the fare and the use of the system is quite strong. However, the *structure* of transit fares is often both inequitable and inefficient at signaling to riders the relative cost of one type of transit trip vs. another trip. For example, bus riders often pay a much higher portion of the cost of service provision than do rail riders, and on both modes long-distance users usually pay a smaller portion of the cost than do short-distance riders. In addition, rush-hour transit service is much more expensive to provide than off-peak service, but fares do not reflect these time-of-day differences in the cost of providing service. Finally, transit riders in dense urban areas usually pay a much higher portion of the cost than do riders in very low density areas. Options for making the structure of transit fares more equitable and efficient are discussed in Chapter 4.

2.1.5 State and Federal Fees

The federal government, as well as the state of California and some local governments levy a series of annual fees paid by all vehicle owners and drivers. In the case of the state, these consist of motor-vehicle weight, vehicle registration, and driver's license fees.²¹ In 1998-99, California raised over \$1.9 billion from these fees.

To date the state's motor vehicle weight fee is charged to the owners of commercial vehicles, and the charge is based on the vehicle's unladen weight and the number of axles. The proceeds are used both to build and maintain state highways and to pay for part of the administrative expenses of the California Department of Motor Vehicles. As of January 1, 2001,

²⁰ There are many different ways to offer low-income drivers reduced toll rates. One possibility is to issue them an identification card or ETC transponder that authorizes them to pay lower toll rates. Currently phone and utility companies offer lower rates to low-income households, and a similar system could be used to determine those who qualify for lower tolls (Frick et al. 1996).

²¹ The state also collects a so-called Vehicle License Fee, but this is *not* a transportation user fee because the proceeds are not spent on transportation. The vehicle license fee is considered an *in-lieu* property tax. One quarter of the proceeds is allocated to fund local health and social services programs. The balance is deposited into the Motor Vehicle License Fee Account and is divided between cities, counties, and the Department of Motor Vehicles. Cities and counties are not restricted in their use of these funds, and most of the revenue generated by the fee is not used for transportation purposes.

the system of assessing fees on commercial trucks will change significantly. The new fees will be based on gross vehicle weight, defined as the total weight of a commercial truck plus the maximum weight load it can transport (both carry and tow).

The driver's license and vehicle registration fees are flat fees assessed on all drivers and vehicle owners. Nearly all the proceeds of the state vehicle registration and driver's license fees are used to support the California Highway Patrol, the Department of Motor Vehicles, and the Air Resources Board (Legislative Analyst's Office 1998; California Department of Finance 2000).

Local governments, including regional transportation planning bodies and air quality management districts, may also choose to adopt vehicle registration fees. These fees are used to fund freeway emergency towing services, abandoned vehicle removal programs, and transportation projects that improve air quality. Collectively, these fees are estimated to raise over \$115 million annually.

The federal government also charges various fees, including taxes on tires, sales taxes on trucks and trailers, and taxes on heavy vehicles.²² In 1998-99 Californians paid approximately \$262 million in miscellaneous federal user fees. This money is all deposited into the Highway Account of the federal Highway Trust Fund.

These fees are all user fees, but unlike fuel taxes and tolls, they are paid annually and do not vary with the amount of usage of the transportation system. As such, these fees are a less direct form of user fee and inferior to other user fees in terms of linking the payment to either benefits received or costs imposed on society.

The idea of charging heavy vehicles an extra fee is both efficient and equitable. Heavy vehicles cause a great deal of pavement damage, so requiring them to make payments that can contribute to repairing road damage is fair. In addition, fees that signal to truck owners that the weight of a vehicle costs society additional road repairs can encourage owners to use lighter trucks in situations where the reduction in fees would outweigh any additional cost of using smaller trucks.

2.2 PROPERTY-ACCESS CHARGES

Property-access charges are fees paid by property owners and tenants in exchange for infrastructure and services allowing access to the property. These charges differ from user fees in that they are not necessarily paid by users of the transportation system, but rather by the residents and establishments who benefit from the transportation system. The main types of property-access charges are property taxes, benefit assessment districts, and developer exactions. Since property values are based in substantial part on accessibility to other property via the transportation system, there is a long-established rationale for using property taxes to finance

²² The tire tax is based on the weight of the tires. The heavy vehicle tax is assessed based on the gross vehicle weight. The truck and trailer sales tax is 12 percent of the retail sales price for qualifying trucks, tractors, and trailers.

local streets and roads. Developer exactions and benefit assessment districts are similarly considered to be access charges.

2.2.1 Property Taxes

In 1997-98 total property taxes collected by California's local governments reached nearly \$3.5 billion. Localities allocated almost eight percent, or \$268 million, for transportation purposes: \$167.5 million was used to fund local streets and roads and \$100.7 million for transit operations (*Highway Statistics* 1998, Table LGF-21; State Controller's Office 2000; State Controller's Office, *Transit Operators and Non-Transit Claimants Annual Report*, 1999).

Without the access provided by local streets and roads, individual pieces of property would be difficult to use — and much less valuable. Not only does the property owner make use of the streets to travel to her property, but she benefits when the roads provide access for individuals and public services such as garbage collection, postal delivery, public transit, and police and fire services. It thus makes sense to view property tax money used to fund local streets and roads as a kind of user fee, even though that connection is not as obvious a user fee as a gas tax or vehicle registration fee. Property taxes are, therefore, equitable in the sense that the land owner is helping to pay for a service (access) that personally benefits her. Unlike direct user fees such as fuel taxes, however, property taxes do not have the benefit of charging users in direct proportion to the use they make of the street system or to the road maintenance costs they impose.

One problem with using property taxes to pay for maintenance of local streets and roads is that local governments face enormous pressure to use property tax revenue for a host of non-transportation uses, from libraries to parks to schools to low-income housing. Because road maintenance must compete for funds with these other very important and often pressing demands, streets and roads get significantly less money than many people believe is needed to protect our road investments, or than economic cost-benefit criteria would call for.

2.2.2 Developer Exactions

When property is developed, the new uses often bring in traffic that requires new or expanded transportation facilities. In exchange for permission to build, local governments often demand that developers help cover all or part of the infrastructure needed to support the development. These "exactions," as they are commonly termed, take many forms: dedication of land to be used for public infrastructure or facilities, direct provision of new infrastructure or facilities, payments to the city that are used to build specific facilities for the new development, or payments that fund general, citywide transportation improvements. Unlike property taxes, which are levied on all property owners, these fees are voluntary in that they are only assessed on new projects that the developer is not, of course, forced to build.

Cities and counties have a long history of requiring developers to build or pay for new traffic facilities directly adjacent to the project. For example, developers building a shopping center near a freeway may pay for a new exit that leads directly to their property. Or, more

commonly, developers must cover the cost when a new development will increase travel on nearby roads enough that the city needs to put in new traffic controls, increase the road capacity, or add transit service.

Since Proposition 13 drastically cut the resources available to localities, in recent years California localities have begun to rely more on developer exactions to pay not just for directly related facilities, but also for the broader costs imposed by new development. A new tool in the realm of developer exactions has been the “traffic impact fee,” where the developer’s payment goes to a fund for transportation needs throughout the whole city or county. For example, since 1981 San Francisco has collected a \$5-per-square-foot transit impact fee on downtown office development. The principle behind a traffic impact fee is that new development increases use of the local transportation system in general, not just use of those pieces of the system directly adjacent to the new development.

There is a great deal of debate about the merits of requiring new development to pay the full cost of the associated infrastructure needs it creates. Older communities often financed infrastructure collectively, with all residents contributing. A common strategy was to pass a bond measure designed to finance a wide range of community facilities, some benefiting the entire community and some designed to allow new development. The new development was expected to raise the local tax base and thus, in the long run, pay its own way. Given this past tradition of spreading infrastructure costs throughout the community, some argue that it is unfair to expect the owners and tenants of new developments today to single-handedly pay all associated infrastructure costs. Why should today’s buyers and renters of property have to pay their own way when individuals in the past didn’t? On the other hand, many communities are strapped for cash, and so it is argued that the only fair solution is to make the newcomers pay.

It is not known how much money cities and counties in California collect annually through these two kinds of developer fees because the information is not collected on a regional or statewide basis. However, even if the overall amounts were found to be significant, the revenue is very unpredictable. Impact fees are an unreliable source of revenue since development happens in irregular patterns, and it is not unusual for projects to take years or decades longer to complete than originally planned. In addition, revenue from the fees is typically not enough to permit the locality to pay cash for infrastructure, and the revenue streams are too unreliable to use as a guarantee for bond payments (Fulton 1999). A final problem is that many assessed fees are never collected.

Another limitation of exactions as a source of revenue for transportation is that local governments rely on them to pay for many different infrastructure and service needs beyond transportation — and there is, obviously, a limit to how high the total fee burden can rise before developers choose to abandon a project. In the 1980s, the Bay Area Council released a study finding that in the Bay Area the average impact fee for a single family home was \$9110, an increase of 644 percent over the previous ten years (Governor’s Office of Planning and Research 1997).

2.2.3 Benefit Assessment Districts

Since 1911, local governments in California have been allowed to assess fees on property within “benefit assessment districts.” In such a district, fees are assessed against property owners in order to pay for a specific improvement that will directly benefit those property owners. The districts are generally formed by the county or city, although since the passage of state Proposition 218 in 1996, affected property owners must vote to approve the districts.²³ A property owner can either pay the assessment in cash or allow a lien to be placed on his/her property in the amount of the benefit assessment; in the latter case, the property owner submits payments over a predetermined number of years. The local government itself is responsible for administering the improvement project. For large capital projects, local governments are allowed to issue bonds against benefit assessment fees.

Benefit assessments differ from property taxes in several ways. First, they are a fee levied against property owners for a specific public improvement, while property tax revenue is not designated for any specific use. In addition, the fee can only be levied on property owners who will directly benefit. Property taxes, of course, are levied equally on all property owners. In addition, benefit assessment fees are not set as a percentage of the value of property; rather, these assessments are flat rates proportional to the benefit that each piece of property receives from the improvement. Also, the total assessment collected cannot exceed the cost of providing the designated improvement.

Communities in California use benefit assessment districts both to improve existing, built-up neighborhoods and to provide infrastructure in newly developing areas. After the passage of Proposition 13 cut back local governments’ ability to raise property tax revenue, the state enabled a new kind of benefit assessment specifically to raise money to build infrastructure on undeveloped land. These districts are known as Community Facilities Districts (CFDs) or Mello-Roos districts. Like all benefit assessment districts, CFDs are authorized to levy special taxes on property owners within a given area in order to pay for specific public improvements in that area. Mello-Roos districts are easier to form than other special assessment districts. First of all, districts are allowed irregular boundaries to conform to a developer’s plan or avoid pockets of resistance; properties in other types of special assessment districts must be contiguous. CFDs frequently contain one large site owned by one or only a small number of landholders. In these cases, the district may be set up by vote of only those landowners. Mello-Roos districts are also unique in that they have a greater financial flexibility than standard benefit assessment districts. For example, assessments do not have to be allocated precisely according to the level of benefits received, and taxes may change as the development takes place, in contrast to standard benefit assessments which cannot be altered after the district is formed (Porter et al. 1997; Fulton 1999; Lucero 1997; Hitchcock 2000).

²³ As of 1996, to create a benefit assessment district the city, county, or special district must hold a public hearing and receive approval from a majority of the affected property owners casting a ballot. According to Section 4(e), Article XIII D of the California Constitution, all owners of property within the assessment district must be mailed a detailed notice of public hearing and a ballot with which to voice their approval or disapproval of the proposed district at least 45 days prior to the hearing.

Benefit assessments are used for many transportation purposes, including freeways, local streets, parking facilities, street lighting, and sidewalk improvements. For example, the city of Pleasanton in Northern California established a North Pleasanton Improvement District in 1985 to help fund new and improved freeway interchanges and ramps, additional lanes, and major access roads. The district assesses a fee based on the benefit from district improvements to about 949 acres located in North Pleasanton (Porter et al. 1987).

As with developer exactions, the total amount of revenue raised for transportation purposes is unknown. However, the amount is probably small — though it has grown significantly since the passage of Proposition 13 in 1978. In 1997-98 sixteen counties used benefit assessment districts for some purpose, and the total amount collected was just \$19 million. Cities made much greater use of the districts, but the total revenues raised for transportation are unlikely to be more than \$100 million for 1997-98 (Porter et al. 1987).

Benefit assessment districts have a number of advantages as revenue-raising tools. First, they are not subject to the limits imposed on property taxes. In addition, they are not subject to limits on city or county indebtedness. Another advantage is that, because bonds can be issued against benefit assessment districts, more funds can be provided up front than are available through impact fees and developer exactions. For capital projects, it is usually much more efficient to receive the money all at once than to try to build a project over many years as money trickles in.

Nevertheless, there are some weaknesses to benefit assessment districts as a source of revenue. The passage of Proposition 218 has created new uncertainty about exactly how and when they can be established. Also, when the districts are created around undeveloped land, there is a risk that the proposed development may not occur or the property owners will be unable to pay the fees. One author notes that there were defaults by many districts established just before the slump in housing construction in the early 1990s (Hitchcock 2000).

2.3 SUBSIDIES

The previous two sections discussed government taxes and fees that are levied only on those who use — or benefit directly from — the transportation system. The government also spends money on transportation that has been raised from businesses as well as the public at large. The two main sources of transportation subsidies are sales taxes and general fund revenues. In 1998-99 subsidies accounted for nearly one-third of all revenues used for transportation.

2.3.1 Sales Taxes

Three different types of general sales taxes — one levied at the state and two at the local level — raise money dedicated for transportation purposes.²⁴ The total revenue generated by these sales taxes for fiscal year 1998-99 was nearly \$3.4 billion, or about 23 percent of all

²⁴ In addition, the city of Truckee has a voter-approved sales tax dedicated for street and road maintenance. The half-cent tax was approved in 1998. Since Truckee is the only city with such a tax, we have not included it in our discussion of local sales taxes and data on revenues raised from such taxes.

transportation revenues raised in California that year. The bulk of this revenue (approximately \$2.5 billion) was raised by local governments through locally-enacted sales taxes. Voters in eighteen counties have approved some form of local sales tax with the revenue dedicated for transportation purposes.

2.3.1.1 Expiring Sales Taxes

In the mid-1980s the state legislature authorized counties to ask their voters to approve limited-term sales taxes.²⁵ These “expiring” sales taxes are supplemental sales taxes of up to one percent of retail sales. The law requires them to have a sunset date on which the tax will expire. An additional feature of these taxes is that the revenues must be spent on a list of transportation projects selected before voters approve the tax.

Since the first one passed in 1984, expiring taxes have played an increasing role in transportation finance, raising approximately \$28 billion to date. Currently sixteen counties have expiring local option sales taxes, though 35 have attempted to pass them. Most of the taxes are half-cent levies (see Table 2.2). In 1998-99 these taxes generated an estimated \$1 billion. Over the duration of these sales taxes, counties plan to spend approximately 35 percent of revenues on highways, 34 percent on transit, and 28 percent on local streets and roads. The remaining revenues are slated to be spent on unspecified transportation improvements (Legislative Analyst’s Office 2000b).

County	Date Approved	Percent Approval	Sunset Date
Santa Clara	1984	56%	1995
Alameda	1986	56%	2002
Fresno	1986	57%	2007
San Diego	1987	53%	2008
San Benito	1988	83%	1998
San Mateo	1988	62%	2009
Contra Costa	1988	57%	2009
Riverside	1988	79%	2009
Sacramento	1988	57%	2009
Imperial	1989	65%	2009
San Bernardino	1989	60%	2009
San Francisco	1989	65%	2010
Santa Barbara	1989	55%	2009
Madera	1990	62%	2005
Orange	1990	54%	2011
San Joaquin	1990	60%	2010
Santa Clara	1996	52%*	2006
Alameda	2000	81%	2022
Santa Clara	2000	70%	2036

Sources: Commission on Transportation Investment 1996; Caltrans, Division of Highways 1995.
 * Measure B, a general sales tax increase, passed by 52 percent. The advisory Measure A, which specified that the county should spend the new revenue on specified transportation projects, passed by 80 percent.

²⁵ Sometimes these are referred to as “local option” taxes.

2.3.1.2 Permanent Sales Taxes

California also has a few counties which collect permanent local sales taxes to spend on transportation. Voters have approved permanent local sales taxes in four counties (Los Angeles, San Mateo, Santa Clara, and Santa Cruz). In addition, the Bay Area Rapid Transit District (covering the counties of Alameda, Contra Costa, and San Francisco) has a permanent sales tax used for transit, with three quarters of the revenue allocated to BART, and the rest allocated by the Metropolitan Transportation Commission to two other transit agencies. The revenue from the various permanent taxes is spent entirely for transit, except in Los Angeles, where the Los Angeles County Metropolitan Transportation Agency is authorized to spend the revenues on road projects as well as transit. In all cases the permanent sales tax is set at a half-cent, with the one exception again being Los Angeles, where the Metropolitan Transportation Authority collects a one-cent levy.²⁶

2.3.1.3 State Sales Tax Revenues Dedicated to Local Transportation Funds

In 1971 the state legislature passed the Transportation Development Act (TDA), which stipulated that part of the state sales tax (revenue equal to one quarter percent of retail sales) would be used for transportation purposes. The revenues raised are returned to the counties in which the money was generated, where the money is deposited in special accounts known as Local Transportation Funds (LTF).

In 1997-98, this statewide sales tax raised \$871 million. The money is primarily used for transit, but LTF money can be also spent on bike and pedestrian facilities. In addition, counties with populations smaller than 500,000 can spend the funds on local streets and roads. In 1997-98 about ninety percent²⁷ was spent on transit, with most funding transit operations. The remaining revenue was spent on local streets and roads, including \$12.2 million for bicycle and pedestrian facilities (State Controller's Office, *Transit Operators and Non-Transit Claimants Annual Report*, 1999; Caltrans 2000b).

2.3.1.4 Evaluation

Evaluating the benefits of the sales taxes that currently raise money for transportation is complicated, since so many different tax types are used and the revenue is spent in so many different ways. Nevertheless, all sales taxes share a couple of important features. A chief advantage of sales taxes is that administering dedicated transportation sales taxes is easy, since the state already collects sales taxes for other purposes. Less desirable is the fact that sales tax revenues are not as stable as many of the other sources discussed, since retail sales vary substantially with changes in the economy. The Metropolitan Transportation Authority of Los Angeles has had to face this fact in recent years. In the early 1990s it issued bonds to be paid back from future county sales tax revenues. When recession hit in the early 1990s, the county found that the sales tax wasn't generating enough revenue to pay back the bonds. As a result the Authority had to cut its expenses, and did so by slowing down its rail construction program,

²⁶ Los Angeles voters approved two separate half-cent levies, which together total a tax of one percent.

²⁷ Author's calculations using data from the State Controller's Office, *Transit Operators and Non-Transit Claimants* (1999).

increasing bus fares, and reducing bus service. Revenues from gas taxes and other motor vehicle user fees are less volatile than sales taxes, because driving behavior doesn't tend to change as much as retail spending when the economy slows.

Aside from these characteristics common to all sales taxes, several points should be noted that are specific to individual taxes.

At the local level, the chief rationale for using sales taxes to fund transportation has been political expediency. As local jurisdictions found themselves wanting transportation services and infrastructure beyond what state-generated transportation funds could provide, local officials looked for a way to raise money themselves. They quickly discovered that voters were often willing to pass local sales taxes (though plenty of sales tax measures have also failed). To date voters have approved well over half of the measures put before them. In part, this popularity probably stems from the fact that sales taxes are a very simple concept already familiar to most voters. People are generally more comfortable with a known tax or fee than with something new and unfamiliar.

Various public polls asking whether people prefer a supplemental sales tax or the imposition of a regional gas tax suggest another reason that voters may favor sales tax increases over fuel tax increases. The results of the polls suggest that voters perceive a sales tax increase as less onerous than a gas tax increase. 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 they prefer the sales tax because a half-cent sounds much less burdensome. For example, a 1992 poll of Santa Clara County voters found a high level of support for raising the sales tax by half a cent, but ninety percent opposition to a fifteen-cent gas tax increase that would have produced as much revenue as the half-cent sales tax (Richards 1998).

Voters are not the only interest group that has supported expiring sales taxes. Local elected officials like the fact that voter approval removes the need for them to vote publicly for a tax increase. 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 been one of the strongest supporters of sales taxes, leading campaigns for a number of them.

A second reason for the great popularity of expiring sales taxes has been the use of project lists on the ballot initiatives. Part of the legislation permitting expiring sales taxes requires that the ballot initiative include a list of specific projects that the revenue will fund. These lists are usually created with an eye to including projects of direct benefit to each constituency. Instead of selecting only the most useful or equitable projects, those responsible for drawing up the lists have often done so with the primary goal of appealing to a broad cross-section of voters. They frequently poll residents about what projects they want, and from these preferences create a list on which most voters find at least one project from which she personally would benefit. This has proven a highly effective political strategy, but the result is sometimes a less efficient transportation system.

Another problem with project lists is that counties have less flexibility to change their 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 sound planning, and

usually happens outside the formal regional transportation planning process led by metropolitan planning organizations. In some cases expensive projects that have relatively modest benefits may get chosen over other projects that would get “more bang for the buck.” Current research is under way to examine exactly what projects have been funded with these sales taxes and whether or not the projects were previously listed as part of regional transportation plans. Finally, another problem with the project lists as a planning method is that in some cases public input may be limited. Normal planning procedures usually 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 relative popularity of sales taxes, it is unknown whether many more will pass. Most of the existing measures passed with only a fifty percent majority. During the 1990s, however, a series of court cases established the requirement that these sales taxes are “special taxes” and therefore need a supermajority, or two-thirds of the vote, to pass.²⁸ Prior to the election of November, 2000, only two county transportation sales taxes won two-thirds of the votes cast, though in the most recent election, measures in Santa Clara and Alameda counties did achieve the required super-majorities. A bill to reduce the vote threshold to a simple majority was considered in the most recent legislative session, but the proposal had little support, perhaps because of the current anti-tax political climate fostered by California’s growing budget surpluses. The fact that two county sales tax measures achieved two-thirds majorities in November, 2000, may strengthen the arguments for retaining the super-majority requirement.

One final point to note is specific to the state’s TDA program. Unlike the expiring sales taxes, the local, permanent sales taxes and the state sales tax dedicated to TDA do not have required project lists. Thus, they do not suffer from the same inefficiencies described above. However, a weakness stems from the way the law requires the revenues to be distributed and spent. TDA funds must be spent on transit in most counties, even those in which transit is not efficient because both residential and commercial districts have very low densities.

2.3.2 General Funds

Like sales taxes, general funds are also a significant source of transportation subsidy. In 1998-99, local,²⁹ state, and federal governments spent an estimated \$1.2 billion of their general fund monies for transportation purposes. Just over a third of this total was revenue

²⁸ In 1996 Santa Clara County wanted to renew its expiring transportation sales tax but did not believe that a sales tax extension would win a two-thirds vote. County officials therefore attempted a new strategy to allow passage with a simple majority. The county put two complementary measures on the ballot, Measures A and B. Measure B asked voters to approve a nine-year half-cent sales tax for general revenue purposes. The initiative therefore was classified as a general tax increase and, according to state law, only required approval by a simple majority. Measure A was an advisory measure stating that the intent of the voters was to spend the revenue from the Measure B tax on a specified list of sixteen transportation projects and services. Measure A is technically non-binding on the County Board of Supervisors, but proponents of the A+B strategy believed that the supervisors would never dare to ignore Measure A. Both measures passed in 1996: the advisory Measure A by 80 percent and the tax by 52 percent. The Measure A+B strategy was challenged in court, but its legality has been upheld. More recently Sonoma County attempted to pass a sales tax with the A+B strategy, but voters did not approve it by even a simple majority.

²⁹ When we speak of local general fund revenue, we are referring to local money *other than* property taxes. Typical revenue sources might include the portion of the state’s general sales tax that is returned to cities and counties, hotel taxes, or parking meter revenues.

that local governments spent on local streets and roads. Of the federal and state funds, about \$338 million was spent on transit and \$452 million on highways, with 92 percent of this money coming from the state³⁰ (*Highway Statistics* 1998).

While local governments have long spent their general funds for transportation purposes, the state avoided doing so after the fuel tax was established in the 1920s. However, in the 1990s, for the first time in many decades, the state allocated part of its general revenues to transportation projects. It initially did this by asking voters to authorize the state to issue general obligation bonds which will be repaid using revenues from the state's general fund. In June of 1990, voters approved two such bond measures, Propositions 108 and 116. Proposition 108, the Passenger Rail and Clean Air Bond Act of 1990, authorized the state to issue a billion dollars in general obligation bonds to fund intercity, commuter, and urban rail passenger projects, as well as passenger intermodal terminals. Under Proposition 116, the Clean Air and Transportation Improvement Act of 1990, the state issued \$1.99 billion in bonds, with the proceeds to be spent on transit projects that would improve air quality. Then in 1996, voters approved Proposition 192, which authorized the sale of two billion dollars in general obligation bonds to pay for seismic upgrading of roads and bridges. Most recently, in 2000 Governor Gray Davis proposed a five-year program of capital construction whereby the state would allocate general revenues to a list of specified transportation projects. The legislature has authorized the first year of this plan.

An evaluation of whether or not general funds are an efficient and equitable way to pay for transportation projects depends on the mode for which the revenue is used and also on the level of government involved. However, a couple of general considerations apply across the board.

First, a major disadvantage of general funds as a source of transportation funds is that they are unpredictable from year to year. There is no guarantee that city councils or the state legislature will continue to allocate funds to transportation every year. Use of general fund money for transportation raises the same issue as spending local property tax revenue on transportation: it puts transportation into direct competition with the many other uses for which that money might be spent. Every dollar from a local or state general fund spent on transportation is a dollar that could have been used for school construction, improvement of the court system, or any of government's numerous other responsibilities.

It is especially unwise to count on state general funds for transportation, because California has no strong tradition of doing this. While Governor Davis' plan calls for the state to allocate general fund revenues to transportation for the next five years, there is no assurance that this will happen, and even less that the legislature would continue to do so after these five years. The governor's plan was drawn up in the context of a significant budget surplus, and it is highly unlikely that the state will continue to see such surpluses over the next decade or longer. Once the state budget surpluses disappear, it is likely that proposals to spend general revenues on transportation will probably also vanish.

Unlike the state, local governments have traditionally used general revenues to pay for local street work and transit subsidies, and they will probably continue to do so. However, Propositions 13 and 218 limit the growth in revenues derived from property taxes to rates that are

³⁰ Of the transit money, \$297 million came from the state and \$91 million from the federal government. Of the highway money, \$432 million came from the state and \$20 million from the federal government.

likely to lag behind the growth in expenditures. Localities will continue to use some general fund money for transportation purposes, but the levels are likely to rise slowly to meet local needs.

The equity and efficiency of spending general fund revenue for transportation purposes also varies according to the mode on which it is spent. State highways have a long and successful tradition of raising money through direct user fees such as fuel taxes, tolls, and fees. Given the equity and efficiency benefits of user fees, these mechanisms are preferable when they are available. Therefore, neither state nor local general funds ought to be spent for highway purposes.

Transit presents a very different case, since fares come nowhere near covering the cost of transit operations, let alone capital expenditures. Therefore, if society deems transit a desirable mode, then the government must subsidize transit operators. Since most transit serves passengers moving within one city or region, the local level is in general the most appropriate source of funds for transit. If sufficient local property taxes are not available, then general fund moneys may be appropriate. It is fitting for the state to fund certain transit services that have statewide importance (e.g., connections to major airports) or that will improve traffic conditions on state highways. In these cases, state general funds are appropriate. In fact, in terms of ability-to-pay equity, state general funds fare very well because over half of the money comes from the income tax, which is the only tax or fee used for transportation that is unquestionably progressive³¹ in the way it is collected (California Department of Finance 2000, Figure 2).

2.4 PROJECTION OF TRANSPORTATION REVENUES

We projected major transportation revenue sources in order to provide a picture of the anticipated resources California will have to meet future transportation needs. Generally, the projections assume that there are no legislative or voter-approved increases in any transportation revenue mechanism. Since general funds are an unpredictable and less appropriate source for the transportation system, we have excluded general funds from the forecasts. The basic assumptions³² used were as follows:

- *Fuel Taxes* (state and federal): We assumed that there will be no change in the rates of federal and state taxes on fuel. The motor fuel consumption estimate is a consolidation of California Department of Transportation (Caltrans) and California Energy Commission forecasts.
- *Sales Taxes* (Local Transportation Fund and locally enacted sales taxes): We predicted that these revenues will grow above inflation in accordance with projected population growth (within the county of the sales tax). Given the two-thirds voter approval requirement for renewal of locally enacted, expiring sales taxes, we assumed that these will not be renewed.

³¹ A progressive tax charges people with higher incomes higher portion of their incomes in taxes. With a regressive tax, on the other hand, the lower the person's income, the higher the percentage of the income paid in taxes.

³² Appendix II provides a detailed explanation of the methodology and sources of data used to construct the projections.

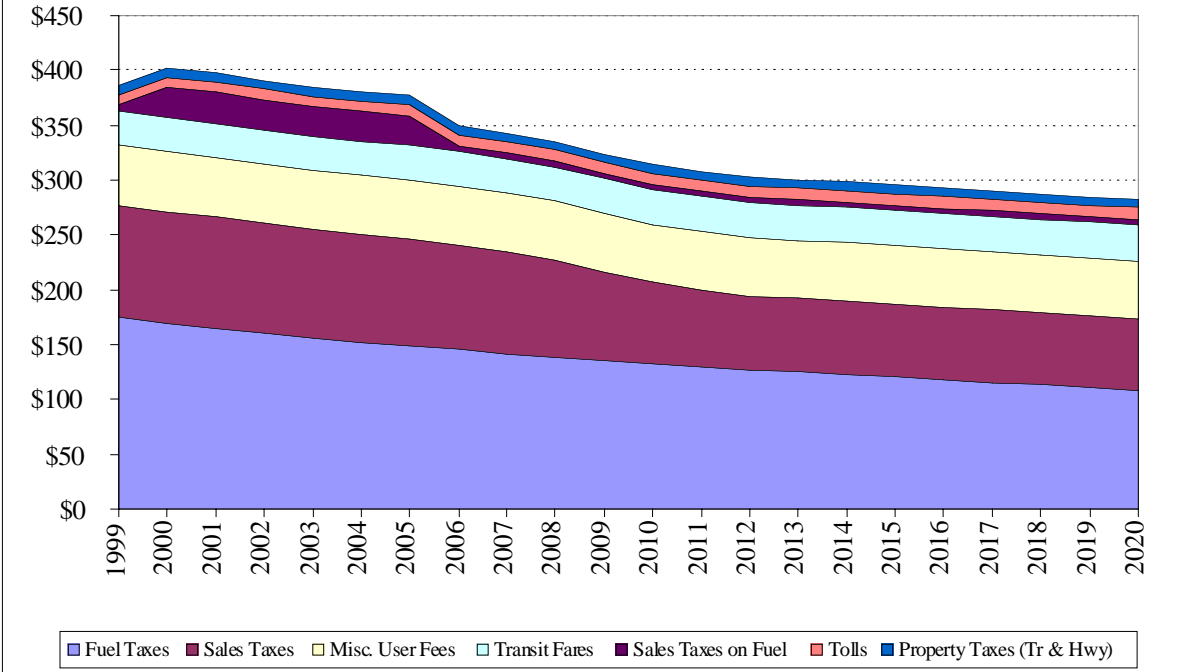
- *Sales Taxes on Fuel*: Currently a small contributor to the transportation finance system, this source will quintuple in 2000-01 as revenue typically directed to the general fund will go to the Governor's Transportation Congestion Relief Program (TCRP). This new source is included for the six years of the TCRP, even though currently only the first year has been approved by the legislature. We also assumed that the funds would no longer be dedicated for transportation after the TCRP program ends in 2006.
- *Fares, Fees, Property Taxes, and Tolls*: These sources were projected according to trends on an inflation-adjusted basis.

Source	1999	2005	2010	2020
Federal and State Fuel Taxes	\$5,941	\$5,544	\$5,292	\$4,919
Sales Taxes	\$3,493	\$3,675	\$2,947	\$2,977
Misc. Federal and State User Fees	\$1,867	\$2,010	\$2,129	\$2,367
Transit Fares	\$1,045	\$1,172	\$1,277	\$1,506
Sales Taxes on Fuel (PTA & TCRP)	\$183	\$1,007	\$195	\$209
Tolls	\$305	\$351	\$394	\$498
Property Taxes (Transit & Highways)	\$305	\$314	\$321	\$337
<i>Total Transportation Revenues</i>	<i>\$13,139</i>	<i>\$14,073</i>	<i>\$12,555</i>	<i>\$12,813</i>
<i>Transportation Revenues Per Capita</i>	<i>\$386</i>	<i>\$372</i>	<i>\$314</i>	<i>\$282</i>
Sources: See Appendix II.				

Table 2.3 and Figure 2.1 show the results of the consolidated revenue projection. By 2005, total transportation revenues will have grown seven percent, largely due to new revenues from the Transportation Congestion Relief Program. However, by 2010, total revenues will have fallen below the 1999 level, and they will remain under that level through 2020. By 2020, total revenues will have fallen to about 2.5 percent below the 1999 level. There are three primary causes for the projected decline in total revenues. First, all of the local, expiring sales taxes will have expired by 2010, with most ending between 2005 and 2010. Second, inflation will reduce the real value of fuel tax revenues. Third, improved fuel efficiency will slightly reduce the amount of gasoline consumed per mile traveled. The last two trends are only partially offset by a total increase in miles traveled that increases overall the number of gallons of fuel on which fuel tax revenues are collected.

Looking at the results in terms of per capita revenues, the projection shows a much more substantial decline in revenues. For example, even though total revenues will rise a little by 2005, per capita revenues will have fallen slightly (four percent). By 2020, per capita revenues will have fallen over 25 percent, from \$386 per person to \$282 per person.

Figure 2.1
Forecast of Per Capita Transportation Revenues
(\$1999)



Sources: See Appendix II.

Note: Property tax revenue includes only those monies spent on transit and highways.

CHAPTER 3

TRENDS IN CALIFORNIA TRANSPORTATION FINANCE: HISTORICAL AND RECENT TRENDS BY SECTOR

The transportation revenue sources discussed in the previous chapter support a variety of expansion, operation, and maintenance expenditures for highways, transit, and local streets and roads. Traditionally, fuel taxes, transit fares, and property assessments have been the largest sources of funding — and thus provided a strong connection between funding sources and their uses or benefits to the transportation system. This connection weakened as finance mechanisms other than user fees — e.g., sales taxes — grew in importance during the 1980s and 1990s.

This chapter briefly outlines the funding history of California's state highways, local streets and roads, and public transit systems, documenting the relative contribution of the transportation revenue sources evaluated in the previous chapter. In some ways, these financing systems are quite similar. After all, they are products of the same economic and political environment. However, the histories and finance systems of highways, local streets and roads, and public transit systems do differ; so the history of each is discussed separately. These histories are relevant to current discussions of transportation finance simply because today's financing trends have evolved from these past financing systems. Several key trends emerge from this analysis to inform Chapter 4, which presents ideas for improving the current finance system.

3.1 LOCAL STREETS AND ROADS

Although local streets and roads carry a relatively small proportion of California's vehicular traffic, they account for an overwhelming majority of the state's roadway mileage (Zettel, 1980). The local street and road network consists of 53,000 miles of rural county roads, 12,000 miles of urban county roads, 3,000 miles of rural municipal roads, and 67,000 miles of urban municipal roads. A complex mixture of user fees and subsidies from three different levels of government raised roughly \$3.7 billion for this system in 1998. This vast network provides vehicular access to individual homes, offices, and businesses, thereby facilitating private travel. In so doing, it also serves as a system of collection and distribution for other elements of the transportation system. Without local streets, state highways, freeways, and public transit could not provide Californians with adequate access to community resources.

Local roads do not simply facilitate travel, however. They also provide access for postal, police, fire, ambulance, and sanitation services. Similarly, they provide the infrastructure necessary for private services (i.e., package, newspaper, and pizza delivery) on which many citizens depend. Streets and roads also serve as rights-of-way for such utilities as telephone, cable television, water, and sewers. In most areas, local roadways provide access for bicyclists and pedestrians as well. At times, they even serve as playgrounds, community centers, and

parking lots. In short, local streets and roads provide community residents with access to a broad range of services and amenities.

For this reason, local streets and roads, unlike state highways, have traditionally been considered a property-serving benefit. As such, they have been financed primarily by local taxes throughout most of California's history, though some funding has also been provided by federal, state, and private sources. The relative importance of each of these funding sources has varied over the years, but local sources generally decreased in importance, while state highway user fees have become more significant.

3.1.1 Major Revenue Sources

A complex mixture of user fees and subsidies from three different levels of government raised roughly \$3.7 billion for local streets and roads in fiscal year 1997-98 (See Table 3.1). Subsidies make up an overwhelming majority of this total. The only user fees to serve as a significant source of funds for local streets are the state fuel taxes, which contributed \$954 million (State Controller's Office, *Streets and Roads Annual Report*, 1999).

Source	Description	Revenue (\$millions)	% of Total
<i>Local</i>			
General Funds		\$ 734	20%
Special Assessments		\$ 161	4%
Bond Proceeds		\$ 205	6%
Other		\$ 1,172	31%
		<u>\$ 2,272</u>	<u>61%</u>
<i>State</i>			
Fuel Taxes	Motor vehicle fuel consumption	\$ 954	26%
Other State Funds	MV license fee, congestion relief, & other	\$ 229	6%
		<u>\$ 1,183</u>	<u>32%</u>
<i>Federal</i>			
	Federal revenue including MV fuel tax	\$ 266	7%
Total		\$ 3,721	100%
Source: State Controller's Office, <i>Streets and Roads Annual Report</i>, 1999.			

Local tax revenues and state fuel taxes have long been the most important funding sources. In keeping with tradition, localities continue to provide a significant portion of revenues, accounting for roughly 45 to 60 percent of total funding. The state fuel taxes account for approximately 25 to 40 percent. The remainder usually comes from a variety of federal and local programs. Almost two-thirds of this remainder (61 percent) came from local sources, state funds accounted for 32 percent, and the federal government contributed 7 percent (State Controller's Office, *Streets and Roads Annual Report*, 1999).

The most prominent distinction between funding for county versus city roads is that the former are funded by state and federal revenues, while funding for the latter is most often raised locally. In 1997-98, approximately \$980 million was earmarked for county roads. Less than one-third (32 percent) of this money was raised locally. Instead, counties relied heavily on state highway user fees (\$364 million) and federal highway programs (\$128 million). The most important local funding sources for counties included other local governments (\$26 million), general funds (\$25 million), and other receipts (\$212 million) (State Controller's Office, *Streets and Roads Annual Report*, 1999).¹

In contrast, the vast majority of the \$2.7 billion available for city streets was raised locally. Local sources accounted for roughly \$2 billion (72 percent) of the money set aside for municipal streets. General funds (which include property taxes) were the largest single local funding resource, contributing \$683 million. Street taxes and special assessments raised \$138 million while other programs provided \$936 million (State Controller's Office, *Streets and Roads Annual Report*, 1999).²

3.1.2 Past Revenue Trends

During the nineteenth century, road construction was considered to be the responsibility of local government, although some county roads were financed and built privately. These "local" roads of the nineteenth century often served large regions of the state. In urban and densely settled areas, construction and maintenance was usually financed by property taxes and special road assessments. In rural and sparsely populated zones, local governments often relied on poll taxes and work requirements in addition to property taxes (Brown 1998).

Throughout the twentieth century, however, the advent and rapid growth of automobile travel rendered the purely local funding mechanisms of the time insufficient for maintaining California's streets and roads. The weight and speed of early automobiles (sizeable when compared to most horse-drawn vehicles) did tremendous damage to existing roads, many of which were paved only with loose gravel (Brown 1998). Local governments struggled to raise the revenues necessary to build and maintain new roads capable of accommodating motor vehicles.

Local governments therefore welcomed the state's growing involvement in highway construction and finance concomitant with the 1923 gas tax legislation, which required the state to distribute one cent of the two-cent gas tax to counties for road construction and maintenance.³ State gas taxes quickly became the single most important source of funding for county roads. Cities, on the other hand, did not receive state aid, and continued to fund their streets with a mixture of property taxes and special assessments. Despite this, new state revenue sources such

¹ Unfortunately, reliable estimates of the revenue from county transportation sales taxes that is spent on local streets and roads are not available at present. It seems reasonable to suggest, however, that these revenues make up a significant portion of the "other" category.

² Once again, reliable estimates of the revenue generated by special transportation sales taxes are not currently available. We believe, however, that these revenues make up a significant portion of the "other" category.

³ Initially, the legislature mandated that gas tax revenues could not be used for the construction of county roads. Within two years, however, this requirement was lifted.

as the vehicle registration fee, the weight fee, and the gas tax decreased the responsibility of many local governments to fund road construction themselves, thereby easing local governments' struggles to build and maintain roads.

The state initiated a series of public works projects in California cities during the early 1930s, in response to sharply decreased transportation revenues and high unemployment rates. Many of these projects involved construction and maintenance of city streets, and were funded by state highway user fees — specifically, gas tax revenues. The legislature did not raise highway user fees to account for this new responsibility, however. Thus, the state set two significant transportation funding precedents during the Depression that have survived to the present day: cities received state funds for municipal streets, and the state took on new transportation responsibilities without adding new transportation revenues.

The financing of local streets and roads changed very little between the Depression and the 1970s. Although state highway funding was vigorously debated during the late 1940s, local streets and roads received relatively little attention. Cities and counties continued to rely on a mixture of gas tax revenues, property taxes, and other general revenues for transportation funding. During this period, the Collier-Burns Act (1947) produced the only significant change in the funding of local streets and roads. The Act required that 49 percent of all gas tax revenues be distributed to counties *and* cities, increasing the reliance of city governments on state gas tax revenues (Brown 1998).

Since the state began to allocate gas tax revenues for city streets in the 1930s, property taxes and state user fees have remained the two most important sources of funding for municipal streets. Traffic fines became an additional source of transportation funding during the 1960s and early 1970s. During the late 1970s and 1980s, however, the real value of gas tax revenues fell sharply as inflation eroded their purchasing power from \$972 million in 1978 to \$693 million in 1982 (in 1999 dollars) (State Controller's Office, *Streets and Roads Annual Report, 1978-1982*).

Experiencing inflating costs for public services, many jurisdictions compensated for reduced fuel tax revenues by raising property taxes. In 1978, however, a popular referendum known as Proposition 13 severely curtailed the ability of local governments to increase property tax revenues. As a result, many cities and counties found it extremely difficult to finance the construction and repair of local streets and roads. During the early 1980s, local governments experimented with a variety of innovative funding mechanisms to replace the transportation dollars lost to Proposition 13 and inflation. Some solicited private investment in road construction. Others proposed to operate city streets as a public utility. Still others floated bonds. The most popular of these new strategies, however, was to require developers to finance local road improvements. Local governments had long required large-scale developments to pay for road improvements adjacent to their project boundaries. For the first time, however, cities began to assess traffic impact fees to fund off-site and regional road improvements (Colman 1988).

Nevertheless, traffic impact fees alone could not completely replace lost local revenues. As the fiscal position of local governments continued to worsen, the California legislature was

pressured to provide them with a new means of generating significant transportation revenues. In 1980 the legislature and the governor approved a measure allowing the Los Angeles County Transportation Commission to institute a half-percent sales tax for transportation if approved by a majority of the county's voters. The voters did approve such a tax in November of that year. In 1984, the legislature passed a bill allowing local transportation sales taxes to be promulgated via ballot initiative. Since 1984, sixteen counties, containing almost 85 percent of the state's population, have levied local transportation sales taxes. Of the \$1.5 billion generated annually for transportation by these sales taxes, approximately 32 percent, or \$480 million, is used to fund local streets and roads. As a result, municipal governments have increasingly relied on local sales taxes, though municipal use of this funding technique is not as widespread as in counties.

In recent years, traffic impact fees and local transportation sales taxes have come under legal attack from developers and anti-tax groups. The courts have upheld the power of local government to collect impact fees from developers, but now require that such fees be supported by a detailed traffic impact study (Colman 1988). This requirement has significantly raised the administrative cost of collecting developer fees, though it has also created a set of consistent standards that may have made these assessments somewhat more palatable to developers (Cervero 1988b). Similarly, recent court decisions have placed new requirements on local governments wishing to pass transportation sales taxes (they now require a two-thirds vote).

Also unclear is the future viability of state fuel taxes as a source of local funding. Between 1947 and 1989, fuel tax revenues were split nearly evenly between the state of California and local governments. Counties and cities received 49 percent of these funds, while the state kept 51 percent. The revenues generated by increases in the gas tax were distributed in the same proportion. Although inflation greatly reduced the purchasing power of these funds during the 1970s, local governments came to rely heavily on their fuel tax apportionments. In 1990, the state legislature raised the gas tax by 9 cents per gallon, but gave local governments just 2.07 cents of this increase. As a result, cities and counties now receive only 23 percent of total fuel tax revenues, while the state's share has increased to 77 percent (California State Association of Counties 2000).

Thus, the absolute level of funding for local streets and roads has increased steadily over time. In real terms, however, it has not been quite as stable. In fact, the real value of the funds available for local streets and roads has actually decreased during some periods. Measured in 1999 dollars, local street and road funds fell from \$2.9 billion in 1978 to \$2.3 billion in 1982. Backfill of revenues from the state has helped somewhat. But revenue growth has not matched population growth. In 1978, local street and road funding was \$127 per person (in 1999 dollars). Currently, funding is 13 percent below that, at \$110 per person.

3.2 TRANSIT

3.2.1 Major Sources of Subsidy for Transit

Operations and capital expenditures of mass transportation in California are funded with diverse sources from all levels of government. Transit operators and cities, counties, the state, and the federal government all contribute funds. In the State Controller's *Transit Operators and*

Non-Transit Claimants Annual Report for fiscal year 1997-1998, transit operators reported 23 different sources of operating revenue. Overall, passenger fares and funds contributed to the Local Transportation Fund (LTF) from retail sales taxes have been the two most significant and consistent sources of transit operating funds.

In 1997-98, transit operators had aggregate operating revenues (including public subsidies) of \$3 billion. An additional \$783 million was spent on capital expenditures. Across the diverse array of transit operations throughout California, the percentage of revenue from passenger fares ranges from as low as 20 percent to as high as nearly 70 percent. In aggregate, passenger fares provided 29 percent of the operating revenue for that year.

Table 3.2			
Sources of Transit Operating Revenue, 1997-98			
Source	Description	Revenue (\$millions)	% of Total
<i>Operating Revenues</i>			
Passenger Fares	A direct user charge	\$ 877	29%
Non-Fare Transit Operator Revenues	A direct revenue	\$ 109	4%
		\$ 986	33%
<i>Local Assistance</i>			
Local Option Sales Taxes	Retail sales (0.5-1.0%)	\$ 439	15%
Special District Sales Taxes	Retail sales (0.5%)	\$ 347	12%
General Operating Assistance	Local revenue sources	\$ 234	8%
Property Tax	Local property taxes	\$ 101	3%
Other Local Assistance	Mixed local sources	\$ 44	1%
		\$ 1,165	39%
<i>State Assistance</i>			
TDA - Local Transportation Fund (LTF)	Retail sales (0.25%)	\$ 684	23%
TDA - State Transit Assistance Fund (STAF)	Motor vehicle fuel consumption	\$ 54	2%
Other State Assistance	State revenue sources	\$ 14	0%
		\$ 752	25%
<i>Federal Assistance</i>			
	Federal revenue including MV fuel tax	\$ 97	3%
Total		\$ 2,999	100%

Source: State Controller's Office, *Transit Operators and Non-Transit Claimants Annual Report, 1999*.

Sources of subsidy for transit consist primarily of sales taxes, operating assistance from local general revenue, other state sources, and federal sources. Locally enacted and statewide retail sales taxes deposited into the LTF are major sources of revenue for both operations and capital expenditures for transit. Combined, sales taxes provided 49 percent (\$1,469 million) of transit operating revenue in 1997-98.

Cities and counties contributed \$234 million of their general funds to support transit operations. This local general operating assistance comes from sales taxes (one percent of the

statewide 7.25 percent sales tax is returned to cities and counties for general purposes), property taxes (especially counties), and in some instances developer fees.

Other state sources for transit subsidy include the Public Transit Account (PTA), State Transit Assistance Fund (STAF), and general funds. Funds for the PTA are derived from a portion of the retail sales taxes on gasoline and diesel fuel. The STAF receives 50 percent of the funds that go into the PTA, which are allocated to transit operators by formula (50 percent by population and 50 percent by ridership). In 1997-98, STAF funding provided \$54.4 million for transit operations (1.8 percent of total revenues) and \$27.1 million for capital projects. As will be discussed below, the STAF has been a volatile revenue source subject to political shifts. In 1999 dollars, the STAF provided \$153.8 million for operating and capital purposes in 1983-84 (the highest amount in its history), \$16.1 million in 1988-89 (the lowest), and \$84.6 million in 1997-98. The rest of the funds in the PTA are allocated by the legislature for capital projects.

Federal government support for capital acquisitions began in 1964. Operating assistance was begun in 1974. California receives significant support for capital acquisition from federal sources. In 1997-98, the federal government provided \$403 million (51 percent of total expenditures) for transit capital expenditures. The sources of funds for operating revenues and capital acquisition in fiscal year 1997-98 are summarized in Tables 3.2 and 3.3.

Source	Revenue (\$millions)	% of Total
<i>Local</i>	\$ 162	21%
<i>State</i>		
General Fund and Other	\$ 106	14%
TDA - LTF	\$ 40	5%
T.P. & D. Guideway	\$ 35	4%
TDA - STAF	\$ 27	3%
Article XIX Guideway	\$ 11	1%
<i>State Total</i>	\$ 218	28%
<i>Federal</i>	\$ 403	51%
Total	\$ 783	100%
<i>Source: State Controller's Office, Transit Operators and Non-Transit Claimants Annual Report, 1999.</i>		

3.2.2 Trends in Transit Revenue Sources

Until the mid-1960s, in most places public transit did not receive much government support. Most transit operators were private companies. They covered operating costs and paid off loans using revenue from fares. Early in the twentieth century, a number of transit operators were owned by real-estate developers or land speculators. In these cases, the extension of transit

service to undeveloped areas increased the value of the newly accessible land. Revenues from operating the transit service were augmented by profits from appreciation in land values. This financing system of user fees was both viable and in principle fair — those who benefited from the infrastructure investment (both users and property owners) paid for it. Government participation in the financing of transit was not necessary at this time. However, local government did influence the system by granting transit operators the right to routes and in many cases mandating maximum fare levels.

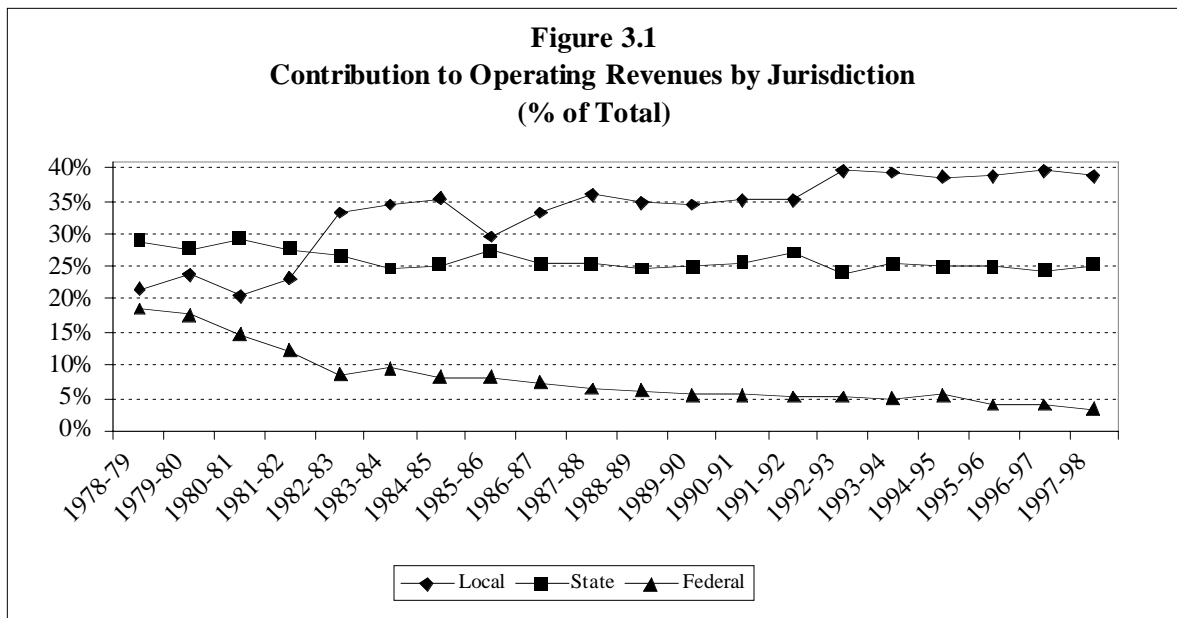
The appeal of personal travel via the automobile and a government-financed road infrastructure contributed, among other factors, to a steady decline in transit ridership in California from the 1930s through the 1960s. Additionally, local governments limited the ability of transit operators to raise fares to keep pace with rising operating costs or make up for declines in ridership. In cases where fares were increased, this served only to further reduce ridership. As fare revenues and opportunities for value-capture through land speculation declined, capital expenditures were deferred, and the quality of rolling stock deteriorated. Many transit operators went into bankruptcy or eliminated some services.

Local, state, and federal governments faced the choice of allowing transit service to disappear or taking it over themselves. The most common solution was for existing local governments or newly formed transit districts to acquire transit companies. At first, local governments used local property tax revenues to supplement fare revenues, but over time they requested assistance from both the state and national governments. Federal participation in transit finance began with the Urban Mass Transportation Act of 1964, which provided discretionary funds for upgrading transit capital equipment. In 1974 the federal government began to provide operating as well as capital assistance for transit. California state participation in transit finance began with the Transportation Development Act (TDA) of 1971. The act created both the Local Transportation Fund (distributed by formula) and the Transportation Planning and Development Account (distributed by legislative discretion; now the Public Transit Account). The primary state funding source for transit was retail sales taxes. In 1979, an amendment to the TDA added a portion of sales taxes on fuels as a source for the Public Transit Account.

Operating subsidies came under increasing scrutiny as some policy analysts argued that they protected operators from escalating costs and thus promoted inefficiencies, poor management, and costly labor settlements (Cervero 1988a). Federal operating assistance peaked in the late 1970s and has since fallen due to a number of factors, from Ronald Reagan's federalism to the perception that operating subsidies had been ineffective and had bloated the costs of transit operators. In 1978-79, 18.5 percent of California transit revenues came from federal sources. In 1997-98, the percentage was down to 3.2 percent, or \$97 million. In 1978, the passage of Proposition 13 increased the need for a new local revenue source. At the same time that federal subsidies were falling, Proposition 13's restrictions on property taxes left local governments without the revenue to increase their own subsidies. While operating subsidies remained flat at the state level throughout the 1980s, the state authorized counties to ask their voters to approve limited-term sales taxes to fill the gap left by declining federal operating

assistance. Proceeds of these sales taxes, which were widely adopted, frequently fund transit (along with highways and local streets and roads). Most of the money goes to new construction, which is thought to be more appealing to voters than operating funds.

Since 1978-79, transit finance in California has evolved to a point that many consider unsustainable, due to reliance on local retail sales taxes as well as an emphasis on capital rather than operations expenditures. Both the number of passengers and their vehicle miles traveled on transit has grown since the late 1970s. Federal, state, and to some extent local support of capacity expansion through capital assistance contributed to the increase in statewide vehicle and passenger miles traveled from 288 million and 1.03 billion in 1979-80 to 426 million and 1.20 billion, in 1997-98, respectively. Passenger fare support for operations has been a consistent contributor during this growth period, providing 28 percent of operating revenues in 1978-79 and 29.2 percent in 1997-98. Local sources, primarily the local option sales taxes described earlier, have provided operating support to replace declining federal operating assistance (see Figure 3.1). This reliance on local sources has increased reliance on retail sales taxes to support transit. In 1978-79, various retail sales taxes provided 34 percent of transit operating revenues (\$703 million in 1999 dollars). In 1997-98, the percentage was 49 percent (\$1,525 million in 1999 dollars).



Source: State Controller's Office, *Transit Operators and Non-Transit Claimants Annual Report*, for fiscal years 1979-80 to 1997-98.

Transportation spending has increasingly emphasized capital expenditures over operations. In the 1990s (through fiscal year 1997-98), capital expenditures averaged \$1,044 million per year versus \$688 million in the 1980s (all in 1999 dollars). Along with relying more heavily on voter-approved retail sales taxes (which bias expenditures towards new capacity), other factors have contributed to this development. At the federal level, the Intermodal Surface Transportation Act of 1991 (ISTEA) increased the ability of states to use federal transportation

dollars to fund transit capital projects. At the state level, Propositions 108 and 116 in 1990 authorized the state to sell \$2 billion in general obligation bonds for capital expenditures on intercity, commuter, and urban passenger rail transportation. As a result, from 1978-79 to 1991-92 (before significant disbursements from Proposition 108 and ISTEA), California spent \$3.90 on transit operations revenues for each dollar of capital expenditures (on an inflation-adjusted basis). Since that time, operations expenditures have amounted to \$2.46 for each dollar of capital expenditures.

The recently approved Transportation Congestion Relief Program (TCRP) continues the state's participation in financing transit capital projects. The Transportation Congestion Relief Program will provide \$3.2 billion in state funds for local transit capital projects. In most cases this money is intended to cover only part of the total cost, so, local governments will be required to provide substantial capital funds to complete the earmarked projects. The plan also does not provide funds for operating the new transit services, which are estimated to require \$240 million to \$280 million a year in operating subsidies (Legislative Analyst's Office 2000e). The TCRP represents a departure from historical transit finance in that it rejected general obligation bonds as a funding source, instead turning to current and future general revenues (however, a significant portion of the "general revenue" comes from retail sales taxes on fuel). This funding program also represents a departure in that while voter-approved funds for transit projects are usually accompanied by project lists to offer something appealing to voters, the projects selected for the TCRP appeal directly to those with influence in the state capital.

Providing adequate sources of revenue for the operation of existing service, as well as the new capacity created with the investments of the 1990s and the TCRP, is a key dilemma for the future of transit finance. Given the current burden of local support for operations, the potential expiration of local option sales taxes, and the required match for capital expansion, transit operators will continue to be faced with the prospect of cutting existing services to finance new ones.

3.3 HIGHWAYS⁴

3.3.1 Major Highway Revenue Sources

The California state highway system is financed by a wide variety of user fees, sales taxes, and general revenues. Highway finance differs substantially from both transit and local street and road finance in that most of the revenues are generated from user fees at the federal and state level, rather than from subsidies with a significant amount of local support. The contribution of each of these revenue sources to highways is detailed in Table 3.4 below.

User fees provided almost ninety percent of the nearly \$7.1 billion raised for California highways in 1998-99. Federal and state motor fuel taxes are the primary source of highway revenue. They generated approximately \$3.9 billion in 1998-99, or about 56 percent of the state's

⁴ A more detailed version of this section appeared previously in Brown et al. 1999.

total highway revenues. Other user fees, including state tolls, vehicle registration fees, driver's license fees, and truck-weight fees, raised just over \$2.3 billion for highways that year.

Subsidies make up the balance of highway revenues. Local option sales taxes provide a growing share of revenues, raising an estimated \$362 million for highways in 1998-99. General fund revenues contributed from the state and federal governments reached over \$450 million, most of them contributed by the state.

Not included in this discussion of highway revenues are bond proceeds. Bonds are not considered a revenue *source*; they are a mechanism for borrowing money but do not generate new revenues. Bonds used for state highways have been relatively insignificant during the last ten years, with the exception of 1994, when \$1.3 billion in highway revenue came from state bond proceeds.

Source	Description	Revenue (\$ millions)	% of Total
<i>User Charges</i>			
Federal Fuel Taxes	gas: 18.4¢/gallon; diesel: 24.4¢/gallon	\$ 1,993	28%
Federal Miscellaneous Fees	tire taxes, sales taxes on trucks, weight fees	\$ 262	4%
State Fuel Taxes	gas & diesel: 11.54¢ of 18.0¢/gallon tax	\$ 1,940	27%
State Miscellaneous Fees	registration, weight and driver's license fees	\$ 1,843	26%
State Toll	Varies by facility	\$ 209	3%
		\$ 6,246	88%
<i>Subsidies</i>			
Local Sales Taxes -- Expiring	varies between 1/2-1¢ in 18 counties	\$ 362	5%
State General Fund	amount varies by year	\$ 432	6%
Federal General Fund	amount varies by year	\$ 20 *	<1%
		\$ 814	11%
Total		\$ 7,061	100%
Note: Sources explained in Chapter 2			
* 1997-98 data adjusted to \$1998-99 with Consumer Price Index			

3.3.2 Trends in Highway Revenue Sources

The evolution of this complex system has been marked by four major themes during the twentieth century. The first is that the structure of the highway finance system has been dependent on, and therefore has evolved with, available collection and administrative technology. Second, changes to the system have been incremental, as opposed to revolutionary, except in periods of extreme crisis. Related to this is the third theme, that highway finance tends to

disappear from the legislative agenda except in periods of perceived crisis. Fourth, the highway finance system has lost some of its original philosophical rationale — the principle of user finance. California's early legislators recognized that motor vehicles impose significant costs on California roads. As a result, legislation traditionally mandated that drivers pay for the construction and maintenance of state highways. However, recent political negotiations and compromises have led to an increasing reliance on finance instruments unrelated to highway use to maintain fiscal stability. Collectively, these four themes explain the incremental transformation of the system of highway finance in California from a user-based system to one in which the revenue-raising programs are increasingly disconnected from actual travel. And together they pose four fundamental challenges to meaningful reform.

California's first highways were financed locally with property and poll taxes, the conventional wisdom being that roads were the responsibility of local governments. The arrival of the automobile brought several changes. Cars placed an enormous strain on existing routes, and expensive new construction materials were needed to build roads capable of withstanding heavy traffic in all weather conditions. Automobile owners lobbied hard for better roads through interest groups such as the Automobile Club of Southern California. Doubting that local governments had the revenue-generating capacity and construction expertise required for large-scale highway projects, automobile clubs lobbied the legislature for direct state involvement in road finance and construction. In 1909, their political pressure prompted the legislature to pass the State Highway Act, which created a 34-route, 3,082-mile system of highways funded by a combination of road construction bonds and vehicle license fee revenues.

Unfortunately, these funding sources were insufficient to fully finance construction of the highway system. Between 1915 and 1922, the state attempted to raise more money for road building by increasing the vehicle registration fee, enacting a weight fee on heavy vehicles, and issuing additional bonds, but these methods also proved inadequate. Convinced that construction would proceed more rapidly under a different highway finance system, the State Board of Equalization and the California Highway Commission proposed significant changes in 1922. Specifically, they advocated a tax on gasoline and higher weight fees on heavy vehicles. The legislature agreed, and the following year it promulgated a two-cent-per-gallon gas tax, a modest increase in vehicle registration fees, and a new tax on the gross receipts of commercial for-hire truck operators. The gas tax proceeds were evenly divided between the state highway fund and aid to counties.

Between 1923 and World War II, highway finance was marked by expanding commitments, but relatively few structural changes. The legislature extended the idea of the gas tax in 1937 when it enacted the diesel tax (Zettel 1946). Vehicle registration fees were also raised, with the largest increases levied on heavy vehicles. In contrast, new proposals not related to fuel taxes and registration fees were less successful. The legislature considered an innovative proposal for a ton-mile tax, but the initiative was successfully opposed by the trucking industry on the grounds that it would impose an unreasonable administrative burden. Similarly, a 1937 proposal to build toll highways in California received very little support because of concerns that the cost of administering tolls would be too high.

After World War II, the state faced a serious highway funding shortfall. The war years had brought California's highway program to a standstill as materials and workers were diverted to the war effort. Highway use, on the other hand, had continued to grow rapidly. As a result, much of the highway system was in poor condition, and the state lacked the resources to make needed repairs. In 1947, Senator Randolph Collier drafted Senate Bill 5, a proposal to overhaul California's highway finance system with large and controversial increases in the fuel taxes and vehicle registration fees. Senate Bill 5 caused even more concern by attempting to restructure truck fees with a ton-mile tax. Collier's proposal generated intense hostility from two powerful political constituencies: the trucking industry opposed the ton-mile tax, and the petroleum industry opposed the large fuel tax increases. The vigorous opposition ultimately produced a series of legislative compromises that watered down the bill. The resulting legislation, known as the Collier-Burns Act of 1947, included small increases in the fuel taxes and vehicle registration fees.

From 1947 until 1959, highway finance in California receded into the background, save for occasional discussions about the significance of federal highway legislation to the state's road system. Then Congress passed the Federal Highway Act of 1956, which offered large federal matching grants to any state willing to take part in the construction of the interstate highway system. The Act won broad support because it demanded few financial sacrifices while spreading its benefits across many constituencies (Rose 1990). By 1959 new federal highway money, combined with surpluses in California's own state highway account,⁵ prompted the state legislature to embrace a statewide system of limited-access freeways. Like the federal program, the state's initiative enjoyed nearly universal support because it provided 12,241 miles of high quality roads to California motorists without raising taxes (*Journal of the Assembly* 1959).

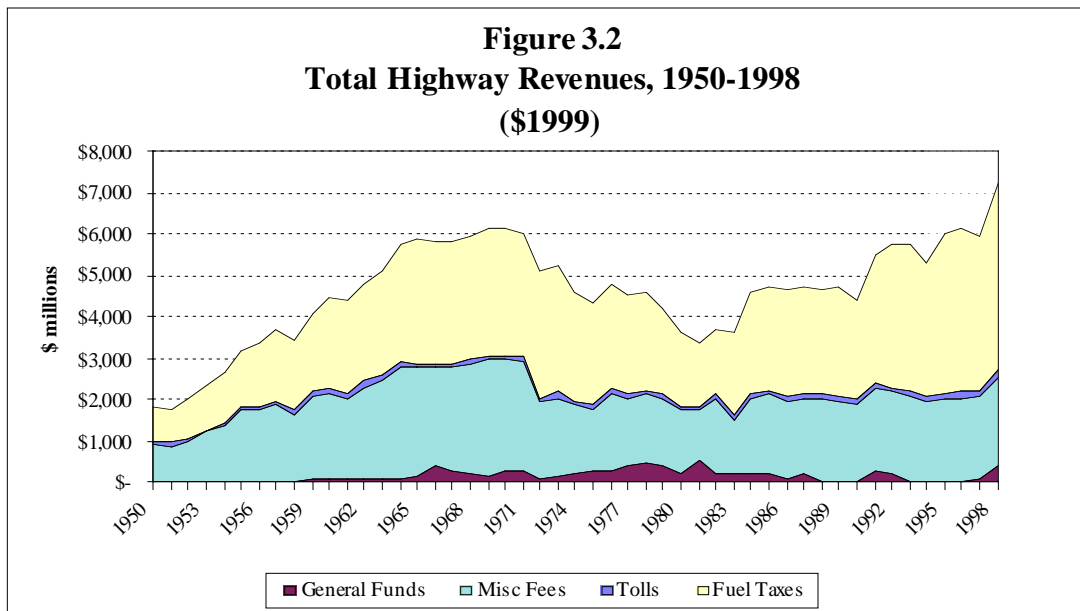
Inflation-adjusted revenues, particularly revenues from fuel taxes, increased steadily through the 1960s in large part due to increases in travel and periodic increases in the state and federal fuel tax rates. As Figure 3.2 indicates, other revenue sources, including miscellaneous state and federal fees which are based in large part on the number of cars and drivers, increased slowly but steadily.⁶ Thus, in absolute terms, highway revenues have undoubtedly increased over time. However, as Figure 3.2 shows, once these revenues have been adjusted for inflation, the highway finance picture over time is not nearly as stable as it seems. The era of highway budget surpluses came to an end in the late 1960s and early 1970s, as rapid inflation lowered the real value of California's gas tax receipts. Fuel taxes are especially susceptible to inflation, since they are based on the number of gallons sold and do not produce more revenue as prices rise. This situation is not an inherent flaw of the gas tax, for the problem can be corrected if the fuel tax is raised periodically along with inflation. However, neither the state nor the federal fuel tax was raised for nearly twenty years — from 1964 until 1982, when the state fuel tax was raised two cents and the federal fuel taxes were raised five cents per gallon. Note that general fund revenues

⁵ The state highway account had a surplus of \$110 million in 1957 and \$145 million in 1958 (*Highway Statistics* 1957-1958).

⁶ The one exception is in 1972, when the amount of revenue from federal fees fell 60 percent. This accounts for the large fall in total miscellaneous fees seen in Figure 3.2.

seemed to increase at times when the revenue from fuel taxes was actually decreasing in real terms.

At the same time, inflation also significantly increased the cost of building and maintaining California's highway network. Highway construction costs grew significantly faster than general inflation,⁷ while high gas prices and federal fuel efficiency standards led many Californians to purchase more fuel-efficient cars. As fuel efficiency improves, cars drive farther per gallon of gasoline, and thus pay less in fuel taxes. As measured by overall passenger car miles per gallon ratings, fuel efficiency of American cars increased from 14.3 miles per gallon in 1960 to 22.6 miles per gallon in 1995. Despite the growth in popularity of sport-utility vehicles, new automobiles drive about twice as many miles per gallon as cars of thirty years ago, so drivers today pay far less in fuel taxes per mile of driving. As a result, fuel consumption, and therefore gas tax revenues, fell sharply even as miles traveled continued to rise.



Source: *Highway Statistics 1950-1998*.

Inflation in the 1970s was accompanied by several new programmatic commitments, further straining California's highway finance system. During the 1970s, money from the State Highway Trust Fund was diverted to help fund urban mass transit, the Department of Motor Vehicles, and the California Highway Patrol. The state attempted to make up for the loss by adding two new funding sources for the highway trust fund. The Transportation Development Act of 1971 extended the state sales tax to gasoline and used the funds to help finance urban transit. The state also began to use sales tax revenues for highways. These programs were somewhat successful in generating revenue for the highway trust fund, as they were more responsive to inflation than fuel

⁷ In California during the 1960s, general inflation (as measured by the Consumer Price Index) averaged 2.4 percent, while the highway construction cost index rose 8.2 percent; in the 1970s, general inflation averaged 8.7 percent versus 12.1 percent for highway construction costs (Bureau of Labor Statistics 1998).

taxes. They were not, however, closely tied to the principle of user finance. Indeed, the use of sales tax revenues to fund highway projects often meant that individuals without access to automobiles subsidized use of the roads by higher-income auto owners.

During the late 1970s, a second inflationary shock further reduced transportation revenues. At first, officials responded to the looming funding shortfall simply by extending the construction period of various projects. As the fiscal picture grew bleaker, however, Caltrans was forced to scale back planned highway routes. Even so these cost-cutting measures were not enough to avert a serious funding shortage. In the spring of 1980, Caltrans made the startling announcement that the state faced a \$915 million shortfall in the State Transportation Improvement Program. The legislature responded with a bill to raise fuel taxes (Senate Bill 215), which passed with very little controversy in spite of the sizeable tax increases it contained. One of the most important provisions of SB 215 was a clause enabling counties to levy sales taxes to fund local and regional transportation projects. Today, this is an important source of transportation funding.

During the 1989-1990 legislative session, increasing traffic congestion and the Loma Prieta earthquake combined to put highway finance back at the top of the state legislative agenda. Sensing that the highway system was in a state of crisis, the legislature responded with several transportation funding bills. Of these, two eventually gained passage: Senate Bill 300 increased the gasoline tax and raised commercial vehicle weight fees, and Assembly Bill 471 raised diesel fuel taxes to 18 cents per gallon (*Journal of the Senate* 1990; *Journal of the Assembly* 1990).

In the last decade, fuel tax revenues have increased somewhat (see Figure 3.2).⁸ These increases are in large part due to state as well as federal increases in gas and diesel tax rates. Specifically, in the last decade the California fuel tax doubled from 9 cents per gallon to 18 cents per gallon for both gasoline and diesel. The federal gas tax also increased similarly from 9.1 cents per gallon to 18.4 cents per gallon, while the diesel rate was raised 9.3 cents to a total of 24.4 cents. Figure 3.2 also shows a rather large increase in fuel tax revenues in 1998, largely attributable to the termination of a federal practice of allowing fuel taxes to accumulate in the trust fund as a way to reduce federal spending deficits.⁹ The impacts of inflation and increasing fuel efficiency nevertheless remain significant. The revenues from the fuel taxes have only increased about seventy percent (rather than doubling).

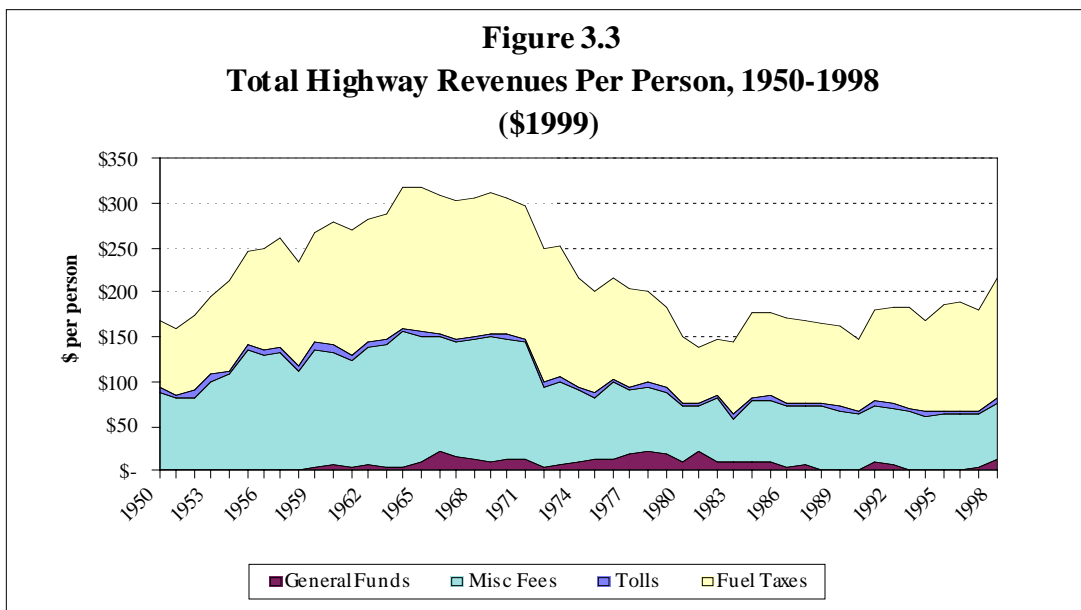
Other factors also erode the ability of revenues to keep up with growing demands on the highway system. For example, California's highway revenues have kept pace neither with the

⁸ Note that this and the following figures do not include local option sales tax revenue. The amount of local option sales tax revenue spent annually on highways over time is not available. In 1998-99, these revenues accounted for five percent of total highway revenue.

⁹ Between 1990 and 1997, a portion of the federal gasoline and diesel taxes was retained in the Federal Highway Trust Fund for federal budget balancing purposes (2.5 cents starting on December 1, 1990, 6.8 cents starting on October 1, 1993, and 4.3 cents starting on October 1, 1995). The trust fund balance had reached 22.4 billion when this practice ended on October 1, 1997. Spending authorized in TEA-21, the current transportation appropriations legislation, will reduce the surplus in the trust fund to about \$8 billion, which is considered an appropriate three-month safety cushion in case of emergency.

state's rapidly growing population, nor with increases in vehicle miles traveled. Revenue projections adjusted only for inflation like those shown in Figure 3.2 can be misleading. The relationship between real revenues and system use tells a more important story. As California's population has increased, so has the need for transportation services in the state. Figure 3.3 shows that after adjusting revenues for population growth, the erosion of the fuel tax from its high point in the mid-1960s is even more dramatic, and the apparent recovery in the last decade due to fuel tax increases is nearly nonexistent. Not surprisingly, other revenue sources demonstrated more stability when analyzed on a per capita basis, because most of these other fees—like driver's license fees and vehicle registration—are paid per person. General fund revenues demonstrated a bit more volatility on a per capita basis, but again, the largest increases in revenue tended to come in years when the fuel tax was not keeping pace with either population or inflation.

While population increased rapidly over the last several decades, vehicle miles traveled per person increased at an even faster rate, further eroding the adequacy of highway revenues, especially the fuel tax revenues. Adjusting revenues for vehicle miles traveled is the most direct way of incorporating demand for the transportation system into analysis of revenue streams. Instead of considering how much the average individual paid, VMT-adjusted revenues show how much individual users paid *per mile* of driving, and is therefore the best way of evaluating the ability of the tax to keep pace with demand over time.

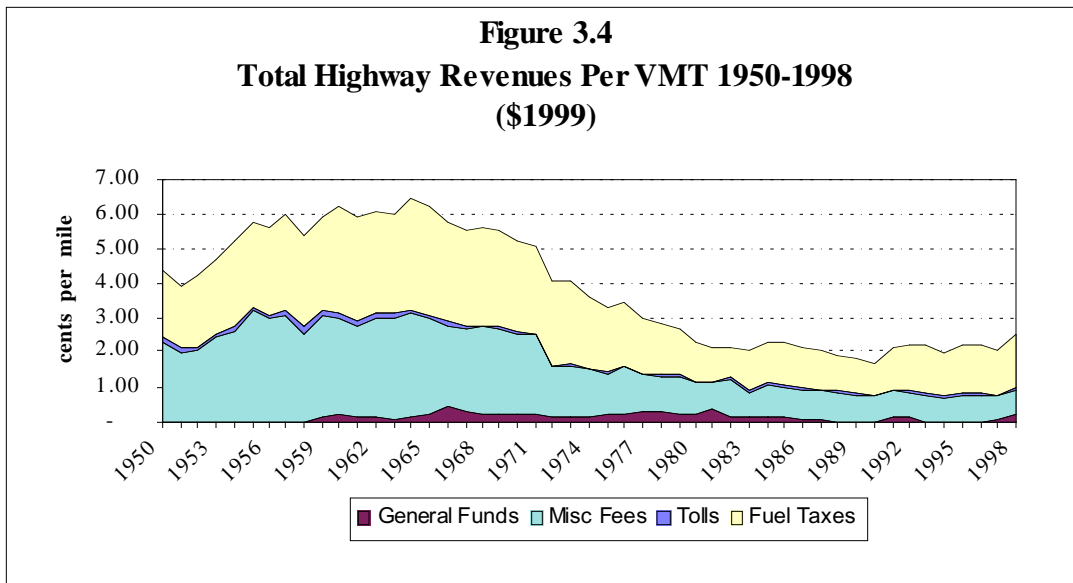


Source: *Highway Statistics 1950-1998*.

Figure 3.4 indicates that despite the recent increases in fuel tax rates, the total amount of revenue for highways collected per vehicle mile traveled has increased only in recent years. Still, it is currently only 2.52 cents per VMT, slightly less than 40 percent of the 1964 high of 6.40 cents per VMT. This analysis shows that adjusting only for inflation, or only for inflation and population, does not compensate for the extra demands placed on the transportation system by

increasing VMT. Given that California is expected to add an additional ten million people in the next ten years, decreasing revenues per person and per vehicle mile traveled are likely unless the funding mechanisms discussed here are periodically raised to keep pace with the growing demand.

Since the fuel tax increases of the 1990s, the state has taken little action on highway finance. Recent legislative proposals have focused on the idea of indexing tax rates to inflation, eliminating the sales taxes on gasoline and diesel, and using local gasoline taxes to fund regional transportation needs. However, the present economic boom has made it unlikely that the legislature will feel compelled to consider any significant changes to the current system of state highway finance.



Source: *Highway Statistics 1950-1998*.

CHAPTER 4

IMPROVING CALIFORNIA'S REVENUE-RAISING SYSTEM

The preceding chapters of this report present an overview of the current transportation finance system in California: its origins, the current sources of revenue, and trends in financing each major sector of the transportation system. This chapter switches focus to the future, looking at ways California can adjust its system of raising revenue to best serve the state's upcoming transportation needs.

As explained in earlier chapters, there are two important reasons to consider changing the ways we raise money for transportation. First, while the state does not face an immediate transportation funding crisis, intermediate and long-term future revenues are not likely to keep up with program needs as they have been defined by state agencies and a variety of advocacy groups. Second, and perhaps more importantly, by adjusting the specific tools used to raise revenue, California can improve the efficiency and equity of its transportation finance system. The recommendations in this chapter are intended to inform a public discussion that hopefully will lead to the adoption of a more integrated, systematic, and coherent approach to transportation finance in California.

In considering overall improvements to the system, it is helpful to think about the transportation system in terms of local vs. long-distance travel facilities. The rest of this chapter is therefore divided into two sections. The first looks at how we can maximize reliance on user fees to pay for intercommunity travel. The second half of the chapter addresses local transportation and ways to improve the system of property access charges and subsidies that support local road and transit systems.

4.1 LONG-DISTANCE TRAVEL FACILITIES

The traditional function of user fees—building and maintaining facilities for nonlocal travel—remains valid and appropriate, primarily because user fees are efficient and equitable. The only exception to this principle should be for intercity rail or bus services, where user fees will not be anywhere near sufficient.

Recommendation: California should rely primarily on user fees for the maintenance and expansion of the state highway system. If the state deems intercity rail or bus to serve a justifiable public function, then these services should be subsidized with revenues from the state's general fund.

There is no doubt that sufficient user fees can be generated to finance the highway system. Fuel taxes should continue to be the core of the highway finance system with supplemental revenue raised through existing annual user fees, tolls, and, potentially, local fuel taxes. However, it is doubtful that intercity bus and rail investments can cover costs through user fees (passenger

fares) alone. In those cases where there is a compelling reason to provide such services, it may be appropriate to use state general fund revenues to support intercity transit. This is the only case in which general funds should be used to support long-distance travel facilities. The remainder of this section discusses in more detail recommendations for each of the different revenue sources.

4.1.1 The Foundation: Fuel Taxes or a Vehicle Mile Traveled Fee?

Recommendation: The fuel tax has been and, at least for the next five years, should continue to be the primary source of user-based support for the state's highway system.

As explained in Chapter 2, fuel taxes have been excellent revenue generators, raising tens of billions of dollars for California's highways and providing a relatively predictable revenue stream. No other source of highway funding raises so much money in such an efficient, equitable, and politically acceptable way. Fuel taxes should be continued, and increased to keep pace with inflation and improving fuel economy.

As discussed previously, one of the chief problems with fuel taxes is that the revenues do not keep pace with inflation. Past experience suggests that the legislature will only raise the rate if there is both a pervasive sense of crisis in transportation funding and a strong coalition of interests in favor of raising the tax. While waiting for such a situation to develop before adjusting fuel tax rates is undesirable, it may be unavoidable. The current combination of high fuel prices and relatively flush state coffers makes any rate increase unlikely to garner either legislative or popular approval. "Indexing" the rate, or automatically adjusting fuel tax rates to keep pace with inflation, would be one way to keep fuel tax rates in step with inflation without requiring constant legislative action. However, distrust of indexed fuel taxes is substantial enough that their adoption is highly unlikely in the foreseeable future.

The second, less immediate problem with fuel taxes is that increased fuel economy and the potential introduction of alternative fuel vehicles on a substantial scale could make the motor fuel tax a less effective revenue generator. One suggested alternative to fuel taxes is a vehicle-mile-traveled (VMT) fee. As the name suggests, drivers would pay a fee for every mile traveled. The standard proposal assumes a regular (probably annual) odometer reading of each vehicle, though another option is to charge the fee each time a driver purchases gas. Like motor fuel taxes, a VMT fee 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 fuel taxes, or else as a replacement for them. If the VMT fee and fuel taxes were both collected, the levels of each could be set to generate total revenues at any level—below, equal to, or greater than current revenues. (For example, a VMT fee of one cent per mile would raise about \$2.8 billion a year, or almost as much as the current state fuel taxes).

An evaluation of the merits of an annual VMT fee suggests that currently it is inferior to fuel taxes as a source of revenue. Even though a VMT fee would keep revenues stable in the face of changing vehicle fuel efficiency, and the charge would cover alternative fuel vehicles, the fee would impose significant administrative burdens beyond those associated with fuel taxes. Also,

VMT fees currently lack the political support that would be necessary to implement them. However, the idea of VMT fees is worth pursuing as a medium- or long-term possibility. In the next five to ten years, improving technology and the potential impact of alternative fuel vehicles may make VMT fees much easier to implement and much more desirable.

Annual VMT fees fare quite well under several of the evaluation criteria laid out in Chapter 1. Since road maintenance costs correlate with miles traveled, the fee links the charges to costs imposed on the system. Also, an annual VMT fee would provide stable and predictable revenue streams, since statewide VMT is relatively predictable.

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 that increase pressure for expensive additions to road capacity: someone driving during the peak hour on jammed freeways would pay the same fee as a driver traveling the same distance on an empty rural highway. VMT fees also have the same limitation as fuel taxes in that both are assessed as flat rates and thus lose their real value in the face of inflation.

Annual VMT fees have less potential to introduce transportation efficiency benefits than fuel taxes because once-a-year fees communicate to drivers much less information about the social cost of their travel. Since most drivers buy gas regularly, they regularly incur the fuel tax. Even if they're not aware of the tax, they're aware of what they pay for gas, which may have some influence on how much they drive. In contrast, while a large once-a-year payment might temporarily remind drivers that driving is expensive, it could also serve to make them angry, and they won't necessarily see the relationship between their driving and the cost it imposes on society. Currently insurance premiums are collected only once a year, and anecdotal evidence suggests that drivers do not consider insurance to be a “cost of driving” in the same way that they view fuel purchases.

VMT fees are less able than fuel taxes to charge heavier vehicles higher rates for the extra pavement damage they cause (fuel use rises at least somewhat proportionately to vehicle weight). A further problem with annual VMT fees is that, unlike fuel taxes, they do not provide any economic incentive to drive more fuel-efficient vehicles, though this issue could be solved if the charge per mile for each vehicle varied with the average fuel efficiency of the make, model, and year.

Another disadvantage of an annual VMT fee over fuel taxes is that the VMT fee could create difficulties for low-income drivers. Even if a VMT fee raised the same amount of money as a fuel tax over the course of a year, because the VMT fee is assessed as an annual payment, households would need to budget carefully. For example, with a VMT fee of one cent per mile, a household driving 10,000 miles per year would pay \$100. For low-income households, coming up with \$100 in a lump sum could be a serious hardship.

There are also substantial difficulties in administering and collecting an annual VMT fee. The greatest hurdles are ones of administrative expense, inconvenience for drivers, and potential evasion. It might be possible for the Department of Motor Vehicles (DMV) to send VMT bills as part of the existing vehicle license fee and vehicle registration process, in which case additional

bureaucracy would be minimal. However, such a system might lead to an increase in unregistered vehicles if drivers saw that by not registering they could avoid paying the VMT fee. If the lump-sum payments were substantial, the incentive for evasion would be high. This concern is based on precedent. The Legislative Analyst's Office reports that in 1997-1998 vehicle renewals for the first quarter fell markedly from the previous year, and the authors conclude that this may well have been the result of a newly instituted requirement that owners of registered vehicles produce proof of insurance (Legislative Analyst's Office 1998). The DMV might also face serious nonpayment problems if families found the annual lump sum payment difficult to make.

Vehicle owners would be inconvenienced by having to make special trips for official odometer readings. Odometers could probably be read annually by approved vehicle repair businesses, in the same way smog checks are currently performed. In fact, the odometer reading could probably be combined with California's biennial smog checks, and only in in-between years would the vehicle owner have to make a special trip for an odometer reading. The system would thus inconvenience drivers to the extent that they would have to make a special trip to a repair shop every other year. Also, it's likely most drivers would have to pay a small fee for the odometer reading.

The potential for fraud is worrisome. From a technological standpoint, such a fee would require the development of an acceptably tamper-proof odometer. While some authors argue that such a device is within our current technological capacity, there is considerable debate as to whether or not this is true. If odometers are not tamper-proof, then evasion could be a problem. There are currently reports of a small industry of people who turn back odometers before used cars are sold; the market for such services would be greater if people saw this as a way to avoid large VMT fee payments. A further avenue for fraud would be for vehicle owners living in California to register their vehicles in other states as a way to avoid paying VMT fees. This issue also raises the difficult questions of how the state would collect fees from out-of-state motorists, and how it would handle California drivers who drive substantial distances out of state.

A number of suggestions have arisen to address many of the objections raised above. One proposal is to assess the fee each time a driver purchases gas. Different technical options exist for doing so. In one scenario, all vehicles would be equipped with an electronic tag indicating the vehicle make, model, and average mileage per gallon of fuel. Gas stations would have equipment at the pumps to read these tags and add the fee onto the price of the gas. Alternative fuel powered vehicles would, of course, require a different charging mechanism. Another option, more sophisticated but also more complicated to implement, would be to equip vehicles with electronic odometers that could be read by machines at fuel stations. When a driver purchases gas, a reader at the pump would assess how many miles the vehicle had been driven since the previous trip to a gas station and charge the proper per-mile fee. A major drawback of these two options is that they would entail a huge investment to equip all vehicles and gas stations.

The efficiency of VMT fees improves the closer the linkage between the use of road facilities and payment. It would also be possible to track the exact time, location, and distance of every trip a vehicle makes. With this type of VMT system, the fee charged to drivers could be different for travel on different road segments, at different times of day, or even according to the

level of congestion at the time a trip is made. For example, drivers could be charged a very low, flat per-mile fee for travel on local streets, but a higher per-mile fee for travel on arterials or highways, with premium fees for travel on heavily congested facilities. Vehicle owners would be sent a bill periodically, perhaps monthly like credit card and telephone statements.

There are a couple of technological options for tracking vehicles with this level of precision. One is to have vehicles equipped with an electronic device that could be read by sensors embedded in the roadways. As a vehicle traveled over the road, the sensors would note the exact time, location, and distance it traveled, and the driver could be billed accordingly. Collecting VMT fees this way is essentially just a more sophisticated version of the electronic toll collection systems being implemented throughout California's existing toll roads (Navai 1997). A second option for assessing VMT fees would be to equip every vehicle with a global positioning satellite (GPS) device that would track its movements.

Price and privacy are the two main concerns with a VMT fee system that tracks drivers' movements. The technology for both types of system currently exists, but at current prices would be prohibitively costly. On the other hand, prices will likely fall as the technologies become more widely used. The GPS technology has more promise, as it would not require the enormous investment necessary to equip and maintain all roads with electronic sensing devices. A second problem is that the ability to track all vehicles to specific locations might raise privacy concerns. While legal safeguards and encryption technology could be implemented to prevent improper use of and access to vehicle location information, drivers still might not be comfortable receiving a monthly bill listing the time and place of their travel. Such privacy concerns have been raised in connection with existing electronic toll systems that track the specific times drivers use toll roads, though it has not proven enough of an issue to prevent the introduction of these toll payment systems. One way to avoid privacy concerns is to offer drivers the option of receiving an itemized statement showing all trips, or else a simple statement showing only the total charge.

If the costs of implementing a GPS-based system of VMT fees do fall, California could reap considerable efficiency and equity benefits. The technology would allow easy implementation of many of the principles and innovations considered in this report. The fee charged could vary by time of day, type of facility, or traffic level so that the driver paid fees that more closely reflected the cost imposed or benefits received of each trip. For example, drivers on congested roads could be charged more, since driving in congestion adds to the delay for all drivers on the roads. Drivers of fuel-efficient vehicles might be charged smaller fees to reflect the fact that these vehicles emit less pollution. For trucks, the addition of an onboard vehicle weighing system could improve the fairness of the system by charging higher fees when drivers of heavily laden vehicles opt to travel on roads that weren't built to the standards needed for such heavy vehicles.

Another set of possible benefits arises from the fact that the fees raised could be earmarked specifically for the geographic region or level of government that paid for the facility. Fees raised from highway travel could be earmarked for highway improvements, for example. Also, fees raised from travel in a particular place (e.g. Los Angeles) could be returned directly to that region. Thus, the statewide system could increase the capability of regional entities to address their

particular transportation situation in a context sensitive manner—reflecting a variety of attributes from congestion levels and patterns to the regions desire to raise funds for transportation (Forkenbrock 2000). Also, the system could facilitate private-sector participation in building new highways by making it cheap and easy to charge tolls for individual roads—if a statewide VMT system capable of charging different fees on individual road segments were already in place, private corporations would not longer face the high start-up costs of adding toll plazas or encouraging drivers to acquire transponders that can only be used on a few toll facilities.

Finally, a statewide GPS-based VMT fee system would provide a couple of ancillary benefits. Transportation planners would, for the first time ever, have complete use data for each road segment within the state. Second, the system would greatly lower the costs of traveler information services such as dash-mounted navigation displays and emergency location transmission (Forkenbrock 2000).

Despite these advantages, the final reason not to push for immediately adopting a VMT fee is that its political appeal is low. Introducing such a fee will take a great deal of concentrated effort, and at the moment there is no obvious constituency to mount such a campaign. A few transportation professionals and environmental groups have shown interest in VMT fees, but not the larger public or the major political forces. Indeed, the public and most legislators are unaware of the concept. One study of public opinion 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). While this single study should not be taken as the last word on the subject, it suggests that VMT fees may not be an easy sell.

In the long run, conditions may change so that a VMT fee becomes a real possibility. For example, public support for a VMT fee could develop if alternative vehicles penetrate the market significantly, technology shows that tamperproof odometers are a real possibility, and new electronic technologies create a cheap method to vary the fee according to the conditions in which the vehicle was driven.

Recommendation: Given the many questions surrounding VMT fees, California should not attempt to implement VMT fees now. However, the state should support further study of both their technological and political feasibility so that they are ready for adoption if and when future conditions warrant it.

4.1.2 Tolls

For decades California collected tolls only on a tiny number of bridges, and political wisdom held that the state’s residents would never agree to the inconvenience and cost of paying tolls on their “freeways.”¹ However, in the last few years that situation has changed. Three new toll roads have been built in Orange County, and southern California also has two new high-

¹ The term “freeway” originally referred to “free-flowing” roads without intersections, rather than roads without tolls, but this original meaning is usually forgotten.

occupancy/toll lanes (HOT lanes). The growing use of these toll roads demonstrates that at least some Californians will pay tolls in exchange for what they perceive to be high-quality transportation options. In addition, both domestic and international experience suggests that developments in electronic toll collection have dramatically reduced the cost of toll collection for road operators as well as the inconvenience of paying tolls for drivers.

Recommendation: Given the many benefits of toll finance as discussed in Chapters 2 and 6, California ought to use toll finance more in the future. Toll roads should rely primarily on their own toll revenues and should not be financed with fuel taxes.

This principle mostly applies to new construction, whether lanes added to existing freeways or entirely new highway segments. One of the most common arguments used against tolls in California is that they represent “double taxation,” since drivers are already paying fuel taxes. However, if tolls are used as the sole mechanism to finance new facilities, this argument disappears. (Part II of this report discusses the possibilities for both public and private toll-based debt financing.)

Another politically viable opportunity to introduce toll lanes appears when pressure builds to allow solo drivers onto existing carpool lanes, so it becomes possible to turn HOV lanes into what are known as “HOT” lanes. HOT lanes, or high-occupancy/toll lanes, are lanes which solo drivers must pay a toll to use, but which carpools use for free or for a reduced toll. A demonstration of this concept is currently underway on an eight-mile stretch of Interstate 15 in San Diego. Because existing carpool lanes along this segment of I-15 were underused, in the early 1990s the San Diego Association of Governments came up with the idea of selling the excess capacity to solo drivers. The demonstration began in late 1996 and was scheduled to end after three years, but it has been extended an additional two years.

A central feature of the I-15 demonstration program has been its use of variable pricing. Originally, solo drivers bought monthly passes that allowed them to use the carpool lanes. However, as of March 30, 1998, the express lanes now require drivers to pay on a per-trip basis. As solo drivers approach the HOT lanes, a series of five electronic signboards display the current toll rate, and drivers have about one minute to decide whether or not to take them. The toll rate is based on the actual level of congestion during a trip, with the rate changing every six minutes as needed. 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. The I-15 project is the first implementation of “real-time” variable pricing anywhere in the world.

Variable tolls offer an unparalleled tool for using a revenue-generating mechanism itself to achieve optimal use of infrastructure capacity because they can ease congestion by spreading traffic over the day.² In the pure form of variable pricing, toll rates are constantly reset on the basis of current traffic levels to keep the lanes free flowing. As congestion increases, the tolls go

² 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, as is done on the privately-operated HOT lanes along State Route 91.

up enough to keep traffic flowing at a reasonable speed, and when traffic lightens they fall. In this way, traffic congestion is eliminated.

The system works because some people will choose to leave a little earlier or later than rush hour so they can use the facility when the rate is lower. This phenomenon is referred to as spreading the peak load. The end result is added efficiency: instead of being congested for a few hours and then lightly used for the remainder of the day, the facility is heavily used for a greater part of the day. It is often possible to achieve these congestion relief benefits by giving only a small percentage of drivers the incentive to adjust their trip timing. A modeling exercise done for the Bay Bridge in 1996 found that a simple variable-pricing scheme where the existing one-dollar toll is raised to three dollars during the morning rush hour would reduce delay by forty percent, lowering the peak waiting time from twenty minutes to twelve. This improvement in congestion would be achieved even though there would only be a seven percent reduction in one- and two-passenger vehicles (Frick et al. 1996).

While variable pricing for toll roads is relatively unknown to the public, Americans encounter and accept variable pricing all the time in other aspects of their lives. Examples of variable pricing include early bird dinner specials, discount theater tickets on weeknights or bargain matinee prices at movie theaters, lower telephone rates on nights and weekends, and cheap airline tickets during the off-season for vacationers. In all these cases, lower prices are used to attract customers during the off-peak period.

The concept of variable road pricing has a decades-long history in the academic literature of economics and traffic engineering. Nevertheless, it has been implemented in only a handful of places worldwide. The best-known case is Singapore, which has successfully used variable pricing for over 20 years to manage traffic in its highly congested city center. In France in the 1990s, variable pricing was introduced on a toll road leading into Paris to reduce heavy traffic caused by weekend vacationers returning home on Sunday evenings. Norway has also introduced variable pricing as part of tolls charged to enter some city centers, though in these cases the variable pricing is not directly intended to manage congestion.

Political wisdom in the United States has it that the public will not accept variable pricing on toll roads. However, California's experience on I-15 and SR-91 does not bear out this pessimism, even though the projects do generate some criticism. Both HOT lanes are well used, and independent evaluations of consumer satisfaction have shown no serious objections to the variable-pricing aspect of either project. In both of these cases there are readily available alternative free roads, which may partially explain the public's acceptance of the variable tolls.

Some public objections to variable tolls are based on misunderstandings about how variable pricing works. As a way to boost popular support for the concept, transportation planning professionals and engineers should take on the role of educating policy makers and the public about how variable pricing really works. For example, some people report that they dislike variable tolls because they see the tolls as a mechanism to gouge travelers, rather than as a useful way to manage demand. Public information explaining that toll rates are set to manage congestion rather than to maximize revenue might help win stronger public support.

Because a variable-toll scheme might set peak-hour tolls at relatively high levels, some people worry how the system would affect low-income drivers. However, three different studies estimating the effect variable tolls would have on people of different incomes found no significant consequences for the poor. The results should not be taken as definitive, 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 based on a simulation of variable tolls in Southern California.³ 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 negatively affected financially 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 a task force studying ways to manage congestion in Southern California.⁴ 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. The wealthiest forty percent of the population would pay a higher-than-average portion of the tolls, but also receive more of the benefits (Wilbur Smith Associates 1997). Finally, an investigation into the option of raising the Bay Bridge toll from one dollar 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).⁵ 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 variable 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 classes. Early results from studies of SR 91 in Orange County have found drivers with 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. Over twenty percent of households earning less than \$40,000 a year reported using the toll lanes for at least forty percent of their trips (ARDFFA 1997).

It is also important to remember that the way the toll revenues are *spent* has a substantial impact on equity. For example, if some portion of the toll revenues are used to support a transit service useful to low-income people in the area, then the overall equity impact could even be positive.

The way the revenues are spent should also be considered as part of a broader strategy for gaining public support for variable tolling. Policy makers should think strategically about this issue, since in many cases variable pricing can raise more revenue than is needed to pay for

³ He used the results of simulations from Giuliano 1994.

⁴ The group was the “Reduce Emissions and Congestion on Highways” or REACH Task Force. It consisted of seventy people from the public, private, and academic sectors.

⁵ 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.

capital and operating costs. In designing any variable-pricing project, a crucial way to generate public support is to build a system that creates many winners and few losers. Traditional economic analyses of variable pricing have often compared total social cost and total social benefits, without bothering to examine how those costs and benefits are spread among the population. The revenue needs to be spent in such a way that those people who do not value their time enough to want to pay for an uncongested trip still receive perceived benefits. Suggested uses for revenue have included transit subsidies, environmental mitigation, and even reductions in other transportation user fees, such as gas taxes. One researcher suggests that environmental and transit advocates, the real estate and development industries, and large employers are all potential allies of variable pricing, though the groups would favor it for very different reasons (Giuliano 1992). It might be necessary to design a spending package that appeals to many or all of these groups.

Variable pricing is not a lost cause, politically, and it's worth pursuing because it brings something no other finance mechanism achieves—the capacity to reduce congestion and spread trips over time so that facilities are well used for a longer period of the day.

Recommendation: California should continue to experiment with variable pricing and attempt to introduce it on any new toll projects in congested areas.

4.1.3 Truck Weight Fees

California is about to change its system of charging truck weight fees by basing them on a vehicle's maximum possible (loaded) weight. The state should investigate the possibility of restructuring this new system of fees on heavy vehicles so that the charges even more closely reflect costs imposed by each vehicle. The most common proposal for doing so calls for a charge known as a "weight-distance fee." In its most sophisticated form, a weight-distance fee assesses trucks based on the number of miles they travel carrying a particular axle weight. In other words, for any given trip a fee is assessed based on the truck's axle weight *with the load in the truck*, multiplied by the number of miles traveled. Another possibility, simpler to administer, is to charge a fee for the miles traveled multiplied by the maximum *potential* axle weight for that truck.

Such fees, combining weight and distance, would create a much more accurate user fee system. Instead of paying a single annual fee regardless of mileage driven, vehicle operators would only pay for the miles they actually drove (and thus for the actual costs they imposed on the road system). If the fees were based on the actual weight of each truck's load, they would be even more precise, and thus more equitable to individual operators. There would also be an incentive for operators to minimize unnecessary trips, which would reduce pavement repair costs.

Despite their theoretical advantages, weight-distance fees are controversial. A handful of states have some version of weight-distance fees, and another group of states has tried them in the past. Overall the results have been mixed. The trucking industry has almost uniformly

opposed weight-distance fees in California for most of the century. For example, in 1947, the legislature briefly considered replacing the unladen weight fee structure with ton-mile taxes, but the trucking industry successfully opposed this effort, citing the large tax increases involved. Common concerns are the administrative burden on the trucking industry, the administrative burden on the government, evasion, and higher costs for the trucking industry and thus for consumers.

Even though past efforts to introduce weight-distance fees have not succeeded, the charges deserve further consideration. One reason is that there has not been a recent, comprehensive investigation of their value for California. In addition, several recent developments make the present an especially appropriate time for such a study. The upcoming change in the system of collecting fees reduces the common resistance to change that can build up when a system stays in place, unmodified, over many years — since California has already decided to make one major change in its heavy vehicle charges, this may be a good time to consider others as well. The state may wish to investigate the impacts of its new system soon, and such a study could be combined with a broader investigation of the desirability of charging weight-distance fees. In addition to the change in California’s fee system, recent advances in electronic toll collection and global positioning system technologies have introduced new options that could substantially lower the cost and inconvenience of administering and collecting weight-distance fees for both the industry and government. It also seems likely that the trucking industry will over the coming decade be adopting technology (e.g., global positioning systems) for its own business purposes that will probably lower the cost of implementing new forms of charging for road use. Finally, opposition from the trucking industry could be reduced if the investigation is undertaken on the premise that the goal is to improve the equity and efficiency of heavy vehicle fees, not to raise the overall revenue collected.

Recommendation: California should conduct an in-depth study examining the relationship between costs and benefits of highway use to trucks of different weights and configurations, with the goal of identifying a more efficient and equitable system of charging user fees.

4.1.4 Local Sales Taxes and Local Fuel Taxes

Recommendation: The current use of revenue from locally enacted transportation sales taxes to fund state highway improvements should be discontinued. California’s local governments should not pass more local sales taxes with money specifically directed to highways. Instead, the state should authorize localities wishing to raise funds for highways to pass local fuel taxes.

There are many options for generating direct user fees to fund highways, and these fees have the potential to raise as much revenue as the state determines necessary. Since user fees are a feasible way to fund highways, and because they return equity and efficiency benefits that sales taxes lack, California’s local governments should not pass more local sales taxes to raise money for state highways. Instead, local sales tax revenues should be preserved for the local transportation system (streets and transit).

Nevertheless, regions and counties have demonstrated a strong desire to fund highway improvements that the state either cannot or chooses not to fund immediately. In these situations, a preferable alternative to a local sales tax is a local fuel tax. California has no experience with local fuel taxes, but the idea of enacting them has a certain appeal to local transportation officials and some state legislators. At least fifteen 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 four to eleven cents per gallon, and in Nevada every county charges a five- to ten-cent-per-gallon gas tax. County gas taxes can be quite high, as in Hawaii, where they 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.

Despite some level of interest in these taxes in California, until 1977 it was not sufficient to convince the legislature to authorize their collection. The potential for motorists to evade local taxes by driving to the next town or county was a strong argument against them and prevented their adoption. Nevertheless, in 1977 the California legislature granted counties the ability to seek voter approval for a one-cent county gas tax. The only county to take advantage of this option was San Francisco, which won voter approval in 1980 for Proposition L, a one-cent-per-gallon county gas tax for mass transit. The Board of Supervisors never implemented the approved tax, however, due to legal uncertainties. Counties' reluctance to seek local fuel taxes probably stems from several factors, including the above-mentioned fear that motorists will evade them by driving to the next town or county to buy fuel.

In the 1990s a series of legislative bills, most backed by the Metropolitan Transportation Commission (MTC) in the San Francisco Bay Area, proposed to expand the authority to collect local gas taxes to regional governing bodies. In 1997 the legislature approved Assembly Bill 595 (Brown), which grants MTC the authority to impose a regional gasoline tax if it is approved by voters. With AB 595 California appears to be the first state in the country to allow a region to pass a multipurpose transportation gas tax. The MTC may submit to voters a ballot proposition for a regional tax of up to ten cents per gallon on gasoline⁶ sold in the region. The tax may last up to twenty 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 law gives MTC the latitude to include all or a portion of the nine Bay Area counties in the vote. The tax could only be imposed in counties where it was approved by voters, however.) The proposed tax would need to be passed by whatever voting margin is legally required at the time it is placed on the ballot (the current requirement is for a two-thirds supermajority). Since passage of the authorizing legislation, MTC has decided that popular support for the measure is insufficient to pass such a tax, and the idea is on hold.

In most respects a regional fuel tax performs the same way as a statewide fuel tax. It is a user fee, though unlike the state fuel taxes there is no restriction on whether funds from regional taxes are spent on public transit or roads. In this sense, regional gas taxes provide more flexibility

⁶ Diesel fuel would not be taxed.

than state fuel taxes. A second major difference between state and regional fuel taxes is that the legislation authorizing the MTC-sponsored tax requires that the money be spent on a predetermined list of projects. As is the case with the sales tax project lists, such a package might be crafted to maximize votes rather than spend money where it would be most productive. Thus, funds from the regional tax could potentially suffer from the same problems that come with the current local sales taxes. Of course, there is no reason to hold future legislation authorizing other regional fuel taxes to this model, though given the popularity of the project lists it may well do so.

Political wisdom holds that regional gas taxes are currently not politically viable. In the Bay Area, a considerable hurdle will be winning approval by two-thirds of the voters. And if regions other than the Bay Area want to follow suit they will need not only voter approval, but also authorizing legislation from the state. That could be a substantial barrier, judging from the five years it took to pass MTC's authorizing legislation.

However, the popularity of regional gas taxes might rise if local sales taxes continue to require a supermajority, and are thus very challenging to enact. 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 could become more popular. If and when this happens, they could provide a good source of local money to supplement state and federal highway revenues.

4.1.5 General Fund Revenues

While state general funds should not fund state highways, the same is not true for intercity rail or bus projects. With such projects the state needs to subsidize the capital costs and some portion of long-term operating costs. When intercity rail or bus is shown to be of benefit to state residents and justifies its cost, then state general funds become an appropriate source of capital and operating subsidy.

4.2 LOCAL TRANSPORTATION

The support of local transportation facilities — streets, transit, and bicycle and pedestrian facilities — should continue to be a function of local government, and the sources of financial support for local access should be local in origin. Local mobility and access should be provided in every community, should not be primarily a function of auto use, and should not depend primarily on user fees. In the modern, multi-modal transportation system, public transit performs local access functions for those who are too young or too old to drive, for those who are disabled, and for those temporarily unable to drive because their vehicles are out of order. Local public transit systems, which in California are composed mostly of bus and paratransit operations, should be seen as complementing local roads, and therefore the same funding sources are appropriate for both modes. Thus, most of this section of the chapter looks at transit and

roads as a single transportation system to be funded as a unit, rather than as two separate modes that should be financed in fundamentally different ways.

From an equity standpoint, property access fees are an excellent foundation for the local transportation finance system. However, Proposition 13 and its successors have so tightly limited the power of local governments to raise money through property taxes that they are unlikely to be able to fully fund their street and transit systems in this way. Developer fees and benefit assessment districts have the potential to provide some additional revenue, but will not be enough to fill the gaps by themselves. They simply don't raise enough money, and they also don't raise revenue in the predictable streams necessary for efficient transportation planning. Local governments must find additional, ongoing sources of revenue to supplement access fees.

4.2.1 State Fuel Taxes

Recommendation: It is appropriate to continue to spend a modest portion of state fuel tax revenues on local transportation systems, but this amount should not be increased except as needed to keep inflation and fuel efficiency improvements from eroding its spending power.

About a third of state fuel taxes are currently transferred to local governments for local street and road expenditures (down from 49 percent prior to 1990). It is appropriate to continue spending some fuel tax revenues on local streets and roads, since drivers do benefit from using them, even if most miles are actually driven on highways. (Using some portion of fuel taxes for local streets and roads is analogous to having transit riders cover a portion of transit costs through fares.) In cases where a jurisdiction determines that increased transit service is a more cost-effective solution to a traffic problem than increased road capacity, transit should also be eligible for fuel tax revenues.

However, the state should not attempt to substantially increase the amount of fuel tax revenues transferred to local jurisdictions in order to cover the shortfall in revenues for local streets and roads and transit. Fuel taxes are needed to fund interregional transportation operations, and it is more appropriate that they be spent on state highways than at the local level. Nevertheless, the erosion of the purchasing power of fuel taxes by inflation and gains in fleet fuel efficiency have the same effect on local government funds as on state highway spending. Any alterations to fuel taxes should preserve the existing purchasing power of the fuel tax revenue allocated for local streets.

4.2.2 Sales Taxes

Recommendation: Counties should continue to ask voters to authorize local sales taxes to fund local streets and roads. However, future sales taxes should not all be required to include project lists.

While local option sales taxes approved by the voters are not a desirable source of revenue for highway projects, such sales taxes *are* appropriate for local transit and streets and roads. The state should, however, consider amending the authorizing legislation to remove the project list

requirement. Local governments should have the option of including project lists or not, in accordance with local priorities, needs, and discretion. This will allow localities to spend money efficiently, in accordance with local transportation planning programs. Eliminating the project lists as a requirement will also give localities the flexibility to rearrange their priorities for the transportation system if underlying conditions change significantly. The legislature should also take the lead in passing a constitutional amendment allowing these local sales taxes to be passed with a simple majority rather than the current two-thirds requirement.

4.2.3 Vehicle License Fee

California currently levies a tax on vehicle owners which is *not* considered a transportation user fee: the vehicle license fee. The vehicle license fee is actually a tax on property, similar to the taxes assessed on land. Today most of its proceeds are allocated to city and county governments. They may spend three-fourths of the money for any purpose, while the remaining quarter must be spent on health and social service programs.

California first established its vehicle license fee in 1935. The annual 1.75 percent tax on the value of the vehicle was a complement to the tax then assessed 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 potential for raising revenue. In 1948 the tax rate was raised to two percent and did not change until a few years ago, when the governor and legislature instituted a program to roll back the vehicle license fee rates over five years. The state budget for fiscal year 1998-99 lowered vehicle license fee rates by 25 percent as of January 1999, with the fee programmed to continue falling to a total of 67.5 percent (from the original 2 percent) over five years if the state's economy performs well.

To the extent that vehicle license fees are seen as the equivalent of property taxes as opposed to highway user fees, the income produced by vehicle license fee collections should also be available in the jurisdictions in which they are collected to finance local access and mobility. The current program to lower the fees raises the possibility of making major changes in their use, as well. Some of the revenue now going to local governments could be restricted to local transportation uses. This might be coupled with a "maintenance of effort" provision to be certain that the new revenues will not simply be used to replace other funds currently supporting transportation programs.

4.2.4 Transit Fares

A final option, one specific to transit, is for local transit operators to readjust their fare schedules. Two major inefficiencies in most fare systems are that people who take longer trips or trips at the peak hour do not pay a higher fare, though these trips are more expensive to provide than shorter or off-peak trips. If transit operators restructure their fares so that riders pay in rough proportion to the cost of providing each trip, it will improve equity and can actually reduce costs for the operator, as well as potentially increasing overall ridership.

Currently most transit fares are structured so that riders pay the same amount for any trip, regardless of its length. Also, even systems that do charge fares based on distance tend to make riders who take short trips pay a far higher fare on a per-mile basis than riders who take long trips. For example, on BART, the heavy rail system in the Bay Area, riders pay a minimum of \$1.10, and a maximum of \$4.65, even though the traveler paying \$1.10 could be traveling as little as four-tenths of a mile (equivalent to a charge of \$2.75 per mile), while a rider can travel 52 miles for the \$4.65 fare (equivalent to a charge of 9 cents per mile). Restructuring transit fares so that fares approximately represent the distance traveled would be fairer according to the cost principle. In addition, transit operators might well find that if they raise long-distance fares they could actually *reduce* short distance fares and thus boost overall ridership.⁷

An additional characteristic of fare structures is that fares are usually the same regardless of time of day, even though rush hour service is much more expensive to provide. Charging more for trips during the peak hour follows the equity principle that users should pay in relation to the costs they impose. In terms of the ability-to-pay equity criterion, charging less for short trips and more for long ones would be an improvement, since in general wealthier people tend to commute long distances, while shorter trips are more often taken by lower income people who are transit-dependent. In addition, charging higher fares is efficient in a similar way to charging higher tolls during congested hours. The higher prices encourage those transit riders who can adjust the time of their trips to do so, saving them money (they don't pay the peak fare) and saving the transit operator the expense of providing them costly peak-hour service. Furthermore, transit operators who choose to set higher peak-hour fares and reduce off-peak fares may find that they increase overall ridership because the cheaper fares may encourage new off-peak trips. Many European transit operators — for example, London Transport — charge different peak and off-peak fares with great success. In the United States, the Washington, D.C. Metro charges higher fares from 5:30 to 9:30 a.m. and 3 to 7 p.m.

4.3 CONCLUSION

The suggestions laid out in this chapter present a strategy for improving and stabilizing California's system of raising transportation revenue. For intercity highway facilities, California should return to the system of user fees that has served it so well for most of the century. While changing technology presents new options for what *kind* of user fee is employed — i.e., tolls become much easier to pay and to collect — the basic premise that user fees are more equitable and efficient than the alternatives remains true. Politically tempting as it may be to raise money for highways through sales taxes or state-wide general revenue bonds, California should refrain from making further use of these revenue sources as a way to fund the state's highway system.

At the level of local travel facilities, where streets and transit provide tangible benefits to property owners as well as travelers, property taxes ideally provide the primary source of funds. However, given the constitutionally mandated limits on property taxes, in reality local governments will need additional sources of funds. In these cases it is appropriate to turn to local

⁷ Long-distance transit riders are less sensitive to price than short distance riders (Cervero 1990).

sales taxes. In addition, the state could play an important role by designating revenue from the vehicle license fee for local transportation uses, and replacing the unrestricted VLF dollars local governments were previously receiving with state general funds. Such a combination of state assistance and local taxation would considerably strengthen the local transportation finance system.

Part II

DEBT FINANCING ALTERNATIVES

CHAPTER 5

PUBLIC DEBT IN TRANSPORTATION FINANCE

While the dominant form of financing for transportation in California has been pay-as-you-go, borrowing by the public sector is playing an increasingly larger role in transportation finance. It must be noted that, despite some perceptions to the contrary, debt — unlike the previously discussed sources — is not a generator of revenue. Debt is simply a tool that allows government to spend *now* revenues that it will not collect until later. A source of funds must be found to repay every debt.

The chapter begins by explaining some of the basic advantages and disadvantages of debt, and then explains the three most commonly used types of public debt: general fund debt, for which there is no connection between a project's revenues (its user charges) and the debt's source of repayment; toll revenue debt, which contains a strong link between project revenues and debt repayment, and other revenue debt, which relies on transportation sector revenues for debt repayment, not solely on a project's revenues. Following the discussion of types of debt is an analysis of the recent experiences with publicly managed project-based debt in Orange County. The chapter concludes with a review of emerging tools to facilitate project-based debt in transportation finance and presents recommendations for when to use debt in transportation financing.

5.1 PAY-AS-YOU-GO FINANCING VS. DEBT FINANCING

As previously discussed, California made the decision to use a pay-as-you-go method to fund its largest transportation infrastructure investment, the state highway system. With pay-as-you-go, no borrowing takes place. Instead, the government procures infrastructure services by paying the full cost of the facility at the outset. Proponents favor this method because there are no interest and debt issuance costs. However, it limits infrastructure investment to cash on hand and does not exploit the benefits of financial leveraging. For example, the state fuel taxes will have raised \$2.9 billion in 1999. Under the pay-as-you-go approach, the state has the capacity to build \$2.9 billion worth of highways. If that \$2.9 billion were used to finance development by borrowing at a six percent interest rate over thirty years, the government could in principle build \$40 billion worth of highways right now.¹ Another limitation of pay-as-you-go finance is that current taxpayers or current users must pay the entire cost of facilities that will benefit future generations. Because gas taxes were sufficiently high, current users of existing roads financed the expansion of California's highways. An argument could be made that future users and beneficiaries should provide some of the funds for new facilities from which they will benefit. Finally, under pay-as-you-go financing it is possible that certain costly, high-priority projects such as the reconstruction/retrofit of the San Francisco-Oakland Bay Bridge could leave few remaining revenues for other purposes.

¹ This example neglects the need for operations and maintenance expenditures.

Debt financing is typically carried out through the issuance of bonds. Using debt essentially accelerates the receipt of future revenues to the present, at a loss of the debt interest payments. Debt financing is advantageous in that it raises large sums of money that can allow government to rapidly meet increasing demand. If the term of the bond matches the economic and physical life of the project, long-term financing also balances intergenerational equity. A third advantage is that to the extent that bond financing allows a project to be built sooner, it could be more cost-effective because it avoids cost increases resulting from inflation. Thus, when choosing between pay-as-you-go and debt financing, the additional cost of interest and fees must be weighed against the benefits of quicker project delivery.² There are many risks associated with debt financing, however. First, predicted revenues for repayment may not materialize, putting government in the position of having to cut other services or raise taxes or fees. Also, if user fees are reserved to pay off debt, then future revenues may be unavailable for ongoing operations and maintenance and especially for unanticipated large-scale repairs.

5.2 TYPES OF PUBLIC DEBT FOR TRANSPORTATION

5.2.1 General Fund Debt

At the state level, debt to be repaid from the general fund did not play a significant role in transportation finance until 1990, when the previously mentioned Propositions 108 and 116 were passed to raise \$2.99 billion, primarily for urban rail projects. In 1996, Proposition 192 authorized \$1 billion in general obligation bonds for seismic upgrading of roads and bridges. These bond issuances represent a significant departure from two traditions of highway finance: user fees and pay-as-you-go financing.

Locally, cities and counties sometimes issue bonds to finance local streets and roads. In 1997-98, 23 cities cumulatively provided \$205 million for city street purposes (7.5 percent of total funds available for city streets). One county provided \$18.6 million (1.9 percent of total funds) for county roads via proceeds from bond sales.

Using general obligation bonds to fund transportation has a number of drawbacks in addition to interest costs. First is the question of whether we should allocate general revenues to a sector that receives over \$12 billion in dedicated revenue sources annually. The state has a limit to the general obligation debt that it can reasonably incur, and general obligation bonds have typically been used to finance infrastructure for other sectors without access to user fees, such as education and corrections. The justification for using general obligation bonds for transit projects appears stronger than for highways, as user fees have historically been adequate to fund highway construction and operation expenses, while user fees for transit (that is, fares) have not been adequate to cover operating expenses under government management.

General obligation bonds are problematic for financing transit, however, because they provide for new capacity without also providing for an accompanying increase in operating expenses (transit fares cover on average only thirty percent of operation costs). Thus local transit operators and planners are forced to refuse the new capital dollars, find increased funding elsewhere for operations, or cut service on pre-existing lines in order to provide service on the new lines. Finally, state ballot measures for transportation use predetermined project lists that are

² The above discussion borrows heavily from Dowall (2000) and the Legislative Analyst's Office (2000c).

designed to appeal to voters and do not necessarily take into account criteria such as costs versus benefits.

5.2.2 Toll Revenue Debt

5.2.2.1 Bridges

An exception to the limited use of public debt in highway finance has been the construction of toll bridges. Typically, bridges were financed by issuing revenue bonds that are known as “non-recourse.” The principal, fees, and interest on revenue bonds are repaid by a specified source of revenue, usually from the project being financed. Non-recourse means that bondholders can only expect repayment from the project revenues; the bonds are not backed by the credit of the State of California nor any local governmental entity with general taxation authority. Usually non-recourse debt does not count against any legislatively imposed debt limits.

This finance method is often what is called “project-based,” meaning that bonds are issued to fund a single project as opposed to a series of projects. It can provide the added benefit of market discipline; since bondholders do not have recourse to tax funds, potential investors in the bonds must carefully evaluate the project’s ability to generate adequate revenue for repayment. In theory, this will prevent the financing of unnecessary boondoggle projects, and the market’s scrutiny provides an implicit form of cost-benefit analysis. Also, the project manager does not have access to general government revenues, which can be an incentive to deliver projects in a timely manner and at a reasonable cost.

Eight California toll bridge projects (both new bridges and major reconstructions) have been financed under this model, delivering projects costing \$2.7 billion in 1999 dollars (Caltrans 2000a). For example, in 1930 construction of the Golden Gate Bridge was financed with a \$35 million bond to be repaid by tolls (Museum of the City of San Francisco 2000). This project-based, user-charge, non-recourse financing model was generally considered feasible for bridge projects, because the lack of alternatives for drivers assured bond investors that toll revenue would be adequate for the repayment of interest and principal.³

In historical bridge-financing cases, the transportation revenue source is the bridge toll, a direct user charge. The use of debt in these cases generally does not burden future general revenues to support either principal and interest repayments or operations. Since the 1980s, the escalating cost of bridge retrofit and reconstruction projects, consolidated state and regional management of toll bridges, and the political unpopularity of increasing tolls has somewhat eroded the direct link between bridge revenues and project financing. Along with toll revenue, these projects are now financed by a number of sources including general obligation bonds,

³ In fact, as was typical, revenues were more than sufficient to repay the forty-year bonds. However, instead of retiring the bonds early, toll revenues were used to fund transit in the corridor. It is interesting to note that, again in typical fashion, the voter proposition authorizing the bonds promised to gradually reduce the 50 cent one-way toll to 25 cents after thirty years. While the current \$3 round trip toll may be considered a renegeing of that pledge, it equates to a one-way toll of 13 cents in 1937 dollars (the year the bridge opened).

funds from the Public Transportation Account, and gas tax revenues.⁴ However, the use of toll revenue for transit and nonbridge projects has increased.

5.2.2.2 Highways

In the 1990s, debt financed by a direct user charge was once again used to fund transportation projects. However, these projects were limited-access toll highways in congested corridors rather than bridges. The publicly owned Transportation Corridor Agencies in Orange County financed three freeways by issuing revenue bonds secured primarily by future toll receipts. The State Route 91 Express Lanes in Orange County were privately financed with debt, and State Route 125 in San Diego, which is in the final planning stages, will also be financed privately. Both private projects use toll revenue as the primary source of repayment of debt. Generally, the risk of toll revenues being insufficient to repay the bonds would be higher on a freeway than on a bridge, as drivers theoretically have alternate, free routes to their destination. However, investors have shown confidence in toll roads, as none of the four toll road projects built so far have had difficulties obtaining debt financing.

5.2.3 Other Revenue Bonds

Other transportation-related sources are also pledged to support debt for upfront capital expenditures. For example, the Los Angeles Metropolitan Transportation Authority (LA MTA) currently has \$2.6 billion in outstanding bonds, backed solely by voter-approved transportation retail sales taxes (Los Angeles Metropolitan Transportation Authority 1999). The bonds typically are issued for a term of thirty years. Long-term financing such as that used by the LA MTA can raise large amounts for capital expenditures, but this generally increases the interest rate and the aggregate amount of tax revenue used for interest payments. Thus in 2020 Los Angeles County taxpayers will still be paying off the principal and interest for expenditures made in 1990. The proceeds of the LA MTA's bonds were used primarily to finance rail construction projects, as well as some highway projects. Of the estimated \$976 million in local sales tax revenues in fiscal year 2000, \$190 million⁵ (20 percent) will be used for principal and interest repayment. Most of the other county transportation authorities who receive funds from local transportation sales taxes do some form of debt issuance against their future receipt for transit and highway capital expenditures. However, since most of those sales taxes have sunset dates (the Los Angeles sales taxes don't), the term of the debt is usually shorter (one to ten years).

In theory, state and local entities could issue non-recourse revenue bonds against the anticipated receipt of other transportation revenue sources such as the gas tax. Currently, in California, this is not practiced. However, Senate Bill 928, discussed in section 5.4.4, has enabled Caltrans to participate in a federal program that allows states to borrow against anticipated receipts from the federal gas tax.

While this type of debt finance is non-recourse, linked to an existing revenue source, and like toll-revenue debt in that general taxpayers are not obligated to repay the debt, it has important differences. Because the debt is not linked to project-specific revenues, this financing

⁴ \$650 million of the \$2 billion in general obligation bonds authorized under the 1996 Proposition 192 was dedicated to the seismic retrofit of state-owned tolled bridges.

⁵ Estimated by taking the percentage of all debt at MTA that is sales-tax related (82 percent) and applying it to estimated debt service obligations provided by the MTA for 2000 (\$237 million)

mechanism does not introduce the principle of market discipline. Potential bond investors will only scrutinize whether the revenue source (such as a sales tax) is sufficient to repay the given amount of debt and will be unconcerned with the feasibility, cost, and revenue potential of a project. Without a link between debt and project, there is no added incentive to deliver projects on time and at reasonable cost.

5.3 Recent Experience with Toll Revenue Debt in Orange County

The case of the Orange County Transportation Corridor Agencies and their toll roads is instructive as to the potential for public entities to use debt to finance new infrastructure on a project, nonrecourse, beneficiary-charge basis. Since 1976, Orange County's Master Plan had called for the construction of 67 miles of highways. When it became apparent that Caltrans would not build the projects in the foreseeable future, Orange County took the initiative to build this network of three freeways. The county formed two joint power agencies, the Foothill/Eastern Transportation Corridor Agency and the San Joaquin Hills Transportation Corridor Agency (together, the TCAs). In 1987, Senate Bill 1413 authorized the two public agencies to build the roads as toll roads and issue bonds backed by future toll and development fee revenues. Two separate agencies were formed due to the geographic separation of the projects. A board consisting of representatives from the county and the various cities affected by the roads governs each agency. In order to join the TCAs, cities had to agree to levy fees on new development.

The three toll roads (San Joaquin, Eastern, and Foothill) are owned by Caltrans, but the TCAs retain ownership of the toll collection system and will operate the highways as toll roads until the debt is retired. At that time, the agencies will dissolve. While the TCAs manage the roads, Caltrans maintains them and the California Highway Patrol patrols them at no cost to the TCAs. This system seems fair as drivers are in essence paying two user fees: fuel taxes, which go to the state to maintain and patrol the road; and the toll, which funds the TCA's operating expenses plus repayment of principal and interest on revenue bonds.

Project-based financing has been touted as a method for introducing new technologies. Indeed, electronic toll collection (ETC) has been used on each road segment beginning with the first in 1993. As of June 30, 1999, the TCAs had issued 241,300 FasTrak transponders. By contrast, state-operated toll bridges have been infamously slow in incorporating ETC, as most bridges were only expected to begin significant use of FasTrak in 2000.

In theory, project-based financing provides an incentive to deliver projects at low cost. It is unclear whether or not the TCAs' projects have been delivered under or over budget, or at a lower cost than would be expected under California's traditional financing and procurement system. However, it does appear that the TCAs have been able to construct projects without undue delay. According to the TCAs, the fifteen-mile San Joaquin Hills Toll Road was completed three months ahead of schedule and segments of the Foothill/Eastern Corridor roads were completed fourteen months ahead of schedule. The San Joaquin TCA used a procurement methodology different from what is typical in the state. It performed only 35 percent of the design itself, contracting out for both the remainder of the design and the construction of the project. Possibly this alternative procurement method speeded up project delivery.

The TCA roads have been subject to considerable controversy. However, most of the opposition to them and criticism in the press does not directly relate to the financing of the

projects or the fact that the roads will have tolls. For example, environmentalists have objected to the various road segments on the grounds that they would stimulate new growth rather than reduce congestion, and also that they would destroy scenic landscapes and the habitat of various protected and endangered species. Today such controversies are part of the nature of building any new freeway in California, whether toll or free, public or private, local or state, debt-financed or pay-as-you-go. However, it is possible that the creation of a special purpose entity with a single mandate like the TCA makes a project's success in gaining environmental clearances more likely. It may be that general government transportation departments like Caltrans or regional transportation authorities would be more responsive to political concerns during project planning. In general, special purpose entities should not be formed unless there is greater consensus about the merits of and need for a particular project.

While most of the controversy around the TCA roads has been unrelated to finance issues, the San Joaquin Hills TCA has been criticized by the press for its financing arrangements. Ten months after the complete road opened in late November 1996, usage was more than 40% below levels predicted by transportation consultants. In September 1997, the TCA successfully refinanced all but \$220 million of its outstanding 1993 bonds, bringing the San Joaquin Hills TCA's total debt to \$1.67 billion. One immediate benefit of the refinancing was that it allowed the TCA to reduce the size of its payments in the short term. This was important, even though the TCA was not in immediate danger of defaulting, because the road was collecting revenues substantially lower than what the agency's original studies had projected. TCA staff claim that refinancing was also undertaken in order to take advantage of lower interest rates now possible because the risk to investors had decreased (litigation having been settled, and the project having been successfully delivered). Overall the TCA says the refinancing was beneficial because it lowered the debt service growth rate from 6% to 3.2%, allowed the Agency to improve its investment grade ratings, and provided an opportunity to insure the entire refunding issue. It is also true, however, that the final maturity of the TCA's debt was extended (and thus the length of time that drivers must pay tolls) from 2033 to 2036.

While the 1997 refinancing supposedly included more realistic traffic and revenue projections, the San Joaquin Hills TCA has continued to perform somewhat less well than expected. In fiscal year 2000, revenues were 80% of projections (TCA 2001). Also, in February of 2000, the bond ratings for the San Joaquin TCA were lowered by two bond rating agencies. Standard & Poor's revised the outlook on the bonds from stable to negative, and Fitch IBCA lowered its rating of the bonds from BBB to BBB- (San Joaquin Transportation Corridor Agency 2000). In June 2000, the San Joaquin TCA announced toll increases to provide enough revenue for bondholders, and also implemented cost-saving measures such as reduced toll collector hours. In addition, the Authority began to explore alternative revenue sources such as road "branding," where the authority would sell the right to name the road, just as many sports stadiums have done recently. Finally, the TCA is considering setting higher tolls during the peak hours in order to enhance revenues.

What are the implications of the San Joaquin TCA's financial difficulties — in particular the fact that there have been substantially fewer users (and thus revenues) than predicted in two official studies? It is important to remember that projections are always estimates, even if they should be very educated and well-substantiated ones. One cannot realistically hope that forecasts will always be correct. Also, it should be pointed out that the projections for the other two TCA roads have proven much more accurate. Only time will tell if the San Joaquin road's financial

difficulties will make investors wary about participating in future non-recourse, project-based financing schemes. Possibly investors might decide that toll roads are highly risky and thus either refuse to invest at all, or else demand extremely high interest rates to compensate for the perceived risk. Nevertheless, while toll-revenue bond investors may look more closely at the next set of traffic forecasts, the depth of the United States capital market, and its demonstrated ability to absorb losses in other sectors without completely abandoning them, indicate that investors are likely to continue supporting toll roads.

Finally, the reaction of the San Joaquin TCA to its revenue shortages demonstrates the benefits of non-recourse, revenue-based bond finance. Because the TCA does not have access to the deep pockets of the state, it must meet its obligations either by cutting costs (and thus promoting efficiency within a public entity), creatively seeking new revenues, or turning to its beneficiaries rather than general taxpayers, as it did by increasing tolls.

5.4 TOOLS TO FACILITATE DEBT IN TRANSPORTATION FINANCE

Assembling the financing for a transportation project is a terribly complex task. In light of this, a number of initiatives have been undertaken to speed the delivery of funding to projects ready to begin construction. Many of the programs presented in this section are frequently labeled “Innovative Finance.”

5.4.1 Loans from the State Highway Account

The increasing perception of a shortfall in transportation revenue contradicts the \$1.6 billion balance in the State Highway Account (SHA) as of January 1999. The balance exists despite the fact that the state still has official plans to build projects totaling \$400 million more than there is available in the SHA. Environmental review, Caltrans staffing shortages, and bureaucratic hurdles delay the implementation of many projects. Approved in October 1999, Assembly Bill 1012 permits the issuance of loans from the State Highway Account to local transportation agencies for projects that are ready for commencement but not slated to be funded by the SHA. Loans can be made only when the SHA balance exceeds \$400 million, and must be repaid within four years. While most likely a minor improvement to the transportation finance system, measures like these can increase the efficiency of the large pool of transportation revenues already available.

5.4.2 TIFIA Loans

So-called TIFIA loans are part of a slate of federal innovative finance-related measures included in the Transportation Infrastructure Finance and Innovation Act of 1998 (TIFIA). The Act, part of the TEA-21 legislation, expands the role of federal credit in transportation finance (the original demonstration of the use of federal credit included credit lines of \$120 million for each of the TCAs). A primary goal of TIFIA is to demonstrate to private investors the long-term feasibility of transportation infrastructure investments; thus a successful pilot program should put itself out of business. The criteria for project selection include national or regional significance, creditworthiness, and the degree to which the project will encourage innovative public-private partnerships. Projects are expected to have dedicated revenue streams. For highway projects, this implies toll charges. An example of how TIFIA loans are expected to enhance access to capital is the \$94 million direct loan and \$33 million line of credit provided to California Transportation Ventures for the construction of the \$400 million SR 125 toll road in San Diego. These

government loans back up the toll-revenue bonds issued for the project, providing a layer of security to private investors.

While TIFIA was originally seen as a way to finance revenue-generating infrastructure, the final rules permitted general obligation and general corporate promissory pledges to satisfy the “dedicated revenue stream” requirement. Because revenue sources like regional shares of state fuel taxes can secure TIFIA credit, the range of possible TIFIA-financed projects expands beyond transit facilities and toll roads. However, this expansion undermines the goal of demonstrating the feasibility of true project-based lending. Lending against government revenues such as gas taxes is something familiar to private sector investors. By borrowing against future tax revenues, TIFIA borrowers mimic traditional debt mechanisms by altering the timing between receipt and expenditure, but do not expand transportation revenue sources.

TIFIA loans are authorized for the life of TEA-21 (through 2003) with a cumulative budget authority of \$530 million that will permit the issuance of up to \$10.6 billion in credit. Federal credit assistance under TIFIA can come in a number of forms. One is a direct secured loan with flexible repayment terms (allowing sponsors to defer principal and interest for up to ten years). There is also a loan guaranty, which could encourage capital market investments, and a standby line of credit, which could improve the credit rating of private debt and provide cash flow to cover unanticipated costs. Final maturity of loans can be as long as 35 years after construction. The federal contribution of credit is capped at 33 percent of project costs.

In 1999, the first five TIFIA projects were selected out of seven applicants. The financing will use \$61 million of federal budgetary authority,⁶ which generates \$1.6 billion in credit assistance for projects with a total cost of \$6.5 billion. The FHWA touts this “leveraging factor” of 106:1 (budget authority to project cost) as the main benefit of the TIFIA program. In addition, the debt provided by federal sources is often structured so that other financing sources (i.e., debt sold in the private market) have priority in terms of repayment. (This is generally referred to as being the “junior” lender.) By taking this junior role in project financing, federal participation is intended to further encourage private participation. The fiscal year 1999 selections, outlined in Table 5.1, represent a diverse set of projects, from intermodal facilities to highways.

Project	Applicant	Project Cost (\$millions)	Award (\$millions)	Source of Repayment
California State Route 125 – San Diego	California Transportation Ventures	\$ 400	\$ 94 Loan Guarantee \$ 33 Line of Credit	Toll revenues.
Miami Intermodal Center	Florida DOT	\$1,350	\$269 Direct Loan \$164 Direct Loan	Regional gas tax allocation. Daily car rental fees.
Farley-Pennsylvania Station – NY, NY	Pennsylvania Station Redevelopment Corp.	\$ 749	\$140 Direct Loan \$ 20 Line of Credit	Lease payments from retail and other station tenants.
Tren Urbano Transit Project – San Juan	Puerto Rico Highway and Transportation Authority	\$1,653	\$200 Direct Loan	Revenue stream of Authority (fuel tax, farebox, reg. fees).
Washington Metro Capital Program	Washington Metropolitan Transportation Authority	\$2,324	\$600 Loan Guarantee	Capital contributions of D.C., VA, MD and other local govts. WMATA revenues.

Sources: California Transportation Commission 1999b; FHWA 1997-2000.

⁶ Since the federal contribution is in the form of credit that is expected to be repaid, the budgetary authority is determined based on a “risk factor” that estimates the losses (costs) of the credit program.

As the SR-125 case shows, the TIFIA loan program can provide a backstop for wary private sector investors questioning project-based financing. However, expanding TIFIA's scope as a means of borrowing against future tax revenues is not so much an innovation as it is an acceleration of spending expected revenues. California should continue to use TIFIA in the former role and question its usefulness in the latter.

5.4.3 State Infrastructure Banks

In 1996 the federal Department of Transportation included California as one of ten states to participate in a State Transportation Infrastructure Bank (SIB) Pilot Program. SIBs were created to provide credit enhancements, letters of credit, bond and debt financing, and other methods of leveraged funding for transportation projects. California was allocated \$3 million to initially fund its bank, named the Transportation Finance Bank (TFB). However, as of this writing, the TFB has not provided any financing, although other states have loaned a total of \$524 million, mostly to counties and cities, to help finance 117 projects worth \$2.9 billion.

The California Transportation Commission, Caltrans, and the California Economic Development Financing Authority (CEDFA) in the California Trade and Commerce Agency (CTCA) executed a Memorandum of Agreement establishing the framework for the Transportation Finance Bank. Guidelines were adopted by the California Transportation Commission on July 8, 1997. The Transportation Finance Bank has not moved forward from that point, and the \$3 million in federal funds for capitalization of the bank remains unused. CTCA has had a broader infrastructure bank, the California Infrastructure and Economic Development Bank, for five years. However, until December 1999 it acted only as a conduit for other financing projects. In other words, it did not issue its own loans nor act as a bank. In December, the bank received initial funding of \$475 million from the 1998-99 and 1999-00 budget. The bank is authorized to make loans to counties, cities, and agencies for projects such as drainage flood control, parks and recreation, and educational facilities as well as public transit, city streets, and county and state highways. The loan criteria, established by the State Treasurer, emphasize giving priority to infrastructure investment in existing and struggling communities. The bank is governed by a three-member board of directors (the Treasurer, Director of Finance of the Department of Finance, and Chair of the Trade and Commerce Agency). In June the bank approved its first loans for a school, a police station, and a reservoir.

The key potential benefit of using a SIB is the recycling of a one-time appropriation. That is, as loans are repaid, capital is freed up and can be "reused" in new projects. In fact, SIBs are often called revolving loan funds. The goal of SIBs is to accelerate locally and regionally significant projects that have access to a dedicated revenue stream, but need flexible financial assistance to clear hurdles that would obstruct or delay their implementation. Additionally, SIBs are designed to lower the cost of other financing that may be available to a project sponsor (local governments or transportation agencies) and provide flexible repayment terms that can be tailored to a project's revenue stream. Like TIFIA loans, credit from a SIB can be used to improve a project sponsor's access to external debt financing, attract new funding into transportation, and validate infrastructure financing to the private market. Again, this implies revenue-generating projects such as toll roads. However, actual use of SIBs outside of California has mainly been a mechanism to speed project delivery by borrowing against future transportation revenues such as sales taxes or fuel taxes or even general funds. While the goal of

a SIB may be to fill shortfalls in areas like local road maintenance, it is questionable whether using debt for an ongoing need is appropriate.

Many states have embraced the SIB concept, using it to fund a number of transportation projects. Michigan, Missouri, Texas, and Puerto Rico have been spotlighted by the federal Department of Transportation for their creative and aggressive implementation of the SIB program. Some examples of the diversity of purpose and source of repayment for SIB loans are shown in Table 5.2. Loans have ranged in size from \$20,000 to \$35 million. It is important to note that most of the projects being financed do not have an explicit revenue source (i.e., tolls). Instead, counties, cities, MPOs, etc., pledge tax revenues for repayment.

Table 5.2 Projects Financed with SIB Loans	
Project Purposes	Sources of Repayment
Intermodal Facilities	Local funds & estimated sales tax receipts
Industrial Parks	Tax increment funds (TIF)
State and County Road Improvement	Parking fees
Utility Relocation	Future federal and state highway funds
Airport Cargo Interchange	Freight transport fees
Bridge Replacement	MPO funds
Source: FHWA 1997-2000.	

A number of states have capitalized on the ability of SIBs to accelerate the completion of needed transportation infrastructure projects. While SIBs represent an opportunity for California to leverage federal and state funds, accelerate projects, provide access to low-cost capital, and improve access to other financing, the program does not represent a source of new transportation revenue. If the assumption is that current revenues do not meet existing needs, then SIBs will not address this shortfall over the long term.

5.4.4 GARVEE Bonds & Transit GANs

Grant Anticipation Revenue Vehicles (GARVEE Bonds) and Transit Grant Anticipation Notes (GANs) are financing instruments that enable states to fund transportation projects (highways and transit, respectively) based on anticipated future receipt of federal funds. States or local agencies borrow from bond investors and use future federal funds to repay the debt. Due to increasing formula-based distribution of federal funds, GARVEEs and GANs have become a more viable financing tool which ensures a steady stream of revenues.

Four states have issued over \$1.3 billion in GARVEEs, and the New Jersey Transit Corporation was the first transit agency to issue stand-alone Transit GANs, issuing \$151 million in 1999 and \$234 million in 2000.

The California legislature passed Senate Bill 928 in October 1999, which enabled the issuance of GARVEEs. Because of the dedicated source of repayment, the legislation specified that GARVEE debt will not count against state general obligation debt limits. It is not foreseen that GARVEEs will be issued in the near future due to California's large unspent balance of both

state and federal highway revenue. GARVEEs can enhance flexibility by providing federal highway funding for projects only eligible for state highway funds.

GARVEE bonds could be a source of financing for certain costly, high-priority projects (i.e., seismic retrofit) which otherwise could deplete revenues from the pay-as-you-go pool. Like any type of debt financing, the benefits would need to be weighed against the addition of debt service costs. To the extent that bond financing allows a project to be built sooner, costs associated with inflation could be avoided and benefits delivered to the public earlier. However, the potential for GARVEEs and GANs to shift transportation revenues toward capital expenditures and limit funds for operation and maintenance should be seriously considered before they are pursued.

5.5 RECOMMENDATIONS FOR USING DEBT IN TRANSPORTATION FINANCE

First and foremost, any use of debt in transportation finance should be accompanied by a rigorous assessment of costs and benefits. The potential benefits of using debt, such as avoiding inflation and reducing congestion sooner, must be weighed against the costs, including interest costs. When benefits exceed the costs, debt financing should be considered. This requirement is a major reason that debt at the state level is inappropriate. When state general obligation bonds are issued, it is simply a way to raise a large amount of money that is eventually allocated at the project level on a grant basis. It is impossible on a statewide basis to do a collective cost-benefit analysis, and in practice projects are picked to appeal to legislators or voters, not to maximize benefits over costs. Additionally, these bonds must be repaid with general revenues, which has the disadvantages already discussed. A final risk is that in the future the state may find itself with more pressing uses for the general funds it has committed to those transportation bonds.

While assessing needs is not the focus of this report, we have shown that traditional sources of revenue for transportation have diminishing buying power. It is generally questioned whether the existing revenue stream is sufficient to support the current level of investment in transportation infrastructure, much less provide additional infrastructure to accommodate California's projected growth. The general nature of operations and maintenance expenditures is that they are annual and ongoing (as opposed to the large upfront costs associated with providing new capacity). *Given the more regular expenditure pattern for operations and maintenance, California generally should not use debt to increase revenues to pay for these ongoing expenditures.* This would further bias new capacity over upkeep of existing valuable transportation infrastructure and reduce future revenues for operational needs. Thus, issuing debt against fuel-tax receipts through mechanisms like GARVEE bonds is inappropriate.

Debt can be an appropriate mechanism for delivering new infrastructure when it is explicitly linked to new transportation revenues. Local and regional governments should be enabled to increase transportation revenue sources such as tolls to finance regionally significant projects. The state can also be an enabler by making itself a lender instead of a borrower. Through mechanisms like State Infrastructure Banks, the state can help local areas finance projects with transportation revenues. The TCA received federal backup lines of credit when financing its projects, but future projects will probably not have this federal benefit, and the role can be played by the state instead.

Appropriately structured, project-based, non-recourse financing is a useful mechanism for continuing the user-fee philosophy of transportation finance, providing incentives for low-

cost service delivery, introducing innovations, and protecting general taxpayers from expensive projects that may not be used heavily enough to justify their cost. It is true that shifting the burden of financing new infrastructure primarily to its future users is a departure from historical California pay-as-you-go highway finance. However, in an era when the buying power of revenues — particularly fuel taxes — is declining, and the quality of existing infrastructure is in doubt, maintaining current assets should be prioritized over new capacity unless there are significant increases in existing revenue.

To facilitate more project-based, non-recourse financing, the State should allocate the transportation revenues it controls to projects that are selected wisely. One way to accomplish this is through “shadow tolling,” where a public or private project manager receives revenues (e.g., from the state gas tax), based on project usage. This would reward heavily used projects and augment local revenue sources. Shadow tolls could be criticized for providing an incentive to congest a highway. If so, the shadow toll payment could be structured to reward faster average speeds to encourage efficient management of a project. One could imagine a project switching from flat actual tolls to a value-pricing scheme to reduce congestion and earn a higher state allocation of fuel-tax monies even if the change is neutral on a direct toll revenue basis.

In conclusion, using debt and “innovative financing” are not solutions to the revenue issues addressed throughout most of this report. Instead, debt can be used in a relatively limited number of cases to help deliver regionally significant infrastructure and continue the user-fee tradition in transportation finance.

CHAPTER 6

PUBLIC-PRIVATE PARTNERSHIPS

This chapter discusses a debt financing strategy emphasizing private sector involvement in transportation. Specifically, it focuses on public-private partnerships — arrangements in which a public agency contracts with a private or nonprofit entity for the development and/or operation of transportation infrastructure.

Public-private partnerships can offer several advantages over pay-as-you-go financing and public debt. First, the private sector often has the flexibility and market discipline necessary to build transportation infrastructure faster and more cheaply than the government. Second, public-private partnerships can provide government agencies with needed technical expertise. Third, partnerships allow the public and private sectors to efficiently allocate the financial risks of infrastructure construction. Finally, public-private partnerships may help financially constrained governments close the gap between transportation needs and available revenues (Taylor 2000).

Nevertheless, public-private partnerships do not always succeed in providing high-quality, low-cost transportation improvements. Legitimate concerns remain about the willingness and ability of such partnerships to balance private profits and public goals such as reduced traffic congestion. It should be emphasized that only a limited number of projects are likely to provide conditions attractive to the private sector — public-private partnerships should be viewed as a way to build a small number of new facilities, but not as a single-handed solution to any perceived shortage of transportation revenues. The following sections briefly examine the history and extent of public-private partnerships in transportation, profile four such arrangements in California, and evaluate future prospects for the use of this financing technique.

6.1 PUBLIC-PRIVATE PARTNERSHIPS IN TRANSPORTATION FINANCE

Public-private partnerships have long been popular in other countries. Historically, the private sector has been involved in the provision of transportation infrastructure in a number of countries. French *autoroutes* and Italian *autostrade*, national systems of limited-access high-speed toll roads, were both developed as partnerships between the public and private sectors (Taylor 2000). Today, a notable public-private project in Europe is Portugal's Vasco de Gama Bridge. Built for a cost of approximately one billion dollars, the 11-mile structure (the continent's longest bridge) has been a financial success and a source of national pride (*Economist* 2000). The \$16 billion Eurotunnel connecting France and England was constructed as a public-private partnership, and in the last decade major toll roads have been built or are under construction as public-private partnerships in such countries as Israel, Australia, and Canada.

Public-private partnerships are also common in developing nations. In these countries, the cost of basic infrastructure development can be an enormous fiscal burden on the public sector. Public-private projects such as the Metro Manila Skyway in the Philippines and the Delhi-Noida Bridge in India permit governments to fund needed infrastructure without overwhelming the national budget (Lockwood, Verma, and Schneider 2000).

During the nineteenth century, public-private road-building partnerships were quite common in the United States as well. Between 1831 and 1840, there were more than 450 privately-operated toll roads in New England alone (Wuestefeld 1991).¹ This system of individual private toll operations ultimately gave way to publicly-financed roads, however, as rapid increases in construction costs, traffic volumes, and maintenance requirements, combined with widespread concerns about public safety and national defense, transformed infrastructure provision into a purely public responsibility (Brown 1998).

In recent years, however, public-private partnerships have grown more popular in the United States. Faced with growing infrastructure needs and shrinking budgets, the federal government has modified several regulations that previously discouraged private involvement in federal highway projects. It has also introduced a program offering credit assistance to private sponsors of eligible surface transportation projects and seed money for public-private partnerships. Many states have also attempted to encourage public-private partnerships by passing legislation empowering transportation agencies to seek project proposals and funding from the private sector.

6.2 RECENT PUBLIC-PRIVATE PARTNERSHIPS IN CALIFORNIA

In California, this state enabling legislation is known as Assembly Bill 680 (AB 680). Passed by the legislature in 1989, it authorized Caltrans to enter into franchise agreements with private entities for the development of four demonstration projects in transportation (Cohen 1991). The law requires a Build-Transfer-Operate (BTO) development model in which projects are built and operated privately, but the state owns all completed infrastructure. Each private sector partner receives a franchise empowering it to operate the facility for up to 35 years. During that time, the operator is free to set and collect tolls sufficient to produce “a reasonable return on investment” (Cohen 1991). All “excess” toll revenues must either be used to reduce the project’s debt burden or be paid directly into the State Highway Account.

On August 1, 1990, Caltrans’ Office of Privatization received eight project proposals. In theory, any transportation project would have been eligible for the AB 680 program, but developers were primarily interested in the construction of toll roads, as tolls are often the best way to realize a direct return on investment (Taylor 2000). Caltrans eventually selected four projects for the program: Express lanes in the median of State Route 91 in Orange County; a new highway between the east side of San Diego and the Mexican border; an 11.2-mile extension of the Orange Freeway near Los Angeles; and a new 85-mile highway in northern California connecting I-680 near Sunol to I-80 near Vacaville.²

6.2.1 State Route 91 Toll Lanes

To date, the State Route 91 Express Lanes are the only AB 680 project to be completed. The lanes run ten miles within the median of SR 91 (also known as the Riverside Freeway) in Orange County, from the Riverside County line to the Costa Mesa Freeway (State Route 55).

¹ Later, public-private partnerships would also play an important role in the construction of the nation’s rail and canal systems.

² Interestingly, at the time of Caltrans’ selection, none of these projects were included in the current State Transportation Improvement Program.

This route is one of the only links between Riverside and Orange Counties. Tolls vary by time of day and are collected electronically using an automatic vehicle identification (AVI) system. The route is the first privately-built toll road in California and the first non-toll highway in the state to which toll lanes have been added.

The project was built by a private consortium called the California Private Transportation Company (CPTC), made up of two US construction firms and a French toll-road firm. Because the project added lanes within an existing freeway right of way, the CPTC was able to secure permits and financing relatively easily. Construction also proceeded quite rapidly, and the entire project was completed in just four years. In total, the SR 91 Express Lanes cost about \$135 million to build.

The SR 91 Express Lanes opened in December 1995 and have been reasonably successful. The facility offers four new lanes of traffic and, at rush hour, reduces the length of a trip between Riverside County and Anaheim by at least thirty minutes. According to one local newspaper, the express lanes “reduced congestion on Highway 91 to levels not seen in fifteen years” (Thurston and Berkman 2000). Not surprisingly, the number of vehicle trips in the express lanes has increased each year, as has the facility’s customer base. Today, roughly 25 percent of all cars traveling on SR 91 at rush hour use the express lanes (Hulsizer 2000). Gross revenues and total income have also increased, though this may be attributable to toll hikes. The CPTC has raised the maximum toll rate on three separate occasions. Moreover, whereas carpools were originally allowed free access to the express lanes, they are now assessed a (reduced) toll. Table 6.1 provides information on the road’s financial performance and the amount of use.

Year	Gross Revenues (millions)	Operating Expenses (millions)	Total Income (rev.-exps.) (millions)	Debt Service (millions)	Profit (millions)	Transponders in Circulation	Vehicle Trips (millions)
1996	\$7.10	\$6.30	\$0.70	\$4.80	-\$4.10	77,000	5.7
1997	\$13.90	\$9.10	\$4.70	\$9.70	-\$5.00	107,000	8.6
1998	\$20.10	\$8.70	\$11.40	\$11.10	\$0.30	114,000	9.3
1999	\$19.50	\$9.10	\$10.40	n/a	n/a	124,000	7.3

Sources: Hulsizer 2000; Spielvogel 1999; Garvey 1999; CPTC 2000.

Despite its successes, the SR 91 project has generated a fair amount of criticism in the press. A few drivers have complained about the toll increases. Also, at times there has been some criticism of the CPTC’s customer service. (The company claims that it has ironed out these problems.) A plan by the CPTC to sell the franchise to a non-profit also produced a wave of criticism in the newspapers, and the CPTC finally abandoned the effort. Finally, there was ongoing negative publicity surrounding what the press described as a “safety” problem. In 1997, the CPTC learned that the local Caltrans office responsible for SR 91 planned to add 6.5 miles of “auxiliary lanes” adjacent to the private project. Officials at the Caltrans district office claimed that the lanes were needed to address public safety concerns. The CPTC produced statistical data supporting its claim that the Express Lanes had in no way compromised public safety. In addition, the CPTC argued that these additional lanes would reduce traffic on the Express Lanes

and reduce toll revenue substantially, thus violating a provision of its franchise agreement, which prohibits Caltrans from opening a competing transportation facility. When the district office refused to abandon the planned new lanes, the CPTC eventually filed suit against Caltrans for violating the franchise agreement. At this point staff at the Caltrans headquarters took over the case from the district office. This new investigation found that there had never been reasonable evidence of a safety problem. Caltrans postponed most of the planned improvements, and the two parties agreed to settle the suit.

Looking at the criticisms of the CPTC in total, it appears that the reported problems have either been short term and minor (i.e., some customer service problems), or proven untrue. Nevertheless, it is possible that the negative publicity will have made enough of an impression on the public and elected officials to hinder future efforts at public-private partnerships. If more projects are proposed in the near future, it is almost certain that the charges against the CPTC will come up again, and it remains to be seen whether or not it will prove difficult to convince elected officials that the SR 91 example does not suggest that public-private partnerships are inappropriate.

6.2.2 The San Miguel Mountain Parkway

The construction of the San Miguel Mountain Parkway (SR 125) has not progressed as quickly as the SR 91 lanes. This toll road is part of a larger project to build an eastern bypass around the city of San Diego. The San Miguel Mountain Parkway is the southernmost portion of the new route, extending from SR 54 to the Otay Mesa port of entry at the Mexican border. Tolls are projected to be \$1.25 for autos and \$4.00 for trucks, and will be collected both manually and electronically. The road will initially have four lanes, but may eventually include as many as eight lanes, and the median has been designed to be wide enough to accommodate carpool lanes or transit lines. The project is designed to ease congestion on nearby Interstates 5 and 805, accommodate truck traffic from the growing international commerce in the border region, and carry commuter traffic from the rapidly-growing suburban communities southeast of San Diego. A companion project known as the San Miguel Connector will be built at the same time as the San Miguel Mountain Parkway. It will connect the toll road to SR 54 and the northern portion of SR 125 at Bonita.

In 1991, California Transportation Ventures (CTV) was awarded a 35-year franchise to build and operate the San Miguel Mountain Parkway. This consortium was initially composed of four partners, each specializing in a different phase of the project's development: Parsons Brinckerhoff Development Group (planning and environmental design work); Fluor Daniel (land acquisition and construction management); Transroute (maintenance and operation of the toll road); and Prudential-Bache Capital Funding (primary financial advisor).³ CTV plans to finance initial construction on the parkway with a \$248 million bond issue. The consortium has yet to decide whether it will structure the financing as a tax-exempt bonding or a taxable finance strategy. If it chooses the former, it would have to transfer the franchise to a special-purpose nonprofit group and be "rehired" to build and operate the toll road. If it pursues the latter strategy, CTV will retain ownership of the franchise and control all revenue streams. The San

³ The current consortium is composed of Parsons Brinckerhoff Infrastructure Development Company, Egis Projects, Koch Industries, and Fluor Daniel.

Miguel Connector, on the other hand, will be financed publicly with a mix of county sales tax revenues and federal highway funds. The connector road is estimated to cost approximately \$92 million.

Unlike the SR 91 express lanes, the San Miguel Mountain Parkway project suffered numerous delays, largely attributable to local opposition, especially from environmentalists. One local environmental group claims that the toll road will negatively impact over four hundred plant and wildlife species, 47 of which are sensitive and eight of which are endangered. Other activists worry that the road might lead to the contamination of the nearby Sweetwater Reservoir. CTV and Caltrans did a poor job preparing the preliminary environmental reports for the project, provoking a couple of lawsuits from local preservation groups. Although some of these cases are still pending, the Federal Highway Administration awarded CTV a favorable Record of Decision — the final environmental clearance necessary to begin construction — in June 2000.

There is also some question about the need to build a new highway between Otay Mesa and SR 54. The San Miguel Mountain Parkway first appeared in Caltrans' plans in the late 1950s. During the 1970s, however, the state decided that the road was unnecessary at the time, and removed the route from its master plans. Some critics feel that there is still no need for the parkway. They cite a statement by the Environmental Protection Agency (EPA) that found that SR 125 is unlikely to relieve traffic congestion on Interstate 5. Moreover, they claim that the toll road cannot be justified as a truck route because I-5 and I-805 provide more direct access to Los Angeles and are free. In fact, some critics suggest that local rail improvements will soon render the San Miguel Mountain Parkway unnecessary for moving freight north and east of San Diego (Chase and Greene 1998).

Finally, some community groups are worried that the toll road will adversely affect the quality of life in rural portions of San Diego County. Several community-based organizations have asked for mitigations such as landscaping, the relocation of Little League fields, and the addition of hiking, biking and equestrian trails. Local governments have a different set of quality-of-life concerns — they oppose the use of tax-exempt bonds for toll road construction and worry that high toll rates will make it difficult to maintain a diverse population.

Construction on two of the northern (non-toll) sections of SR 125 is already underway. At present, CTV is scheduled to begin building the San Miguel Parkway in 2001. The consortium expects the project to be completed by 2004. It is unclear whether environmental concerns will continue to delay the project, but it seems likely that some degree of local opposition to the toll road will persist.

6.2.3 Other AB 680 Projects

The other two public-private partnerships authorized by AB 680 have not progressed beyond the initial granting of the franchise. The Parsons Municipal consortium won the right to build and operate an 85-mile highway stretching north from I-680 near Sunol to I-80 near Vacaville. Although Caltrans thought highly of the project, it was ultimately doomed by a combination of local opposition and funding difficulties. Similarly, the National Toll Road Authority (NTRA) was unable to finance the Santa Ana Toll Road, a tolled extension of the Orange Freeway (SR 57) linking Anaheim with I-405. The project involved an 11-mile, four-

lane expressway built above the Santa Ana River channel and is estimated to cost about \$700 million.

In recent years, however, new financing techniques have sparked renewed interest in the Santa Ana Toll Road. In 1999 the franchise rights to the project passed from the NTRA to American Transportation Development (ATD). ATD hopes to finance construction with tax-exempt bonds. The consortium would create a nonprofit entity to float tax-exempt bonds for road construction, thereby lowering the cost of the project (currently estimated at \$1 billion). ATD would then be “hired” to design and build the facility, and the non-profit entity would operate it. Like the tax-exempt schemes proposed for portions of SR 91 and SR 125, this plan has inspired criticism from local officials, who feel that private companies should not be allowed to use tax-exempt financing to build toll roads. They would prefer to see the project built and operated by a joint powers authority consisting of municipal governments, Orange County, and the Transportation Corridor Agencies. Either way, the high cost of building the Santa Ana Toll Road will probably make some kind of tax-exempt financing necessary.

6.3 PROSPECTS FOR PUBLIC-PRIVATE PARTNERSHIPS IN CALIFORNIA

Should California continue to encourage public-private partnerships to build and operate transportation infrastructure? The results of the AB 680 projects, combined with a brief review of public-private developments in other places, suggest that future partnership proposals should be approached with caution.

6.3.1 Lessons from California

Several lessons can be drawn from California’s recent efforts to promote the formation of public-private partnerships. First, *public-private partnerships are fairly popular with private entities*. Builders and developers seem especially interested in these arrangements — all four consortia included at least one of each. Furthermore, the involvement of construction and development firms seems to be associated with successful project delivery. The partnerships involved in SR 91 and the San Miguel Parkway consist almost entirely of such firms. In contrast, the partnerships originally involved in the Santa Ana Toll Road and the Bay Area tollway were dominated by financial institutions.

Builders, contractors, and developers are often interested in using tax-exempt financing structures. These firms have specialized expertise in project development, rather than facilities management, and are accustomed to generating revenues from construction work and development fees. Consortia such as the CPTC and CTV are therefore likely to be interested in a financing structure that allows them to transfer their franchise to a nonprofit group. The nonprofit is then expected to “hire” the original consortium to develop and build the project. This arrangement reduces debt service on the project and permits construction and development firms to concentrate on familiar responsibilities.

Noncompetition clauses are necessary to ensure profitability, but they have caused controversy and may increase political opposition to toll road construction. The SR 91 Express Lanes were at one point widely criticized for creating unsafe traffic conditions on the Riverside Freeway. The non-competition agreement in the CPTC’s franchise prevented Caltrans from adding lanes, provoking outraged reactions from several local government officials. (Caltrans ultimately dropped its claim that new lanes were needed to address a safety hazard.) Similarly,

local officials have objected to both the SR 91 and SR 125 projects on the grounds that non-competition agreements will prevent Caltrans from making needed capacity improvements to existing transportation infrastructure.

Public-private partnerships have successfully experimented with a variety of toll collection innovations. The SR 91 project was the first toll facility in California to employ time-of-day pricing and electronic toll collection (Cohen 1991). CTV plans to make use of these tolling techniques on SR 125 as well (Lockwood, Verma, and Schneider 2000).

6.3.2 Lessons From Other Public-Private Partnerships

The above conclusions are not sufficient to fully evaluate the desirability of future public-private partnerships in California. There is very little variation among the AB 680 projects: all franchises were granted at roughly the same time; all involved the construction of a limited-access freeway; and all employed a BTO development model. Future partnerships might not share these characteristics. In order to better assess the future prospects for public-private partnerships in California, it is useful to examine the results of partnership efforts outside of the state.

The transportation finance literature provides several insights on public-private partnerships in other states and countries. *Although limited access freeways are the most common type of public-private development, other facilities also seem well-suited for such a partnership.* The Rosario-Victoria bridge in Argentina, the Delhi-Noida bridge in India, and the Melbourne City Link tunnel in Australia are some of the most prominent — but by no means the only — examples of non-freeway public-private developments. In fact, public-private partnerships played an important role in some of the real estate development projects connected to the Toronto subway system.

Land acquisition can pose a significant challenge to public-private partnerships, regardless of the infrastructure type. It is often very difficult for governments to defend the taking of private property when such an action directly benefits a for-profit entity. As a result, public-private partnerships often have trouble (both legal and moral) justifying the use of condemnation powers to acquire land for the construction of transportation infrastructure (Taylor 2000).

6.3.3 Are Public-Private Partnerships Desirable?

In light of these findings, what can we conclude about the desirability of public-private partnerships? Specifically, how well do such partnerships accord with the principles for improving transportation outlined in Chapter 1?

Public-private development initiatives can be financially effective. Partnerships allow financially-constrained governments to meet some of their infrastructure needs. Furthermore, they often generate toll revenues adequate to cover construction costs because they have the flexibility to index toll rates to economic conditions. In contrast, public toll authorities usually do not increase tolls to keep pace with inflation, which reduces the real value of toll revenues. Unfortunately, it is difficult to accurately predict the demand for tolled infrastructure, making toll revenues somewhat unstable.

Public-private partnerships have both positive and negative effects on transportation efficiency. Partnerships help promote efficiency in two ways. First, they facilitate the construction of needed infrastructure for which public funds are unavailable, thereby expanding capacity and efficiency of the transportation network. Second, partnerships often employ fee structures, such as congestion pricing, that are designed to maximize efficiency. Unfortunately, the non-compete clauses in many public-private franchise agreements may compromise efficiency for the wider transportation system in the area. These stipulations might reduce the flexibility of public agencies, rendering it difficult to accommodate traffic growth in an efficient fashion.

Public-private toll roads fit the principle of fiscal efficiency quite well. Many public-private partnerships use innovative toll collection technology that is easy to administer and difficult to circumvent. Although some customers have complained of technical difficulties and poor customer service, it seems reasonable to expect that California's public-private partnerships, like those operating in other states and countries, will address and solve these problems in a timely manner.

According to the benefit criterion, public-private partnerships are fairly consistent with the principle of equity. Public-private toll facilities ensure that users pay similar costs for similar benefits. Most partnerships employ a toll structure that allows them to satisfy the cost criterion as well.

In the short run, the political acceptability of public-private partnerships depends in large part on the details of individual projects. When partnerships undertake popular projects, they are likely to be politically acceptable, less so when they attempt to build unpopular facilities. In the long term, however, political acceptability is likely to be based on a combination of customer service, toll rates, and the toll operator's relationship with local and state officials. It may be difficult for public-private partnerships to meet these requirements for long-term popularity. Some partnerships have been criticized for poor customer service, and all must eventually raise tolls. Furthermore, public-private projects often create an adversarial relationship between toll operators and local officials (Lockwood, Verma, and Schneider 2000).

6.4 CONCLUSION

Public-private partnerships can provide government agencies with needed technical expertise, allow them to build transportation infrastructure quickly and cheaply, and help financially-constrained governments to close the gap between transportation needs and available revenues. Recent efforts to encourage public-private partnerships in California have not always produced the desired results, however. The SR 91 lanes is the only one of the four projects authorized under AB 680 that has actually been completed, though construction is underway on a second (SR 125). Of the remaining two projects authorized, one has been abandoned, and the other, the Santa Ana Toll Road, has yet to progress past the preliminary stages, though the current franchisee is very interested in pursuing the project and has requested that the current franchise requirement for construction to commence by January 11, 2001, be extended to January 11, 2007, to enable sufficient time to deliver the project.

Experience to date in California has demonstrated the difficulty of forming partnerships capable of delivering completed projects and operating them effectively. In California, consortia dominated by construction and development firms have been the only groups capable of moving

beyond the planning stage. They have been less successful dealing with local governments, community groups, and customers. It also seems that private entities dominated by service-oriented firms (financial and otherwise) may lack the technical expertise necessary to complete major infrastructure projects.

In some situations, however, public-private partnerships seem well-suited to the development of transportation infrastructure. *Partnerships are an attractive option when the public sector lacks the capacity to finance needed transportation infrastructure.* Of course, this private sector involvement is likely to be limited to projects that offer reasonable rates of return. Bridges and freeways are two types of projects that might do so. Looking at the overall picture of California's potential future revenue needs, public-private partnerships may provide capital for select capacity expansions, but they are highly unlikely to make up for widespread revenue shortfalls or to replace the need to raise additional revenue through taxes or fees.

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APPENDIX I

WORKSHOP ON STRATEGIC FINANCE OPTIONS FOR CALIFORNIA

To assure that the findings of this study are useful to a variety of interest groups in California, a day-long workshop was held on the UCLA campus to present and discuss preliminary findings and recommendations. Over thirty people attended, including academics, representatives of municipal, county, and state governments, metropolitan planning organizations, automobile clubs, transit service providers, nongovernmental organizations, environmental groups, and consultants who specialize in transportation policy and finance. The session was moderated by LeRoy Graymer, founding Director of the Public Policy Program of UCLA Extension. Members of the project team made brief presentations summarizing methods, data, interim findings, and tentative conclusions. Participants engaged in a lively dialogue on these themes.

Participants in the workshop urged the study team to develop a vision for the future of transportation finance in California that is not fettered by current problems and immediate needs. Rather, they said, a long-term, comprehensive view is needed. One participant noted that the federal Government Accounting and Standards Board would soon require all state infrastructure to be valued and managed like a private corporation, and suggested that this transition to asset-oriented management provides California an opportunity to comprehensively rethink its approach to transportation system finance and management. Another participant supported the research already underway by noting that members of the legislature and many other public officials believe that transportation finance is not broken, and therefore not in need of fixing. She urged us, however, to assert forcefully that it is indeed broken, and hoped that this study would help to focus needed public attention on the problems of equity and efficiency in financing the California transportation network.

Participants in the dialogue urged the study team to recognize that California is huge and diverse, and so it is no surprise that its transportation policies, programs, and needs are also diverse. There are enormous differences between north and south, between desert, coast, and mountain, and even among jurisdictions within a single metropolitan area. As a practical example of the consequences of this principle, for example, one participant urged the team to separately consider rural versus urban uses of transit subsidies provided under the Transportation Development Act (TDA).

Workshop participants pointed out that new, major changes in the ways California charges truckers user fees need to be considered. In order to become consistent with other states in the apportionment of revenues from interstate truck traffic, California has had to revise its truck weight fees, basing charges on laden, rather than unladen, weights.

A great deal of discussion was devoted to the relative merits of and problems with a transportation finance system that gives great weight to user fees as sources of revenue. Participants generally expressed support for user financing of transportation systems, but they acknowledged that for political reasons California transportation finance is slowly moving farther and farther from reliance on direct user fees. While they hoped for a more consistent system, workshop participants predicted that the trend toward other forms of financing, such as sales taxes, would continue and even accelerate.

The workshop attendees felt that the draft version of the report failed to adequately distinguish between local and regional sources of support for transportation plans and programs, and advised the research team to make these distinctions more explicit in the final draft of the report.

Several participants felt that institutional reform was needed in transportation. They argued, for example, that slow project delivery is one of the most severe policy problems facing transportation in California, and felt that there is a need to address this through restructuring environmental review processes and design and construction procedures. It was noted that in England and in several other states, changes in the ways transportation is financed have gradually led to reforms in transportation institutions. It was suggested that it's possible to envision institutional changes in California as well.

Needs assessments in transportation were discussed extensively during the workshop. It was agreed that the expenditure of transportation revenues should be based on reasonably rigorous assessments of need according to a wide variety of technical criteria, and that the tools and techniques available now in California are inadequate and subject to political influence.

An active discussion took place around the question of whether California should attempt to finance most transportation projects and programs using current revenues, or whether it was also appropriate to incur bonded indebtedness to expand or maintain the transportation system. While there were some differences of opinion within the group, it was generally noted that borrowing is appropriate when capital projects will produce benefits over many years, justifying the cost of financing the loans. It is also more appropriate to use debt financing for projects that will generate a stream of revenues over many years than to borrow now to pay for projects that will require later payments of interest and principal from general statewide sources. In addition, most participants felt that the state should not borrow funds to finance routine highway maintenance or to subsidize ongoing transit operations.

The workshop concluded with a lively discussion of alternative research topics that might be pursued in Phase II of this study. Among the topics discussed and considered were:

- 1) A study of laws governing public-private partnerships in transportation in other states and countries, and a comparison with those that apply in California. Participants felt that

California did not especially encourage private participation in transportation programs, and that examples from other locations could be used to strengthen our approaches.

2) A study of HOT (high occupancy/toll) lanes in California as a combined strategy for accomplishing transportation demand management and increasing revenues generated by users of the transportation system. It might be possible to structure a demonstration project, with the support of federal funding, to expand the use of HOT lanes in California beyond the SR91 and I-15 experiments already underway.

3) Case studies of the implementation of recent toll roads in California and the political and economic controversies that have arisen. In both Orange County and with respect to SR 91, it has proven necessary to “repackage” the financing of some toll roads after they were built and already operating. The suggestion was that systematic case studies of these projects might provide insights that would enable future toll road projects to be implemented in less controversial and more successful ways in this state.

4) The truck fee restructuring recently enacted by the legislature could be the subject of a useful research project evaluating its success or failure on the basis of effectiveness, efficiency, and equity.

5) A follow-up study might evaluate procedures and practices used for needs assessments in other states to make recommendations for improving them in California.

Attendees included the following participants:

Kazeem Attaran
CALTRANS

Robert Ayer
City of Santa Monica Municipal Bus Lines

Mitchell Baker
CALTRANS

Frances Banerjee
LA Dept. of Transportation

Ronald Bates
League of California Cities, Orange County Division

Arthur Bauer
Arthur Bauer & Associates

Dan Beal
Automobile Club of Southern California

Susan Bok
LA Dept. of Transportation

Jeffrey Brown
UCLA, Dept. of Urban Planning

Daniel Chattman
UCLA, Dept. of Urban Planning

Randall Crane
UCLA, Dept. of Urban Planning

Keith Curry
Public Financial Management, Inc.

Kenneth De Crescenzo
CALTRANS

Steve Erie
UC San Diego, Department. of Political Science

Lee Hultgren
SANDAG

Janet Huston
League of California Cities, Orange County Division

Norm King
San Bernardino Association of Governments

Nancy Lee
CALTRANS

Therese McMillan
Metropolitan Transportation Commission

Dean Mischzynski
California Research Bureau

Michael Moore
California Energy Commission

Charles Oldham
California Transportation Commission

James Ortner
Orange County Transportation Authority

Robert Poole
Reason Foundation

Valerie Pryor
LA Dept. of Transportation

Deborah Redman
Southern California Association of Government

Lisa Schweitzer
UCLA, Dept. of Urban Planning

Edward Shikada
City of Long Beach, Traffic & Transportation Bureau

Ryan Snyder
Ryan Snyder Associates

Beth Thomas
BART Capital Development

Patrick Tyner
CALTRANS

Jason Weller
Legislative Analyst's Office

APPENDIX II

PROJECTION METHODOLOGY AND DOCUMENTATION

This appendix explains the methodology used to compute the forecasts of transportation revenues presented in Chapter 2. Section II.1 provides details on each revenue source included in the projection, and Section II.2 provides notes on additional elements of the projection.

II.1 DETAILS BY REVENUE SOURCE

Fuel Taxes

We assume that neither the federal nor state government raises the fuel tax rates. Thus, the decline in revenue reflects the effect of inflation offset partially by growth in fuel consumption. The projected revenue assumes that all federal fuel tax revenues are returned to California. Revenue is equal to the tax rate per gallon multiplied by the consumption of fuel in gallons.

Sales Taxes

Two types of retail sales taxes fund transportation: the Local Transportation Fund (LTF), a statewide 0.25 percent tax, and locally enacted sales taxes, which are typically a half percent of retail sales in the counties which enact them. For both of these taxes, growth above and beyond inflation was assumed to track population growth (either statewide for the LTF or by county for locally enacted sales taxes). While retail sales usually track income and economic growth, this more conservative growth assumption was used due to the uncertainty of economic growth over the long term. The aggregate sales tax prediction shows an inflation-adjusted decline due to the fact that 15 of the county taxes will expire between 2002 and 2015. This projection assumes that renewal of the taxes is unsuccessful due to the new two-thirds voter approval requirement. Thus far, only four county sales tax measures have received two-thirds approval.¹

Sales Tax on Fuel

Currently a small contributor to the transportation finance system (via the Public Transit Account), this source will quintuple in 2000-01 as revenue typically directed to the general fund will go to the governor's Transportation Congestion Relief Program (TCRP). This new source is included for the six years of the TCRP, even though currently only the first year has been approved by the legislature. We also assumed that the funds would no longer be dedicated for transportation after the TCRP program ends in 2006, since there is no existing plan to continue to use this source of revenue for transportation. Given the fact that this tax has traditionally served

¹ The projection does not include expected revenue from the new Alameda and Santa Clara county sales taxes which passed in the election of November 2000, after the authors had completed their projections.

as a source of general fund revenue, it is unlikely that the monies would be dedicated to transportation in the future once the current budget surpluses disappear.

For the years 1999 and 2006-2020, the revenue from the sales tax on fuel that will be spent on transportation (the amount going to the Public Transit Account) was calculated as follows:

- PTA Revenues = Gasoline PTA Contribution + Diesel PTA Contribution

- Gasoline PTA Contribution =
(4.75 percent sales tax) * (9-cent state excise tax) * (forecast gasoline consumption)

- Diesel PTA Contribution =
(4.75 percent sales tax) * (inflation-adjusted base price of diesel fuel +
federal excise tax) * (forecast diesel consumption)

For the years 2000-2005, the revenue from the sales tax on fuel that will be dedicated for transportation purposes was calculated according to the formula in the TCRP:

- TCRP =
Diesel PTA Contribution + [(5.0 percent sales tax) * (inflation-adjusted base price of
gasoline + all federal and state excise taxes) * (forecast gasoline consumption)]

Miscellaneous User Fees

These sources include state registration, weight, and driver's license fees. To project these revenues, we used inflation-adjusted data from the last fifteen years to generate the straight-line trend of these revenues.

Transit Fares

Over the last twenty years, inflation-adjusted transit fare revenues grew annually at 0.4 percent, which is slightly above the population growth rate for the same period. We assumed a continuation of this trend.

Tolls

We assume that toll revenues will be affected by two counteracting trends. The first is political pressure to eliminate existing tolls or hold toll rates constant in nominal terms. Recently, the tolls were eliminated on the Vincent Thomas Bridge serving Los Angeles Harbor and the Murray Road Bridge in Oceanside. The toll for the San Diego-Coronado Bridge will be

eliminated as of July 1, 2002. The second trend is the growth in tolls related to new highway infrastructure (the State Route 91 Express Lanes, the Transportation Corridor Agencies' toll roads, and the soon to be constructed State Route 125 San Miguel Mountain Parkway). Given these two trends, we predicted that tolls will grow at their historic, inflation-adjusted rate of 2.6 percent.

Property Taxes (for expenditures on transit & highways only)

For these smaller revenue sources, we used inflation-adjusted data from 1979 to the present (the post-Proposition 13 years) to generate straight-line trends, which we applied over the projection period.

II.2 ADDITIONAL NOTES

Fuel Consumption Forecasts

Both Caltrans and the California Energy Commission (CEC) have generated gasoline and diesel fuel consumption forecasts for the state (Caltrans, Transportation System Information Program 1999; California Energy Commission 1999). Our diesel fuel projection is simple: we just averaged the forecast from the CEC with the forecast produced by Caltrans. For gasoline, the CEC creates both low-consumption and high-consumption scenarios. The low-consumption scenario assumes that the percent of new vehicles sold which run on alternative fuel will rise to ten percent by 2003 and remain at that level thereafter. Fuel economy for conventional vehicles is assumed to grow by 15 to 28 percent between 1997 and 2015, depending on vehicle class. The high-consumption scenario assumes no improvements in fleet fuel efficiency. Caltrans, on the other hand, has just one forecast of fuel consumption. The consumption level predicted by Caltrans, which does not include improvements in the average fleet fuel efficiency, is higher than both of the CEC forecasts. To create our gasoline forecast, we averaged the midpoint of the CEC high- and low-consumption forecasts with the Caltrans prediction.

Fuel Price Forecasts

To calculate revenue from the sales taxes on fuel, we needed fuel price forecasts. These were obtained from the California Energy Commission's 1998 report *California Petroleum Transportation Fuels Forecast*. For both gasoline and diesel forecasts, the Commission's "Mid-Case Projection" scenario was used. According to this case, prices are equivalent to the average oil price after the Persian Gulf War (1991-97) and are projected at a flat rate of real price growth. The data we used came from Table A-2 and Table A-5 in the report. We believe that these forecasts are valid over the middle and long term despite recent fluctuations in the pump price of gasoline.

Population Forecasts

County and statewide forecasts came from the California Department of Finance (1998).

Inflation Factors

It was necessary to deflate projected revenues by inflation in a few cases. In those cases we used the projected U.S. Consumer Price Index from the UCLA Anderson Business Forecast (University of California, Los Angeles 1999).