



GRAPES, ELECTRONS, SURF

Infrastructure Investments for California's Future

Next Ten is an independent nonpartisan organization that educates, engages, and empowers Californians so that, together, we can improve our future economy and quality of life.



acknowledgments

Next Ten creates tools that empower Californians through deeper understanding of critical issues affecting our state. We call ourselves Next Ten because we aren't here for the quick fix. We have our sights set on joining with others to improve the state over the next ten years, and the ten years after that. The decisions we make together will affect California's future economy and quality of life for years to come. Together, we can create the brighter future we all want for ourselves and our children. Visit us online at www.nextten.org.

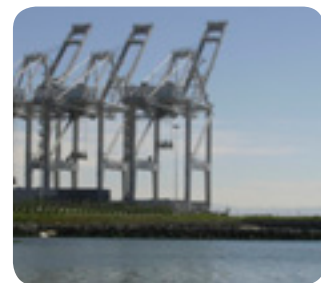
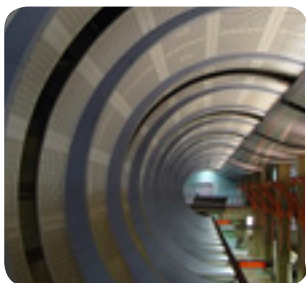
The California Center for Regional Leadership is a statewide nonprofit organization established to support, facilitate, and promote innovative regional solutions for our major economic, environmental, and societal challenges, to help achieve a more sustainable California. CCRL works with a network of collaborative regional organizations from throughout California, and works on behalf of this network to encourage and enable effective regional strategies by local and state government. Visit us online at www.calregions.org.

Special thanks go to Bank of America and Caltrans. This report would not have been possible without their generous support for the 2006 Regional Growth Dialogue project and long-term commitment to infrastructure planning and investment vital to California's future prosperity and well-being.

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introduction

Grapes, electrons, and surf keep our economy strong and help make California a great place to live and work. What binds these three elements together is infrastructure, the skeletal support of our communities. We must find a sustainable way to ensure that these resources, and others, are available for generations to come. The topics discussed in *Grapes, Electrons, Surf* outline different directions, trends, values, and options to create infrastructure investment solutions for our common future.

HOW SHOULD CALIFORNIA RESPOND TO THE INFRASTRUCTURE CHALLENGES OF THE NEXT DECADE?

The importance of infrastructure to our neighborhoods, communities, and economy has never been made more strikingly apparent than with events in the last five years:

September 11 drastically changed our view of:

- The importance of our infrastructure system's ability to respond in times of crisis.
- The interconnectedness of infrastructure in our daily lives, most importantly our security, health, and wellbeing.
- The profound effect that disruptions in infrastructure service can have on people and businesses.

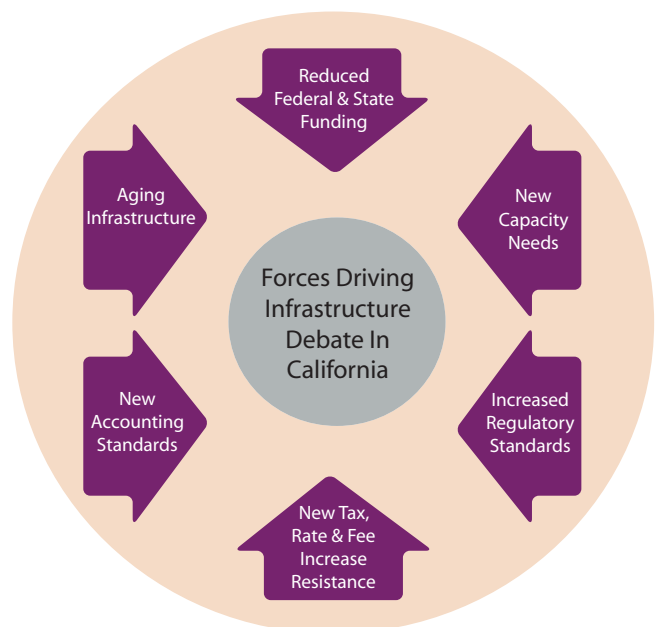
Hurricane Katrina changed the way we think about:

- The fragile nature of our most crucial infrastructure systems and their impact on the elderly, the poor, and our communities' most vulnerable.

- The need for better long-term planning, preventative maintenance, and smart investments.
- The potential economic damage caused by the interruption of energy and exports of commodities and other goods.
- The consequences of delaying needed infrastructure maintenance and improvements.

During California's rapid rise to become the most populous state in the nation and the 6th largest economy in the world, the state chose to make fundamental infrastructure investments that helped create the kind of California we want for our families, communities, and businesses. As we move further into the 21st century, we must decide whether and how to invest in infrastructure.

FORCES DRIVING INFRASTRUCTURE DEBATE



California’s population is expected to increase by nearly 50 percent to about 55 million in 2050. This growth will alter the state’s economy, demographics, environment, and quality of life. How well the state responds to this period will largely define California’s prosperity and quality of life for decades to come.

Already there is a noticeable and growing “infrastructure gap” – the gap between the needs of our growing population and economy, and the capacity of our roads, transit, schools, water systems, and other basic infrastructure necessary to meet our needs. The state’s investment in these and other basic facilities dropped after the “golden years” of the 1950s and 1960s, due in part to:

- Increasing skepticism about large-scale public spending and declining trust in government, resulting in measures like Proposition 13.
- Growing concern about the environment and quality of life, leading to stricter controls on the construction of roads, schools, and other projects.

Californians have started a dialogue on infrastructure issues, as evidenced with the November 2006 ballot measures, but in order to bridge the “infrastructure gap” and make up for past underinvestment, we must prepare for difficult decisions in specific areas of infrastructure like transportation, water, flood control, and education facilities.

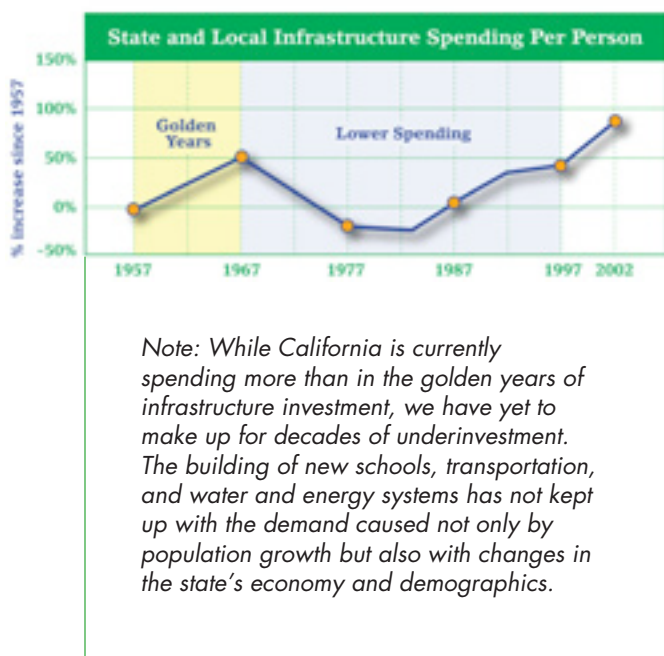
There are many proposals about infrastructure that require public choices. The decisions we make or support today will affect California’s economy and quality of life for years to come. It requires reviewing:

- What programs, investments, and services do we expect from state government?
- What do we think local governments should provide?
- How should we pay for these programs?

Statewide organizations including *Next Ten* and the *California Center for Regional Leadership* are part of a growing effort to engage Californians in the infrastructure dialogue. However, substantial work remains for the state to partner with the public, elected leaders, and the business community as we work through the balances, trade-offs, and responsibilities necessary to put us on a path to long-term, sustainable solutions.

This paper draws on past studies of California’s infrastructure prepared by the *Legislative Analyst’s Office*, the *Public Policy Institute of California*, the *California Department of Finance*, and others.

For more information on California’s infrastructure, please visit www.nextten.org and www.calregions.org.



starting points

“Infrastructure” means the physical structures that provide the basis for development and quality of life, including roads, transit, school facilities, water systems, sewers, airports, power plants, and more.

Infrastructure refers broadly to facilities and related operations providing basic services to individuals and businesses. In the 21st century this has expanded to include telecommunications. These facilities often require sizable capital investment and substantial commitments of land and other natural resources.

KEY ELEMENTS OF INFRASTRUCTURE



Transportation: Roads, bridges, transit, airports, shipping ports, rail



Education Facilities: Buildings for K-12 schools, colleges and universities



Water and Natural Resources: Water, air quality, electricity, parks and beaches



Public Buildings: Fire and police stations, libraries, public hospitals, government buildings, courts, prisons, public housing

Infrastructure planning and investment involves a partnership of federal, state, and local authorities. Much of California’s key infrastructure is built and financed by the private sector, which is often the source of innovative solutions and best practices. While the private sector provides the leadership needed to initiate change in public policy, the public sector also plays a critical role regulating and coordinating private efforts. By leveraging resources and linking to a range of partners, the state is able to maximize its potential for increased investments.

NEW TRENDS IN INFRASTRUCTURE

Funds to incentivize better transportation planning and performance:

The state of California has committed \$10 million for the Regional Blueprint Planning Program to encourage and support comprehensive land use scenario planning by Metropolitan Planning Organizations and Councils of Government.

Green infrastructure:

How our built infrastructure systems interact with parks and recreation, open spaces and preserves, watersheds, and other precious habitats is critical to maintaining and improving the health and high quality of life that Californians have come to demand.

Schools as centers of community:

Integration of school facilities into our overall infrastructure planning, along with encouraging joint community use of school amenities such as libraries, recreational fields, and clinics can enhance the spirit of community in our towns and regions while making more efficient use of scarce financial resources.

Goods and people movement:

Effective transportation improvements must account for two key developments that directly affect our state's economy and quality of life:

- Workers seeking affordable housing choices are facing longer commutes throughout the state.
- California's rapid growth as the country's logistics and distribution center has led to more trucks on our roads and highways, increased rail traffic, and decreased air quality.

To make real improvements, strategically planned transportation investments in California must intelligently gauge and address the growing demands of both trends.

Public/private financing:

To bring California's infrastructure up to date, current estimates report that California's infrastructure funding deficit totals hundreds of billions of dollars, numbers far larger than our state or local governments can reasonably spend. In order for California to make long-term investments in our energy, roads, water, and other public systems, one promising option is to leverage public-private financing mechanisms used successfully in many other states and countries around the world.



“A civilization's rise and fall is linked to its ability to feed and shelter its people and defend itself. These capabilities depend on infrastructure – the underlying, often hidden foundation of a society's wealth and quality of life. A society that neglects its infrastructure loses the ability to transport people and food, provide clean air and water, control disease, and conduct commerce...But excessive demand, misuse, and neglect take their toll...

There is an urgent need to rebuild America. But the cost is prohibitive if this is not done intelligently...Instead, the nation must strive for intelligent renewal, a process that cost-effectively uses limited economic, material, and human resources.”

–The Civil Infrastructure Systems Task Group
of the National Science Foundation

finances

Over the past fifty years, California's infrastructure, including schools, highways, water treatment and sewage systems, hospitals, and prisons, have been built using a myriad of financing strategies. Initially these facilities were paid using current revenues (pay-as-you-go), but as projects became larger and more expensive and state and local governments had to allocate revenues for other purposes, a shift occurred to the use of bonds (borrowing). The use of bonds allows public agencies to complete projects more rapidly and have future residents, who will benefit from the completed project, contribute to the cost.



Sources of funding for infrastructure can include both general and selective taxes, user fees, the sale of physical assets or income streams, and a variety of other alternatives.

INFRASTRUCTURE FINANCING OPTIONS

Pay-As-You-Go. This is when infrastructure projects are paid for directly from the state's General Fund or other dedicated sources.

Renting and Leasing. This can sometimes be feasible in cases where privately owned infrastructure (such as buildings) is available for public use.

Bond Financing. This has become the most common form of infrastructure financing in California and typically involves borrowing money to be paid back over time with interest to build or acquire long-lived capital facilities.

Local Option Sales Taxes. During the last 25 years, residents of 20 California counties have voted to raise local sales taxes by half or one percent to pay for local and regional transportation improvements. Such measures include TransNet in San Diego and Measure M in Orange. Together, these county-based taxes generate about \$3 billion per year and are the fastest growing source of revenue for funding new transportation projects in California, such as streets and roads, highways, and rail/transit.

KEY CALIFORNIA PROPOSITIONS

A number of ballot propositions in recent years have changed the way in which governments can raise or spend money for infrastructure and other purposes. Some propositions have affected the amount of taxes local and state government can collect while other propositions have affected the government's discretion over how to spend the funds it collects, for example:



Proposition 13, passed in 1978:

- Limits residential and commercial property tax rates to one percent of assessed value.
- Limits increases in assessed value after purchase or construction.
- Makes the legislature responsible for dividing property tax among local entities.
- Requires two-thirds vote in the legislature to increase taxes and two-thirds voter approval of special taxes.

Proposition 62, passed in 1986:

- Requires approval of new local general taxes by two-thirds of the governing body and a majority of local voters.

Proposition 98, passed in 1988:

- Establishes a minimum state funding guarantee for K-12 schools and community colleges.
- Guarantees that funding will never be lower than the previous year's funding, although it may be higher. If the legislature allots more than required, that amount becomes the new minimum.

Proposition 42, passed in 2002:

- Redirects sales tax on gasoline previously deposited in the General Fund towards transportation.
- 20 percent is allocated to public transportation, 40 percent to transportation improvement, and 40 percent to local streets and road improvements.

Since the passage of Prop 13, the state has gradually become a major funder of local government capital facilities. Approximately two-thirds of California's \$35 billion in bond financing over the last 20 years has gone to support non-state facilities, the majority going to local school facilities. Although the state's current policy is to fund 50 percent of new school construction projects and 80 percent of modernization projects, most districts can apply for hardship standing and receive 100 percent funding.

While public opinion polls find that California residents lack confidence in their lawmakers and want decisions made locally in order to have more of a voice in our state's future, the same polls find that residents also lack confidence in their local government's ability to plan for growth. With tax limitations like those as a result of Prop 13, local governments face far greater constraints than the state in terms of generating new resources. State bonds require a simple majority to pass, while local bonds require a "supermajority" of two-thirds. However, since voters lowered the threshold for passing local school bonds to 55 percent in 2000, funding for local educational facilities has become more certain.

Because of the increasing constraints on the availability of governments to finance infrastructure improvements, consideration of public-private partnerships may be required to meet California's growing needs. The private sector plays a growing role through user fees for ports and airports and through a growing number of public-private partnerships where the private sector finances infrastructure in return for a stream of revenues. Common examples include when a government leases a privately owned facility, builds a toll road, or procures services from a non-governmental provider.

demand management

One way to preserve existing infrastructure and scarce fiscal resources is to expand demand management and conservation programs. Demand management asks a simple question – are there ways to meet infrastructure needs and encourage efficient use of existing facilities without expanding capacity or investing in new capital equipment? For example, in 1990 California began a campaign aimed at getting businesses and residents to recycle 50 percent of the waste they generate. Sixteen years later, in August 2006, the state hit its 50 percent goal.

Real-time pricing and other mechanisms can be explored for managing the demand for many types of infrastructure, especially during peak hours of use. During a time of limited financial resources, demand management has the added benefit of not relying on new capital outlays. **Transportation** demand management techniques increase transportation choices and include adopting land use patterns that encourage non-automobile forms of transportation, trip reduction or carpooling programs, and pricing strategies such as toll roads. **Water** demand management techniques include water metering, water-efficient fixtures, and outdoor watering limits. Techniques for **energy** demand management include charging more for electricity in peak usage times and incentivizing customers who sign up for energy conservation programs.

Most infrastructure agencies in California face challenges in trying to use demand management as a tool for meeting strategic service-delivery objectives.

Programs including employer trip reduction, ridesharing, and telecommuting have proven more successful. Water agencies are a noticeable exception. Efforts by urban water districts across the state to influence demand have taken on a variety of forms, including price increases that better reflect the full costs of water services, rebates for purchases of equipment that use less water, and campaigns to promote voluntary reductions in water usage. Water demand management efforts also result in recycling and reuse benefits, which help decrease overall demand.

“Scenarios serve as stimulants for our imagination. They help us to conceive of new possibilities, to explore wildly different alternatives, and to integrate many different factors into our thinking about the future.” **Hammond, 1998**

Insufficient availability and lack of affordable housing have plagued the state for more than a decade. Patterns such as low density housing developments, limited housing production, and affordable housing far from job centers erode a sense of community and are using up scarce land resources that will make it difficult to meet future needs. Modest increases in density will allow communities to maximize limited resources and reduce the cost of producing housing. Changes in zoning codes, improvements in community design, and restoration of underutilized urban lands will help meet our housing needs, improve mobility, and create more livable communities.

governance/decision making

A large share of infrastructure governance today involves a mix of local, regional, state, and federal infrastructure agencies. A typical household may find itself simultaneously governed by a city, county, school district, and numerous special districts, all of which may levy assessments or charge fees to provide services or build infrastructure facilities. Additionally, local special districts in California govern an increasing percentage of our infrastructure assets.



A majority of statewide infrastructure planning originates at the agency or department level and is guided by the State Administrative Manual. Each department prepares a capital budget based on proposals for individual projects. After presentation of the budget bill by the *Department of Finance* and the subsequent impact analysis by the *Legislative Analyst's Office*, the legislature holds budget hearings. Both houses of the legislature send an approved bill to the governor, who may veto capital budget items before signing the final budget bill.

Special districts are separate local governments that deliver public services to a particular area. Inadequate tax bases and competing demands for existing taxes make it hard for cities and counties to

provide all the services their citizens desire. When residents or landowners want new services or higher levels of existing services, they can form a district to pay for them. Fire districts, water and irrigation districts, sanitation districts, and pest abatement districts exist today because taxpayers were willing to pay for public services they wanted. Over 3,400 special districts in California collect and spend about \$30 billion per year, making overall integrated infrastructure planning difficult.

Today, when infrastructure decisions are made, many more private, nonprofit, and community interest groups seek to be stakeholders in decision-making, including through the use of voter initiatives and litigation. The resulting approval and governance process for infrastructure is proving to be ever more challenging.

In general, infrastructure governance (and funding) seems to be devolving from federal to state to regional agencies and local governments. In every region of the state, regional organizations called "Metropolitan Planning Organizations" (MPOs) are responsible for the distribution of federal and state transportation dollars. For example, approximately 75 percent of the proposed \$19.9 billion Prop 1B transportation bond (2006) would flow through MPOs. The structure and authority of these MPOs vary greatly from region to region, with some functioning as coordinated regional transportation planning organizations and others functioning like loose confederations of cities, counties, and stakeholder groups.

asset management/life-cycle costing

Traditionally, most infrastructure planning and investment strategies exclusively evaluate projects based on up-front (building) procurement costs, with little attention to ongoing costs such as maintenance, repair, and refurbishment. However, experience has shown the infrastructure community that the operations and maintenance costs of infrastructure assets can easily, and frequently do, dwarf up-front capital costs. The current approach favors financing and budgeting over long-term planning and assessment. It therefore overvalues short-term planning and new projects and undervalues maintenance, leading to large levels of deferred maintenance in California's infrastructure asset portfolio.

Many consider life-cycle costing and asset management to be a more balanced and efficient approach. Life-cycle costing refers to the total cost of building, operating, and maintaining a capital asset over its lifetime. Asset management refers to efforts to get the maximum benefit from an organization's assets, usually its fixed physical assets. Life-cycle and asset management techniques increasingly are being used to work toward reducing infrastructure costs for owners and ratepayers. The United States Environmental Protection Agency estimates a long-term cost savings of 20–30 percent from using techniques including providing a level of service at the lowest life-cycle cost, ensuring appropriate re-investment in infrastructure, promoting inter-generational equity, and striving for the best *"value per dollar spent."*

The issue of managing a jurisdiction's assets is no longer just a maintenance person's problem. Lawyers, planners, engineers, accountants, governing bodies, and citizens all have a role to play. Taking a life-cycle asset management approach to infrastructure design, operation, and maintenance means providing the desired level of service in the most cost-effective manner – while understanding the level of financial resources necessary to optimize the useful life of the asset and investing accordingly.



Active asset management of infrastructure systems can be challenging, as it requires a change in management culture – paying attention to the condition of equipment and the system's performance, and analyzing the discounted costs of maintenance strategies. But the potential for managing assets efficiently has increased with the advent of sophisticated technological tools that optimize the design and monitoring of infrastructure networks. For example, proactive maintenance and evaluation of trade-offs involved in maintaining equipment versus replacing it are now possible with new technologies. The payoffs can be significant and include extending equipment life, reducing operational and maintenance costs, and significantly improving the reliability of infrastructure systems.

risk assessment

California is at risk as a state with earthquakes, fires, floods, and other potential for natural and man-made disasters. The far-reaching consequences of not dealing with these risks was brought home by the effects of Hurricane Katrina. The total economic impact to Louisiana and Mississippi exceed \$150 billion, making it the costliest natural disaster in our country's history.

One method of reducing risk is to transfer government liability to private contractors. The contractor has shown itself better placed than the government to dispose of surplus accommodation, negotiate lease terms with landlords, and contract for the delivery of services on a national basis.

Source: Bay Area Economic Forum, June 2006

Despite the importance of infrastructure funding, budgetary resources are never unlimited and documented infrastructure needs are too great to be addressed in their totality over a short timeframe. Consequently, decisions must be made to determine which infrastructure projects will be funded from available resources. That decision-making process, and its result of establishing priorities for infrastructure funding, must be multidimensional and balance public need with potential costs.

For example, while maintaining outdated facilities and structures pulls resources away from critical

areas, a reliance on maintenance brings other issues to light, namely the increased risk of a breakdown in providing basic services to the public. If water or energy delivery systems fail, individuals and businesses alike are placed in difficult positions, creating stress on economic conditions along with basic infrastructure.

Many Californians travel along roadways that have exceeded their useful lives. This creates an ever-increasing bill for users and the state in terms of additional costs for maintenance. In addition, data shows that disrepair can lead to greater instances of critical automobile accidents.

Delaying infrastructure decisions can be costly. Material costs continue to rise, pushing project budgets higher and higher. If a region is met with a serious crisis and the inability to deliver necessary services, public demand creates even higher costs. Choosing to address infrastructure needs after a crisis is almost certainly met with greater expense than suitable preparation.



equity issues

Research has noted that educational facilities, water supply and quality, and roads and transportation infrastructure have been addressed unequally across California’s communities. The negative impacts (noise, air pollution, and toxic waste) that are sometimes associated with infrastructure have raised questions about “*environmental justice*” in lower-income areas of the state and the nation.

When looking at the relationship between equity and infrastructure, we should examine whether the infrastructure improves, duplicates, or worsens existing systematic social inequalities.

FOUR DIMENSIONS OF EQUITY

Access (who gets what)	Funding (who pays)
Long-Term Impacts (who gains)	Participation (who decides)

In the dynamic global economy of the 21st century, California’s greatest competitive advantage is our educated workforce. The quality of facilities, from classrooms to administrative space, directly impacts achievement; therefore our educational facilities must provide the best possible learning environment for students of all ages and their educators. California will find it difficult to attract businesses to the state without a skilled labor force and the opportunity for a good quality of life.



Infrastructure decisions impact everyone and should be guided by principles designed to ensure that the benefits and burdens are distributed fairly. Financial support for critical infrastructure competes with other services for limited federal, state, and local funds, and decisions must be made about when and where to allocate these dollars, and in what priority. Having all of the public pay for infrastructure makes sense when benefits are widely distributed (as with education, libraries, and parks) or when user fees are hard to collect or felt to be unfair. Equity concerns can be addressed if California starts to fund infrastructure by imposing new user taxes and fees. The means for collecting revenues to support infrastructure improvements should be applied in ways that are fair and not disproportionately burdensome to those with lower incomes.

Decisions about the specific needs to be addressed and how they will be paid for should not result in certain communities bearing the brunt of a failure to apply equity principles to infrastructure planning. Infrastructure decisions have widespread impact on housing, development, investment patterns, and quality of life and the outcomes of those decisions should be fair and beneficial to all.

accountability

Californians are demanding greater accountability regarding government spending in general, and infrastructure is no different. Most policymakers agree that infrastructure spending should be looked upon as “*investments*” in our state’s future. Just as shareholders receive annual reports on their mutual fund investments, the general public would like to be informed regarding accountability and the return on their infrastructure investments.

However, there is currently little in the way of accountability regarding infrastructure provision in California – examples include strategic planning, goals, standards, evaluation, and performance assessment. There are few plans or public policies aimed at increasing accountability for infrastructure providers in the state. A notable exception is the five-year infrastructure plan submitted by the governor.

It is important to introduce accountability measures to foster enhanced project delivery at the agency level. Infrastructure decision-making should be transparent and include mechanisms for stakeholders to contribute to the planning and policymaking process. Overcoming slow or otherwise inadequate infrastructure service delivery may be advised by the following approaches:

- Developing strategic plans that include performance goals and standards.
- Providing clear state-mandated incentives for high-level performance, including personnel reviews, merit increases, and bonuses.

In 1993 the legislature created the Bureau of State Audits, which is responsible for promoting effective management of public funds and programs. The BSA provides the public with independent and objective evaluations of state and local governments’ activities.

Traditionally, state and local governments used cash accounting methods for infrastructure assets. With cash accounting, the capital cost of an infrastructure investment appears in an agency’s annual financial report during the year in which the cost of construction is incurred; the value of existing physical assets does not appear on financial reports. Accrual accounting methods are generally the standard in the private sector, as most expect to see an accounting of the remaining useful value of all assets.

Under the national Governmental Accounting Standards Board Statement No. 34, many agencies will begin reporting current values for transportation infrastructure (roads, bridges, etc.) in their annual financial reports. This signals a change in generally accepted accounting practices that promises to affect state and local governments. GASB 34 is the start of a long-term upgrade of baseline infrastructure planning and investment information and research that will be available to Californians on an annual basis.



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