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An Infrastructure Investment Strategy for California

California residents are contemplating infrastructure investments of nearly $200 billion in the next ten years for State, local, and regional projects. If done wisely, these investments will significantly enhance the State's economy and quality of life. If done poorly, these investments will be a waste of taxpayer dollars and a missed opportunity to plan for California's future.

All parties in California's infrastructure policy discussions agree that the level of information available to develop a long-term infrastructure investment strategy is inadequate. The current information base is poorly organized and incomplete.

Two major improvements are needed in the process of compiling and evaluating infrastructure needs:

1. **California's infrastructure investment must be treated as a partnership effort**.

   The State government should take responsibility for compiling a comprehensive picture of statewide infrastructure needs and funding availability. These lists should reflect the activity of all partners – local and regional agencies, the federal government, and California's private and non-profit sectors – and not focus just on the State government. The lists should clearly identify choices between improving existing infrastructure and building new facilities. They should also identify where infrastructure investments can serve multiple purposes. Finally, integration of planning efforts across agencies and communities is needed.

2. **California's infrastructure investments must be developed and evaluated with the same rigorous investment criteria used by families and firms**.

   Hard questions should be asked about whether proposed investments represent the best way to solve an infrastructure capacity need, i.e. whether the proposed solutions meet economic criteria of cost-effectiveness and return on investment. Infrastructure planning should focus on improving the State's infrastructure service capacities first, then address what facilities need to be built or improved. Market forces – prices, incentives, competition and private-sector expertise – can help improve California's infrastructure service capacities. Return on investment should be made an explicit investment criterion. Finally, the numbers underlying investment analyses really do matter and need to be done well and openly.

Forward

The resurgence of California's economy since 1995 has refocused broad public attention on the infrastructure needed to support the State's continued economic prosperity and quality of life.

This spotlight on the State's infrastructure comes at a critical juncture in California's history. Years of under-investment have placed the State in a precarious position. Parks and public facilities are overcrowded and in poor repair. Roads are at over-capacity during commute hours. Inadequate protection of open space, water, and other natural resources has caused the loss of important birds, fish, and other wildlife. Schools were short of classroom space even before class-size reductions created more demand. This is the State's condition even before more people are added to the population.

The decisions California makes in the next decade about investments in both its physical and environmental infrastructure will be a key determinant of the State's future economic prosperity in the 21st century.

The reason is found in the 1998 report on *Land Use and the California Economy: Principles for Prosperity and Quality of Life*. Commissioned by Californians and the Land and authored by the Center for Continuing Study of the California Economy (CCSCE), the *Land Use* report concluded that a high quality of life is a critical determinant in attracting entrepreneurs and workers to the State's leading high-wage industries.

Firms and employees in these valued industries have choices about where to locate. They demand good schools, clean air and water, efficient transportation, open space, excellent public services, and great recreational, environmental, and cultural amenities – in short, a high quality of life. Increasing investments in the physical and environmental infrastructure which provide these services was one of the five key principles identified by CCSCE for improving California's decisions that affect the State's quality of life (see Appendix A for a list of all five principles).

Since the release of CCSCE's *Land Use* report, there has been a surge of published projections about how much money needs to be invested in public infrastructure. While the cost estimates vary widely, the State certainly faces billions of dollars in new infrastructure investments to correct present shortages as well as to provide for future growth.

There has also been an increase in efforts to develop a Statewide infrastructure investment planning process. Bond measures and other proposals to provide immediate infrastructure funding are under active discussion. New initiatives to develop a comprehensive State plan for capital investment are moving forward under the leadership of the California Governor, State Treasurer, State Legislature, and non-governmental organizations such as the Business Roundtable.

Responding to this renewed level of interest, Californians and the Land requested CCSCE to prepare a follow-up to the *Land Use* report to focus on public infrastructure investment planning. CCSCE was asked to address three major issues from an economist's perspective:

1. What are the critical gaps in the information and analysis needed for public infrastructure planning?
2. What cost-effective approaches to meeting infrastructure needs should be considered in a public investment strategy?
3. What economic criteria should be used to determine how much funding should be invested in public infrastructure?

The bottom line identified by CCSCE is that California can afford and the State's economy will require more investment in its parks, roads, schools, and other capital facilities. The State must catch up on past maintenance of its current infrastructure as well as plan for future needs.

However, these funds come directly from taxpayers and are not unlimited. The current competition for public dollars requires a more thoughtful planning process that anticipates the State's real needs. The future of California's economy depends upon its ability to make the right decisions and to avoid the waste of billions of dollars spent on the wrong infrastructure.

The conclusion is inescapable. California has before it an enormous opportunity to weave a better land-use fabric for all the State's residents. To be successful, California must significantly improve the information and analysis on which these critical decisions will be based.

Californians and the Land
1999

Executive Summary

California residents are contemplating infrastructure investments of nearly $200 billion in the next ten years for State, local, and regional projects. If done wisely, these investments will significantly enhance the State's economy and quality of life. If done poorly, these investments will be a waste of taxpayer dollars and a missed opportunity to plan for California's future.

Californians face both short-term and long-term investment choices. In 2000, residents will vote on bond issues and tax policy changes that would immediately add billions to the State's infrastructure investment funding pool. At the same time, decision-makers are working to develop a long-term infrastructure investment strategy. This report addresses the long-term planning challenges.

All parties in California's infrastructure policy discussions agree that the level of information available to develop a long-term infrastructure investment strategy is inadequate. The current information base is poorly organized and incomplete. No family or private business would willingly make serious long-term investment decisions with the paucity of information currently available to decision-makers and voters regarding California's infrastructure.

Two major improvements are needed in the process of compiling and evaluating infrastructure needs:

1. California's infrastructure investment is and must be treated as a partnership effort.

The State government should take responsibility for compiling a comprehensive picture of statewide infrastructure needs and not focus solely on individual State funding choices. The State government is one of many partners who can meet California's infrastructure investment challenges. The best role for State government in California's infrastructure investments should be determined by simultaneously considering the role of the State's other infrastructure investment partners – local and regional agencies, the federal government, and California's private and non-profit sector investment partners. The current compilation of infrastructure needs must be broadened in scope and improved in quality.

For example, current compilations of K-12 school needs do not provide easy access to basic information such as: 1) how many new classrooms need to be built under various growth and class-size reduction alternatives; 2) what are the repair and upgrading needs in existing facilities; and, 3) how much local school infrastructure funding might be available under different local school bond voting majority rules.

Concepts for a Comprehensive and Partnership Approach to California's Infrastructure Investment

- **Compilations of infrastructure investment needs and funding availability should be comprehensive in scope and reflect the activity of all partners – not just the State government.**

California's infrastructure will be planned, funded and built by many infrastructure investment partners – the State government, local governments, regional agencies, the federal government, and the State's private and non-profit investment partners. The partnership roles will vary by type of infrastructure investment, e.g., regional agencies are key partners in transportation, local school districts in K-12 planning, and private land trusts in open space acquisition, while the State government has the dominant role in planning for higher education facilities.

> In its work over the last several months, the committee has come to appreciate the complexity of attempting to evaluate, compare, and prioritize the wide variety of State and local facility needs. Though the committee received valuable information from a variety of experts and interested parties, it is apparent that the State would benefit if decision-makers had a comprehensive inventory of its facilities needs and options for financing those needs. The State should develop a long-range capital plan that identifies its infrastructure needs, establishes priorities, and presents funding mechanisms to implement the plan.
>
> *Interim Report to the Govenor*
> Commission on Building for the 21st Century
> August 2, 1999

- **Many infrastructure needs are not related to future growth.** California needs to both improve and increase infrastructure service capacities. The State faces significant investments to replace old infrastructure, introduce new standards and technology (e.g., class-size reductions), catch up with the under-investment of past decades, and also plan for future growth.

  Compilations of investment needs should clearly identify these different components of infrastructure investment to facilitate the inevitable investment choices that will occur between improving existing infrastructure and building new facilities. Moreover, residents still need more information to clarify misunderstandings about the relationship between future growth and infrastructure investments.

- **Joint-use opportunities are one example of why California's infrastructure investment must be a partnership effort.** Joint-use can be a cost-effective approach when new facilities need to be built. There will need to be significant new infrastructure facilities construction. For example, K-12 classroom needs are extensive and will be even more extensive if class-size reductions are expanded to additional grade levels. One way to get more capacity from infrastructure is to share the use. School districts and cities throughout the State are looking increasingly to develop joint-use of facilities.

- **The need for integration of different agency planning activities is another illustration that infrastructure investment must be treated as a partnership process.** For example, integrating land-use and transportation planning – an idea that can economize on transportation investments and improve the quality of life for residents – will also require a new look at how California's planning and investment partners can work together.

2. California's infrastructure investments must be developed and evaluated with the same rigorous investment criteria used by families and firms.

Hard questions should be asked about whether proposed investments represent the best way to solve an infrastructure capacity need, i.e., whether the proposed solutions meet economic criteria of cost-effectiveness and return on investment. There are significant unanswered questions about the best way to reduce congestion, the best way to meet water needs, the best use of park money, and the best way to build new schools. Californians deserve to have these questions answered before they commit public funds, just as a family or firm requires answers before they make serious investment commitments.

For example, transportation investment needs exceed $100 billion in the decade ahead, yet regional transportation planning agencies forecast that after these investments are made, congestion will still be worse than today. Is there a better approach?

Concepts for Developing and Evaluating Cost-Effective Approaches to Improve California's Infrastructure Capacity

- **Focus on improving infrastructure service capacities first, then decide what infrastructure needs to be built.** For example, residents want increased mobility, not necessarily more transportation facilities, and adequate water supplies, not necessarily more water facilities. There are significant unresolved questions about the best way to improve infrastructure service capacities and the State needs to make sure these questions get addressed as part of a long-term planning process.
  - **Building infrastructure capacity doesn't always require building**. Making better use of existing infrastructure capacity can often be the most cost-effective approach. For example, Southern California is currently meeting increased urban water demands primarily through conservation.

    It will be especially important to explore better use of existing transportation facilities, since current estimates of conventional investment needs are so large and without the prospect of significantly improving current levels of congestion and mobility.
  - **Market forces – prices, incentives, competition and private-sector expertise – can serve public investment purposes**. California has had success in using prices and market incentives to reduce investment needs in electricity, water, and air pollution clean-up. Experimentation with more extensive use of prices and other market forces to guide infrastructure investment decisions should be able to reduce funding needs in a variety of areas in the long term.

- **Return on investment should be made an explicit criterion for investment choices**. Evaluating public investments is more difficult than for private investments, and it must take account of social as well as financial benefits and costs.

  There are useful models for rigorously evaluating the benefits and costs of public investments. Moreover, families and firms have extensive experience in carefully evaluating their own serious investment decisions and expect that government will be equally careful in investing public funds. Development of a more rigorous process to evaluate public investments should be a high priority in California's new comprehensive infrastructure planning process.

> California is faced with many conflicting transportation priorities that compete for scarce transportation funds. To maximize the return on our investment, in terms of mobility, economic, and environmental benefits, a uniform process for determining critical projects should be developed that is performance-based. The act of determining such a system, including categories of measurement and appropriate performance indicators, will be a lengthy process and require input from all key transportation stakeholders. This committee believes this will require additional discussion before a final recommendation can be made.
>
> *Interim Report to the Govenor*
> Commission on Building for the 21st Century
> August 2, 1999

- **The numbers matter**. Serious investment decision-making always involves numbers. Infrastructure demand assessments depend on forecasts about future growth. Infrastructure investment analyses depend on careful estimates of benefits and costs.

  The numbers must be carefully developed, transparent (i.e., easy to figure out how each set of numbers was derived), and easily accessible to public scrutiny and debate. As the President's Commission to Study Capital Budgeting recommends, "Given the many billions of dollars at stake each year, it would be penny-wise and pound-foolish not to spend millions of dollars for analysis to help produce better information for decision-makers."

How Much Infrastructure Investment Can We Afford?

How much to invest in California's infrastructure should depend on the return on investment or "payoff" from these investments. This report sets out concepts and practical steps to address the serious information and analysis gaps that currently hinder Californians from being able to effectively answer the "how much to invest" question.

California's personal income is projected to grow from $960 billion in 1999 to $1.7 trillion in 2009. Devoting an extra one-half percent of State income to public infrastructure investment over the next ten years would provide a ten-year investment pool of $65 billion, in addition to existing funding. **It is too early to conclude that California cannot afford to fund all infrastructure investments with demonstrated high rates of economic and social return**.

> Good investment policy dictates that the nature and exact level of public investment should be driven by a set of principles guiding California's future economic growth, not by a "magic" percentage of the State's budget or a compilation of capital projects desired by various agencies. To date, much of the discussion surrounding infrastructure investment has revolved around dollar needs versus dollar availability, in the absence of a strategic investment plan.
>
> *Smart Investments*
> Philip Angelides, California State Treasurer

The Present Situation

There is broad agreement that California needs substantial increases in the level of infrastructure investment – in schools, transportation, water, parks, public facilities, and the environment – to promote economic prosperity and maintain a high quality of life for all Californians. At the same time, the income of State residents and the revenues of State and local governments have been raised by five years of strong economic growth.

These two forces combine to create new energy for addressing infrastructure planning issues in 1999. The Governor and Legislature have adopted a two-part infrastructure investment strategy:

- An immediate infusion of new money for infrastructure investment.
- Commitment to developing a comprehensive long-term infrastructure planning process.

The Governor and Legislature are pursuing three approaches to quickly increase infrastructure investment throughout the State:

1. The State budget for 1999-2000 contains increased funds for infrastructure investment, including $425 million for the California Infrastructure and Economic Development Bank to co-fund infrastructure investments with local government partners throughout the State.
2. The Governor and Legislature are deciding what infrastructure bond issues to place on the 2000 ballot. The Governor's Commission on Building for the 21st Century has recommended approximately $5 billion in State bonds focusing on water, parks, housing, and urban rail and ferries. The Legislature is still debating a broad range of bond investments.
3. The Legislature is debating ballot initiatives that would allow voters to approve local infrastructure investments with a 50 percent majority and, thus, make it easier for residents to increase the amount of local infrastructure investment.

How Are These Short-Term Decisions Currently Being Made?

The current decision-making process has two main elements: 1) lists of infrastructure needs and 2) political choices.

State agencies like the Departments of Education, Resources, Business and Transportation, and Corrections regularly make lists of infrastructure needs. These lists are compiled by the Department of Finance into a *1999 Capital Outlay and Infrastructure Report*. The 1999 estimate of unfunded ten-year State government infrastructure needs was $82.2 billion, with education and transportation accounting for 70 percent of the investment dollars, followed by resources and environment and corrections. Yet, in May 1999, the California Transportation Commission estimated that statewide (State, local, and regional agencies) ten-year unfunded needs **in transportation alone** were nearly $100 billion.

These lists and accompanying messages of urgency were presented to the Governor, the Legislature, and the Governor's Commission on Building for the 21st Century.

State leaders are using these lists to decide what kinds and amounts of infrastructure investment bonds to place before voters in 2000. The Commission on Building for the 21st Century recently recommended: 1) a $750 million to $1 billion housing bond proposal; 2) a water bond of up to $2 billion; 3) a parks and open space bond of up to $2 billion; and, 4) a bond of $500 million to $1 billion for increased investment in passenger rail and ferries.

These recommendations and the bond recommendations that will come from the Legislature are very general in nature (e.g., spend more on parks, invest in water facilities, spend more on transportation) and represent macro-level political choices about which areas should get immediate funding. **These recommendations do not address questions like, "What is the best way to spend investment dollars for transportation, parks, schools or water?" Moreover, the recommendations are not based on any analysis of the rate of return on alternative investments**.

There may still be time before the 2000 elections to provide additional specific information and analyses on infrastructure ballot issues. The pressures that force decision-makers and voters to make choices with limited information are not unique to infrastructure planning or to elections in the 1990s.

However, the current information and analysis process for developing infrastructure priorities falls far short of the standards set by private investors with their dollars. CCSCE has heard no disagreement with this finding.

Moreover, the goal of this report is not to take politics out of the decision-making process, but to infuse more information and analysis into the political decision-making process. The remainder of this report focuses on three central ideas for developing a long-term infrastructure strategy for California:

1. Focus on infrastructure spending as an investment. Treat infrastructure planning as serious investment planning.
2. Identify the best role for State government in California's infrastructure investment by focusing on the State's role as one of many statewide infrastructure investment partners.
3. Pursue cost-effective approaches to increasing California's infrastructure service capacities and apply rigorous evaluation criteria to all potential investments.

The Basic Premise — Infrastructure is a Critical Public Investment For California's Future

CCSCE is joined by a broad group of public and private organizations throughout California in supporting the premise that infrastructure investments will shape California's future prosperity and quality of life.

> An investment in infrastructure is an investment in California's future. The State's schools, highways, bridges, water systems, public safety facilities, and natural resources are the framework for individual and collective quality of life. Without a strong framework, both the public and private sectors of the economy will falter.
>
> *1999 Capital Outlay and Infrastructure Report*
> California Department of Finance

> Investments in the quality of our public facilities are a key determinant of the State's economic growth.
>
> *Building a Legacy for the Next Generation*
> California Business Roundtable

> Sustained economic success in the 21st century will require the investment of public resources to ensure the continued attractiveness of California as a place not only to locate business, but also as a good place for people to work and live.
>
> *Smart Investments*
> Philip Angelides, California State Treasurer

California families and firms are familiar with making investment decisions. Most families face decisions about investing in a house or a college education for their children. Firms are continually investing in new plants and equipment to earn profits through providing better products and services.

California's infrastructure planning process will be strengthened by focusing on the fact that infrastructure is a form of public investment and that decisions about infrastructure should be treated as serious long-term investment choices.

California firms and households regularly invest significant sums in anticipation of long-term future benefits. In 1999:

- California businesses will have invested more than $100 billion in new plants and equipment;
- California households will have invested: $40 billion in home construction; furniture and appliances; $30 billion in new car purchases; and additional billions of dollars in investments in education and training.

Because California families and firms make critical investment decisions, they have significant experience with the requirements of investment planning and how to make serious investment choices. All of this experience is relevant to developing an infrastructure investment planning process for California. In fact, only if the **private** experience of firms and families about investment decisions is reflected in the **public** investment planning process will residents have the confidence to support the significant public investments that most residents think are critical for California's economy and quality of life.

What is Infrastructure?

The dictionary definition of infrastructure is "The basic facilities, equipment, and installations needed for the functioning of a system." While there is no precise definition of what types of public investments should be included as infrastructure, these investments are critical for three important "systems" in California – the State's economy, environment, and quality of life.

Expanding the State's infrastructure will mean investing in new public facilities and rebuilding or revamping old facilities. California faces a major round of new infrastructure construction. However, expanding California's infrastructure capacity can also mean making better use of existing facilities and resources. As the examples in this report demonstrate, there are many non-building approaches that can be used to increase infrastructure capacity while saving scarce investment dollars.

Why Do Governments Invest?

Governments invest for the same reasons that households and businesses invest – to provide a stream of benefits lasting over a period of time that exceed the cost of the investment. Most of the benefits of public investment fall into three categories:

1. Benefits for the State's economy.
2. Benefits for the State's environment.
3. Benefits to the quality of life of California residents.

The connection between public investment and the California economy is the reason why groups such as The California Business Roundtable, California Council for Environmental and Economic Balance, and regional groups like Joint Venture: Silicon Valley Network are leading advocates of increased funding for public investment. Investment in California's transportation

capacity to move goods and people and in the State's schools, ports, and water systems improve the competitiveness of California as a location for high-wage industries.

California invests to maintain and improve its quality of life. In particular, two of the State's largest areas of public investment – transportation and schools – serve dual purposes. The transportation facilities that allow efficient movement of people and goods to reduce business costs work simultaneously to reduce congestion for residents. School investments that attract business can simultaneously meet social goals of providing a good education for all students.

> California's need for new capital investments in public works adds up to billions of dollars. But the reality of what those huge numbers mean in the everyday lives of our citizens is measured in thousands of examples all over the State. We owe our modern prosperity in large part to the legacy of the last generation of Californians – the schools, highways, and institutions of higher learning that they paid to build. With this report, the Business Roundtable is issuing a challenge to a New California to make a similar commitment to the future.
>
> *Building a Legacy for the Next Generation*
> California Business Roundtable

Quality of life is a fundamental determinant of economic competitiveness in California. Entrepreneurs and workers in California's leading industries demand a high quality of life where they work and live.

Common Characteristics of Public and Private Investment

Private investments made by families and firms have many similar characteristics to the public investments made by Californians acting together. One such common characteristic is that investments provide long-term benefits, usually involve large dollar outlays, and often pose long-term financing challenges.

> Silicon Valley remains a center of innovation and entrepreneurship because of its people. If we lose the talent that distinguishes us – whether to congestion, poor schools, inadequate housing, or environmental degradation – we lose the essential element of our success.
>
> Becky Morgan, Former President & CEO
> Joint Venture: Silicon Valley Network

Two characteristics of both private and public investments are worth elaborating here because they are not always emphasized in current discussions of infrastructure planning in California.

1. Return on Investment

Families and firms expect a return on their investment. The benefits (monetary and non-monetary) of investments are expected to exceed the costs.

Firms use detailed analyses of the rate of return in ranking prospective investments. While families often use less formal methods, there is equally serious consideration of which car, house, or college will provide the greatest benefits in relation to cost.

Calculating the return on public investments is more difficult than for private investment evaluations. Public investments have social benefits and costs in addition to financial returns. Moreover, residents are concerned about the distribution (equity) of public investment benefits.

These challenges complicate the process of public investment evaluation, but do not diminish the need for rigorous evaluation criteria for infrastructure investments.

2. Focus on Infrastructure Services – Not the Infrastructure Itself

Households, firms, and public agencies invest in capital to get the services produced by the capital. It is not capital itself but the productive capital services that people desire. Three examples illustrate this concept:

- Californians want more school capacity to provide educational access to an increasing number of students and reduce current class sizes in K-12 schools. A large number of additional classrooms will have to be built to meet these demands. In some circumstances, year-round use of school facilities could provide additional capacity without building.
- Californians want adequate capacity to travel from place to place without substantial congestion. They want the mobility services provided by California's system of roads and public transportation. There is profound disagreement about whether the best way to increase transportation capacity is to: 1) build more roads; 2) build more mass transportation facilities; and/or, 3) use market forces such as toll roads, congestion pricing, or private jitney services to increase capacities with minimum new construction.
- California wants adequate water for the State's new industries and residents while simultaneously providing adequate water for agriculture and the environment. While some new facilities may need to be built, there are many examples where water capacity has been increased through conservation.

Example: Water Conservation in Southern California

In the early 1990s, the California Department of Water Resources predicted substantial growth in Southern California's water demand and that the region would experience increasing water shortages unless new water supplies, including costly dams and other controversial water diversion facilities, could be constructed.

However, an innovative water conservation program initiated by the Metropolitan Water District of Southern California and the City of Los Angeles since the 1990s has dramatically reduced water usage in the region. Through the distribution of simple water-saving devices, such as ultra-low-flow-toilets and low-flow showerheads, the region has decreased its water needs by more than 30 percent.

Today, Los Angeles uses no more water than it did in 1970, even though the City's population has grown by 32 percent, or nearly one million people. Southern California's Metropolitan Water District estimates that through a combination of conservation and water recycling programs, its 27 member agencies, which cover the area from Ventura to San Diego, have reduced Southern California's need for imported water by 710,000 acre-feet annually.

Other benefits from these programs have been substantial. The reduced water usage has helped to ease pressure on Los Angeles' antiquated sewage system, decreased the incidence of sewage spills in Santa Monica Bay, and made water available for the protection of the environment, including Mono Lake. In addition, it has funded community-based programs, including college scholarships, playground equipment, and graffiti abatement, and provided jobs for dozens of residents.

Building dams and canals as a way of meeting California's water needs statewide are now giving way to new strategies: conservation, recycling, groundwater storage, and water marketing.

> Los Angeles water planners now say that they can meet the region's needs over the next 20 years simply by making better use of they water they now have.
>
> *The Los Angeles Times*
> June 15, 1999

Infrastructure Investment Planning is a Difficult Challenge Nationwide

Infrastructure planning is a difficult challenge for both federal government and State governments throughout the nation. While infrastructure planning is especially difficult for California, success in this State will establish a model which will attract nationwide attention.

The federal government has no comprehensive capital investment plan and no consistent system for evaluating and prioritizing proposed capital investments. In 1997, President Clinton formed the Commission to Study Capital Budgeting for the federal government. The Commission's report, completed in February 1999, found that the federal government faces the same unresolved planning challenges as California.[1]

Other state governments are also working to develop and adopt good capital investment planning practices. A survey of state capital budget planning processes reveals that California is somewhere in the middle nationwide in terms of state capital planning.[2] States have investment planning processes that lag far behind the best practices in the private sector.

Four Reasons Why California's Challenge is Especially Difficult

Developing a comprehensive infrastructure investment process in California will probably be more difficult than in most states. There are four reasons why this is likely:

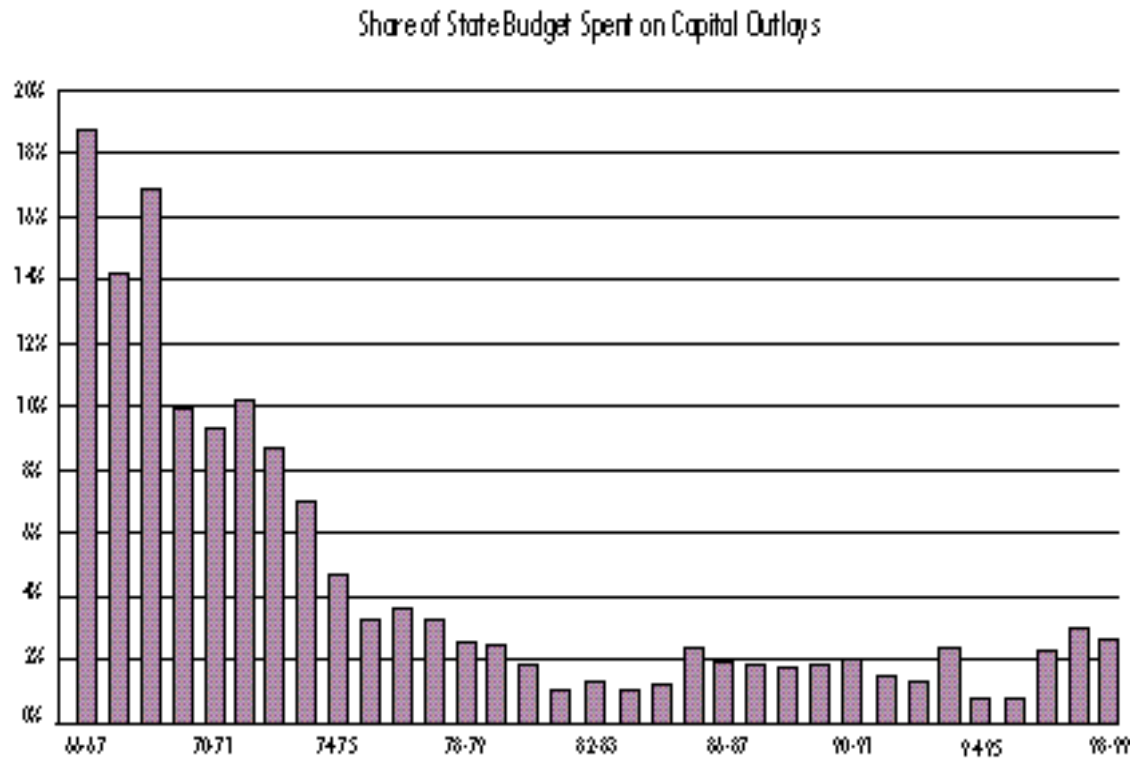
1. **California faces a significant amount of infrastructure investment "catch-up".** The level of State funding for capital outlays, excluding transportation and K-12 construction, remained relatively unchanged for 30 years. As shown on the next page, State capital outlays fluctuated between approximately $500 million and $1 billion per year from 1966 through 1996.

   State capital outlays did not keep pace with the growth of California's population and income. As a result, the share of the State budget devoted to capital outlays fell dramatically. By 1975, capital outlays were less than four percent of the State budget, down from more than fifteen percent in the late 1960s. The share has remained below three percent since 1978 even with the recent increases in State capital outlay spending.

   In addition to low levels of new capital outlays, routine maintenance was severely cut back in many State and local government programs. Fiscal constraints made routine maintenance a low priority item for cities, school districts, and highway agencies. As a result, California public agencies have accumulated a significant backlog of deferred maintenance.

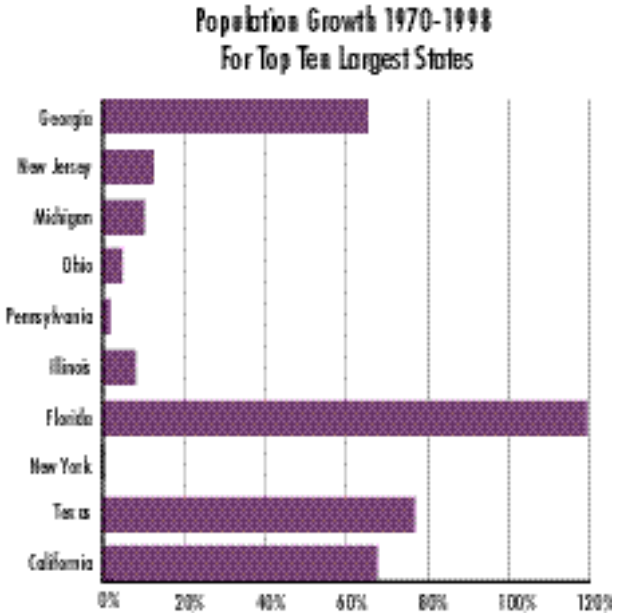
2. **California continues to grow.** California's past high-growth rates contributed directly to the "catch-up" problem discussed above. Future growth rates, while lower than in the past, are still above the national average and higher than in most of the other ten largest states.

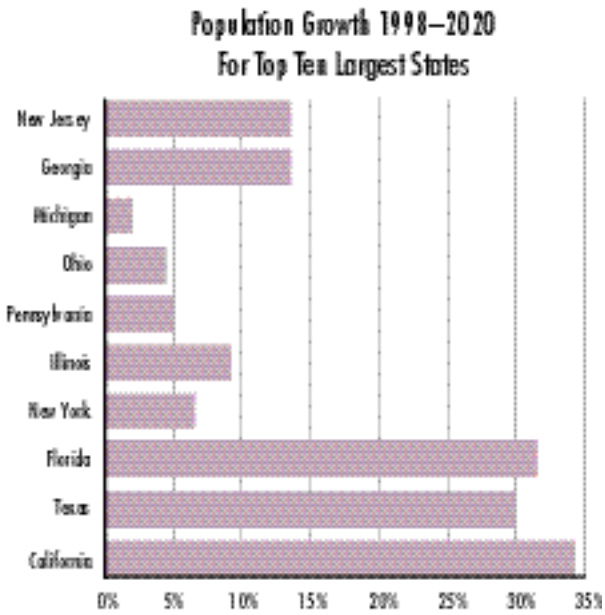
1 The President's Commission to Study Capital Budgeting, February 1999, www.whitehouse.gov/pcscb
2 Capital Budgeting in the States, National Association of State Budget Officers, September 1997; www.nasbo.org



Some large states, like New York and Pennsylvania, will have an easier time with capital investment planning because both past and future growth rates are relatively low.

– Of the ten largest states in 1998, California had the third-highest population increase since 1970 (+68 percent), trailing only Florida and Texas. Six of the ten largest states – New York, Pennsylvania, Illinois, Ohio, Michigan, and New Jersey – had population growth of less than fifteen percent since 1970.





– California will have the largest population gain (+34 percent) between 1998 and 2020 of the ten largest states, according to recent Census Bureau State population projections. Five states – New York, Pennsylvania, Illinois, Ohio, and Michigan – are projected to grow by less than ten percent.

3. **California is the largest State in terms of population, income, and infrastructure needs.** California is also a State of many large regions, like Southern California and the Bay Area, each with infrastructure planning challenges equivalent to those in many other states. The geographic and demographic diversity of California make its infrastructure planning challenges even more complicated.

4. **California's strong economy provides both an opportunity and a challenge.** The opportunity is provided by the additional resources resulting from five years of job and income gains. The challenge is to overcome the possibility of becoming complacent in the face of economic success.

It is important to remember that the State's economy is led by the more technologically advanced industries in the world and that these industries, more than most, demand the world's best public infrastructure. Overcoming these infrastructure planning challenges will require vision, improved information, and smart planning.

Developing a Comprehensive and Partnership Approach to California's Infrastructure Investments

California's infrastructure investments will be planned and funded by many infrastructure investment partners. State government, local governments, regional agencies, private and non-profit organizations, and the federal government are all significant partners in meeting California's infrastructure investment needs.

The State government has a unique role in this partnership. State government should be responsible for providing a comprehensive analysis of infrastructure needs and funding, and for making sure that the efforts of California's infrastructure investment partners are coordinated and cost-effective.

Identifying the best role for State government as an infrastructure investment partner can only be determined by simultaneously discussing the best role for all partners. The compilation of investment needs and funding possibilities must, therefore, be comprehensive and include the contribution of all partners in school, transportation, park, water, environment, and other infrastructure planning areas.

Significant investments will be needed for repair, new standards (e.g., class-size reduction), and catch-up for decades of under-investment. Choices between meeting current infrastructure gaps and providing for future growth will inevitably arise and should be openly identified and debated. Finally, residents and decision-makers will benefit from a clear analysis of the relationship between infrastructure investment and future growth.

Developing a Comprehensive List of Infrastructure Needs and Funding Sources

The level of information available to evaluate infrastructure investment choices in California is inadequate. The current information base is poorly organized and incomplete. No family or private business would willingly make serious investment decisions with the paucity of information currently available to decision-makers and voters about California's infrastructure.

It is likely that residents will decide to make some additional infrastructure investments while a more comprehensive approach to infrastructure investment planning is developed. This section, however, focuses on the longer term by identifying some deficiencies in the current information base and steps that can be taken to improve this information base for infrastructure investment planning.

Current Compilations of Infrastructure Needs

In the past two years, there has been increased attention to developing lists of infrastructure investment needs in California. Three recently published lists are summarized below.

Ten-Year Infrastructure Needs ($Billions)

	California Department of Finance (1999)	California Business Roundtable (1998)	California Transportation Commission (1999)
K-12 Education	$14.0	$28.4	
Higher Education	17.3	13.6	
Transportation	28.6	27.8	$100.0
Corrections	9.5	9.2	
Resources & Environmental Protection	9.1	7.5	
Other	3.7	4.1	
Total	$82.2	$90.6	

These lists have significant problems and omissions which limit their usefulness for decision-making, but they do establish four major dimensions of the context for California's infrastructure planning.

1. The full compilation of infrastructure investment needs in California will almost certainly exceed $100 billion over the next ten years.
2. Education and transportation will account for the dominant share of future infrastructure investments in California.
3. Natural resources (e.g., parks and beaches) and environmental resources (e.g., clean air and water) are part of California's public infrastructure. Protecting the State's valuable natural and environmental resources improves the quality of life of current and future generations and, in doing so, helps California remain an attractive place to start or expand a business.
4. The State is one partner in California's infrastructure investment planning. The Statewide investment lists shown above reflect the detailed work of many local, regional and State agencies in identifying infrastructure needs. Local and regional input is critical to correctly identify infrastructure priorities and solutions, statewide and locally.

   The partnership involved in California's infrastructure investment is even broader when viewed from the funding perspective. Federal funds are available for some infrastructure investments, and private sector involvement (e.g., public-private partnerships) will be a growing part of the solution to California's infrastructure investments.

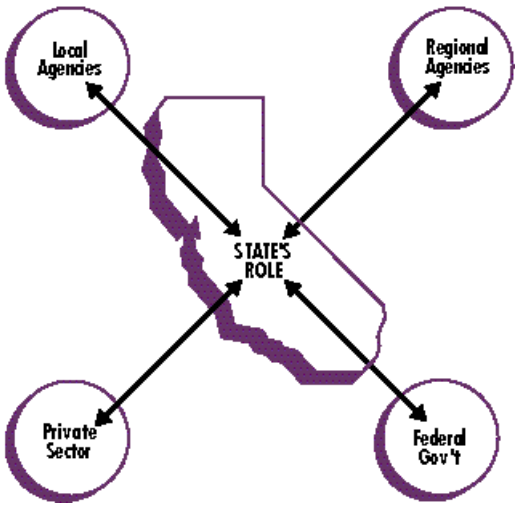
> Long-term economic prosperity of our communities must have a firm basis in both our physical infrastructure, like schools that educate us and homes that shelter us, and our natural resources, like clean air and water that sustain us. A vision for the 21st century must recognize that California's habitats and natural communities are an integral part of the economic foundation upon which future prosperity depends. We need increased investment in our land, air and water and the life they support, to sustain a strong agricultural economy, growing tourism and recreational industries, healthy communities and a quality of life that attracts the workforce that underpins a vibrant economy.
>
> *Habitat and Prosperity, Protecting California's Future*
> California Environmental Dialogue

Steps to Improve the Identification of Infrastructure Investment Needs

1. Information on the State, regional and local needs for each type of infrastructure will be helpful in determining the best role for State government.

The California Transportation Commission was required by Senate Resolution 8 (1999) to identify a ten-year needs assessment of the State's transportation system. The compilation (See Appendix B) included local, regional, and State needs. As a result, the approximate estimate of ten-year investment needs was $100 billion – far above the approximately $30 billion listed in the Department of Finance (DOF) and California Business Rountable (CBR) reports.

State government is already a partner with local and regional public agencies in most areas of infrastructure investment. This is true for transportation, K-12 education and community colleges, corrections, resources, and environmental protection. Achieving the best results in these areas requires the cooperation of different levels of government. The first step is to identify and discuss the local, regional, and State components of infrastructure investment.



K-12 education is an example in which the most basic information is missing from the current infrastructure lists. State government and local school districts have a shared role in financing K-12 school construction. Yet neither the DOF or CBR reports talk about how many new classrooms are needed under different alternatives and what they might cost

for the State and local share combined. Both reports focus instead only on how much money the State might need to invest.

2. All infrastructure investment needs should be identified – not just the unfunded portion.

State policy-makers and residents make decisions about the State's role in infrastructure investments. As discussed on the previous page, they need information on the total infrastructure investment choices facing California in order to determine the best role for State government.

A barrier to developing a picture of total infrastructure investment needs is that existing compilations are not consistent in identifying whether the lists include total needs, only the funded portion, or only the unfunded portion. Two examples illustrate this point:

- The transportation investment estimate in the DOF and CBR reports is actually not a list of proposed transportation investments, but an estimate of available resources.

  The recently completed compilation by the California Transportation Commission of transportation investment needs addresses part of the information gap. However, the Commission report does not present a picture of total needs because many estimates are only for the unfunded portion of identified transportation projects.

> An analysis of the actual ten-year infrastructure needs of Caltrans has not been undertaken; historically, the reported needs have been based on projecting available resources and matching needs to resources. This report continues that practice.
>
> *1999 Capital Outlay and Infrastructure Report*
> California Department of Finance

- K-12 school construction costs are shared between the State government and local school districts. The *1999 Capital Outlay and Infrastructure Report* says that the State portion of these investment needs is $14.1 billion, of which $5.2 billion is available from existing bond authority, leaving an unfunded need of $8.9 billion. The report goes on to state that 1998 State school bonds provide $6.7 billion for K-12 facilities.

The *Capital Outlay* report then says, "This report reflects the State funding share for K-12 ten-year infrastructure needs for primary and secondary schools of $14.1 billion. This compares to $22 billion identified for K-12 in the 1997 report and reflects the new sharing ratios established in Prop 1A, on the November 1998 ballot."

It is difficult from this information to answer such basic questions as:

- How many new schools/classrooms are needed in California?
- Did the number of new schools/classrooms needed go up or down from last year's estimate and by how much?

- What level of total funding is required for the new schools/classrooms?
- How much total funding is available and how is available funding allocated between State and local sources?

The emphasis on unfunded investment needs comes from the perspective that the fundamental question facing Californians is how to raise the unfunded portion of California's infrastructure investment needs. **However, the question that should be asked before addressing the funding gap issues is, "What is the best way to meet California's need for current and future public capital (infrastructure) services?"**

Existing funding sources are usually not committed to specific projects and can, in fact, be put to many different uses. The distinction between "funded" and "unfunded" needs may be important later on in designing a financing plan, but it is not a useful distinction in identifying the service capacity needs in areas like transportation or education or in figuring out the best way to meet the need for these public capital services in California.

Just as decision-makers and residents will be helped by an identification of the infrastructure needs of all partners – local, regional, and State – it is also important to identify all existing and potential funding sources. California's infrastructure funding "partners" include not only the local, regional, and State agencies already involved in identifying infrastructure investments, but also the federal government and the private sector.

3. The growth assumptions underlying infrastructure needs should be explicitly identified and discussed.

Large numbers regarding growth tend to get tossed into the public debate about infrastructure, and they are often conflicting. California's population growth to 2020 has been quoted as twelve million, fifteen million, or eighteen million – all in recent discussions of infrastructure planning.[3] At the same time, a population growth projection of ten million for the Central Valley is frequently quoted.[4]

The average increase in K-12 enrollment is described as 50,000 per year in one source and as nearly 100,000 per year in another source. This difference illustrates the confusion that can arise when older and newer projections from the same agency are used. The California Department of Finance recently made substantial downward revisions of annual K-12 enrollment growth which now represent the most recent State projections.

Many kinds of infrastructure investments depend on future growth in jobs and income as well as population. Transportation and water demand models, for example, include jobs and income as critical variables in determining future water demand.

Future projections are uncertain and different organizations can develop different sets of assumptions about the future growth of a city, county, and/or region. One purpose of CCSCE's recommendation is to identify differences in future projections and focus public discussion on developing a consistent set of projections for use in infrastructure investment planning.

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[3] The most recent California Department of Finance (DOF) population growth projection for 1998 to 2020 is approximately 12 million.

[4] DOF projects population growth to 2020 of 1.9 million in the San Joaquin Valley and approximately 3.5 million for the 18 county Central Valley. Projected population growth to 2040 for the Central Valley is near 7 million.

The same set of growth projections should be used in a planning area for determining future water demand, transportation demand, and school enrollment. To use the Central Valley example cited on the previous page, the first step would be to evaluate whether projected population growth is three million, seven million, or ten million, and for what period. There is no sense in using a three million growth projection for analyzing water investments and a seven million projection for evaluating transportation needs for the same planning period.

Infrastructure demand is sensitive to the growth projections, although future growth is not the most important reason for infrastructure investment. In infrastructure planning the numbers do matter.

Growth projections also matter for identifying funding possibilities and eventually making infrastructure investment funding decisions. The Treasurer's Debt Affordability Report, *Smart Investments*, correctly points out that the amount of State debt which can be issued should depend on how fast State income and, therefore, the ability to repay debt, is growing.

> Depending on revenue projections over the next decade, the total General Fund debt capacity could range from as low as $27.5 billion to as much as $38 billion.
>
> *Smart Investments*
> Philip Angelides, California State Treasurer

Modest changes in the rate of economic growth can make substantial differences over time in the total income of California residents and in the revenues that are available under existing tax structures to finance public investments for the State.

The numbers matter not only for determining funding possibilities, but also for making funding plans credible. It is important to lay out economic growth alternatives when developing long-term funding analyses and to be explicit about the assumptions underlying the growth projections. Two examples illustrate this point:

- CCSCE recently prepared projections of income and taxable sales growth as inputs into the California High Speed Rail Authority's financial planning. We presented a range of growth projections and identified each critical assumption in developing the numbers. There were two important results from this process:
  - The amount of revenue raised from a specific sales tax rate will vary significantly in the next 20 years, depending on how fast the California economy grows.
  - The Authority and public can be effective partners in deciding the final assumptions if information about the alternatives is presented to them.
- Long-term projections of federal revenues have been revised significantly upward based on revised projections of U.S. economic growth. There is talk of a possible $1 trillion

federal budget surplus. If true, economic growth will dramatically affect the nation's outlook on future investment financing.

The President's Commission also believes that **the numbers matter** in capital investment planning. The Commission states, "A related need is for the government to provide a stronger commitment to improving its base of statistical data in the entire economy. Some of this information is important in preparing benefit-cost and other analyses of various existing and proposed government programs."

Clarifying the Relationship Between Infrastructure Needs and Future Growth

California residents have strongly differing views about whether growth will or should occur and about the relationship of public investments and growth. These disagreements are, in CCSCE's view, a major obstacle to developing consensus around a long-term capital investment strategy for California.

The discussion of public investment choices in California often centers around the concept that California needs public investment because California is going to experience rapid growth. However, the link between future growth and public investment, while true, is often grossly exaggerated. Many current public investment needs are not related to future growth in jobs and population.

Moreover, the concept that public investment demands are linked to growth leads to the false idea that stopping future growth will make a significant difference to the State's public investment strategy. The concept that public investment demands are linked to growth leads to the faulty conclusion that limiting public capital investments (such as not providing roads or water) can inhibit future growth.

Public investment in California falls into four main categories: 1) investment to repair or replace worn out facilities; 2) investment to upgrade existing facilities or respond to new standards; 3) investment to catch up to the demands created by past growth and previous low levels of investment; and, 4) investments to provide capacity for additional jobs, households, and population. Only this last category has anything to do with future population growth.

Repair and Replacement

California faces substantial public investment demand to **repair** and **replace** the State's existing public capital facilities.

The recent California Business Roundtable report began with a compelling story of disrepair – one of several stories which led California's business leaders to spotlight the need to repair and replace California's aging inventory of public capital assets.

California faces billions of dollars in public investments to repair our roads. These road repairs will have direct benefits to residents and businesses: savings in car and truck repair bills, savings in time because travel speeds can be higher on well-maintained roads, and improvements in fuel efficiency and air quality.

In California, deferred maintenance and low investment in our infrastructure has caused us to lose our economic edge, has led to increased social tensions, and threatens the beauty and viability of our natural environment. No conscientious homeowner would let a house deteriorate to the current shape of our California home.

Our Endangered California Home
California Council for Environmental
and Economic Balance

The buildings at McNair Elementary School in the Compton Unified School District are so dangerous that the NAACP urged parents to keep their children from attending classes. Toxic levels of peeling lead paint were detected in rooms utilized by students in kindergarten through third grade. In addition, the school's crumbling walls have provided easy entry for rats, and health inspectors have turned up rodent feces in the storage areas for the school's cafeteria. The Compton Unified School District is plagued with so many problems that the State took control of the district out of local hands in 1993.

Building a Legacy for the Next Generation
California Business Roundtable

Upgrading and New Standards

In recent years, California households and businesses have routinely replaced computers that were in perfect condition with new, more powerful computers. In the 1970s and 1980s, after oil prices increased by 1,000 percent, American businesses replaced billions of dollars worth of working equipment with new machines that were energy-efficient. Today, public investment is rewiring California schools for the internet age, building new classrooms to reduce class size, and strengthening California's public buildings to meet new seismic safety standards.

Times change. Technology improves. Sometimes prices change dramatically. Health and safety standards change as our knowledge increases. Our views about the appropriate number of students in elementary school classes change in response to evidence about class size and educational achievement.

Repair, replacement, upgrading, and meeting new standards account for a major share of California's education-related investment needs – far outpacing growth as a cause for school investment.

The *1999 Capital Outlay and Infrastructure Report* of the Department of Finance reports that:

- Of the $6.7 billion approved in the November 1998 bond for K-12 education, $2.9 billion is for new construction, $3.1 billion for modernization and deferred maintenance, and $700 million for class-size reduction.
- The $17.3 billion in higher education capital investment needs address: technological or functional obsolescence of existing space; deteriorating facilities; code requirements including seismic safety and the Americans with Disabilities Act; emerging new program areas; changing instructional techniques; **AND** a significant surge in enrollments.

Repair, replacement and upgrading are often linked. The need to repair and replace public capital projects offers the opportunity to increase efficiency through upgrading. When schools replace aging plumbing, heating, air conditioning, and lighting systems, the new systems are more energy-efficient and water-efficient. Road repairs allow the use of better materials, and aging buses and trains are replaced with safer, more energy-efficient vehicles.

One way to increase the payoff from public-investment spending is to seek opportunities to combine repair with other goals. An innovative example is being proposed in Los Angeles where repair of school yards is helping to achieve other benefits.

Example: Treepeople and Repairing Los Angeles School Yards

In 1997, the city of Los Angeles approved a $2.8 billion bond measure to fund much-needed repairs to 400 elementary school yards in the region, of which $195 million was allocated for playground pavement replacement. At the urging of Treepeople – a Los Angeles-based community group – the Los Angelides Unified School District Board (LAUSD) agreed to set aside 30 percent of the funds reserved for playground improvements to **unpave** – **not repave** – the playgrounds for up to 30 percent of these schools.

What the schools needed, Treepeople argued, was more trees and greenspace. The new landscaping would cool the schools, creating an energy cost savings of twelve percent to eighteen percent, while saving the schools the additional capital costs of air conditioning equipment. And the children would have a more enjoyable space to play in. Under the “Cool Schools” program, now being implemented in partnership with Treepeople, the Los Angeles Conservation Corp, Northeast Trees, the Hollywood Beautification Team, and the Los Angleles Department of Water and Power, an average of 88 trees will be planted at each of 40 schools and 30 percent of the asphalt will be replaced with landscaping.

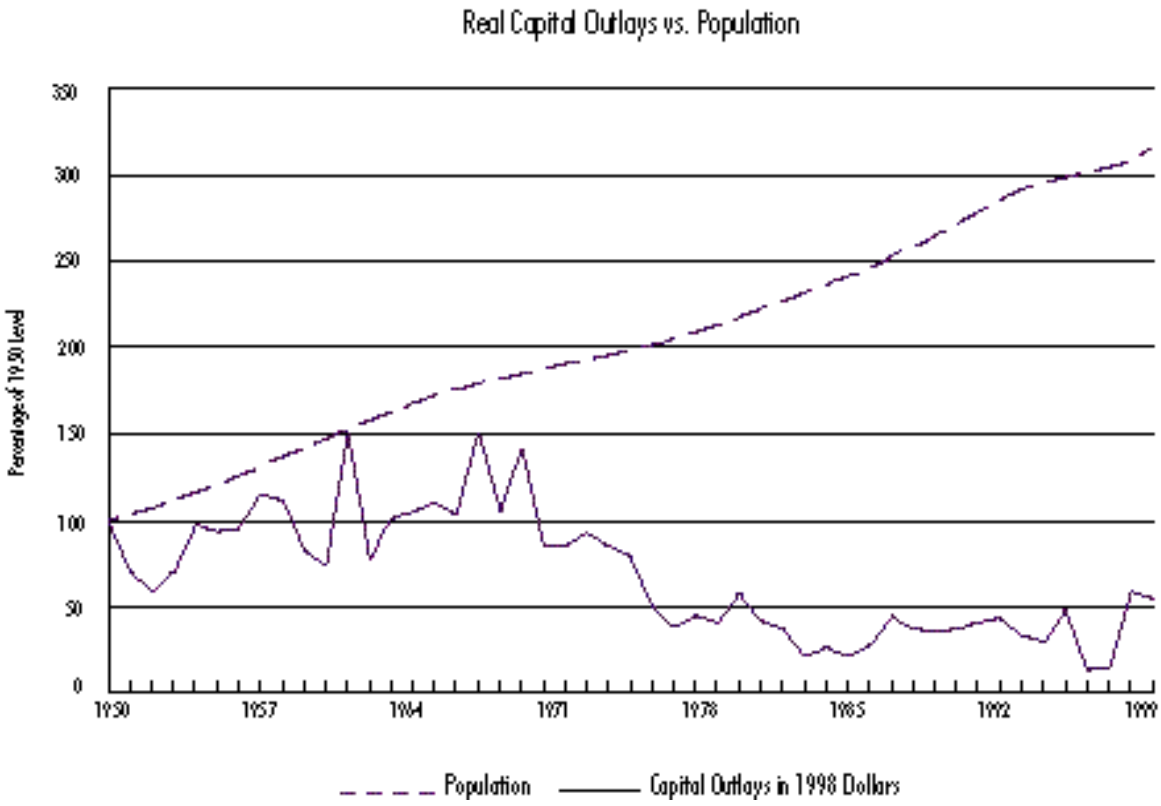
Treepeople is also exploring the additional city wide benefits that can be achieved through the redesign of the school yards to do a better job of using and processing water. In a demonstration project planned for Crenshaw High School, Treepeople outlined a series of specific remediation actions for the site that would conserve water, improve storm water drainage, reduce water and air pollution, and enhance flood management.

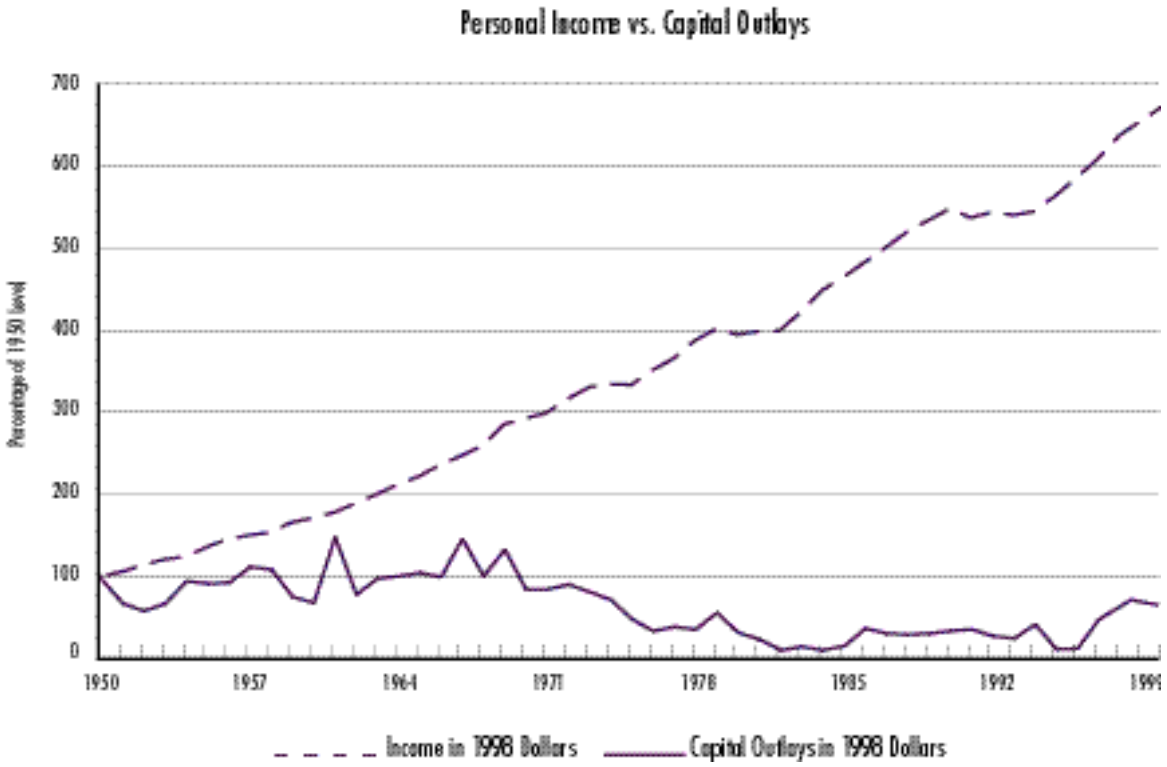
Catching Up With Past Growth

Public capital investment in California has not kept pace with job and population growth since the 1960s. Our information about California's public capital stock is so incomplete and unorganized that it is not possible to prove this claim definitively or to know the magnitude of recent under-investment. However, the partial evidence that is available does support the under-investment assertion.

State capital outlays (excluding K-12 education and transportation) have not nearly kept pace with population and income growth during the past 30 years. As a result, Californians are spending less on public investments per person and as a percent of personal income and the State budget than it did 30 years ago. Moreover, these trends have occurred during a time of immense technological change and in which the State's real income has increased significantly.

In addition, California ranks well below average compared to other states in terms of public investment. According to the 1998 California Business Roundtable Report, California ranks 48th in highways, 41st in higher education, and 38th in K-12 for public investment spending as a percent of personal income.





Building Capacity for Future Growth

California will continue to grow. Led by a strong competitive economic position in high-growth industries, California is expected to add approximately five million jobs, twelve million residents, and four million households by the year 2020. Most of these new jobs and households will be located in the State's major metropolitan regions – the Los Angeles Basin, San Francisco Bay Area, San Diego, and Sacramento.

These new firms and residents will want their public capital needs met – adequate water and electricity, excellent school facilities, transportation capacity to move goods and people, sufficient

California Growth 1998-2020 (Millions)

	1998	2020	Growth	Percent Growth
Total Jobs	15.5	20.2	4.7	30%
Total Population	33.5	45.0	11.5	34%
Total Households	11.1	15.4	4.3	39%

Source: Center for Continuing Study of the California Economy

capacity in California's port and airport systems, parks, and public recreational facilities. They will also want increased capacity from California's public environmental capital – open space, access to California's beaches and mountain areas, and clean air and water.

So future growth will contribute to the need to expand the capacity of California's public capital to provide services – but future growth is only one of many contributing sources of demand.

CCSCE believes that California's infrastructure investment planning process will be deficient unless it includes a full and open discussion of growth projections, concerns about future growth, and the relationship of future growth to infrastructure needs. Our experience in working on public sector issues and, in particular, recent experience in discussing the *Land Use* report make it clear that Californians are far from agreement about the best way to prepare for future growth, in jobs, population, and households.

Developing and Evaluating Cost-Effective Approaches to Improve California's Infrastructure Capacity

The cornerstones of serious investment planning are the search for cost-effective approaches to solve problems and the application of rigorous evaluation tools to analyze investment choices. The concept of return on investment or "payoff" is the basic criterion for ranking investment priorities.

Hard questions should be asked about whether proposed investments represent the best way to solve an infrastructure capacity need, i.e., whether the proposed solutions meet economic criteria of cost-effectiveness and return on investment. There are significant unanswered questions about the best way to reduce congestion, the best way to meet water needs, the best use of park money, and the best way to build new schools. Californians deserve to have these question answered **before** they commit public funds, just as a family or firm requires answers **before** they make serious investment commitments.

The State Treasurer's report, *Smart Investments*, challenges Californians to focus on the "how to" questions in infrastructure planning before addressing the question of "how much to spend." Moreover, *Smart Investments* calls for new thinking on the most efficient approach to expanding the State's capacity to provide infrastructure services.

> This approach entails a move away from simply building more conventional facilities and demands a smarter fiscal approach that looks at cost-effective alternatives...Smart cost-effective investing represents a new discipline for the public sector.
>
> *Smart Investments*
> Philip Angelides, California State Treasurer

Evaluating investments is harder for public investors but no less necessary than for families and firms. Public-sector investment analysis must take account of public benefits and costs and often include evaluations of non-monetary impacts. There are existing methods for evaluating public investments which need to be utilized and improved in helping to prioritize California's infrastructure choices. All evaluations (e.g., benefit-cost analyses) must be presented clearly, openly, and early in the public debate so that the evaluation process is oriented to providing information and not just project advocacy.

The Most Efficient Approach for Expanding Infrastructure Service Capacity

Public capital investment serves significant public purposes, but there is not agreement on the best way to modernize and increase California's capacity to deliver these services. Significant unresolved "how to" questions include:

- What is the best way to reduce congestion?
- How much should California invest in more prison capacity versus alternative sentencing and confinement approaches?
- Should increasing water capacity focus on conservation or building more facilities?
- How much can year-round schooling reduce school construction needs? Are there better ways to design and build schools?

More effort needs to be directed towards identifying innovative approaches to expanding the service capacities of California's public investments.

Californians have had some recent success in meeting the demand for more infrastructure capacity without building more conventional infrastructure facilities. For example, Californians have been able to meet increasing demands for water and electricity with minimum facility construction through using prices and conservation to boost efficiency.

> We've done enough building. We need highly proficient staff to manage our existing resources and acquire new water supplies through competitive management techniques – as opposed to building new dams.
>
> Ron Gastelum, General Manager
> Metropolitan Water District of Southern California
> *Metro Investment Report,* July, 1999

Californians have also seen new incentive and management approaches that minimize the cost or size of infrastructure investment. The South Coast Air Quality Management District used market incentives rather than direct regulation to reduce the cost of cleaning the air. A private toll road was constructed and is operating successfully in Orange County. Private land trusts are becoming partners with government in the acquisition and maintenance of open space.

These examples illustrate two important concepts for California's infrastructure planning:

- **Building infrastructure service capacity doesn't always imply building a new facility.**
- **Market forces can serve public purposes** – the use of prices, incentives, competition and private-sector expertise can, in many situations, guide the State in selecting the most cost-effective infrastructure investments.

The remainder of this section illustrates these concepts with some examples that are being discussed in California about transportation and schools – the two largest dollar infrastructure investments facing residents. None of these ideas represent a specific recommendation of CCSCE

or Californians and the Land. Even with widespread adoption of non-building approaches to increasing infrastructure service capacity, California faces a huge investment in new infrastructure building in the decade ahead.

Non-Building Approaches to Building Infrastructure Capacity

Californians have used market incentives and non-building approaches to increasing infrastructure capacity (i.e., approaches that use existing infrastructure more efficiently) to save billions of dollars.

- Conservation and the use of prices to discourage peak load uses have avoided billions of dollars in energy investments (see page 40).
- Conservation and the use of prices to discourage waste have reduced water use substantially in Southern California (see page 16).
- The use of market-based incentive systems has reduced the investment needed to meet nitrogen oxide emission-reduction targets in South Coast Air Quality Management District (see page 41).

Now is the time to apply these concepts to California's two largest areas of future infrastructure investment: transportation and schools.

Transportation

Traffic congestion regularly ranks as the highest-rated problem in polls about California's quality of life. Transportation is also the top infrastructure concern of California's businesses. There are good reasons why transportation is universally considered such a critical problem:

1. Transportation capacity has not kept up with growth. The California Transportation Commission reports that between 1967 and 1997:
   - State population increased 70 percent;
   - Vehicle miles traveled increased by 200 percent;
   - Lane miles of California highways and roads increased by 29 percent.

   The result is a substantial and continuing increase in congestion.
2. Ten-year transportation infrastructure needs for building and repair are estimated at over $100 billion. Yet transportation agencies report that these investments will not reduce current congestion and may only make future increases in congestion somewhat smaller.

These findings are a wake-up call to look at new approaches in providing mobility services to California residents and firms.

We use prices for water, electricity, and phone service, and the use of prices is accepted as a good approach to guiding investment decisions in these areas. Economists believe that the use of prices can lead to more efficient use of transportation facilities as well.

There are a number of ways that tolls could be used to reduce congestion on existing facilities. One way is to allow the construction of private toll roads as an addition to the existing "free" road system. California is currently testing this concept, and one private toll road is in operation in Orange County.

> State Route 91, running through Orange County, is one of four pilot projects for toll roads authorized by the Legislature in 1989. It was financed by California Private Transportation Co., a partnership of United Infrastructure and Cofiroute, a French company. The companies are authorized to collect tolls for 35 years, when the State takes ownership. Law enforcement and road maintenance is provided by State agencies but paid for by the company. Early reports show the variable toll lanes have decreased congestion and are enjoying a high approval rating for local commuters.
>
> *Building a Legacy for the Next Generation*
> California Business Roundtable

Another approach is to allow single occupancy drivers to "buy" space in high occupancy vehicle (HOV) lanes – multiple occupancy vehicles would still drive free. The Environmental Defense Fund (EDF) has proposed a trial of this idea on a highly congested Bay Area section of InterState 680. The EDF proposal caught the attention of the *San Jose Mercury News* which wrote on March 31, 1999, "We don't know if the EDF suggestion on the Sunol Grade is the best solution, but we like an approach that tries to get the most from existing resources before paying to build more."

A third way to use tolls is to institute peak-hour tolls on existing roads. With current technology, electronic devices in a car could record peak-hour use and drivers could receive monthly bills in the same manner that is being used at certain bridge toll booths today.

Mass Transportation

One hope for California's future transportation system is that mass transportation services will carry a higher share of total trips and, as a result, reduce congestion and the need for additional road building. At the present time, this hope is in conflict with mass transportation ridership trends. For the past 30 years, mass transportation has carried a steadily declining share of total trips.

Currently the service provided by most mass transportation is not competitive with car travel, even with the increasing hassle and congestion with driving. Public agencies throughout California are focused on the struggle to improve mass transportation services.

A new idea is to introduce competition into the provision of mass transportation services. One approach would be to experiment with greatly expanded private jitney service (e.g., airport shuttles) which offer flexibly routed mass transportation services. The concept of private jitney

service is one component of the long-range transportation plan of the Southern California Association of Governments (SCAG).

Car-sharing, which could be publicly or privately operated, is another innovative approach to designing mass transportation services which are competitive with private auto use. Most cars are driven by one person and sit idle most of the day. One example of car-sharing would be for people in a neighborhood to "share" a car to reach a mass transit station and leave the car at the station for sharing by departing riders. On their return, riders could pick up a car at the station and share a ride back to the neighborhood. BART is designing a car-sharing experiment in the Bay Area.

The Private Sector as an Infrastructure Partner

The private sector is a major partner in providing electricity and natural gas to Californians. The private sector has financed the majority of California's electricity and natural gas infrastructure.

Energy deregulation will bring more private sector competition into the provision of energy services. The broadening of competition should both reduce the price of energy services to Californians and reduce overall energy infrastructure investment by allowing the most efficient firms to serve California markets.

The private sector, including non-profit institutions, is a major partner in acquiring and managing open space. According to a 1998 National Land Trust census, private land trust organizations have helped to protect 4.7 million acres across the United States. The increasing role of private land trusts in open space acquisition and management makes it critical to develop a public sector open space role that is closely coordinated with what the private sector is doing.

School Construction

With increased enrollment and a policy of reducing class sizes, California will need to build a significant number of new schools and classrooms. While year-round use of school facilities may reduce the need in certain cases, most of the State's need for new school capacity will come from building.

1. **Joint-Use.** School construction can, however, provide the opportunity to reduce total infrastructure building needs through the joint-use of school facilities. The joint-use of school facilities to meet broader community needs was one of the key ideas discussed at a May 1999 conference at the Getty Center in Los Angeles sponsored by New Schools/ Better Neighborhoods (www.nsbn.org). Another example of joint-use combining school design and water conservation is illustrated on page 29.
2. **Reducing the Cost of School Construction.** There is a way to use private sector expertise in construction management to save money on school design and construction. One recent example of such an approach was reported by the California Business Roundtable.

In the summer of 1995, the Castro Valley Unified School District opened the first privately-built and financed school in California to be turned over to a school district upon completion. It was designed in partnership with the Castro Valley Unified School District and tailored to the District's needs. It meets or exceeds all State guidelines, but costs 22 percent less. The school was built entirely with private funds supplied by Shappell Industries in lieu of the developer paying school fees.

Building a Legacy for the Next Generation
California Business Roundtable

Working smarter means designing facilities that can accommodate expanded community functions to save on the time, money, land, and other environmental resources used to duplicate functions elsewhere. Smarter designs for new or renovated facilities can accommodate direct community access to spaces like libraries, gymnasiums, auditoriums, performing arts, athletic, and recreational spaces that can serve the broader needs of the community. Instead of being designed for a limited time frame of 7 - 8 hours everyday, combining community uses can produce facilities that operate 12 - 14 hours, serving a wide range of community needs that can also include things like health clinics, counseling centers, and other social services.

New Schools, Better Neighborhoods, More Livable Communities
Steven Bingler, President and Co-Founder
Concordia Architects

Seeking Multiple Benefits From Infrastructure Investments

There are many examples in which infrastructure planning needs to take account of multiple goals to realize multiple benefits.

Land-use and transportation planning represent the most common example of the fact that infrastructure investments that have multiple impacts. Transportation investments affect the options for land use and land-use decisions affect the potential for savings in transportation investments. Together, land-use and transportation decisions are the cornerstones of regional efforts to better manage job and population growth.

> We need to think about water, transportation, and even school construction in a resources context – these facilities can and should provide multiple values for our society. Parks can function as spreading basins for groundwater recharge; greenways along roads can provide trails and access as well as reduce air pollution; schools can double as community centers.
>
> Mary Nichols, Secretary of Resources
> State of California

Developing a Rigorous Process for Evaluating Public Investments

California families and firms are familiar with the concept of evaluating the return on their investments. Return on investment is the principle consideration used by private sector firms in determining their investment priorities and investment funding levels. Private firms devote considerable resources and often employ elaborate models to evaluate the return on prospective investments.

Families go through a similar careful investment evaluation process. Two examples illustrate this fact:

1. There is broad understanding that most higher education "pays." The Census Bureau estimates that college graduates earn $17,500 more per year than do high school graduates.[5]

   Families know that higher education has a financial payoff, which is why most families strive so hard to make a college education available to their children. Equally familiar is the refrain, "Why should we spend extra money to send you to...when you can get just as good an education at the state college?" This is straight return-on-investment analysis.

2. Families make investments in a new house or in remodeling their home for a combination of quality-of-life and financial reasons. When financial considerations come into discussion, families often have long and spirited conversations about whether a particular investment will "add to the value of the house" when it is eventually sold. This, too, is straight return-on-investment analysis.

Rigorous Investment Analysis Should be the Standard for Infrastructure Investment Planning

Evaluating public investments is more complex than the investment analyses faced by families and firms. Nevertheless, the expectation of evaluating the return on public investment should be a basic concept in California's infrastructure investment process.

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[5] The federal and state government use the information that higher education "pays" to support pubic loan and grant programs to help students finance their college education.

> Smart investment policy requires a new focus on cost-effectiveness, return on investment, and results to sustain California's economic growth.
>
> *Smart Investments*
> Philip Angelides, California State Treasurer

Public investments provide both monetary and non-monetary benefits. Moreover, residents are interested in how the benefits and costs of public investments are distributed. It is not enough to say that a public investment has net benefits, if all groups do not share in the benefits. Some public investments are made with the explicit purpose of differentially assisting less affluent residents. These considerations make evaluations of public investments more complicated than most private investment analyses.

Governments do serve public purposes and do not operate with the primary goal of earning a profit. Nevertheless, governments can strive to be "businesslike" in their pursuit of public purposes and, in particular, be careful analysts for their public investments for California's future.

Rigorous evaluation is the expectation for how federal capital budgeting should be done. According to the President's Commission to Study Capital Budgeting, "The benefits and costs of alternative options should be considered before decisions are made."

These are two principal evaluation methods that have been applied to public investments at both the federal and State level:

1. **Cost-Benefit Analysis.** The purpose of cost-benefit analysis is to identify the costs and benefits (monetary and non-monetary) of public investments, identify the timing of the costs and benefits (usually the costs precede the benefits in time) and decide whether expected benefits exceed expected costs, and by how much. Cost-benefit analyses have usually been conducted for large, new public investments like BART, or a new dam, or the Federal Clean Air Act. The California High Speed Rail Authority is currently conducting a cost-benefit analysis for high-speed rail corridors in California.
2. **Cost-Effectiveness Analysis.** Cost-effectiveness analysis answers the question, "Is a particular public investment the lowest-cost way to meet an already accepted goal?" The South Coast Air Quality Management District (AQMD) regularly employs cost-effectiveness analyses to determine the cheapest approach to meeting adopted emissions-reduction targets, which were adopted originally through cost-benefit analysis.

Example: Two Evaluation Successes

1. **The California Energy Commission.** In 1974, the California Energy Commission was formed to oversee the development of energy resources in the State. The Commission was funded sufficiently to be able to develop a substantial staff analysis capability.

In the early 1970s, California's utilities expected a substantial long-term growth in energy demand and were, as a result, exploring the addition of new nuclear power facilities. As a result of the Commission's economic analyses, these facilities were not approved and, in retrospect, State utilities and ratepayers were saved several billion dollars.

The Commission staff used economic analysis in two ways that changed how the nuclear plant proposals were evaluated. First, new and detailed projections of California's economic and demographic growth indicated that the State was going to grow more slowly than implied by the utility forecasts. Second, staff determined that conservation measures could greatly reduce the growth of energy demand needed to adequately meet the State's economic and demographic growth.

The Commission reports that, since 1977, Californians have saved $16 billion in energy costs – the equivalent of constructing eleven new power plants – through energy conservation and the use of efficient lighting and appliances. While California per capita electricity consumption is almost unchanged since 1975, the U.S. average has increased by 35 percent.

2. **The South Coast Air Quality Management District.** In the early 1990s, the South Coast Air Quality Management District (AQMD) evaluated a new concept for meeting some of the agency's emission reduction targets. The concept was to develop a market-based incentives approach to replace the "command and control" rules AQMD had for achieving nitrogen oxide emission reductions. After considerable analysis and public review, AQMD adopted the RECLAIM (Regional Clear Air Incentives Market) program.

   The market provides an incentive for firms which have the lowest emission-reduction costs to provide the desired reduction in emissions. By creating a market, low-cost firms could sell extra emission-reduction credits to firms for whom emission reduction was more expensive. Analyses showed that the RECLAIM approach has lowered the total investments required in the region to meet the emission-reduction targets.

The President's Commission to Study Capital Budgeting, the Office of Management and Budget, the South Coast Air Quality Management District, and California Air Resources Board have published guides to conducting cost-benefit and cost-effectiveness evaluations.[6]

Practical Considerations in Designing a Rigorous Evaluation Process for Infrastructure Investments

CCSCE has five suggestions for designing the evaluation component of California's new infrastructure planning process. Some of these suggestions are to apply recommendations of the the President's Commission to California's infrastructure planning process (see box on page 42).

1. **The State needs an independent infrastructure investment evaluation process**.

   The most significant failure of many previous evaluations of government investments is that, in retrospect, costs were underestimated and benefits were overstated. The record for major transportation investment analyses is especially poor.

[6] **Capital Programming Guide**, Office of Management and Budget, Washington, D.C.; www.whitehouse.gov/OMB/circulars/a11/cpgtoc.html

To date, most investment evaluations (e.g., cost-benefit analyses) have been conducted by or for the agency proposing the investment. There has been a tendency for agencies and their consultants to produce positive evaluations for most proposed investments.

Establishing an independent investment evaluation process is essential to developing credible information on the return (monetary and non-monetary) of proposed public investments.

2. **The State needs to allocate adequate resources to investment evaluation**.

   As the Commission's report says, skimping on evaluation is penny-wise and pound-foolish when billions of public investment dollars are at stake.

3. **Evaluation should begin early in the project-planning process**.

   The typical public investment evaluation process is to do an evaluation of the "final" investment project proposal and present that evaluation when asking for project approval and funding. This is one of the reasons that evaluations are often looked at as "selling" tools and less likely to show negative results.

   Actually, the evaluation process should begin early and offer insights on how to improve prospective investment plans. The evaluation can provide information that may direct project planning in a different direction before it is too late to change.

4. **The State should consider becoming a technical advisor on investment evaluations to other levels of government in California**.

   Careful evaluation of infrastructure investments is even more difficult for local governments than it is for State agencies. Evaluations are often expensive and time-consuming for local staff. There may be economies of scale in funds and experience from having an evaluation capability in State government that can be shared among other levels of government.

Recommendations of the President's Commission to Study Capital Budgeting

- The benefits and costs of alternative options should be considered before decisions are made.
- Policy-makers should not wait for sporadic economic studies of individual programs prepared by academic scholars to appear in the professional literature. Instead, there should be an ongoing effort within the government to analyze the benefits and costs of all major programs.
- As a practical matter it may be useful to begin by requiring benefit-cost analyses only for "major" initiatives.
- More resources within the agencies should be devoted to carrying out this mission. Given the many billions of dollars at stake each year, it would be penny-wise and pound-foolish not to spend millions of dollars for analysis to help produce better information for decision-makers.
- A related need is for the government to provide a stronger commitment to improving its base of statistical data on the entire economy.

The federal government and some State agencies publish investment evaluation handbooks which are available to other jurisdictions. CCSCE's suggestion goes beyond this effort and advocates what would essentially be a technical service capability developed within the State that could be available to assist the local investment evaluations. This could also serve as a model for other States.

5. **The State must provide time and resources to facilitate an open, public review of the economic evaluation of critical public investments.**

   A substantial portion of the funds for California's future infrastructure investment will come from California taxpayers – through State and local budget allocations, the passage of bonds, and special taxes dedicated to infrastructure, such as the transportation sales tax overrides currently approved in 18 counties. California's taxpayers are, therefore, a critical audience for understanding and accepting the economic evaluations of proposed infrastructure investments.

   The public review of infrastructure evaluations should take advantage of the internet as a dissemination tool. The internet provides an opportunity for broad and timely dissemination of information in ways which were not possible even two or three years ago. The number of Californians who have internet access to information, such as infrastructure evaluations, is increasing rapidly.

   Any new evaluation and review process will need to be carefully designed to overcome the skepticism generated from the past record of inadequate and biased evaluation analyses.

Management and Accountability Issues

Californians understand that investments to build the State's infrastructure capacity serve important public purposes. On the other hand, residents regularly express concerns about the ability of governments to effectively manage large public programs.

The concern about effective management and accountability practices for governments is echoed in the report of the President's Commission to Study Capital Budgeting and the report of the National Association of State Budget Officers on state capital budgeting best practices. The concern is not unique to California.

Two ideas have been discussed throughout this report on utilizing California's private-sector expertise in the development of an infrastructure-investment planning process:

1. Seek the assistance of private-sector leaders who have faced the same challenge of managing large investment projects. Members of the Governor's Commission on Building for the 21st Century are one place to start.

2. Identify opportunities for partnerships with the private sector in expanding California's infrastructure capacity. Some examples of public/private partnerships appear throughout this report.

Integration of Partnership Efforts

Cost-effective approaches to infrastructure investment in California will require looking at infrastructure issues from a multi-agency, mult-jurisdiction perspective. The examples of joint-use of school facilities, the payoff from integrating land-use and transportation planning, and the numerous situations in which water conservation can be combined with planning other infrastructure facilities all make a strong technical case for the benefits of closely integrating the infrastructure investment planning of all partners.

The State's long-term infrastructure investment strategy will need to develop tools and incentives for the integration of partners' infrastructure investment planning. This includes ways in which individual State agency efforts can be integrated as well as tools and incentives for State efforts to be more integrated with local, regional, and private-sector infrastructure participation.

Planning for Construction Workforce Needs

Whenever the public sector plans for a major expansion of activity, workforce issues need to be addressed. At the current time, California is in a construction boom and future demands for housing and infrastructure are both expected to increase. Planning to have an adequate construction workforce is an integral part of developing a long-term infrastructure investment strategy (see Appendix C).

Deciding How Much to Invest

Californians do not currently have enough information to make a decision regarding how much should be invested in infrastructure in the coming decade and beyond. This report sets out concepts and practical steps to address the serious information and analysis gaps that exist today.

How much to invest in California's infrastructure should depend on the return on investment or "payoff" from these investments. Today's answer to the "how much to invest" question is, "It depends."

> Good investment policy dictates that the nature and exact level of public investment should be driven by a set of principles guiding California's future economic growth, not by a "magic" percentage of the State's budget or a compilation of capital projects desired by various agencies. To date, much of the discussion surrounding infrastructure investment has revolved around dollar needs versus dollar availability, in the absence of a strategic investment plan.
>
> *Smart Investments*
> Philip Angelides, California State Treasurer

The search for cost-effective approaches to expanding infrastructure service capacities and the emphasis on rigorous evaluations can meet two important objectives: 1) obtain more increases in infrastructure capacity for a given number of dollars, and 2) provide credible information to residents who will probably be asked to support substantial additional spending.

There is no conflict, however, between funding the highest priority infrastructure investments immediately while simultaneously working to develop a long-term infrastructure investment plan. If residents can identify and agree on a first round of new infrastructure investments, these investments can begin at once while the ultimate level and composition of California's public infrastructure is determined by answering the questions posed throughout this report.

California is the eighth largest economy in the world measured by total income. In 1999, the personal income of California residents will be near $960 billion – just short of $1 trillion. In ten years, State personal income is projected to increase to $1.7 trillion.

Devoting an extra one-half percent of State income to public infrastructure investment over the next ten years would provide a ten-year investment pool of $65 billion, in addition to already earmarked investment funds.

Today, it is too early to conclude that California "cannot afford" to fund all infrastructure investments with demonstrated high rates of economic and social return.

Appendix A

Land Use Principles for a Growing Economy

Principle One: Regional Perspectives are Required

Regions are the critical geographic area for organizing land-use decisions in California. Planning for adequate land for jobs, housing, and open space requires a regional perspective. Currently, local land-use decisions often hinder economic growth. Business costs will be higher and the quality of life will be lower if local land-use decisions are made without assessing the regional impacts on housing, transportation, and the economy.

Principle Two: Land Must Be Used More Efficiently

Higher densities in California's urban regions are necessary to house the projected job and population growth. The challenge is to make California's existing cities attractive places to live and work for many of the twelve plus million new residents expected by 2020. Failure will bring lost jobs and income and greatly increase the pressure for congestion and further negative impacts of unplanned growth.

Principle Three: Public Investment is Required

California faces more than $100 billion in infrastructure investments in the next ten years. The need for substantial increases in public investment – in schools, transportation, airports, and water – has been documented again and again in analyses of California's economic competitiveness. These same investments are also needed to support smart land-use planning and maintain a high quality of life for all Californians.

Principle Four: Fiscal Reform is Essential

Current fiscal rules give the wrong land-use planning incentives. Current fiscal rules make infrastructure funding difficult. Current fiscal rules prevent local governments from providing high-quality public services for California's growing number of businesses and residents.

Principle Five: Equity Considerations Must Be Included

Smart land-use planning must include job and housing opportunities for all Californians as well as open space and preservation of the State's unique land resources. Californians share the same land, the same economy, and the same environment. The challenge is to ensure that increases in economic prosperity and quality of life reach all residents.

Source: *Land Use and the California Economy*

Appendix B

Summary of Findings of Ten-Year Needs ($ Billions)

	Unfunded
Regional Agencies: Highways, Arterials, Rail, Bicycle and Pedestrian	$53.6
Highways	$19.6
Arterials	$13.1
Urban and Commuter Rail	$19.6
Bicycle and Pedestrian	$1.3
Local Streets and Roads: Pavement Rehabilitation	$10.5
Local Bridge Rehabilitation and Replacement	$0.6
Native American Reservation Roads and Access Roads	$0.2
State Highways: Interregional Improvements in Rural Areas	$5.8
State Highways: Interregional Improvements in Urban Areas	unspecified
State Highways: Bridge and Highway Rehabilitation	$5.3
State Highways: Safety Improvements	$1.1
State Highways: Recurrent Problems	$4.3
State Highways: Operational Improvements	$2.7
California Alliance for Advanced Transportation Systems (CAATS)	$2.0
State Highways: Storm Drainage Retrofit	$6.0
State Highways: Retrofit Soundwalls	$0.6
Airports: Ground Access Improvements	$2.9
Seaports: Ground Access Improvements	$1.1
North American Free Trade Agreement Transportation Infrastructure	$0.4
Los Angeles Basin Rail Consolidation and Grade Separation Needs	$2.3
Intercity Passenger Rail Service	$4.3
Bus and Rail Transit: Operating Shortfall (3 levels of service)	$0.7-3.8
Bus and Rail Transit: Rolling Stock (3 levels of service)	$0.7-2.4
Bus and Rail Transit: Capital Improvement (3 levels of service)	$1.0-6.2
Bus and Rail Transit: ADA Operations (3 levels of service)	$0.1-6.2
Bus and Rail Transit: ADA Capital Improvements (3 levels of service)	< $0.1- < 0.1
Elderly and Disabled Paratransit Non-Profit Providers	$0.1

Source: *Inventory of Ten-Year Funding Needs for California's Transportation System* , California Transportation Commission, May 5, 1999

Appendix C

California's Construction Workforce Challenge

California will need an expanded and well-trained construction workforce to handle the substantial repair, improvement, and expansion expected for the State's infrastructure. At the same time, the construction industry is facing rising levels of home construction and overall building as a result of California's continuing economic growth.

California has added 200,000 construction jobs since 1995 to keep pace with the surge in construction activity. It is important that future workforce needs be carefully evaluated so that housing infrastructure and other construction needs do not end up competing for workers in a construction workforce shortage.

These facts bring both challenge and opportunity:

1. The challenge is that California might not have enough skilled construction workers to do the needed building or to do it in the most high-quality and cost-effective way.
2. The opportunity is that job levels will be expanding in an industry that offers high-wage jobs to residents without requiring a four-year college degree.

The anticipated surge in construction activity will require an increase in skilled workers of a different kind. California's construction sector will provide the largest opportunities for growth in skilled blue-collar jobs in California.

In 1999, the California Legislature is working in cooperation with industry, labor, and a variety of institutions that provide specialized training (such as California's community colleges) to create a new set of workforce development approaches for the California economy. CCSCE recommends that expanded and innovative approaches for training in construction skills be a high priority in the State's workforce development efforts.