



After the Transportation Blueprint:
**Developing and Funding an
Efficient Transportation System**

Background

Growing population, urbanization, and overall driving are increasingly straining the states' highways. At the same time, transportation revenues are not growing as rapidly as demand. As a result, there is a "gap" between revenues and demand.

This gap has been reduced by the increased use of local sales tax revenues for transportation, the authorizations for which will expire between 1998 and 2010. Failure to reauthorize these measures which generate more than \$1 billion per year means that the gap between demand and revenues will widen.

LAO Findings

- ❖ The state traditionally has addressed transportation problems by increasing the capacity of the transportation system; however, this is unlikely to permanently alleviate traffic congestion.
- ❖ The California Transportation Plan recommends that the state's highest transportation priority should be demand reduction, and its lowest should be construction of new transportation facilities.
- ❖ In order to close the gap between transportation demand and revenue, the Legislature should consider not only policies to increase the supply of transportation capacity, but also those that restrain growth in demand.
- ❖ The gas tax should continue to be the state's primary revenue source and it should be adjusted periodically, as necessary, to ensure that its value does not erode.
- ❖ The use of tolls holds promise for generating transportation revenue while restraining demand; however, a sudden shift to widespread use of toll funding is neither practical nor advisable. In order to better test the feasibility of toll road projects, the Legislature should authorize toll projects as a pilot program and direct an evaluation of toll roads, including their effect on low-income drivers and how any adverse impact can be mitigated.

LAO Recommendations

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March 5, 1998



INTRODUCTION

In 1989, faced with a backlog of unfunded transportation improvement projects, the Legislature enacted the *Transportation Blueprint for the 21st Century*. The *Blueprint*, which was subsequently approved by voters in 1990, increased transportation revenues by doubling the state gas tax and authorizing bond funding of rail transit projects. The *Blueprint* also laid out a ten-year spending plan for its new revenues, created new transportation improvement programs, and gave local transportation planners greater flexibility in using state and federal transportation funds.

However, the *Blueprint's* program funding levels have not been realized thus far, due to lower than anticipated revenues and unanticipated expenses (primarily seismic retrofit of highways and bridges). Meanwhile, California's transportation system is coming under increasing strain from growing population, per-capita driving, and urban expansion, resulting in growing traffic congestion. The increasing congestion, and resulting loss of mobility, reduces both the quality of life for California's residents and the economic health of the state's businesses.

In order to achieve a more efficient use of *existing revenues*, the Legislature recently enacted Chapter 622, Statutes of 1997 (SB 45, Kopp) to further refine the state's transportation policies. Unlike the earlier *Blueprint*, Chapter 622 does not increase transportation taxes, focusing instead on encouraging more productive use of existing revenues and on providing more local flexibility to

develop transportation systems that reflect local priorities. Its major features include:

- ◆ Increasing flexibility in the use of transportation improvement funds by consolidating many *Blueprint* programs into two large flexible programs.
- ◆ Increasing local responsibility in selecting and programming transportation improvement projects.
- ◆ Modifying the process for scheduling, budgeting, and delivering projects in the State Transportation Improvement Program (STIP), including shortening the STIP from seven years to four years.

In this report, we recommend additional changes focusing on state policies for capital outlay expenditures to improve the transportation system (primarily roads and highways, but also including transit capital outlay). Specifically, we discuss ways for the Legislature to:

- ◆ Increase flexibility by relaxing the constitutional restriction on use of fuel tax revenues for transit capital costs.
- ◆ Match revenues for transportation with demands for transportation, by adjusting both revenues and demand.

PERMIT USE OF FUEL TAX REVENUES FOR TRANSIT ROLLING STOCK

Chapter 622 eliminates nearly all of the *Blueprint's* individual programs and their specific funding requirements for transportation capital outlay projects. In their place, it creates two large, flexible programs: the Regional Improvement and the Interregional Improvement programs.

While the prior individual programs limited flexibility by creating discrete, constrained funding for different types of projects, the two new, consolidated programs will provide greater flexibility in the use of transportation funds. As a result, transportation planners will be able to select transportation improvement projects—including the most cost-effective projects or those with greatest community support—without being constrained by the availability of funding in individual programs.

Although the new, flexible Regional Improvement program is intended to fund a wide variety of transportation improvement projects, Article XIX of the California Constitution continues to impose a barrier against funding transit rolling stock (such as acquisition of buses or rail vehicles). This is because Article XIX restricts the use of fuel tax (gas and diesel tax) revenue to only (1) construction, maintenance, and operation of roads and highways; or (2) construction and maintenance of mass transit guideways (mainly rail tracks).

While acquisition of transit rolling stock can qualify as a Regional Improvement project, the number of such projects is constrained by the

availability of state funding that is *not* subject to Article XIX, mainly funds from the Public Transportation Account (PTA, formerly the Transportation Planning and Development account). However, annual PTA revenues are limited and unpredictable, which both constrains and complicates long range planning for transit improvement.

RELAX ARTICLE XIX LIMITATION

We recommend that the Legislature enact a constitutional amendment to permit expenditure of gas tax revenues for transit rolling stock. Transit rolling stock is the only type of transportation capital outlay that currently cannot use the revenues under Article XIX. Relaxing Article XIX in this manner would allow greater flexibility and would further the funding flexibility and consolidation that Chapter 622 has instituted. In 1974, voters similarly relaxed Article XIX to allow individual counties by Board of Supervisors resolution to opt to spend gas tax revenues for mass transit guideways (mass transit facilities such as rail track). A similar amendment to Article XIX could authorize expenditure of gas tax revenue for transit rolling stock. Such an amendment would not change the amount of transportation revenue available to any county, but would provide greater flexibility in the use of that revenue.



GROWING STRAIN ON STATE HIGHWAY SYSTEM

For many Californians, growing traffic congestion is the most prominent sign that the state’s highway system is overburdened. Figure 1 shows that from 1987 through 1995, the number of hours that drivers spent in congested conditions on urban highways increased almost 70 percent—from below 200,000 hours per day to over 300,000 hours per day.

Growth in traffic congestion shown in Figure 1 reflects both the spread of congestion to previously uncongested roads and an increase in the number of congested hours per day on already congested roads. While traffic congestion has increased, California has added relatively little new highway capacity—just 3,250 lane-miles (a 7 percent increase) over the past 20 years. In this section we discuss how the structure of the state’s traditional revenue source—the gas tax—results in transportation revenues that grow less rapidly than demand, thus limiting the state’s ability to construct additional transportation improvements.

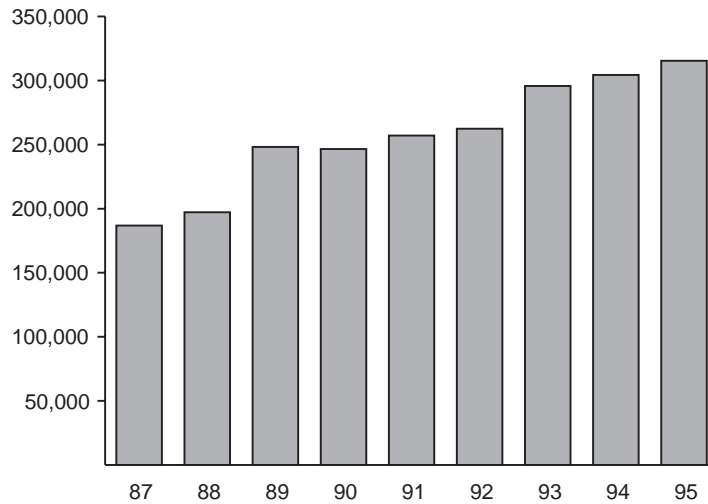
TRANSPORTATION REVENUES LAG BEHIND DEMAND

Figure 2 compares the growth of transportation demand factors (population and vehicle miles traveled [VMT]) and revenues (federal, state, and

Figure 1

Urban Highway Congestion Increasing

Delay (Vehicle Hours Per Day)

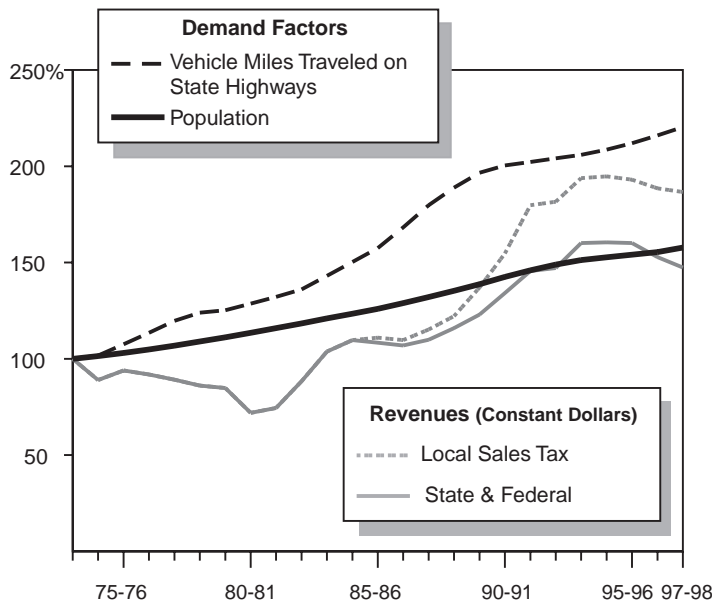


local). Population has grown steadily over the past 25 years, and is currently about 60 percent higher than in 1973-74. At the same time, however, highway VMT has more than doubled, growing much more rapidly than population. Several factors contribute to the gap between growth in population and VMT, including the growth in two-worker households and the corresponding increase in commuting, as well as the expansion of sparsely populated urban areas.

State and federal transportation revenue, however, has lagged behind growth in demand factors. Figure 2 shows that in 1997-98 state and federal

Figure 2
Transportation Demand Outpaces Revenue^a

1973-74 Through 1997-98



^a Excludes one-time revenues such as bonds.

fuel economy results in the consumption of less fuel—and the generation of less gas tax revenue—per mile driven. In addition, the value of the slow-growing revenue is eroded over time by inflation. The federal fuel tax, currently 18.3 cents per gallon, suffers from the same type of erosion.

As Figure 2 shows, during the 1970s high inflation reduced the real value of state and federal transportation revenue, even as VMT grew. In response, the Legislature increased the gas tax from 7 cents to 9 cents per gallon in 1983, but during the 1980s, inflation and increasing fuel economy again kept revenues from growing at the same rate as VMT.

Revenues finally caught up with population growth in 1991-92 as a result of a 100 percent increase (from 9 cents to 18 cents per gallon) in the state gas tax that was phased in from 1990-91 through 1993-94 as a result of the *Blueprint* legislation. However, as Figure 2 illustrates, growth in state and federal transportation revenues still lagged behind VMT growth.

FACTORS CONTRIBUTING TO REVENUE/DEMAND GAP

Vehicle Fuel Economy and Inflation

This revenue “gap” is primarily due to the structure of the state and federal gas tax. California levies a gas tax of 18 cents per gallon, and one might expect revenues to increase along with growth in population and VMT. However, this is not the case, mainly because improving vehicle

revenues from growing at the same rate as VMT. Revenues finally caught up with population growth in 1991-92 as a result of a 100 percent increase (from 9 cents to 18 cents per gallon) in the state gas tax that was phased in from 1990-91 through 1993-94 as a result of the *Blueprint* legislation. However, as Figure 2 illustrates, growth in state and federal transportation revenues still lagged behind VMT growth.

Growing Costs Exacerbate Revenue Gap

The revenue gap is further exacerbated by two other factors: increasing rehabilitation costs associated with an aging highway system and growth in the cost of constructing highway improvements. In



order to protect the state's multibillion dollar investment in the state highway system, state policy places a higher priority on rehabilitating existing roads than on constructing new roads. Pavement has a fixed life span, usually 20 to 30 years, and even with proper maintenance it must eventually be rehabilitated. Because much of the state highway system was constructed in the 1960s, it has now reached the end of its useful life. Over the next ten years Caltrans anticipates spending over \$6 billion on pavement rehabilitation which will reduce funding available for new project construction.

In addition, the cost of constructing highway improvements—especially in urban areas—has increased faster than the rate of inflation. Highway construction in urban areas brings unique challenges—including acquiring right-of-way, accommodating existing traffic during construction (sometimes requiring night work), and cleaning contaminated construction sites—all of which increase project cost. In addition, community involvement that is allowed by state and federal law can result in design modifications that affect project cost—such as rerouting, soundwall construction, or landscaping. Finally, additional expenditures may be required for environmental mitigation measures to offset damage caused by project construction. All of these factors reduce the “purchasing power” of each dollar of transportation revenue, because it now costs more to provide a given amount of new transportation capacity.

LOCAL SALES TAXES HAVE NARROWED THE REVENUE GAP

The Legislature has authorized local governments to impose sales taxes to generate additional revenue for transportation improvements, and voters in 17 counties have approved a one-half cent local sales taxes for this purpose. Figure 2 shows that growth in these local sales tax revenues, when combined with growth in state and federal revenues, substantially narrows the gap between revenues and VMT. (Figure 2 displays only local sales taxes that are primarily dedicated to transportation improvements and does not include local sales taxes that primarily support transit operations or general fund purposes.)

Counties use these local transportation sales tax funds for purposes similar to state and federal transportation funds. This includes primarily expansion of the state highway system, including construction of lane-additions and short connecting highways, improvements to local roads, and construction and expansion of rail transit systems. In 1996-97, local transportation sales taxes generated about \$1.2 billion, while state and federal gas taxes provided about \$5.3 billion.

Although sales tax measures have allowed local governments to augment available state and federal transportation funds, their future is uncertain. Most of the tax measures were authorized for either 10 or 20 years and will expire between 1998 and 2010. Voters can reauthorize the tax measures, but this is made more difficult by (1) a 1995 court ruling (*Santa Clara County Transportation Authority vs. Guardino*) that determined that

transportation sales tax measures must be passed by a two-thirds vote, rather than a majority vote; and (2) Proposition 218 which further clarified the two-thirds vote requirement. Of the 17 measures, only two—San Benito and Riverside Counties—received greater than a two-thirds vote. At this point, it appears that sales taxes passed prior to *Guardino* will remain in effect until their planned expiration date unless a court determines that

Guardino should apply to, and invalidate, existing sales taxes. All new or reauthorized local transportation sales tax measures will now require a two-thirds vote, and many local transportation officials believe that it will be difficult to meet this vote requirement. Failure to reauthorize these measures means that the gap between demand and revenues would widen, putting increased pressure on the state for additional funding.

BALANCING TRANSPORTATION DEMAND AND REVENUE

Traditionally, California has addressed transportation problems, such as rising traffic congestion, by expanding the “supply” of transportation infrastructure. Generally, this consisted of constructing new roads and improving the operation of existing roads in order to accommodate more traffic. The *Blueprint*, for example, increased the gas tax in order to finance more highway construction and also increased local control and flexibility in order to yield more efficient use of revenues. Chapter 622 does not increase revenues, but seeks to increase useful transportation investments by further increasing flexibility and local control in order to yield more efficient use of existing revenues.

California’s highway system faces future challenges including continuing population growth, expanding urban areas, growing traffic congestion, increasing costs of transportation improvements, and the gap between growth in VMT and revenue. In view of these challenges, the Legislature should

not only focus on policies to increase the “supply” of transportation capacity, but also on policies that reduce the growth in demand. In this manner, the Legislature can adjust both sides of the equation in order to strike a balance that considers both the benefits derived from accommodating transportation demand and the costs of supplying transportation capacity.

Striking a balance between increasing transportation supply and reducing demand requires difficult policy choices and a critical evaluation of the objectives of the state’s transportation system. Traditional supply-based policies accept growing transportation demand as inevitable and seek strategies to accommodate that growth. Balancing supply and demand, however, requires policy decisions—implicit, if not explicit—about the level of transportation services that the state will provide, and then requires strategies to reduce demand and make the system operate efficiently.



CALIFORNIA TRANSPORTATION PLAN

In 1992, the Legislature directed Caltrans to develop the California Transportation Plan, including (1) a description of the state's transportation policies and system performance objectives, (2) strategies to implement the policies, and (3) specific recommendations. It was anticipated that a clear statement of transportation policies and system performance objectives would provide guidance to the Legislature in evaluating the efficacy of its current investment policies in achieving the state's transportation goals. Also, it would facilitate balancing additional investments against demand reduction policies.

Unfortunately, Caltrans' California Transportation Plan, completed in 1993, does not address these questions in a manner that provides useful guidance for evaluating transportation investment policies. The plan includes 88 recommendations, ranging from narrow, specific recommendations such as "expand express bus service and facilities," to broad recommendations such as "place maintenance as a priority" and "reduce congestion." Because the recommendations are unfocused and uncoordinated, providing no overall strategic approach to transportation investment, the plan can be used to justify virtually any transportation expenditure. Thus, it provides little direction or guidance on larger policy questions such as:

- ◆ Do the state's current transportation expenditures—well over \$5 billion per year—serve to achieve the state's objectives for the transportation system in the most cost-effective manner?
- ◆ Is the state making sufficient investments in order to realize its transportation objectives?
- ◆ How should state policy balance *accommodating* and *reducing* growth in transportation demand?

Plan Favors Demand Reduction Strategies

While the plan overall is of limited use as a guide to transportation investment policy, one of its recommendations does reflect a policy that favors demand reduction over construction of new transportation facilities:

Priorities for System Improvements. To assure cost-effective system development, the California Transportation Commission, Caltrans, regional and local transportation providers should adopt the following priorities for system improvements: (1) demand reduction strategies; (2) operational improvements to increase efficiency of the existing system; (3) actions to shift demand from single occupant vehicles to other modes; and (4) new facilities.

This recommendation represents a dramatic departure from current practices—state policy currently places little if any emphasis on demand reduction. However, the plan does not discuss how this policy might be implemented or what its effects might be. By presenting this policy without further interpretation or discussion, the plan leaves unexplored questions such as:

- ◆ How much should demand be reduced, and how, and by whom, should this decision be made?

- ◆ What strategies can the Legislature, Caltrans, and local transportation agencies implement in order to reduce demand?
- ◆ What are the system performance objectives that will guide implementation of this policy?
- ◆ Do the state's transportation policies suggest that demand reduction should apply differently to commercial, commuting, and recreational transportation?

Without more thorough analysis in the plan, this fundamental recommendation has limited impact in shaping transportation investment policy.

California Transportation Commission Should Revise Plan

While many of these questions must ultimately be decided by the Legislature, the California Transportation Plan was intended to provide information to assist the Legislature in making policy decisions such as these. As the current plan fails to fulfil that function, ***we recommend that the Legislature direct the California Transportation Commission (CTC) to revise the California Transportation Plan, with staff support from Caltrans.*** The revised plan should provide a framework for considering transportation investment and policy decisions by clearly specifying the state's transportation policies and system performance objectives, and providing alternative implementation strategies.

The California Transportation Plan should serve the Legislature as a guide to developing long-term transportation investment policy and balancing

demand restraints and supply increases. While the plan is being revised, however, the Legislature should begin to address both demand and supply. In the following sections we discuss steps that the Legislature can take both to restrain demand as well as to increase supply.

RESTRAIN TRANSPORTATION DEMAND

In the long run, supply strategies—improving and expanding the transportation system—are unlikely to eliminate traffic congestion and result in an efficiently operating transportation system. This is because new road capacity will typically lead to new traffic, especially in urban areas, because people and businesses benefit from the mobility that the transportation system provides and seek to use it to their benefit.

For example, enhanced mobility allows people to live in less expensive housing further from work and to make more shopping or leisure trips, and allows businesses to locate further from suppliers and customers. Thus, as long as drivers desire more mobility than can be accommodated by the existing system, increases in “supply” (the size of the road system) will be consumed by drivers. Ultimately, road use will increase, leading to congestion of new road capacity. For this reason, expansion of the transportation system will rarely alleviate congestion permanently; however, by restraining transportation demand this tendency can be offset and existing congested roads, as well as new roads, can be made to operate efficiently.

Restraints on Driving. Driving behavior is not fixed, but is the result of individual decisions in



response to economic factors. As Figure 2 shows, over the past 25 years Californians have made decisions that resulted in increased per capita driving. Drivers make these decisions in light of constraints on money (which driving consumes through fuel and other vehicle costs) and time (which driving consumes in greater amounts when trips are longer or roads are congested with traffic). When driving consumes too much money or time, drivers are likely to seek ways to reduce driving, such as combining trips, carpooling, walking, using transit, and shopping by mail.

In many urban areas, heavy traffic congestion—which makes trips more costly in terms of time—is the major constraint on further growth in driving. Because congestion, rather than money, is the constraint, new capacity that reduces congestion will be quickly filled and ultimately congested again. However, it is possible to reduce overall growth in driving so that new road capacity, or even current road capacity, will operate more efficiently. The overall growth in driving can be reduced by:

- ◆ **Road Pricing.** Policies that change the cost of driving can influence how much, when, and where people drive.
- ◆ **Land Use Planning.** Land use policies that reduce the distances between housing, employment, and retail centers can reduce growth in driving.
- ◆ **Alternatives to Driving.** Policies that increase the attractiveness of other forms of mobility can increase use of alternatives to driving.

Road Pricing

Altering the way in which transportation revenue is collected, without necessarily changing the total amount collected, can encourage efficient driving by using price to signal to drivers the cost of their actions. Drivers will make more efficient use of roads when transportation taxes are collected from drivers on a per-mile basis, rather than on a lump sum basis (such as vehicle registration fees) or without any connection to driving. Some revenue mechanisms, such as tolls and the gas tax, can be more effective in revealing costs to drivers. Others, such as sales taxes for transportation improvements, contribute to inefficient driving decisions by hiding the cost of driving from drivers.

Using tolls to generate transportation revenue is one way to reveal costs to drivers, because tolls for each road can be set according to its construction cost and congestion conditions. Although toll financed roads are not as widely used in California as in some other states, tolls have been used to finance the construction, operation, and maintenance costs of ten major highway bridges in the state. More recently, California has begun to use tolls to finance construction of new highways. In Orange County, for example, there are currently three toll roads in operation, two operated by the public Orange County Toll Corridors Agency and one operated by a private owner under the terms of AB 680 (Chapter 107, Statutes of 1989) (described below). California's new toll roads collect tolls electronically, eliminating the need for drivers to stop at toll booths.

Even greater efficiency in road use can be achieved by adjusting tolls according to specific conditions on each road at different times of day—higher on busy roads and during peak hours, and lower on less used roads and during off peak hours. This type of variable time-of-day pricing is currently in use on the State Route 91 Express Lanes (these are toll lanes next to nontoll lanes) in Orange County. By adjusting tolls in this manner, it is possible to maintain free-flowing traffic under varying demand conditions. By raising tolls during peak hours, some drivers will postpone trips, take alternate routes, carpool, use public transportation, or change destinations; and remaining traffic will flow more smoothly.

When tolls are increased to eliminate congestion, some drivers—especially those that drive during peak hours and on the most congested roads—will pay more than at present. At the same time, the need for additional capital outlay expenditures to expand the highway system will be reduced. As a result, there could be a surplus of toll revenue that can be used for improvements in other areas, expansion of transit, or to offset and reduce the need for additional transportation revenue.

Expanding the use of tolls has the potential to increase transportation costs for low-income drivers, either increasing the share of income spent on transportation or reducing their transportation options. There are several ways to ensure that low-income drivers do not suffer reduced mobility as a result of toll roads. Where tolls generate surplus revenue (in excess of the amount needed to pay

for road construction and maintenance), surplus funds could be used to expand transit or subsidize transit operations to reduce its price. Also, welfare recipients could be provided a monthly transportation subsidy in the form of toll credits, which would be electronically deducted from their accounts when they use toll roads. Low-income drivers who do not receive welfare benefits could be provided reduced “lifeline” toll rates, similar to the reduced lifeline telephone and energy rates.

Legislature Should Expand Use of Pricing on Pilot Basis. While a sudden shift to the widespread use of road pricing is not currently feasible, there are opportunities to expand the use of pricing through a pilot program whereby the effectiveness and impact of road-pricing can be assessed. Such a pilot program should consist of two components—with one component being an extension of an existing demonstration program.

Specifically, in 1989 the Legislature enacted AB 680, authorizing Caltrans to award franchises for the construction and operation of four privately owned toll roads. Eight years later, one of these projects—the State Route 91 Express Lanes project in Orange County—is operational and appears successful; however, progress on the remaining three projects has ranged from slow to none. A toll road project on State Route 125 in San Diego County is still undergoing environmental review, but may eventually be constructed. The final two projects have seen no progress and are essentially dead due to community opposition, environmental, and financial issues.



The limited success so far of AB 680 toll roads is due not to a failure of toll financing, but rather to developers' lack of experience and overambitious project scope. In order that the state can better test the feasibility of toll financed highway development, ***we recommend that the Legislature direct Caltrans to (1) terminate the franchise agreements for the two dead projects and solicit new project proposals, (2) place the State Route 125 project on a schedule to show progress towards construction or similarly lose its franchise, and (3) report to the Legislature evaluating the AB 680 projects, including their effect on low-income drivers, how any adverse impact can be mitigated, and lessons for future toll road development.***

High Occupancy Toll (HOT) Lane Pilot Program. As another component of the pilot program, we recommend that the Legislature authorize a program to investigate the feasibility and congestion-reduction benefits of HOT lanes. The HOT lanes are similar to traditional High Occupancy Vehicle ([HOV], or carpool) lanes, except that non-HOVs can pay a toll to use HOT lanes, while they are barred from using HOV lanes. This allows more effective use of the excess capacity that sometimes exists on HOV lanes, and provides a source of toll revenues that can partially or fully offset the cost of constructing the HOT lane. The private State Route 91 Express Lanes are HOT lanes that are free for vehicles that have three or more riders. The success of this project suggests that HOT lanes deserve greater investigation. Two new HOT lane projects could be authorized under AB 680, if

Caltrans revokes the franchises for the two failed AB 680 projects. However, we believe that HOT lanes deserve wider evaluation. Therefore, in order that the effectiveness of HOT lanes can be evaluated, ***we recommend that legislation be enacted to authorize the construction of HOT lanes, either publicly or privately owned, as a pilot program.*** Where local support exists, the pilot program should also allow conversion of existing HOV lanes to HOT lanes in order to generate revenue for other improvements.

Land Use Planning

Transportation demand is also influenced by local land use decisions that determine the locations of new housing and jobs, and which in turn determine whether communities will be compact and densely populated or sprawling and sparsely populated. Land use in many of California's urban areas is defined by lower-density development and ever-expanding urban boundaries that make pedestrian, bicycle, and transit travel impractical, and that increase trip length and VMT. Coordinating land use and transportation policies is made more difficult because many large urban areas include several city and county jurisdictions, and land use decisions of one jurisdiction can impact traffic in other jurisdictions.

Inefficient road pricing is one factor that encourages sprawl. Businesses and households that locate on the urban fringe are drawn by lower property costs, even though distances are greater to other parts of the urban area. This choice is made more attractive because drivers do not pay the full cost of their road use; in effect, development on the

urban fringe is subsidized by other drivers who suffer from greater highway congestion. More efficient road pricing will necessarily result in land use that minimizes driving, as businesses and households are faced with paying the full cost of their driving decisions.

Explore Land Use/Transportation Connections.

Alternative land use policies include urban development boundaries or greenbelts that limit urban sprawl, as implemented in several California cities (most recently in San Jose and Pleasanton) and throughout Oregon. Policies to encourage fill-in development within existing urban boundaries can also reduce sprawl by concentrating development in existing urbanized areas.

Although land use decisions relating to individual residential or commercial developments have predictable transportation effects, the ability of broad land use policies—such as development boundaries, or in-fill development policies—to ease widespread traffic congestion and reduce the growth in VMT has not been widely tested. Accordingly, ***we recommend that the Legislature direct the Governor's Office of Planning and Research to investigate and report on (1) the impact of state and local land use policies on transportation, (2) successful policies adopted by California communities and in other states and countries, and (3) recommended state and local policies that would harmonize land use and transportation decisions.*** Additionally, we recommend that the Legislature hold joint hearings of the transportation and land use committees to review the findings and recommendations of the report.

Alternatives to Driving

Although most trips are made in single-occupant automobiles, there are many alternative ways to address mobility needs. However, these alternatives are generally less convenient than driving, and drivers turn to them only when driving costs become excessive. Policies that increase the relative attractiveness of alternatives to solo driving—either by making solo driving less attractive (such as through road pricing) or by making the alternatives more attractive—can induce a larger shift away from solo driving to transportation alternatives.

However, it should be noted that providing alternatives to driving does not actually *reduce* the overall demand for transportation, but rather provides different ways to fulfil that demand. Transportation alternatives can therefore increase the overall level of mobility, but may not result in reduced traffic congestion. As a result, the Legislature should not rely solely on alternatives to driving, but should consider them as a way to provide mobility while reducing demand for driving through other approaches. Alternatives for the Legislature to consider include:

- ◆ ***Transit.*** Transit currently carries a relatively small share of trips in California, but where ridership levels are sufficient it can provide cost-effective transportation. Transit works best in communities with dense land use patterns, such as San Francisco.
- ◆ ***Carpool Facilities.*** California has a growing network of carpool lanes, that allow drivers



to avoid traffic congestion. Carpooling is made even more attractive where carpools avoid not only congestion but also avoid tolls (as on toll bridges and the State Route 91 toll lanes) and where other benefits, such as discounted parking, are provided.

- ◆ ***Bicycle and Pedestrian Facilities.*** Where land use is dense and distances are short, safe and attractive facilities for bicyclists and pedestrians can increase the number of such trips.
- ◆ ***Electronic Commuting and Commerce.*** Telecommuting and electronic commerce (including mail order shopping by telephone and the internet) are growing, as businesses, employees, and consumers find that it allows them to avoid driving and often reduces costs. Strong competition and falling prices in the information technology industry will continue to increase the attractiveness of electronic alternatives to driving.

The need to provide transportation alternatives depends upon the extent to which state and local policies restrain growth in driving and upon the performance objectives for the transportation system, including the overall level of mobility that is desired. Gas tax revenue can currently be used to construct mass transit guideways, carpool lanes, and bicycle and pedestrian facilities. Relaxing Article XIX of the State Constitution, as recommended earlier in this report would provide greater flexibility in funding transit improvements.

GENERATE TRANSPORTATION REVENUE THAT GROWS WITH DEMAND

Demand reduction policies, while necessary to restrain growing VMT and congestion, are unlikely to fully resolve California's transportation problems in the foreseeable future. Therefore, funds will continue to be needed to improve and expand the transportation system. In this section, we discuss ways to ensure that transportation revenue grows along with, rather than lagging behind, transportation demand.

California's transportation revenue structure—based primarily on the gas excise tax and augmented with local sales tax revenue—does not generate revenue that grows with transportation demand because of erosion due to inflation and fuel economy gains. However, this revenue structure is only one of many possible options, some of which could better generate revenue that grows along with demand, thereby providing revenue to improve and expand the transportation system when appropriate. In addition, some revenue mechanisms encourage efficient road use by signaling the actual cost of driving, while others hide these costs from drivers, thereby contributing to excessive road use.

Alternatives to State Gas Tax

Alternative revenue structures could use taxes other than the gas tax, and could rely to a greater extent on locally generated revenues or on toll revenue. (While the state relies as well on federal funds, we assume that state policy does not directly influence the level of federal transportation revenue.) However, each of the major alternatives

suffers from shortcomings that limit their effectiveness. Below we review the advantages and disadvantages of the major revenue options. We conclude that the state gas tax, despite its shortcomings, should continue to serve as the core revenue source for transportation improvements.

State Gas Tax. The gas tax has several advantages, including familiarity and low administrative costs. It also approximates a user fee, where drivers pay more as they use roads more, which tends to encourage efficient road use. Disadvantages are erosion of growth in its value, due to both inflation and increasing fuel economy, and the fact that the per-mile equivalent tax depends on vehicle fuel efficiency, thus treating different drivers differently. However, the first disadvantage of the gas tax is not insurmountable, because the size of the excise tax can be indexed (automatically adjusted) to account for inflation and increasing vehicle fuel economy.

Vehicle Miles Traveled Tax. Rather than taxing consumption of fuel, a VMT tax taxes driving at a specified cost per mile. As a user fee, the VMT tax is superior to the gas tax because it directly taxes road usage and treats all drivers similarly regardless of fuel consumption. A VMT tax would not be eroded by increasing fuel economy, but would be eroded by inflation unless the per-mile tax is periodically adjusted. The major obstacle to implementing the VMT tax is its implementation and enforcement costs.

Local Sales Taxes. Local transportation sales taxes are not eroded by inflation and they generate more revenue as the economy grows. However,

sales taxes are not user fees because the tax is imposed on activities unrelated to driving. Thus, driving appears less costly than it actually is, encouraging excessive road usage and ultimately contributing to a need for additional transportation improvements. Additionally, the two-thirds vote requirement makes local sales taxes difficult to impose.

Local Gas Taxes. Counties can, upon approval by two-thirds of the voters, impose a fuel tax surcharge on sales of motor vehicle fuel within the county. The local gas tax has most of the same benefits and limitations of the state gas tax. However, the two-thirds vote requirement makes the local gas tax difficult to impose. Also, because the tax base (sales of motor vehicle fuel) is much smaller for a local gas tax compared to that of a local sales tax, a local gas tax would have to be about 11 cents per gallon in order to generate the same amount of revenue as a half percent local sales tax. A tax increase of this magnitude could result in migration of gas sales to neighboring counties with lower taxes. Although no county has yet attempted to impose a local gas tax, Chapter 878, Statutes of 1997 (AB 595, Brown) authorizes the nine San Francisco Bay Area counties to seek voter approval for a *regional* gas tax that would apply in all nine counties.

Tolls. Tolls can be the most effective user fee for transportation because they can be set according to the actual cost and traffic conditions on each road in order to encourage efficient road use. Electronic toll collection simplifies the implementa-



tion of tolls and allows toll levels to be easily varied to control traffic levels.

Gas Tax Should Remain

We conclude that, at present, the state gas tax should continue to serve as the core of California's revenue structure. Its advantages include its ability to approximate a user fee, public acceptance, and low administrative costs. While other revenue mechanisms such as the VMT tax and tolls have the advantage of responding to the total amount of driving, their disadvantages include significant implementation problems for the VMT and potential adverse impact on lower income drivers in the case of tolls. Furthermore, generating transportation revenues at the local level, through local sales or gas taxes, introduces other inefficiencies. Specifically, local sales taxes lack any connection to the cost of driving and local gas taxes can cause migration of gas sales. Therefore, these local taxes are best used on a limited basis to augment, rather than replace, state revenues.

As a result, ***we recommend that the Legislature ensure that the state gas tax can provide adequate funding to achieve the state's transportation goals and that its value is not eroded by inflation and fuel economy.*** The Legislature can accomplish this by either periodically adjusting the gas tax rate

through statute, or adopting an automatic indexing mechanism that adjusts that tax rate in response to inflation and fuel economy.

In addition, ***we recommend that the Legislature investigate: (1) the increased use of toll financed roads through a pilot program, and (2) the feasibility of using VMT fees.***

- ◆ ***Authorize Additional Toll Roads.*** The Legislature should authorize additional toll roads on a pilot basis, as an interim step towards possible greater reliance on toll revenue in the future (described earlier in this report). The Legislature can authorize new toll road projects, or it can delegate authority to Caltrans, the CTC, or local agencies.
- ◆ ***Study Future Revenue Options.*** If current obstacles can be overcome and effects on low-income drivers addressed, VMT fees and tolls have the potential to efficiently generate transportation revenue while reducing traffic congestion and VMT growth. The Legislature should direct Caltrans to report on the obstacles and recommendations for addressing them if the state were to eventually transition from primary reliance on the gas tax to a VMT fee, with greater reliance on tolls where appropriate.

Acknowledgments

This report was prepared by Michael Cunningham, under the supervision of Dana Curry. The Legislative Analyst's Office (LAO) is a nonpartisan office which provides fiscal and policy information and advice to the Legislature.



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