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Alternatives for Producing and Financing
Transportation Services and Improvements in California

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Abstract

ALTERNATIVES FOR PRODUCING AND FINANCING TRANSPORTATION SERVICES AND IMPROVEMENTS IN CALIFORNIA

This report examines a range of alternatives for providing and financing transportation services and improvements in California. Some of these approaches are being employed today; others remain the subject of discussion, research, and spirited debate. Much of the paper focuses on highways and public transit since the two comprise most of the state's transportation budget and they face particularly serious challenges today and in coming years -- namely, deteriorating service levels, dwindling funds, and escalating demands being placed on them. Seaport and airport facilities are also examined because of the vital role they play in moving freight and commerce as well as passengers throughout the state. Following a brief discussion of the economic role of transportation in California, the paper concentrates on four major policy areas: service production and delivery options; alternative financing methods; possibilities for private assumption of public functions; and incentives for encouraging greater entrepreneurship in the delivery of transportation services. Specific recommendations made for financing future transportation improvements in California include greater reliance on competitive contracting of highway and transit services, an increase in fuel taxes collected on an ad valorem basis, the initiation of toll financing, greater private sector financing, deregulation of paratransit services, and the institution of performance-based transit operating subsidies.

ALTERNATIVES FOR PRODUCING AND FINANCING TRANSPORTATION SERVICES AND IMPROVEMENTS IN CALIFORNIA

I. Introduction

Transportation has been one of the driving forces behind the economic growth and prosperity enjoyed by Californians this past century. Highway, rail, air, transit, and waterport systems have stimulated and supported the state's overall economic development, providing access to resources and markets, facilitating trade, and linking people and jobs.

For most of this century, California's transportation system has been in a continual state of expansion. Seaports, airports, highways, and transit lines proliferated throughout the state as California's industrial base grew and diversified. For decades, the Port of San Francisco was the busiest on the West Coast, a focal point for trans-Pacific trade; Long Beach and Los Angeles have more recently attained that status. California's network of freeways and highways has become an international showcase of surface transportation, known for its enormity, efficiency, and engineering splendor. California has always had among the most extensive and modern urban mass transit networks in the nation, from Los Angeles's 1,200-mile trolley system built by utility and real estate magnate Henry Huntington around the turn-of-the-century to today's 78-mile Bay Area Rapid Transit (BART) system, the prototype of recent-generation heavy rail systems. The city of Los Angeles today boasts the largest all-bus system in North America -- the 3,000-vehicle Southern California Rapid Transit District (SCRTD). Air transportation has also been pivotal to the state's economic expansion. Over 200 general aviation and commercial airports dot the state, many functioning as major regional hubs. More air traffic flows between Los Angeles and San Francisco than along any other corridor in the country.

This massive expansion of the state's transportation infrastructure has slowed considerably in recent years, however. Only a few hundred lane-miles of highway are presently being added to the state highway system each year; maintenance now accounts for

most of California's highway budget [California Department of Transportation, 1984]. With the state facing a potential transportation funding shortfall of as much as half a billion dollars, even routine highway maintenance is in danger of being substantially cut back.

The slow-down in new highway construction stems, in part, from the fact that the state has a fairly mature highway system. Nearly 97 percent of the federal interstate system designated for California is complete and in most metropolitan areas the basic road net is in place. No major technological advances, moreover, appear on the horizon that might fundamentally change how Californians travel. Experts agree that the highway-automobile system and gasoline-fueled, piston-driven vehicles will remain the mobility standard for at least the next thirty years [Horton and Compton, 1984]. Thus, most highway-related public works projects will involve fine-tuning the existing system.

Fiscal pressures have also exerted a tremendous strain on California's transportation sector. Inflation in the highway building industry has been rampant, substantially devaluing the construction dollar. Revenues from the gasoline gallonage tax, the traditional mainstay of highway finance, have been eroded by both inflation and the introduction of more fuel-efficient fleets of automobiles. In real terms, California's 9 cents per gallon gasoline tax presently generates less income per motorist than the 4 cents per gallon tax did two decades ago. Federal cuts in transportation, combined with state and local spending limits (Propositions 4 and 13, in particular) and voter rejections of infrastructure bond referenda, have drastically reduced available funding.

California's mass transit systems have also been hurt by declining revenues and soaring costs. Operating deficits for the five largest publicly owned bus systems in the state more than doubled between 1979 and 1983, jumping from \$264 million to \$591 million in four years.¹ Research has shown that most of this deficit increase was not due to improved services but rather to rising labor and fringe benefit costs, unproductive work practices, lax management, unjustifiably low fares, and the unbusinesslike extension of services into marginal, low-density

markets [Pickrell, 1983; Cervero, 1984A]. Public subsidies, critics argue, have shielded local transit authorities from responsibility for rising deficits and removed any incentive to change entrenched fare and service practices and to adapt to new and changing markets. Facing drastic cuts in federal operating assistance and rapidly escalating deficits, transit properties in Los Angeles, San Diego, and Oakland have recently begun to prune services, raise fares, and terminate certain operations.

Unfortunately, these fiscal problems have come at a time when the state's transportation system is in need of a major overhaul. Many bridges and highways have surpassed their design lives and need to be replaced and reconstructed. Steady population and employment growth throughout the state has placed more demands on the road system -- motorized travel in California climbed from 160 billion vehicle-miles in 1981 to 208 billion vehicle-miles in 1985, nearly a 30 percent jump in just four years [California Chamber of Commerce, 1986]. With the steady decentralization of both residences and jobs over the past decade, moreover, traffic jams are no longer confined to California's central cities -- suburban and small town commuters are also getting caught in bumper-to-bumper traffic. In 1986, Californians lost an estimated 75 million hours per year -- or the equivalent of 8,560 persons spending a complete year sitting in their idling cars -- because of congestion [Road Information Program, 1987]. Powerful demographic and economic trends -- such as increases in middle-age, dual-worker households with fewer children and expansion of the service economy -- are giving rise to a population that will be even more dependent on their automobiles in coming years. All of this suggests that, in the absence of any significant road-building programs, congestion levels throughout California will only worsen with time.

In view of the fact that California's celebrated Proposition 13 is nearing its tenth anniversary and the tax revolt sentiment and political climate in the state have remained essentially unchanged, public funds for transportation will no doubt remain scarce through the remainder of this century. Local and state authorities and private carriers must find ways of

delivering transportation services more efficiently and at a lower cost or else seek new sources of funding to maintain, adapt, and expand services. Many of the new funding scenarios will necessarily involve the private sector, particularly where commercial developments stand to benefit from improved transportation access. Users and other direct beneficiaries will also be increasingly called upon to help foot the infrastructure bill. A healthy dose of competition, moreover, will likely be needed to help contain rising costs, increase productivity, and spur innovation.

This paper examines a range of alternatives for providing and financing transportation services and improvements in California. Some of these alternatives are being employed today; others remain the subject of discussion, research, and spirited debate. Much of the paper focuses on highways and public transit since the two comprise most of the state's transportation budget and they face particularly serious challenges today and in coming years -- namely, deteriorating service levels, dwindling funds, and escalating demands being placed on them. Seaport and airport facilities are also examined because of the vital role they play in moving freight and commerce as well as passengers throughout the state. Following a brief discussion of the economic role of transportation in California, the paper concentrates on four major policy areas: service production and delivery options; alternative financing methods; possibilities for private assumption of public functions; and incentives for encouraging greater entrepreneurship in the delivery of transportation services. See Kirlin [1986] for a general discussion of the underlying theories and rationales behind these four policy initiatives.

II. Role of Transportation in California

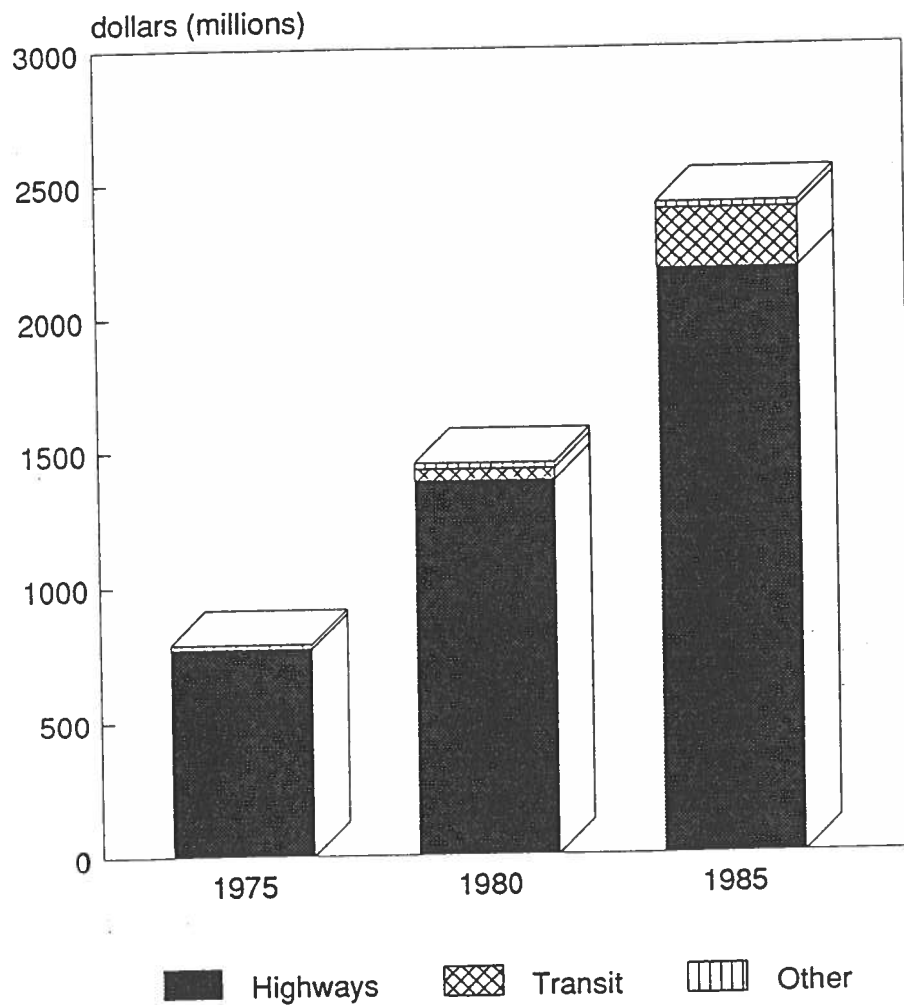
As an industry, transportation comprises nearly 17 percent of California's Gross State Product [California Department of Transportation, 1983]. Moreover, an estimated 13 percent of total business expenditures for new plant and equipment in the state are for transportation purposes [Transportation Policy Associates, 1985]. In addition, about 11 percent of California's jobs are transportation-related, including about 306,000 jobs in transportation service

industries, 274,000 jobs in transportation equipment manufacturing, and over one-half million jobs in activities that are wholly transportation related, such as insurance, government, construction, and materials manufacturing [Motor Vehicle Manufacturing Association, 1984; Deakin, 1987].

California's state budget reflects the importance of transportation to the state's economic and social well-being. The Governor's proposed budget for 1987-88 totals \$39 billion, of which \$3.2 billion, or around eight percent, is slated for transportation purposes. The proposed allocation is an increase of four percent over the previous year's \$3.1 billion allotment, and 29 percent over the \$2.5 billion of two years ago. Included in the transportation funding program are accounts for highway development and maintenance, mass transit assistance, vehicle registration services, and aeronautics. Of the total, highway programs account for 94 percent, up from 90 percent the previous year. Mass transit programs account for five percent, down from nine percent the previous year. Vehicle registration and aeronautics account for a tiny fraction of the remaining budget.

Figure 1 reveals trends in state expenditures for transportation since 1975. While highways have amassed a larger share of the pie over time, funding levels still remain far below estimated needs. A recent study by Caltrans estimates that \$2.87 billion is needed each year for rehabilitation and safety and capacity improvements on state-maintained roads alone, yet only \$2.4 billion is being provided -- producing nearly a one-half billion dollar shortfall each year [Road Information Program, 1987]. Transit proponents claim that levels of underfunding for the state's urban transit systems are even greater. With these prognoses in mind, we now turn to the potential role of different alternatives for producing and financing transportation services and facilities in the state.

California's Transportation Budget in 1975, 1980, and 1985



Source: California Budget Summaries,
Caltrans appropriation statistics.

Figure 1. State Budget for Highways, Transit, and Other Transportation Functions in 1975, 1980, and 1985

III. Service Production and Delivery Options

A number of alternatives for lower-cost and more efficient production and delivery of public services have emerged in recent years that have applicability to the transportation sector. These include competitive contracting, co-production and "self-help" initiatives undertaken by community groups, and voucher programs aimed at defraying the cost and improving the quality of specialized transportation services, such as curb-to-curb van services for low-income elderly and disabled populations.

III.1. Competitive Contracting

Contracting of public services to private operators has gained considerable popularity in the 1980s, becoming the centerpiece of federal transportation policy under the Reagan Administration. More and more public entities are contracting out mass transit routes, road repair jobs, and even air traffic control functions, along with more traditional areas of public service contracting, such as garbage disposal and fire protection. The literature abounds with successful stories of transportation services being privately provided for far less money, and therefore smaller public subsidies, than comparable publicly provided services. Case studies of unsuccessful experiences with contracting transportation services are conspicuously absent from the literature.

As with any major policy reform, contracting of transportation services is intensely controversial, with certain groups clearly benefitting and others clearly losing. The threat of work assignments being transferred from the public to the private sector, in particular, has spurred vocal labor opposition. However, the intent of contracting is less one of eliminating public jobs than one of injecting competition in the transportation sector. Transferring transit services from a public authority to a single franchise firm, in and of itself, is likely to produce few tangible benefits. Indeed, the substitution of a private transit monopoly for a public one will neither lower cost or improve performance. As being applied in the transportation field, contracting's aim is to return public services to private carriers but

rather to enlist private organizations in the delivery and financing of transportation services and facilities. In virtually all cases, control over service and fare practices remains in the public sector. Private sector involvement is substantially limited to the actual delivery of services. Thus, where a transportation sector has few economies of scale and, accordingly, there is little justification for granting a public entity monopoly protections, contracting is increasingly being called upon to inject sorely needed competition into the sector.

III.1.A. Potential Benefits of Transportation Service Contracting

In theory, two levels of benefits should redound to public agencies that competitively contract out transportation services. The immediate benefits, called first-order benefits, should result from substituting lower cost privately operated services for comparable publicly operated ones. By spurring competition, however, contracting should also produce second-order benefits, in particular, helping to contain service delivery costs in the public sector as well.

Figure 2 presents a normative model of competitive contracting's likely first and second order benefits in the transportation field [Cervero, 1986A]. The engine that propels the process is competition. Competition drives down costs when contracts are first awarded and continues to contain them as contracts are periodically rebid. To remain competitive, firms must hold the line on costs, maintain lean overheads, and tailor their capital acquisitions so as to assure a profit. They are also more inclined to aggressively pursue new customers and carve out new market niches. In the transit field, for instance, studies show that many firms engaged in contracting use luxury buses for special charter services during weekends and off-peak hours and as premium-quality commuter buses for the general public during rush hours; contracting, thus, has resulted in firms efficiently using available bus capacity over nearly the entire week [Giuliano and Teal, 1985].

Three chief first-order benefits are shown in Figure 2 that could be expected from transportation service contracting: 1) cost saving; 2) increased productivity; and 3) greater

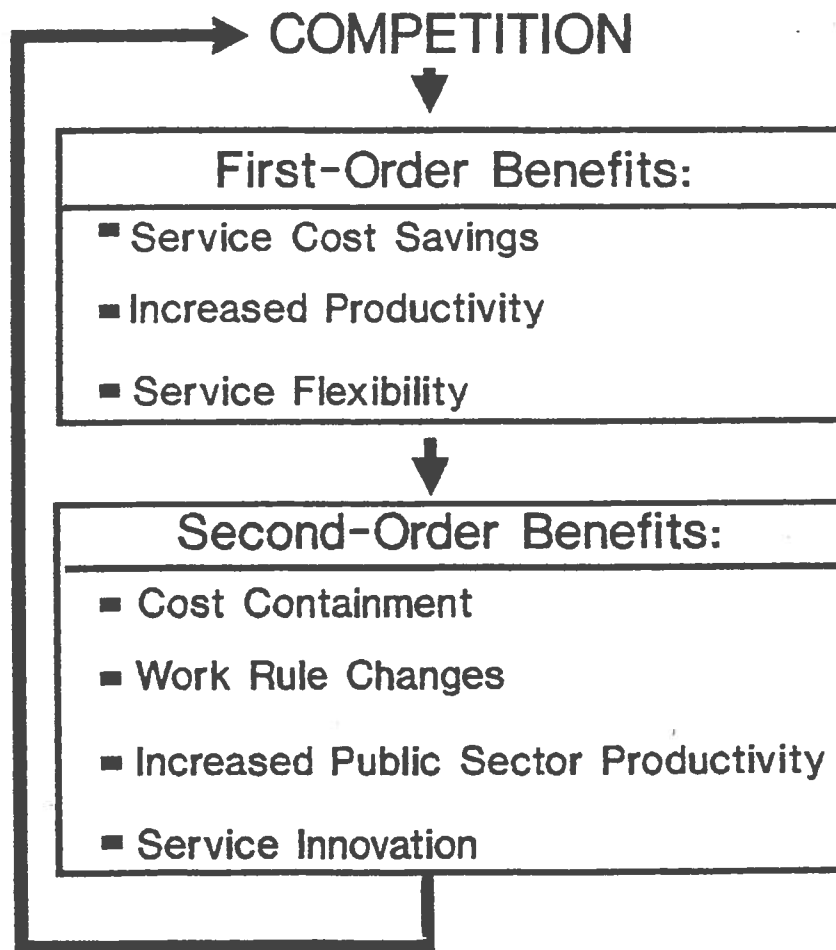


Figure 2. First and Second Order Benefits of Competitive Contracting of Transportation Services

flexibility. Most of the cost savings from competitive contracting stem from lower labor compensation as well as work rule conventions which are less favorable to private sector than public sector employees. Besides receiving lower wage rates, studies show that private transportation workers also rarely receive split-shift or spreadtime pay premiums and generally accrue overtime only after twelve hours [Giuliano and Teal, 1985]. There also tend to be fewer restrictions on hiring part-time help in the private sector, an important consideration given the tendency toward extreme peaking of demand in most transportation sectors. Labor cost savings of 23 percent to 70 percent have been recorded for public transit services transferred to small bus companies using non-unionized drivers [Teal, 1985; Cox, 1983]. Even private firms operating under exclusive franchises have been found to have lower average wage rates and fewer work rule penalties than their public service counterparts [Pucher and Markstedt, 1983; Perry, 1984].

Productivity -- i.e., the efficiency in which resource inputs are translated into service outputs -- is generally increased through contracting. Careful attention to scheduling often reduces deadheading and results in more revenue miles of service per vehicle. Better management and inspection practices, moreover, can increase maintenance productivity. The service flexibility benefits of contracting stem from the fact that transportation agencies are able to experiment more freely with new services. If a service proves to be unproductive, it can easily be eliminated by discontinuing the contract. Such flexibility is particularly important in view of the rapid demographic, economic, and spatial changes that are demonstrably changing travel patterns, such as the increase in intersuburban commuting.

Four second-order benefits of competitive contracting are also shown in Figure 2: 1) cost containment; 2) work rule changes; 3) increased public sector productivity; and 4) service innovation. Because of competition, public service providers will find it necessary to contain costs, forcing managers to hold the line on expenses and drive harder bargains at the wage negotiations table. Labor concessions that have been attributed to contracting in the

transportation sector include: wage rollbacks; reductions in automatic COLAs; job reclassifications; creation of non-unionized work positions; and revisions in benefit packages. The most notable example of this second-order benefit in the transportation field is the case of the regional transit authority in the Norfolk, Virginia area which was able to win back paratransit services previously contracted out to a private taxi company because internal "belt-tightening" measures enabled the public agency to eventually underbid the private firm [Talley, 1986; Cervero, 1986A].

Competitive contracting has also been found to prod unions into accepting work rule changes, including repeals of contract restrictions on hiring part-time workers, reductions in spreadtime and overtime pay premiums, and reductions in guaranteed and combination time provisions. Lower rates of worker absenteeism have also been found in more competitive transportation environments, resulting in a reduction in the size of public agencies' extraboard employees [Lave, 1985]. Service innovations, such as the design of more efficient timed-transfer transit networks in burgeoning suburban employment settings, have also been found to be most prevalent in areas with aggressive competitive contracting [Newman, et al., 1983].

III.1.B. Experiences with Transit Contracting

Among all of the transportation sectors, competitive contracting is most widespread in the urban transit field. California leads the nation in transit service contracting -- an estimated 200 transit agencies in the state contract out some portion of their operations [Teal, 1987]. While these 200 agencies comprise over one-half of California's public transit entities, collectively contracting accounts for less than 4 percent of the state's total transit operating budget. Over 80 percent of California's contracts involve demand-responsive services, split evenly between those which are available to the general public and those reserved exclusively for elderly and disabled customers. Transit agencies also contract out for an assortment of administrative and maintenance chores as well. Nationwide, 41 percent of all public transit

agencies contract out for body repairs; 35 percent contract out machine overhauls; and 75 percent contract out a range of administrative functions [Metro, 1985].

Of the nation's public transit agencies with more than 100 vehicles, only five -- Phoenix, Honolulu, Charlotte, Springfield (MA), and Westchester County (NY) -- are known to contract for all of their services, and the latter two contract with franchised operators [Teal, 1987]. Westchester County's is probably the most ambitious program, with over 321 buses being operated by between five and eight private firms [Orski, 1985; Teal, 1985]. For most large transit properties in California, contracting has almost exclusively involved specialized, dial-a-ride (DRT) services. Transit districts in Orange, Riverside, San Bernardino, and San Diego Counties let bids for all of their DRT services. The Orange County Transit District (OCTD) runs the nation's largest DRT system, with five private operators competing annually to operate 130 vehicles.

Several noteworthy commuter services are also being contracted in California. The San Mateo County Transit Authority (SamTrans) has contracted for many years with Greyhound to operate over fifty commuter buses along trunk lines serving the Peninsula's main corridors and to downtown San Francisco. Farther north in Marin County, Golden Gate Transit has contracted for commuter subscription bus service, involving 15 to 25 vehicles, since the early 1970s.

Evidence on the cost and performance impacts of transit service contracting has been encouraging, confirming many of the hypothesized benefits of contracting that were outlined earlier in Figure 2. Of the before-and-after studies conducted to date, most have found cost savings in the range of 10 to 50 percent based on methods ranging from simple comparisons of unit costs to the use of fairly advanced cost allocation models [McKnight and Paaswell, 1984; Teal, et al., 1984; and Giuliano and Teal, 1987]. Studies show that cost savings depend crucially on the size of transit agency in question. Giuliano and Teal, for instance, estimated that transit systems of 250 or more vehicles will save 25 to 50 percent of their costs when

contracting out all fixed-route bus services. With 20 percent of these agencies' total service contracted, cost savings would be far less, in the 5 to 10 percent range. The authors note, however, that since few large transit agencies in the United States contract out more than 5 percent of their service, there is little empirical evidence to substantiate the benefits that would accrue from meaningful-scale contracting.

Little rigorous research has been conducted on specific cost savings associated with transit contracting in California. Evidence is largely anecdotal. From the literature, the following benefits have been cited:

(*) Following OCTD's contracting of DAR services, total annual costs of operating over 100 van-size vehicles declined 4 percent within one year [Teal, 1987]. In San Bernardino County, since the local transit authority began contracting out DRT services in 1980, DRT costs have increased at less than the rate of inflation whereas non-contracted fixed-route services have risen at over twice the inflation rate [Cervero, 1986A].

(*) San Diego Transit (SDT), a city-owned public corporation, competes with five private firms for all services outside of San Diego's city limits. Since 1981 when the bidding process began, San Diego Transit's operations have shrunk from 49 to 29 fixed routes. SDT managers maintain that because of competition, SDT's mean salary level has gone from the second to the twenty-seventh highest in the nation, a figure more in line with the agency's relative size and budget. Following contracting, moreover, automatic COLAs were eliminated, restricted work rules were relaxed, and the share of the agency's work force that is part-time increased from nearly zero to 12 percent [Cervero, 1986A].

(*) Golden Gate Transit saves an estimated 25 percent by procuring subscription bus services from private companies rather than operating them in-house, in large part because the \$7 hourly wage rate earned by most contractor drivers is considerably less than what GGT pays its drivers [Teal, 1985; Cervero, 1986A].

(*) Yolo County, in the Sacramento area, reduced its transit operating costs by 38 percent when it decided in 1982 to procure services from ATE Management and Service Company rather than Sacramento Regional Transit [Morlok, 1985]. In 1986, ATE operated 14 buses over six routes at one-half the cost that the County previously paid Sacramento Transit.

(*) The City of Los Angeles, unhappy with SCRTD's costly downtown shuttle service, replaced it in 1985 with the DASH wide-body van service operated by Diversified Paratransit. The new privately contracted service costs the city \$100,000 less per year than what SCRTD charged. Ridership on the downtown circulator increased 20 percent following the changeover to private operations and operating deficits fell 15 percent within one year of letting the new contract [U.S. Department of Transportation, 1986].

In general, cost savings and performance benefits from contracting have been most significant when: fixed-route services, in addition to dial-a-ride, were contracted; contracting

involved newly added services in addition to existing ones; multiple private operators bidded for services and services were awarded on an annual contract renewal basis rather than as a sole-source franchise; and contracts were let by large transit agencies that operate in areas where labor opposition tends to be less vocal.

Making cost comparisons before and after contracting, it should be cautioned, can be a hazardous undertaking. Routing is sometimes altered following the conversion to private operations and vehicle types and service quality very often vary as well. Costing and accounting procedures also tend to differ among public and private entities, further complicating cost comparisons. Regardless, the preponderance of evidence clearly suggests that even modest levels of competitive transit contracting have been associated with significant cost savings.

Transit contracting has not been without its problems, however. Because of Section 13(c) of the Urban Mass Transportation Act, which protects transit workers from being harmed by public policy actions, many transit authorities have been reluctant to initiate contracting. This provision has been used by labor as a powerful bargaining chip for preserving a public monopoly of transit jobs and has enabled unions to include clauses in local labor contracts which severely restrict or even preclude service contracting. As long as the 13(c) requirement remains in its current form, any phasing-in of competitive contracting will likely be bound by the natural attrition rate of employment. Some critics also discount the ability of contracting to contain wages, arguing that private sector costs will also eventually increase. This could occur, for instance, in small areas where there is an absence of competition because only one private firm has chosen to bid on a contract. Moreover, as private firms grow and workers begin to organize into unions, critics argue, their costs will begin to rise as they experience some of the scale diseconomies facing large public monopolies. At least five cases of this have already been documented [U.S. Department of Transportation, 1985]. Another possible scenario is that some competitors will deliberately underbid to win

the contract, only to come back to the agency for additional funds after services have been initiated under the threat they will go bankrupt. Unforeseen administrative costs that were not included in the negotiations contract have forced private firms to renege on contracts in several instances and prompted others to scrimp on services [Richard, 1980]. In general, the periodic rebidding of contracts should provide a safety valve for monitoring costs. Moreover, experienced transit managers will over time become leery of bargain-basement offers and will weed out unqualified bidders by writing performance standards into contracts.

Some observers have also warned that transit contracting could create social inequities. In an effort to increase profits, private firms might pare back unprofitable routes, such as those going through economically depressed neighborhoods or those serving needy, limited-mobility populations [Richter, 1985]. As long as public transit agencies retain control and oversight over all service practices and simply contract out the operation of services to the lowest bidder (which meets acceptable service standards), however, transit contracting should have few, if any, maldistributive effects.

Overall, the future of transit service contracting appears bright in California. Current federal requirements call for all transit properties to put at least five percent of total vehicle miles of service up for competitive bid. Presently, California's legislature is considering the Public Transportation Competitiveness Act which would require competitive contracting of at least three percent of existing fixed-route services.² Several transit properties in the state are taking these mandates seriously. Notably, SCRTD in Southern California has embarked on a five-year program aimed at contracting 7.5 percent of its fixed-route services, or nearly 600,000 vehicle hours of operations, to private firms by 1991.

III.1.C. Highway Maintenance and Construction Contracting

The California Department of Transportation, Caltrans, has in recent years seriously considered the contracting out of selected highway construction, maintenance, and engineering services. While California's local governments have for years contracted out street repair and

repaving projects, the state has held off due to labor resistance, lack of research on cost savings that might accrue from contracting, and uncertainty over whether the state has the legal right to contract out its highway work. Conflicting codes in several state legal documents have further clouded the issue, making it unclear whether private companies can be given work that could otherwise be performed by Civil Service employees. The state legislature is considering Senate Bill 516 which would give Caltrans permission to contract out highway work when department officials find such action would substantially lower costs and better serve the public interest. Because of a lack of internal consensus at high administrative levels of Caltrans, some uncertainty remains as to whether the agency would begin selective contracting even if SB 516 were to pass.

The primary argument that has been used in favor of contracting out highway construction and maintenance functions is that it would save considerable time in completing projects. Proponents note that inflation significantly erodes the purchasing power of highway dollars. Faster delivery of highway projects would both save money and benefit taxpayers by making highway improvements available to motorists sooner.

Because of scale economies, Caltrans probably has a cost advantage over most private companies in performing a large share of highway functions. The agency has so many maintenance and equipment stations already in place throughout the state that it probably could carry out routine highway construction and maintenance assignments for less money than a private firm could [State Senate Committee on Transportation, 1985]. For larger scale projects, however, the time savings might be sufficient to justify competitive contracting. Caltrans, moreover, suffers from a shortage of trained personnel with which to complete the State Transportation Improvement Program (STIP). Because there are not enough design engineers to handle the accelerated programs in the STIP, contracting out those services, some argue, would be less expensive than hiring new state employees and would expedite the completion of the STIP. One study estimates that Caltrans could save nearly 10 million

annually through contracting by reducing the average length of time for project completion [Kempton, 1987]. In view of these potential time savings, a recent Caltrans study recommended that the agency contract out \$240 million annually, or around 7 percent of the agency's budget, assuming that legal disputes can be resolved.

Numerous precedents of competitive contracting of highway construction and maintenance services presently exist from which Caltrans could learn from. At least seventeen other states allow contractors to perform highway engineering, construction, and maintenance, and in several instances substantial cost savings have been found [Kiljian, 1986]. In California, Santa Clara County is pioneering the practice of contracting out highway engineering and construction work. When voters in that county approved Measure A in 1984, they not only authorized a half-cent boost in the local sales tax to finance highway improvements, but they also created the Santa Clara County Transportation Authority (SCCTA) which administers highway projects funded by tax revenues. County officials gave SCCTA a mandate to contract out between one third and one half of the County's Measure A financed projects; so far, the agency has exceeded this target, opting to contract out over 70 percent of all work to private firms, ostensibly because of substantial cost savings. Because SCCTA was a newly formed agency, it should be noted, no labor relations problems were encountered when contracts were initially let. For long-established agencies like Caltrans, however, it is more likely that competitive contracting would have to be gradually introduced in order to stave off possible labor opposition.

Other Transportation Contracting Possibilities

Competitive contracting has been used for other transportation functions, although state governments have generally reaped few direct fiscal benefits because most of these functions fall outside of their administrative and legislative purview. Nationwide, for instance, more than 40 percent of all school trips are served by private operators -- accounting for more riders than are carried by all public transit systems -- at an estimated annual savings in the

hundreds of millions of dollars [Metro, 1985]. Most of these cost savings have redounded to local school districts, enabling resources to be spent more productively on classroom activities.

Air traffic control functions have also been contracted on a limit basis, although this is a federal, not a state, matter. The Federal Aviation Administration (FAA) has contracted out air traffic control work to private firms at thirteen small airports in the midwest, and has been studying the feasibility of expanding private air traffic control functions to more than 100 airports in the next few years [Main, 1985]. This action was prompted by both a desire to trim the federal deficit as well as the 1981 controllers' strike which led to the decertification of the controllers' union and subsequent firing of striking controllers. Because of a recent U.S. Department of Labor ruling that requires private air traffic control firms to pay wages equal to those paid by the FAA, however, there is some doubt as to whether significant cost savings will accrue from contracting out these services [Poole, 1986].

III.2 Self-Help Initiatives

Another alternative to public sector production and delivery of transportation services is for individuals and groups to form and operate their own services. There are several fronts in the transportation field where such self-help initiatives are taking form: volunteer services, provided primarily to elderly and other limited-mobility persons; transportation associations formed to provide services in areas where public transit services are minimal; casual carpooling, involving the self-matching of drivers and passengers traveling to similar destinations; and short-term vehicle rental arrangements.

III.2.A. Volunteer Initiatives

In the Bay Area, several non-profit volunteer centers have formed to help transport limited-mobility citizens in outlying settings [Del Green Associates, 1984]. The Volunteer Bureau of Marin County, for instance, sponsors transportation services for elderly and disabled residents of the county seven days a week. Volunteer drivers, many of whom offer their time and services at no or minimal pay, are recruited by the agency. Drivers provide their own

vehicles and are reimbursed for gasoline expenses. The Volunteer Bureau provides insurance coverage that supplements drivers' personal coverages. Eligible riders are transported to any destination in the county and only pay fares if they can afford to. The Volunteer Bureau's budget for fiscal 1982 was only \$13,720, most of which was used for driver gasoline and mileage reimbursement. A similar volunteer center in nearby Napa County provides even a wider array of transportation services, including a program in which volunteers regularly visit infirmed residents to help combat loneliness and isolation and a curb-to-curb van service for wheelchair-bound citizens. Although no studies have been conducted on the cost savings of these initiatives, they have no doubt been substantial in view of the estimated \$40 it costs public transit agencies, on average, to serve a single disabled passenger.³

III.2.B. Transportation Associations

Around new employment centers, especially those in the suburbs, a number of associations comprised of local businesspersons and developers have formed in recent years to help mitigate local traffic congestion. Most associations, anywhere from five to 75 employer members, engage in a wide range of activities, such as promoting ridesharing through computerized matching and providing policy leadership and advocacy on local transportation matters. Nationwide, over twenty transportation associations have been launched so far, most of them spurred by mounting concern over congestion in the suburbs [Cervero, 1986B; Orski, 1986B]. In California, several of the most noteworthy transportation associations have been formed by employers in El Segundo, Newport Beach, Pleasanton, and Santa Clara County. The El Segundo Employers Association, representing the massive aerospace and electronics industrial complex near Los Angeles's international airport, was credited with luring 24 percent of the city's employees to carpools and vanpools in the early 1980s; because of falling gasoline prices and waning employer interests, however, activities of the association have been curtailed in recent years and El Segundo's share of commuters who share rides has fallen [Torluemke, 1983; Cervero, 1986B]. Pleasanton's transportation association, on the other hand,

has grown in stature in recent years, playing a major role in matching areawide workers into carpools in an effort to comply with the city's mandatory trip reduction ordinance.⁴

Orski [1986B] maintains that transportation associations will become indispensable organizations for coping with transportation problems over time because of their many inherent advantages. By promoting areawide coordination of traffic programs, they are in a position to achieve greater overall reductions in commute trips than if programs were implemented on a piecemeal, site-by-site basis. Transportation associations also provide a forum in which comprehensive solutions to traffic problems can be implemented on a multi-jurisdictional basis. Because these associations are unhampered by usual bureaucratic distractions, they can also be more freewheeling and entrepreneurial, and can implement solutions that would be difficult to pursue in the more conservative environment of local government.

III.2.C. Casual Carpooling

Perhaps the best example of the laissez faire doctrine at work in the transportation field today is what has been termed "casual carpooling". Nowhere is casual carpooling more evident than along the San Francisco-Oakland Bay Bridge corridor. Each weekday morning, motorists pick up passengers near bus stops and BART stations so they can take advantage of the free bridge toll and, more importantly, the 20-30 minutes travel time savings that bridge's carpool lane offers. In return, passengers not only save a \$1.50 or more in transit fares; they also receive a comfortable, guaranteed seat, something that peak-period BART trains and AC Transit buses do not always offer.

Because of lost patronage, casual carpooling has been sharply criticized by both BART and AC Transit. A 1986 survey found that of the 3,500 Bay Area commuters who daily join casual carpools, 87 percent previously rode BART trains or AC Transit transbay buses [Homburger and Stevens, 1986]. Together, the two agencies lose around \$1.5 million annually in farebox revenue because of casual carpooling. Perhaps what has upset AC Transit and

BART officials the most, however, is the fact that casual carpooling largely occurs in the morning since it is difficult for office workers leaving downtown San Francisco in the evening to match up when destinations are so disparate. Also, the absence of a free outbound carpool lane on the Bay Bridge removes much of the incentive to rideshare. As a result, both transit systems experience asymmetrical loads, losing morning riders but gaining them back in the evening. Transit officials complain that they are unable to reduce operating expenses because the heavy evening loads force them to maintain their fleets, even though vehicles are only partly used in the morning. Proponents, however, counter that costs could be substantially lowered because the concentration of demand in the evening allows transit agencies to reduce costly split shifts and overtime assignments associated with diurnal morning and evening peaking. Indeed, since peak hour operations are the most costly to provide and incur the largest deficits, over the long run, casual carpooling should materially benefit transit agencies [Lave, 1985]. The only reason transit agencies are being hurt by this phenomenon is that current labor agreements and political pressures prevent them from trimming their peak hour services, despite the fact that demands are being lessened by casual carpooling.

Casual carpooling exists because there is clearly a market for it, one that should not be interfered with. It is a viable load-shedding alternative for public transit and, with time, could produce substantial cost savings. Since it provides a superior quality of peak hour service relative to most transit operations, it also draws more commuters out of their automobiles than otherwise would occur, thus helping to relieve congestion. Perhaps the most sensible public policy response to casual carpooling would be for public authorities, such as Caltrans and the City of San Francisco, to create staging zones and "park-and-pool" lots that would enable carpools to be formed by downtown workers heading to similar destinations in the evening. This would create more symmetrical loads for BART and AC Transit.

III.2.D. Other Self-Help Initiatives

A wealth of other examples of self-help initiatives can be found in the literature, many involving the creation and operation of special-purpose transportation services by school districts, churches, homeowner associations, and citizens groups. Following the deregulation of inter-city bus services in 1982, for instance, Greyhound Lines abandoned services to over 400 small communities in California. In response, churches and school districts began making buses available to small town residents on an as-need basis [Cervero, 1983A].

Another self-help example in the transportation field has been the formation of a vehicle rental program by the residents of Park Merced neighborhood in San Francisco. Because of the high cost of owning an automobile in high-density settings like San Francisco as well as shortages in areawide parking, residents formed a cooperative automobile leasing arrangement several years ago. Under current arrangements, residents can lease automobiles, either short-term or long-term, at favorable rates. Not only has the program increased the travel opportunities of local residents, it has also enabled Muni, San Francisco's transit operator, to scale back some of the costly off-peak and late-night transit services in the Park Merced area.

III.3. Transportation Vouchers and User-Side Subsidies

User-side subsidies, administered through vouchers and scrips, could yield efficiency benefits in the urban transit field just as they have in education and public housing. Rather than channeling subsidies to public transit agencies, most of which has gone towards higher worker salaries and unproductive service expansion [Pickrell, 1983; Cervero, 1984A], user-side subsidies would direct assistance to the intended beneficiaries of government assistance -- namely, the poor, elderly, and handicapped. A well-designed voucher program would also stimulate greater competition among various service-providers as taxi companies and transit agencies actively vied for voucher customers. Competition could in turn spawn service innovations and new paratransit options. Kirby [1981], for instance, found that the

introduction of user-side subsidies in Kinston (NC) and Montgomery (AL) led to the emergence of over ten different taxi companies actively competing for customers.

In California, two noteworthy user-side subsidy experiences have been recorded to date. One was the 1979 Share-a-Ride demonstration project in Los Angeles's Harbor area (encompassing the neighborhoods of San Pedro, Wilmington, and Harbor City). Under this program, coupons were sold to eligible low-income residents for 15 cents a piece; each coupon was good for up to three dollars worth of metered cab fare. The program encouraged ridesharing since participants could earn an additional three dollars of ride per extra passenger. One study found that the Share-a-Ride program engendered smaller subsidies per passenger than comparable paratransit services provided by the County of Los Angeles [Richard, 1980]. Only three percent of eligible residents used the program on a regular basis, however, and there was disappointingly little ridesharing. The lack of participation was largely due to the fact that most elderly and handicapped residents in the area already received free transportation from local human services agencies.

San Diego's experiences with user-side transportation subsidies have been more encouraging. In 1982, the city transferred all of its dial-a-ride services to fourteen taxi companies and one non-profit operator of wheelchair lift-equipped vans on a contractual basis. Non-wheelchair residents were free to patronize whichever of the 14 taxi companies they wished. Within three years, dial-a-ride passenger trips increased by 15 percent while the per passenger cost paid by the city fell by 14 percent. Because of competition, service quality also improved, evidenced by a 20 percent reduction in the average time for radio-dispatched vehicles to respond to calls for services.

As with competitive contracting, efforts to launch a meaningful-scale user-side subsidy program would likely be fought by the beneficiaries of provider-side subsidies -- public transit employees. Besides appeasing transit unions, a successful voucher program also requires the support of a public agency which is willing to oversee the program, a steady stream of funds

to cover on-going operating and administrative costs, the presence of suitable service-providers in the private sector, and a firm policy commitment by public officials to improve the mobility of those in need.

III.4. Public Policy Considerations

Several policy actions could help promote the service production and delivery alternatives discussed in this section. Legal challenges and labor resistance remain the major impediments to widespread competitive contracting and the application of user-side subsidies in the transportation field. The state should seek to clarify its legal authority to contract out highway and other transportation-related work. Because contracting could substantially shorten the time it takes to complete needed highway projects, there should be provisions to allow contracting even when contractors are unable to underbid Caltrans.

One of the major obstacles to contracting out urban transit services in the state is the 13(c) labor protection rule at the federal level. This provision has been effectively used by labor interests to thwart competitive contracting, even when unionized workers are guaranteed job security. California should join with other states in seeking the repeal of 13(c). To prevent employee layoffs and worker strikes, however, competitive contracting should be phased-in at a rate consistent with employee turnover and retirement.

Competitive contracting also suffers from a lack of research on its potential cost savings and economic benefits. In particular, cost models are needed that allow comparison of unit costs among multiple service-providers based on comparable accounting rules and uniform costing procedures. If informed decisions are to be made on the appropriateness of transit service contracting, the state should consider sponsoring research that develops costing approaches that would be applicable to all California transit properties which are interested in contracting.

Almost by definition, there is no real need for any kind of public intervention in the self-help arena. Any public actions to discourage casual carpooling would be

counterproductive since the choice to rideshare is market-driven. Casual carpooling both makes efficient use of available seating capacity of automobiles to increase the throughput of natural corridors like the Bay Bridge and also encourages public transit agencies to be more efficient in order to compete for passengers. At most, the state could perform a useful service by publicizing successful self-help transportation initiatives that other individuals and groups could emulate.

Finally, consideration should be given to changing California's Transportation Development Act so that at least a portion of transit operating assistance is distributed in the form of user-side, rather than solely provider-side, subsidies. Any user-side subsidy initiative should also define administrative procedures for setting up programs and steps for soliciting and monitoring paratransit service-providers.

IV. Alternative Financing Approaches

Transportation agencies in California have busily sought new sources of funding in recent years as federal and state assistance continues to wither. This section describes alternative methods for financing transportation improvements. These include: user charges, such as road tolls; tax and bond financing, such as increased fuel taxes; impact fees, special assessments, and exactions; and cooperative financing approaches, such as joint public-private development and financing of rail transit improvements.

IV.1. User Charges

In the transportation field, where motorists, passengers, and truckers are the direct beneficiaries of highways and other channelways, user charges are the most efficient and equitable way of financing improvements. Not only do user charges collect revenues from beneficiaries, they also serve to regulate demand since travellers have to pay more if they want to use thoroughfares more frequently. The ability of user charges to ration demand has led many economists to argue for road tolls as a means of relieving highway congestion. To the extent motorists pay the true marginal cost of the time delays they impose on others

when they enter a freeway stream, people would travel at a socially optimal level and overall travel conditions would improve markedly. While congestion pricing makes sense in theory, in practice it has met with little success. In the early 1980s, Hong Kong launched the most ambitious congestion pricing pilot program to date, installing sensor loops in roadbeds throughout the colony which electronically read the passage of test vehicles equipped with transponders. Motorists received monthly bills with charges based on how frequently they traveled in congested locations and at congested times. Despite the fact that the program was a technological success, it was scuttled at the end of its demonstration period because of complaints over invasion of privacy and vocal grass-roots opposition [Fong, 1985]. If congestion pricing is unacceptable in a politically centralized, self-contained setting like Hong Kong, its chances for success in California's sprawling metropolises seem somewhat remote.

While pure congestion pricing may be too contentious politically, several other "second-best" forms of user charges could be implemented more easily and yield some of the benefits of true marginal-cost congestion pricing. In particular, natural corridors, like bridges, and the terminuses of rush-hour trips, such as downtown parking garages, provide logical settings for collecting price increments from motorists for using facilities at congested periods. Tolls, moreover, could be used to pay off bonds for financing new thoroughfares. Tolls also make sense in other modal areas, such as waterway segment tolls levied against waterborne freight traffic and airport landing fees assessed against airlines and general aviation pilots.

IV.I.A. Bridge Tolls and Parking Fees

In places like the San Francisco Bay Area, bridges represent natural corridors for collecting congestion charges since passing motorists are a "captive market" and the slow down in traffic caused by overuse enables tolls to be more easily collected. Because of the tremendous time losses caused by acute congestion during rush-hours on the Bay Bridge and Golden Gate Bridge, several studies have shown that peak-period tolls should be three to four

times above current levels to achieve an optimal hourly throughput of traffic [Keeler, et al., 1975; Lee, 1979].

Bridge tolls in the Bay Area have not been raised since 1977, even though traffic volumes have steadily increased and transbay transit fares have risen 140 percent over the same period. Tolls have been frozen by AB 50, passed in 1981, which limits revenue income to that collected in the mid-1970s. A bill to increase tolls passed the legislature in 1984 but was subsequently vetoed by the governor on the grounds that it was a tax in disguise. A proposed bill, AB 1134, would enable tolls to be increased and provide a steady source of funds for improving mass transit along the bridge corridors. While most of the debate centers around the need to collect additional toll revenues, the potential role of tolls in rationing demand is equally important and should not be overlooked.

The underpricing of parking, particularly by companies that heavily subsidize parking as an in-kind benefit to their workers, has also contributed to congestion in many areas [Shoup, 1982]. One study of Los Angeles government employees, for instance, found that only 40 percent of those who paid to park drove to work alone, while 72 percent of those who parked free solo-commuted [Francis and Groninga, 1969]. Some observers have argued for treating free parking as a taxable benefit while others have proposed legislation that would set all parking prices at market-clearing levels [Shoup, 1982; Meyer and Gomez-Ibanez, 1981]. While largely a local issue, higher parking fees would no doubt encourage more carpooling and transit usage in congested areas and would provide a more practicable basis for passing on congestion charges in many settings.

IV.1.B. Toll Roads

Toll roads have long been used in other states, particularly those in the Mid-Atlantic and New England regions. California, however, rejected toll roads over sixty years ago in favor of "pay-as-you-go" financing. Toll roads, particularly those built through public-private partnerships, offer a means of tapping into private capital resources and thus deserve serious

consideration by revenue-strapped states like California. Compared to highways financed by general revenues, toll roads tend to be more cost-effective since they have to pass a self-sufficiency test to compete for funds in municipal bond markets. As with other user fees, tolls force motorists to carefully allocate their use of roads and thus lead to more rational pricing of highways.

After years of languishing in semiobscurity, toll roads are staging a comeback in many areas of the country experiencing rapid growth pressures and a shortage of cash. In the last five years, bonds backed by toll revenues have been used to finance the Dulles Toll Road in Northern Virginia, the Hardy Toll Road in Houston, the Dallas North Tollway Extension, the Jacksonville Expressway, and the North Atlanta Toll Road. Because of higher interest rates and maintenance costs, daily traffic volumes of at least 50,000 per day are presently needed to justify toll financing, compared to a requirement of only 12,000 vehicles per day in the 1950s. Because most fast-growing suburban corridors in California have a shortage of thoroughfares and those that do exist tend to be oversubscribed, attracting 50,000 vehicles per day on a new expressway no longer seems unattainable. A case in point is the Dulles Toll Road which recorded volumes of 63,000 vehicles per day a scant six months after opening [Orski, 1986A].

Toll financing has not be without its detractors. One criticism is that tolls, and indeed congestion charges in general, are regressive since poor people would have to pay a disproportionately larger share of their incomes to travel. Some also question whether toll roads could attract significant amounts of private capital given the alternative investment opportunities investors have. Legal questions also abound -- e.g., whether the state could exercise eminent domain to obtain rights-of-way; what legal protections might be given owners of the rights-of-way and abutting properties; how liability matters would be handled, among other things. None of these problems is insurmountable, however. The regressivity criticism of toll financing, for instance, hinges largely on how toll revenues are spent. If a portion of revenues were dedicated to improving, say, mass transit services along toll corridors, viable

commute alternatives would then be available to those priced off the toll facility. Income redistribution, however, is a much larger policy issue that can best be dealt with through other mechanisms, like negative income taxes, than through the pricing and financing of transportation facilities.

IV.1.C. Waterway Tolls and Fees

Waterway segment tolls have been debated in the United States Congress for decades, mostly in regard to inland rivers, but have never been implemented because of fear that they would cut into shippers' profits and endanger local commerce. The Sacramento River is the only inland waterway of consequence in California; because of the river's relatively small amount of freight traffic, however, the collection of segment tolls would likely generate too little revenue to make toll financing worthwhile.

California's seaports, on the other hand, have long employed users charges in the form of dock and wharf use fees. Because of diminishing federal funds for dredging, increases in dock fees may become necessary. California's seaports are municipally owned and the larger ones are among the most successful public enterprises in the country since they are unsubsidized. As for the state's smaller ports, however, many are in a precarious financial situation and could be forced to close if they had to resort to higher user fees to offset losses in federal funding. Critics charge that higher user fees, custom charges, and ship fuel taxes would also place the state at a competitive disadvantage relative to Vancouver, Seattle, and other major ports along the Pacific coast. Price [1983] has called for greater state-level port planning, as is done in eastern states, to balance business among the state's ports in lieu of higher user fees. Others have suggested creation of a state-level revolving fund for financing facility improvements at subsidized interest rates. Because of these concerns, it is likely that higher user fees will be both politically and economically feasible only for California's largest seaports.

IV.2. Tax and Bond Financing

A variety of tax sources and mechanisms are available for financing highway and transit improvements in California, including: increases in the fuel gallonage tax; conversion of the fuel tax to an ad valorem tax (indexed to the rising price of gasoline); earmarking of sales tax increments for road construction; weight-distance tax on heavy vehicles; increased registration and licensing fees; and the creation of dedicated tax sources for transit, such as special earnings and excise taxes.

Fuel taxes provide the best on-going source for financing road improvements -- since they vary with fuel usage, they are sensitive to levels of benefits received. They are also easy to collect and administer. Fuel taxes tend to be regressive, however, and are quite vulnerable to changing economic conditions. Gas tax revenues, for instance, have fallen in some state during the past decade because of gains in fuel conservation and automobile efficiency and higher gasoline prices. Although gasoline prices have been stagnant in recent years, many experts agree they will start to rise again in the 1990s and thus argue for indexing the tax to the cost of gasoline (i.e., an ad valorem tax) rather than levels of consumption [Hoel, 1986]. Since wear-and-tear of highways is directly related to the dead-axle weight of vehicles, moreover, many observers have also advocated weight-distance taxes as a means of paying for the increasing maintenance, rehabilitation, and reconstruction needs of highways [U.S. Department of Transportation, 1982].

In recent years, voters in six California counties have opted to increase sales taxes for financing highway improvements -- Santa Clara, Santa Cruz, Los Angeles, Fresno, and Alameda. Los Angeles's dedicated sales tax is expected to generate \$2 billion for both highway and rail transit projects by the year 2000. Financing highway improvements through sales taxes is difficult to justify on equity grounds, however. Logically, Californians should be contributing to new road building based on how much they drive, not by how much they spend on furniture, clothes, and other consumer goods. Sales taxes are also decisively regressive,

even when exemptions are granted. Sales taxes have become politically popular, however, because responsibilities for tax increases are left, county by county, to the voters. They also raise substantial pots of money and respond more quickly than most taxes to swings in the business cycle. Moreover, sales taxes are generally more palatable to the voting public because they are hidden in the price of items and are collected in relatively small, inconspicuous amounts.

Despite the political justifications for sales taxes, as long as there is little rational relationship between highway use and sales tax payments, they are inappropriate for funding highways. Fuel taxes are not only the most efficient and equitable tax alternative, they also hold the seeds to the solution of many transportation problems since people drive less when gasoline costs more. A bill to increase the state fuel tax by five cents per gallon (to 14 cents) passed the Legislature in 1985 but was vetoed by the governor. Another barrier to higher gasoline taxes is proposition-mandated restrictions on spending, in particular the Gann limit. A bill to exempt the fuel tax from the Gann limit was introduced last year but received little support. Building political support for higher fuel taxes remains one of the state's biggest fiscal challenges.

Other tax sources might also be considered by California. Income and earnings taxes have been used to finance regional transit improvements in Cincinnati and Louisville with considerable success. Research shows that earnings taxes are the least regressive tax source for financing transportation improvements and provide the largest potential tax base of all [DiPasquale and Henderson, 1982]. Dedicated payroll taxes are currently collected in Portland and Eugene, Oregon, generating over half of each city's transit operating budget. Excise and assorted "vice" taxes have also been used to support local transit: Chicago taxes cigarettes five cents per pack for transit; Birmingham, Alabama, earmarks taxes on beer for transit; and Arizona, Pennsylvania, and Nevada dedicate a portion of lottery proceeds to transit [Cervero, 1983B]. Another tax that might be considered as a means of further discouraging automobile

usage would be a parking tax levied on employers. On the positive side, such taxes are easy to administer. On the negative side, they often generate only marginal sums of revenue, can distort the market for taxed items, and usually weigh heavily on lower-income groups. For California communities to introduce such creative taxing mechanisms, authorizing legislation would be necessary.

Lastly, bonds might also be used to finance new highways. Bonding is exempt from the Gann limit, and the state's AAA rating would likely make bonds readily saleable. Future prospects for bond financing, however, largely hinge on the willingness of voters to accept additional public debt [Deakin, 1986]. Nationwide, most bond referenda for new road construction have been turned down voters over the past few years.

IV.3. Assessments, Fees, and Negotiations

Developer contributions are being relied upon more and more around the country to finance transportation improvements. Developers have for years paid for streets, sidewalks, curbs and gutters within new subdivisions. What is new is private financing of off-site improvements. In California, over 200 jurisdictions receive contributions in some form for off-site improvements, either through special assessments, impact fees, or monies negotiated as a precondition to granting discretionary building permits [Cervero and Greitzer, 1987]. California courts have liberally interpreted these actions as reasonable expressions of local police powers as long as it can be demonstrated that certain property owners uniquely benefit from an improvement or contribute to specific infrastructure needs [Stegman, 1987].

IV.3.A. Special Assessments

Under special assessments, property owners contribute toward the cost of areawide road improvements, based either on the appraised value of their land or on its front footage. In California, more than \$160 million in private funds will be spent between 1984 and 1989 on 35 different state highway projects using assessment district financing [California Department of Transportation, 1985]. In suburban Sacramento, the entire \$28 million cost of constructing

four new freeway interchanges is being financed by property assessments. By far the largest assessment district has been formed in Pleasanton, some 35 miles east of San Francisco, where more than \$145 million is being collected for freeway and arterial improvements as well as pedestrian and cycling trails, residential soundwalls, and flood control canals. Special assessments are also being used to finance rail transit projects in the state. Los Angeles, which recently broke ground for the \$1.25 billion, 4.4-mile first leg of a planned 20-mile subway system, will raise between 10 and 15 percent of the cost through a 30 cents per square foot assessment around its stations. A similar assessment district is being planned in San Diego to raise a share of the cost of the San Diego Trolley extension.

The advantages of special assessments are that they pass on costs to those who benefit from new road and transit construction and they generate monies for areawide, not just near-site, improvements. Problems can arise in deciding exactly where to draw district boundaries and in eliciting support among property-owners within those boundaries.

IV.3.B. Impact Fees

Rather than assessing landowners based on their real property valuations, impact fees collect monies according to how much traffic a future development will generate. California leads the nation in the implementation of impact fees, with over seventy jurisdictions applying them in some form [Cervero and Greitzer, 1987]. The most ambitious impact fee program anywhere was launched recently in the booming Westchester area of western Los Angeles. There, a one-time fee of \$2,010 is being collected for each evening rush-hour auto trip generated by new commercial and office developments on an average weekday. Receipts will cover an estimated \$235 million in needed areawide road improvements. Developers can receive credits against their fee obligations by dedicating land for future transit centers or subsidizing vanpools. A "corridor fee ordinance" also recently passed in Orange County to cover \$630 million toward the cost of three new freeways near Irvine. San Francisco recently won a court battle to allow it to spend over \$30 million in impact fees already collected for

financing Muni transit services. And in Contra Costa County, a portion of a 50 cents per square foot impact fee will go toward financing local transit improvements around the Pleasant Hill BART station.

The primary advantage of impact fees is that they are efficient since those responsible for additional traffic have to pay the cost of accommodating that traffic. If developers overbuild or erect projects prematurely, they have to pay the consequences. There is an incentive to infill urban spaces where road capacity is already available. Additionally, impact fees programs pool funds for areawide, not just near-site, improvements, thus holding developers responsible for the upstream and downstream impacts of their projects. As presently implemented, impact fees pose several serious problems. To date, fees have been levied only against new, yet-to-be-completed projects, despite the fact some of the growth in traffic is due to intensification of uses of existing properties and increased travel per capita. Thus, forcing new developers to foot the full bill for correcting highway congestion is unfair. Compounding matters have been our inability to accurately measure the true marginal cost of additional rush-hour trips generated by new developments and to gauge the spatial and temporal extent of their impacts. Research presently being sponsored by the National Highway Cooperative Research Program aims to fill these knowledge gaps by developing valid trip generation and cost allocation methodologies for implementing impact fee programs. Perhaps the most serious shortcoming of impact fee programs to date, however, is that most have been fairly token gestures, collecting only a small fraction of the dollars needed to finance the infrastructure required to support new commercial growth [Cervero and Greitzer, 1987]. Until better costing methodologies are developed, most impact fee programs will probably continue to be modest in scope.

IV.3.C. Negotiations

Because of judicial restraints placed on development fees and exactions as well as an emerging esprit de corps among public and private interests to cooperatively finance new

infrastructure, more and more jurisdictions are turning to ad hoc negotiations to secure private contributions. While some observers have likened the process of bargaining with developers to "enlightened extortion", most agree that negotiations have become an established, and even necessary, part of the land development process [Orski, 1986A]. Perhaps the largest private contribution anywhere has been pledged by the developers of the Irvine Spectrum, a massive office/industrial/biotechnology complex being built on 2,900 acres in Orange County. There the Irvine Company has agreed to pay over \$500 million toward building several new freeways, restructuring others, and financing a host of traffic management improvements. Just to the south in San Diego County, Shapell Industries, developers of Rancho Carmel, a 1,500-acre mixed-use project expected to cost about one billion dollars, have agreed to provide 33 separately identified capital infrastructure projects at a total cost of \$58 million. Multi-million dollar contributions have also been made by developers of large suburban employment centers in San Ramon, Los Angeles, and Alameda as well.

While negotiated financing embraces beneficiary principles, its main drawback is that private contributions often end up going toward improving signals and widening interchanges immediate to a site, usually on a piecemeal basis. In California, over three-quarters of \$180 million in private contributions negotiated between 1984 and 1986 have gone toward improving or building new freeway interchanges serving specific developments. Unfortunately, new interchanges do not really augment capacity that much and may actually reduce it since they detract from the limited-access, through-movement function of freeways. Based on a recent survey of public administrators in charge of negotiating with developers in California, Cervero and Greitzer [1987] found that nearly one-quarter felt they were being "out-bargained" by developers who are skilled at deal-making. Administrators also felt that negotiations often resulted in inequities because standards and criteria varied too frequently.

IV.4. Benefit-Sharing and Joint Development

Benefit-sharing (also known as value capture), whereby a local agency obtains a financial return based on the value of the transportation benefit provided, has been pursued fairly aggressively in the urban transit field. Frequently, this has involved public sector sharing of the increases in land values induced by transit improvements. Recently, for example, both Oakland and San Francisco successfully leveraged new joint developments around several BART stations by directing infrastructure improvements and zoning bonuses at station areas [Sedway and Cooke, 1984]. The cities have benefitted from increased property tax yields and leasing revenues while the new businesses around the stations have benefitted from improved customer and employee access.

Another example of joint development has been air rights leasing. In Santa Ana, air rights above a new downtown bus terminal have been leased to a developer of a new downtown office building [Public Technology, 1983]. The new Transportation Center project, which also includes a four-story parking garage connected via elevated walkway to the airrights structure, is the centerpiece of Santa Ana's \$10 million downtown revitalization program. BART has similarly leased the air rights over its Pleasant Hill station for several mid-rise office complexes.

Joint development prospects for new light rail transit systems in Sacramento, San Jose, San Diego, and Long Beach are fairly promising, however most of these efforts will likely produce revenues to cover only one or two percent of total annual operating costs [Cervero, 1984B]. In the highway field, little progress has been made in securing joint development agreements, although a value recapture bill is presently pending in the Colorado legislature that would collect 25 percent of the future increase in local land values to finance the extension of the E-470 freeway east of Denver [Isaac, 1987]. On the whole, compared to impact fees and other forms of cooperative financing, benefit-sharing should not be looked to as a potentially bountiful source of future transportation funds.

IV.5 Public Policy Considerations

User charges represent the most efficient and equitable way of financing California's transportation infrastructure and thus deserve political support at the both the executive and legislative levels. Congestion is a sign that transportation facilities are being underpriced and that users are taking advantage of this by overconsuming the resource, be it a roadway, transit vehicle, or runway. User charges collect monies from those who benefit from transportation facilities and services while also rationing restricted capacity. The capacity-rationing affects of user charges are particularly important in view of the strong peaking of demand for most transportation facilities.

While pure congestion pricing is not feasible in most instances, there is evidence that bridge tolls and employee parking fees should be considerably higher than their present levels. State support for legislation that would enable an increase in bridge tolls and would support such initiatives as employer parking taxes should be pursued. Gasoline taxes, charged on an ad valorem basis and indexed to inflation rates, should also be increased to cover rapidly expanding maintenance and reconstruction needs. A worrisome trend in the state, however, has been the reliance on locally approved sales tax initiatives to finance future road improvements. Gasoline taxes are far superior to sales taxes because they encapsulate how much users benefit from a facility. The state should seize the opportunity to increase fuel taxes while pump prices are generally under one dollar per gallon, for as soon as prices rise again, there will no doubt be a chorus of opposition to anything which further raises prices.

Two other viable funding alternatives that should be promoted are toll financing and impact fees. Both offer a means of tapping into private capital and serve to temper travel demand and growth impacts. Efforts should be made to resolve some of the legal, institutional, and related implementation barriers that have impeded the adoption of these initiatives.

V. Private Assumption of Transportation Services

The private sector has become a lead player in initiating, financing, and operating urban transit services around the country, oftentimes with only modest government involvement. Developers and businesses have the purse strings and wherewithal, combined fewer bureaucratic distractions, to efficiently provide express bus and shuttle services for tenants, employees, and clients. Increasingly, these initiatives are being taken with little, if any, government prodding. Most private interests fully recognize that the marketability and long term success of their projects and businesses hinge crucially upon guaranteeing their customers good access. As Orski [1985] has noted, the role of private interests in providing transportation services is not based on benevolence or philanthropy. Rather, an essential ingredient is corporate reward.

This section describes two fronts where private takeover of traditional public transportation responsibilities is occurring and deserves state support. One is the direct private provision of services in the absence of suitable public offerings, such as developer sponsorship of shuttle services in and around a suburban, mixed-use complex. The other is deregulation of entry and service restrictions placed on taxis, jitneys, and other alternative service providers.

V.1. Direct Private Service Provision and Load Shedding

California leads the nation in private provision of mass transit services. Some of the more noteworthy examples have been:

Hughes Aircraft Corporation in El Segundo has set up a private transit system to help its 25,000 employees get to work. The system has 9 regular routes and an annual operating budget of \$650,000. Hughes contracts with a private company, California Charter Buses, for the service at an average cost of \$85 per bus hour, which is about 30 percent less than the \$120 per hour that SCRTD charges for its charter bus services [Orski, 1986A].

In San Ramon, Pacific Bell funds express bus service between BART's Lafayette station and its main facility at the Bishop Ranch business park. Since the service was initiated in early-1985, the number of Pacific Bell employees riding transit to work has shot up more than 500 percent, from 550 to more than 3,000 today. The owners of the Bishop Ranch complex, moreover, own and contract out the

operations of four large coaches buses. The service is free for the employees of companies which lease office space at Bishop Ranch [Cervero, 1986B].

In Pleasanton, the Hacienda Business Park operates six shuttles that offer nonstop service between the complex and several BART stations, a free lunchtime shuttle to nearby shopping centers, and continuous internal circulation within the 1,200-acre compound.

In Ventura County, an organization of private employers contracts with a private bus operator to provide subscription bus services to employees [Orski, 1986A].

In downtown Sacramento, local merchants have raised money to operate a rubber-tire "vintage trolley" downtown and between fringe parking areas.

Private sector assumption of urban transit responsibilities extend beyond specialized bus services. In Las Colinas, Texas and Tampa, Florida, for instance, private developers have built fixed rail internal circulators to connect buildings within new master-planned communities. Private consortia, moreover, are presently investigating the possibility of financing and constructing large-scale rail projects in Orlando and along the Dulles Access Road in northern Virginia. High-speed bullet trains have been discussed and studied for the Los Angeles-San Diego, Los Angeles-Las Vegas, and San Francisco-Sacramento corridors. More than anywhere, Japan has taken the lead in private sector sponsorship of rail services. There, the cost of suburban rail construction between satellite communities and major hubs like Tokyo and Osaka are being internalized in the overall cost of land development, just like the cost of roads, sewer lines, and other essential community infrastructure [Orski, 1986A].

All of these initiatives have been effective load-shedders -- i.e., they have relieved public transit authorities of the extra cost that would have been incurred in expanding routes and operating new lines to serve new markets. The cost savings have been particularly significant in the case of new suburban employment centers since serving these markets can be very expensive (because of deadheading, circuitous routing, etc.). As with competitive contracting, private assumption of mass transit services has involved far more deficit-skimming than cream-skimming.

V.2 Deregulating Urban Transportation

The nation's air, rail, trucking, and intercity bus industries have all been deregulated in recent years in the name of economic efficiency -- getting government out of the friendly skies and off the busy highways of this nation so that market forces can prevail. But although the cross-country rider now benefits from lively competition, the inner-city and cross-town rider unfortunately does not. There is no reason why the same benefits of deregulation would not accrue in the urban transportation sector as well.

Perhaps the greatest appeal of deregulation lies in its potential for spawning a richer mix of services. When commuting in cities, many Americans have at best only two alternatives to the private automobile -- buses or taxi. The past decade, however, has taught us that fixed-route, uniform-quality transit services will not lure significant numbers out of their cars. Studies consistently show that commuters are more sensitive to the quality of transportation services than price levels -- that is, they are most likely to switch travel modes when given dramatic changes in travel time or comfort levels. What is needed, then, is a wider assortment of urban transportation services that serve different market niches and diverse travel needs. By opening up the market to shared-ride taxis, jitneys, and other service-providers, regulatory reform would inject much-needed competition into urban transportation, just as it has already done with the nation's airlines, railroads, and roadways. Moreover, the entry of a wider array of service-providers would allow some of public transit's costly peak hour loads to be transferred over to shared-ride taxis, jitneys, and commuter buses.

V.2.A. Relaxing Taxi Restrictions

While few observers question the propriety of regulating driver "fitness", the same cannot be said for controlling the number of taxis that operate in a city, the types of services they provide, and the rates they charge. Most Californian cities restrict entry by fixing the number of licenses (medallions) granted. Los Angeles achieves the same result by granting exclusive franchises to a few companies. Medallion and franchise cities more often than not

have higher fares than cities that allow virtually unrestricted entry into the taxi market. In Washington, D.C., an unrestricted city that boasts a ratio of over 13 cabs per 1,000 residents (by far the highest in the country), the fare for a typical four-mile journey is around \$3. By comparison, in Los Angeles, where franchising holds the ratio to around 2 cabs per 1,000 residents, the same trip would cost around \$7.

Experiments with taxi entry and fare deregulation in twenty-two U.S. cities over the past five years have proven quite successful [Frankena and Paulter, 1984; Gelb, 1984]. In these places, the number of firms and cab service hours rose markedly following deregulation. In San Diego, for instance, total weekly hours of cab service increased 26 percent between 1982 and 1984 following entry deregulation. Moreover, average fares have remained unchanged and service quality has improved. Average waits for San Diego's radio-dispatched cabs, for instance, fell from 10 to 8 minutes in the first two years of deregulation.

V.2.B. Allowing Shared-Ride Services

While governments have been quite solicitous of carpools in recent years, they have generally been reluctant to extend the ride-sharing concept to taxis by allowing them to pick up more than one party en route. Shared-ride taxis have flourished in Washington, D.C. since World War II. There, cab drivers with special destination signs in their front windows pick up other people along a route who are going their way. Under this system, riders receive a break in fares and available seating capacity is exploited to the maximum extent possible.

An experiment with shared-ride taxi in El Cajon in the late-1970s found that they operated at a much lower cost per passenger than subsidized dial-a-ride vans [Teal et al., 1980]. Shared-ride taxis have also been a boon to local bus systems by siphoning off some of the already oversaturated peak demands, in addition to serving as feeders into bus lines.

V.2.C. Deregulating Jitneys

Jitneys extend the shared-ride concept by carrying up to a dozen passengers, usually in a station wagon, over a semi-fixed route on a fairly regular basis. Popular early this century,

jitneys were banned in most U.S. cities around World War I, victims of trolley-operators' charges of cream-skimming and unfair, predatory competition. Though jitneys may well have threatened city transit systems in 1920, a time when those systems were in their infancy and struggling to survive, they would actually benefit urban transit systems today by providing, as shared-ride taxis would, a much-needed supplement to peak-period capacity and further encouraging free competition.

Publicly sanctioned jitneys currently operate only in San Francisco's Mission District, Atlantic City (NJ), and, most recently, San Diego. Four years following San Diego's 1979 deregulation of jitneys, 15 jitney companies serving 12,000 weekly customers had entered the market. They operate on streets paralleling the new light-rail trolley and main bus routes, concentrating mainly on commercial strips and tourist spots. A five-mile trip from San Diego's airport to the downtown area today costs about \$4 by jitney compared to \$14 by exclusive-ride taxi [Cervero, 1985].

V.2.D. Deregulating Vanpools and Commuter Buses

Vanpools and commuter buses have also been stifled by excessive regulation. In the seventies, when vanpools first became popular, some state courts ruled that they were public carriers and thus subject to various certification requirements. California's legislature, however, has exempted employer-sponsored vehicles that carry fifteen or fewer passengers from state regulation.

Although subscription buses are serving growing legions of commuters across the state, operators must still prove their services are necessary and in the public interests before licenses are granted. Even in the Los Angeles area, where the country's largest fleet of subscription buses carries over 5,000 daily commuters to work, transit authorities have succeeded in holding the number of runs below market demand. A study by the Southern California Association of Governments found that the Los Angeles area could save over \$5 million a year by allowing subscription buses, which operate at about one-half the cost of

public transit, to replace twenty-two local bus routes [Williams and Wells, 1982]. Yet transit authorities continue to file protests against commuter bus applications in fear that publicly operated services will be jeopardized by competition.

V.3. Public Policy Considerations

The most important role the state could play in encouraging greater private sector assumption of transportation services would be to create a legislative climate that is conducive to it. In general, the marketplace itself will induce developers to sponsor and operate transit services to and from their complexes. Legislation that gave developers credits against impact fee and tax obligations could further encourage private provision of services.

While the licensing and regulation of taxi services has traditionally been a local concern, the state could sponsor overriding legislation which would relieve entry and service quality restrictions in certain markets. Legislation, moreover, could stipulate that local jurisdictions relax entry restrictions and encourage more open competition as a precondition to the receipt of state transit operating assistance. While the California Transportation Commission and other state authorities could endorse the principle of deregulation, much of the leadership and support for it will have to come from local elected officials themselves.

VI. Incentives for Public Entrepreneurship in Transportation

Public transportation agencies would benefit from some of the management and incentive techniques that are commonplace in the private sector. These might include the inauguration of incentives that induce better economic performance, new institutional arrangements that spur competition, and employee takeover of public transit services for purposes of increasing productivity and introducing profit-sharing.

VI.1. Performance Measures

Government subsidies have contributed directly to urban transit's deficit problems. A study of seventeen major transit properties in California found that operating subsidies resulted in significantly higher costs per vehicle hour of service and lower labor productivity

[Cervero, 1984A]. Subsidies which are dedicated at their sources were found to be particularly perverse in their impacts on unit costs and economic performance.

Under California's Transportation Development Act (TDA), state operating assistance for transit has over the years been distributed roughly according to population rather than any indicators of performance. This is because the original legislation requires that the State Board of Equalization return dedicated sales tax receipts to each county according to the amount of tax collected in that county. Consideration should be given to revamping the Act so that subsidies are provided, at least in part, according to the desired output of transit services -- namely, ridership. Other possible performance measures that could be used to allocate operating subsidies would be improvements in cost recovery, reductions in maintenance expenses, and increases in peak hour patronage.

Another possible strategy might involve the creation of transit block grants, giving transit systems the freedom to spend money on either capital purchases or to offset deficits however they see fit. This would remove the incentive to prematurely substitute new equipment for maintenance expenditures. A block grant based on ridership, for instance, would encourage local officials to use subsidies in ways that maximize ridership per dollar spent. Alternatively, multi-modal block grants could be initiated which would allow local officials to direct money where it is most needed, whether for highways, buses, waterfronts, or pedestrian zones. This would foster greater modal competition and thus ultimately the production of more efficient transportation services. Of course, subsidies would most effectively be distributed through general revenue-sharing at the state level, thus requiring transportation to compete with other public sectors for limited funds, although this would admittedly be difficult to sell politically.

Performance incentives could also be effectively written into contracts for transportation services. For example, Transit Contractors Inc., the operator of Yolo bus services in Yolo County, receives an additional one cent per revenue mile if it logs over 7,000 miles monthly;

the contractor, however, loses one cent per revenue mile if it averages less than 4,000 miles between roadcalls [U.S. Department of Transportation, 1986].

VI.2. Management and Institutional Initiatives

Performance could also be improved in the transportation sector if agencies embraced private sector approaches to management. This might include management-by-objective, whereby agencies specify goals, set criteria for evaluating performance, and periodically report progress in meeting goals. In California, most public transit agencies perform route-by-route performance evaluations on an on-going basis as a precondition to receiving operating assistance. Methodologies for improving performance evaluations should be freely disseminated throughout the state. A wealth of research on the effects of alternative transportation service and pricing policies has been produced over the past two decades that California's transportation managers should be made aware of.

As with the case of service contracting, transportation organizations might also become more efficient and responsive in their practices if a more competitive institutional environment existed. Nationwide, more and more suburban jurisdictions are breaking away from regional transit districts because they feel this allows them to contract out for services that are more responsive to local needs. Another motivation is to save money since small-scale transit organizations usually have a lean overhead and greater flexibility in hiring practices. For these reasons, the Minnesota legislature recently passed legislation giving suburban governments in the Twin Cities area the right to "opt out" of the regional transit system and contract for services on their own. Similar withdrawals of suburban jurisdictions from regional transit agencies have occurred in Johnson County in the Kansas City area and in Fairfax County, Virginia. In Los Angeles County, a proposal to set up an independent transportation authority in the San Gabriel Valley, empowered to replace SCRTD services with those of private carriers, can be traced directly to the dissatisfaction of local communities with the quality and responsiveness of the regional district's services. In a real sense, such

institutional initiatives could produce some of the same efficiency and cost saving benefits as other load-shedding programs such as competitive contracting and decontrol of taxis.

While suburban jurisdictions are threatening to withdraw from Los Angeles's regional transit program, in the San Francisco Bay Area, it might be noted, there is a push to move in the opposite direction. Presently, nineteen separate public transit authorities operate in the Bay Area, leading to charges of duplication, waste, and poor service integration. Based on the experiences of Los Angeles and the Bay Area, it is evident that neither a large public monopoly or a byzantine organizational structure is desirable. To the extent that the urban transportation market is opened up and competitive contracting is aggressively pursued, a proper balance of public and private service-providers would likely evolve.

VI.3. Employee Entrepreneurship

One of the most promising examples of public entrepreneurship has been the takeover of deficit-riddled transit operations by employees who are turning them into profit-making ventures. In 1984, the City of South Lake Tahoe announced that the money-losing South Tahoe Area Ground Express (STAGE) service would be discontinued. STAGE employees banded together and entered into a one-year contract with the city to operate the fixed-route service on a private, for-profit basis. In the first year, the employee group made a profit of \$40,000, running five city-owned buses and averaging 1,200 riders per day. The service will soon be expanded to several suburban neighborhoods [Dooley, 1987]. The California Transportation Commission aims to use the South Lake Tahoe contract as a model for similar employee takeovers in the future [U.S. Department of Transportation, 1986].

VI.4. Public Policy Considerations

The state could encourage greater entrepreneurship within its transportation sector in a number of ways. For one, transit performance could be improved by distributing operating assistance, at least in part, on the basis of ridership gains experienced by agencies or counties. A two-tiered TDA reward system might be devised in which a share of funds was

returned to counties in proportion to how much each contributed to statewide receipts and another share was allocated based on annual increases in ridership. Since every transit agency in the state is required to maintain accurate ridership records anyway, the additional data collection burdens placed on transit agencies should be minimal.

The state might also consider adopting legislation which would give jurisdictions the option of contracting out their services to private vendors in lieu of participating in a regional transit district, as is presently done in Minnesota. While steps need to be taken to insure that regional services do not become overly fractionalized, in general initiatives which encourage competition among organizations will spawn greater public entrepreneurship. Where employees of public agencies are willing to take over floundering transit operations and turn them into profit-makers, moreover, local jurisdictions should openly welcome such takeovers. South Lake Tahoe's experiences with employee takeover of local transit services is a worthy precedent that should be showcased.

VII. Conclusion

This paper has examined and reviewed the literature on a number of approaches to delivering and financing transportation services and improvements in California. Particular attention has been paid to the needs of the state's highway system and public transit services since both constitute the bulk of the state's transportation budget and both face severe fiscal constraints today and, most likely, in coming years.

Several themes emerged from this analysis. One is that public transit services and highway engineering and construction can, in general, be provided more efficiently and at a lower cost if competitively bidded out. Studies consistently show that contracted transit services cost much less than comparable publicly operated services and that private contractors can perform highway engineering and construction work significantly faster than their public sector counterparts. Labor resistance remains the chief obstacle to competitive contracting of these transportation functions.

Another recurring theme of this analysis is that public authorities must find creative and responsible ways of financing improvements. User charges should be relied upon as much as possible to finance operations, maintenance, and even the expansion of capital facilities. Higher bridge tolls, employer-based parking taxes, increased gasoline ad valorem taxes, and toll road financing are the most efficient and equitable ways of generating additional highway revenues. Where private interests materially benefit from transportation improvements, value capture and other benefit-sharing mechanisms should be used to help retire the bonds of large-scale improvements. Where private developments place new demands on infrastructure and impose direct costs on other motorists, cost-sharing programs, such as impact fees and special assessments, should be instituted. None of these funding choices will be easy to gain political support for since certain parties and constituencies are clear losers under each. All, however, are economically the soundest and fairest ways of financing new infrastructure and thus should be employed at some point, political opposition notwithstanding.

The state could also take a leadership role by encouraging greater private assumption of transportation functions that have been traditionally provided by public agencies. Included would be the relaxation of entry, service policy, and pricing restrictions placed on taxis and other service providers and the encouragement of employee takeover of public transit services when it is within the public interest to do so.

Among the many public policy directions that I propose in this paper, the following are the most important and deserve policy consideration at the state level:

- 1) Competitive contracting of highway and urban transit should be actively encouraged. California should join other states in seeking the repeal of the federal 13(c) labor protection requirement which, for all intents and purposes, has thwarted contracting of fixed-route mass transit services. Legal questions regarding the ability of the state to contract out highway engineering, design, and construction should also be promptly clarified.

2) The state's transportation program should be supported to the maximum extent possible by user and other beneficiary charges since in most cases there are direct, identifiable beneficiaries of transportation improvements. Legislation should be passed to allow higher bridge tolls, increased gasoline ad valorem taxes that are indexed to inflation rates, and toll road financing. In order to pass on costs to those that are responsible for increased demands being placed on transportation facilities, impact fees, special assessments, employer parking taxes, and weight-distance taxes should also be promoted. Both administrative and legislative support for these initiatives should be aggressively sought.

3) Operating assistance for mass transit services should be allocated according to a two-tier system, with part of the revenue earmarked as user-side subsidies for disadvantaged persons (and administered by social services agencies) and the other part distributed directly to transit agencies based on their progress in attracting new riders and increasing economic performance. The Transportation Development Act should be amended to incorporate both user-side subsidies and performance-based provider-side subsidies.

4) A legislative climate should be created to encourage greater private assumption of transportation services. Businesses and developers who operate their own mass transit services at a savings to public entities should be eligible for some kind of credit, be it a state income tax credit or a credit against impact fee obligations. Entrepreneurs who are willing to operate taxis, jitneys, and other paratransit modes, either in place of or in direct competition with public transit operations, should be allowed to do so as long as they meet acceptable fitness, indemnity, and service standards. Competition would help shed costly peak loads, would increase the travel choices of Californians, and would impose a cost discipline on public transit operations. Legislation which requires local jurisdictions to relax entry restrictions on taxis and other alternative service providers as a condition to the receipt of state transit subsidies should also be considered.

Notes

1. Based on the number of revenue vehicles, the five largest bus systems in the state in 1983 were: Southern California Rapid Transit District (SCRTD); San Francisco Municipal Railway System (Muni); Alameda-Contra Costa Transit System (AC Transit); Orange County Transit District (OCTD); and Santa Clara County Transportation Agency [Urban Mass Transportation Administration, 1981, 1984].
2. Since California's requirement would result in fixed-route services being bidded out, whereas the federal requirement allows DAR services to be exclusively contracted, the state's proposed legislation would be more stringent than current federal law.
3. The high per passenger cost has been primarily due to the added expense of installing, operating, and maintaining special lifts and retrofitting buses with kneeling features [U.S. Congressional Budget Office, 1979].
4. The ordinance holds that no employer with fifty or more workers can have more than 55 percent of its workforce driving to work alone during the peak hours in 1988. Companies failing to comply with the ordinance are subject to a \$250 daily fine [Cervero, 1986B].

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