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Lessons from California and Beyond**

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COMMENTARY

RETHINKING STATEWIDE INFRASTRUCTURE POLICIES Lessons From California and Beyond

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Over the next 10 years, California faces a daunting infrastructure challenge. According to the California State Treasurer's Office, the state needs to invest \$82 billion to repair and maintain current structures and build new ones. Projected state and local revenue sources will meet only about 50% of this need. Unfortunately, California's infrastructure planning and financing process seems to be broken as well. According to the Legislative Analyst's Office, the state government (a) lacks a stable funding source for infrastructure investment programs, (b) reviews these programs on an ad hoc basis, and (c) does not have an administrative or legislative evaluation of infrastructure investment requirements. This commentary argues that many states, including California, need to rethink their approach toward infrastructure planning and finance.

Infrastructure Policy: Supply Versus Demand

Whether it is for public infrastructure or private facilities, investment planning should be demand driven and predicated on both the willingness and ability to pay for services. The demand for infrastructure services is dynamic and sensitive to economic, social, and technological changes. A failure to assess these changes accurately often leads to disastrous results—such as toll roads in Mexico, where demand was overestimated by 300% and 400% (Ruster, 1997), or the transit systems in Los Angeles and Dallas, which have failed to meet ridership projections.

Unfortunately, the state's infrastructure planning is usually based on estimates of future requirements.¹ For example, infrastructure supply managers commonly estimate such items as water and energy consumption, future applicants to postsecondary educational institutions, state park visitations, and prison populations. These estimates are based not on demand but on underlying demographic trends or historical patterns of per capita usage. Since the late 1970s, however, traditional supply-side planning has come under attack for being unreliable and unresponsive to political and environmental concerns.² In response to these and other criticisms, many public utility commissions began focusing on demand management rather than on expanding supply to meet infrastructure requirements. As a result, many utility companies now

AUTHOR'S NOTE: This commentary is based on the author's ongoing research for the Public Policy Institute of California (PPIC) (see *California's Infrastructure Policy for the 21st Century: Issues and Opportunities*, PPIC, 2000). This commentary reflects the views of the author and not the PPIC.

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Given the fact that treatment and aftercare counseling costs approximately \$12,000 per person, it may be possible to design cost-effective programs to reduce recidivism.

The California Department of Parks and Recreation might follow the U.S. National Parks Service and the U.S. Forest Service in implementing demand management systems to maintain high-quality recreational facilities.

use demand-management and cost-avoidance strategies in their least-cost planning exercises. These efforts have led to significant reductions in infrastructure investments in several key sectors. Broader application of demand management techniques to the state's capital planning process could save taxpayers billions of dollars in unnecessary costs. For example, the application of congestion pricing for bridges and expressways would help to mitigate traffic congestion and generate resources for developing additional transportation capacity. Demand management can also be applied to other state services as well.

Whereas policy makers need to be careful not to suppress consumption of merit goods or generate adverse impacts on the poor and the disadvantaged, demand management may cut spending by reducing California's high rate of recidivism. Approximately 56% of those released from California's prisons return to prison within 3 years. Although 80% of adult inmates have substance abuse problems, the Department of Corrections has only 3,000 slots in treatment programs (Brinkerhoff, 1999). Surveys show that recidivism rates fall by 12% for those receiving substance abuse treatment. When this treatment is combined with aftercare and counseling during parole, recidivism falls by 48%. Given the fact that treatment and aftercare counseling costs approximately \$12,000 per person, it may be possible to design cost-effective programs to reduce recidivism.

Another way to reduce demand for correctional facilities is to focus on young preoffenders. A recent RAND Corporation study examined a range of interventions to divert children from crime (Greenwood, Model, Rydell, & Chiesa, 1998). Based on field trials, the RAND researchers concluded that early-age interventions may result in significant reductions in criminal activity and therefore warrant consideration as a policy tool.

Other opportunities for demand management abound. For example, year-round operation of educational facilities could reduce infrastructure costs significantly. For the University of California (UC) and California State University systems alone, year-round operation would avoid approximately \$3 billion in construction costs over the next 10 years (Legislative Analyst's Office [LAO], 1999). Pricing and demand management could be effective in meeting budgetary requirements for many of the Resources Agency and Cal Environmental Protection Agency as well. California-Federal Government Bay Delta Program's (1999) scenario-planning process has identified new models of cooperative water resource management that also lower capital costs. Local urban water districts have also achieved remarkable reductions in water usage through a variety of programs and pricing systems to promote conservation (Baumann, Boland, & Hanemann, 1998). The California Department of Parks and Recreation might follow the U.S. National Parks Service and the U.S. Forest Service in implementing demand-management systems to maintain high-quality recreational facilities.

It is important to recognize that demand management is not the only tool that infrastructure planners should use to guide decisions about infrastructure planning, development, and operation. Infrastructure managers should also address questions about whether the public or the private sector should provide infrastructure.

Public and Private Provision of Infrastructure

The idea that only the government can and should provide critical infrastructure is giving way to the view that both the public and private sectors should be involved in infrastructure provision. This shift reflects a number of changes, including the growing awareness that competition among providers fosters both higher quality and lower cost services. This section examines two fundamental questions. First, who should provide specific infrastructure services? Second, if government is best suited to provide certain services, which level of government should assume that responsibility?

Such questions are not new. Adam Smith's idea of the invisible hand, which acts through market mechanisms to ensure self-balancing allocation in the economy, has long been understood to have limits, particularly in matters concerning the allocation of public goods (Kapp,

1950). Economists accept the notion that government should intervene to correct market failures; and for much of the past two centuries, most have argued that government is best positioned to provide these public goods. This view prevailed into the 1970s, when deregulation in the telecommunications and airlines industries began to generate significant consumer benefits through lower tariffs and greater innovation. Later, the fall of communist regimes in Eastern Europe and the sustained weaknesses of mixed socialist economies in Spain and France provided further impetus to the questioning of public sector provision of goods and services.

In fact, governments often fail in the provision of infrastructure services. On the efficiency side, government failures include

- providing too little or too much infrastructure,
- unresponsiveness to consumer demand,
- spending on projects that generate few benefits,
- high unit costs, and
- soft-budget constraints.

Governments often do not gauge the real demand or market for services. The development of the Concorde by both the British and French governments offers a vivid example of the overprovision of public air transport (Hall, 1981). An example of underprovision is the lack of drug counseling and rehabilitation by the California Department of Corrections (Brinkerhoff, 1999).

Because government agencies often operate as monopolies, they have little reason to worry about consumer demand or the quality of service. Without competition and choice, consumers have few options other than to stop consumption, provide the service themselves, or move to different jurisdictions.³

Ineffectiveness in government spending is the result of institutional failures, the most important of which is that decision makers have little incentive to improve the efficiency of public service delivery (Leibenstein, 1978). Despite the growing influence of the public sector quality-improvement movement, most government departments do not conduct rigorous cost accounting or quality auditing (Goldsmith, 1999). The lack of accountability and efficiency leads to high public sector output costs. Government agencies routinely enjoy soft-budget restraints; that is, they often receive additional budget support from municipal or state governments. A vivid example of this is the case of Argentina Railways. Prior to reforms, Argentina Railway's total annual subsidy from the government equaled 1% of Argentina's gross domestic product (GDP) (World Bank, 1994).

Soft budget constraints, poor or inadequate cost information, and unfocused management goals frequently lead to financial inefficiencies. During the 1980s, for example, most developing countries charged electrical power tariffs that covered only 50% of the actual costs of service provision. In the transportation sector, countries routinely underpriced services.⁴ Unless there are valid reasons for subsidizing services—such as promoting equity through the transfer of income, generating significant positive externalities, or promoting economic development in lagging regions—infrastructure services should recover full capital, operating, and maintenance costs.

Government failures have sparked lively debates about how to divide responsibilities for infrastructure provision (Kessides, 1993). It is important to recognize that there is no single correct approach to this question. What is appropriate in one country or state may not be appropriate in others. It is also important to recognize that the debate in California is not about privatizing public services or shutting down government. Rather, it is about improving the quality and cost-effectiveness of infrastructure provision while fostering social and economic development, providing services to all consumers at affordable prices, and doing the least harm to the environment.

The lack of accountability and efficiency leads to high public sector output costs.

Creating Markets for Infrastructure Services

To eliminate government failures and improve the overall quality of infrastructure service delivery, policy makers must frequently introduce competition and accountability. This can be done in a variety of ways: (a) promoting coordination and cost sharing, (b) making procurement and service delivery competitive, (c) forming partnerships with the private sector, and (d) introducing private and nonprofit provision of services.

In thinking about how to improve the quality and cost-effectiveness of infrastructure, it is important to return to the role that competition plays in the allocation of resources. Whether it is between two or more private firms or two public entities, competition creates incentives to provide services at the lowest possible cost and highest possible quality. Work on contestable markets shows that the near-term threat of entry creates powerful incentives for incumbent monopolists to be more efficient (Baumol, Panzar, & Willig, 1982). Competitive pressures will propel incumbents to innovate and adopt new technologies. Competition can also reduce the need for regulation, because predatory pricing and poor service will create opportunities for new firms to enter the market.

Examples of the benefits of allowing entry to the market abound worldwide. In the United States, deregulation of the airline industry is estimated to generate nearly \$20 billion a year in savings to consumers. Deregulation of the trucking industry in the United States has led to a 28% reduction in fares and substantial efficiency gains. In New Zealand, deregulation of the telecommunications sector has brought about cost reductions of nearly 6% per year since the start of competition (Ehrhardt & Burdon, 1999).

However, too much competition can also create problems. There may be an inefficient duplication of facilities: too many hospitals, too many universities, or too many parks. This problem can be handled through the use of franchising as well as regulations that can limit the number of operators in a district or region. Competition can also make it more difficult to guarantee universal services. Again, government regulation (as opposed to provision) can be used to ensure universal access. If government wants services to be provided below cost, it can enter into service contracts with providers that cover capital and operating losses. Finally, although intense competition may induce private companies to violate environmental and safety standards, government regulation and monitoring here also plays a critical role in maintaining acceptable levels of private sector performance.

Competition can be introduced into government activity by creating competition for the provision of services. Governments have a wide range of options for creating competitive procurement: service contracting, management contracting, leasing, and concessions. Government entities responsible for providing infrastructure can be corporatized, privatized, and forced to compete in the marketplace. Privatization helps to create incentives for the efficient use of resources by linking performance and compensation.

Models for Arranging Infrastructure Responsibilities

This section outlines a range of examples being used to enhance the quality and cost-effectiveness of infrastructure services. The presentation starts with limited operating and capital efficiencies before moving to more fundamental transformations of public and private sector responsibilities. The model examples do not pertain to specific sectors or levels of infrastructure provision. No single approach is recommended, because policy makers need to assess conditions carefully and proceed with reforms that are most likely to succeed in improving the quality and efficacy of infrastructure services.

Coordination and cost-sharing cooperation. Higher education, in California and elsewhere, is under extreme cost escalation pressure. The RAND Corporation recently assessed cost-control activities and found that three approaches warrant attention by policy makers and managers: collaboration, technology, and outsourcing (Kaganoff, 1998).

Table 1: Trends in State and Local Government Service Outsourcing (percentage of activities outsourced)

Function	1987	1990	1995
Major construction projects	100	100	100
Janitorial services	52	62	70
Solid waste collection	30	38	50
Building maintenance	32	37	42
Security services	27	33	40
Parking garages	20	26	35
Park maintenance	18	25	32
Tree trimming	17	23	31
Street maintenance and repair	19	21	37
Ambulance services	11	13	20
Bill collection	10	12	20
Street sweeping	9	11	18

SOURCE: Mercer Management Consulting (1995).

An example of collaboration is the Southeast Pennsylvania Consortium for Higher Education, in which eight schools collaborate on planning, purchasing, technology, and use of network facilities. The consortium is also looking at sharing faculty. In another case, Five Colleges, Inc. (Amherst, Hampshire, Mount Holyoke, Smith, and the University of Massachusetts at Amherst) pooled faculty to create two joint departments. They also link libraries, theater productions, and course registration. One of the oldest consortia of higher educational institutions is the Claremont Schools, which share costs for student services, management, libraries, and real estate management. Forming consortia is difficult, and it takes considerable time to build understanding and trust.

Public enterprises. One common method for rearranging service provision is to corporatize public companies so that they can be held more accountable for performance. This process can proceed along several paths, but the most common method is to separate the entity from the government and form a stock company. This company can be wholly owned by the government but operate like a private stock company with a board of directors, shareholders, and management. A municipal water department, for example, can be spun off and established as a stock or independent entity. This independence allows the company to develop highly focused service-delivery goals and to be accountable to its stockholders rather than a local council. Corporatization does not guarantee that poorly run government departments will become efficient companies, but the legal transformation allows owners to change management and to tie their compensation and contracts to clear performance goals. It also eliminates soft-budget constraints and focuses attention on the need to achieve fiscal self-sufficiency (Organization of Economic Cooperation and Development [OECD], 1997b).

Competitive procurement and managed competition. Many governments around the world have developed competitive procurement methods. Although the most common approach taken is to outsource them, another viable option is to create competitive markets for procurement and allow existing government departments the right to compete to provide services. Table 1 presents trend data for state and local government contracting out by type of activity. As it illustrates, contracting out has been expanding across the country over the past 12 years.

Considerable evidence suggests that contracting out lowers costs through the reduction of overhead, fixed costs, and direct production costs. It can also help to vitalize public sector efficiency by allowing comparisons between in-house and outsourced costs (General Accounting Office [GAO], 1997). According to OECD's Public Management Advisory Group, successful contracting out is one of the principal market-type mechanisms applied in member countries. It can lead to efficiency gains while maintaining or increasing service quality (OECD, 1997a).

A municipal water department, for example, can be spun off and established as a stock or independent entity.

In general, successful outsourcing requires the following:

- top management involvement and commitment to reengineering,
- focus on staff concerns and issues,
- specific service requirements in terms of outputs or outcomes,
- monitoring performance and fostering cooperative relationships,
- ensuring valid comparisons between in-house and outside proposals,
- fostering competitive markets, and
- developing and maintaining the necessary skills for contracting out.

Examples of successful outsourcing can be found in North Carolina's system of higher education and in the State of Virginia's Commonwealth Competition Council, which identifies opportunities of competitive service provision. New Zealand also contracts out functions of its Audit Office, and the government of Iceland contracts out residential-treatment homes for children (OECD, 1997a). Not all outsourcing is successful, however, especially when oversight is poor. Noncompetitive and loosely controlled contracting can lead to inefficiencies, cost overruns, and corruption (Bloomfield, Westerling, & Carey, 1998). Therefore, public agencies need to ensure that managed competition and outsourcing are done in an open and transparent manner.

Management contracting. Whereas outsourcing and competitive procurement are used to acquire specific services, management contracting is the wholesale (although temporary) transfer of management responsibility from incumbent public managers to outside private or non-profit entities. Management contracting is increasingly popular in municipal wastewater collection and treatment and water supply and distribution. In 1998, the City of Milwaukee entered into a 10-year operations and maintenance (O&M) contract with United Water. The \$350 million management contract is the largest wastewater O&M agreement reached to date in the United States. It guarantees 30% annual savings (or about \$145 million) to ratepayers. The City of Atlanta also recently took steps to contract out the operation of its water supply and wastewater treatment system. Facing 100% rate increases to fund improvements, the City of Atlanta negotiated a 20-year agreement with Lyonnaise des Eaux and United Water to operate and maintain its system and to bring it into compliance with federal and state water-quality standards. The city retains ownership of the system and will continue to control rates and finance capital expenditures. In both cases, the cities structured competitive tendering procedures to attract firms and bid for contracts. The use of competitive bidding enabled both to procure lower cost alternatives for managing and operating their utility systems. Both winning bidders agreed to keep all public water and wastewater employees on payroll (Reason Public Policy Institute, 1999).

Leasing and concessions. Leasing and concessions offer another way to create competition and improve the efficiency of infrastructure operations. The government offers to lease an infrastructure facility to a private operator for a fixed period of time. During the lease period, the operator is responsible for operating and maintaining the facility. Leasing offers the opportunity to temporarily transfer the responsibility for operating a facility to a private operator. Examples of leasing facilities include Argentina's railroads and highways and the U.S. National Park Service's tourist facilities (Fishbein & Babbar, 1996).

Concessions are used when the company or the infrastructure service requires significant capital investment. They are typically long-term arrangements to allow sufficient time for the concessionaire to recover costs and earn a reasonable rate of return. For example, water supply and wastewater treatment systems, railroad networks, airport facilities, parking garages, sports facilities, and college dormitories could be the target of a lease or concession agreement. The government leases the existing facility to the private operator, requiring that the facility be upgraded to a specified level of service and then operated for a fixed time period. At the end of the lease or concession period, the improved facility is returned to the government. Careful monitoring and oversight of concessions is needed to ensure that public interests are being served (Burns & Estache, 1998; OECD, 1997a). In some cases, concessions do not reflect the

Management contracting is increasingly popular in municipal wastewater collection and treatment and water supply and distribution.

full economic value of the assets being leased and therefore provide indirect subsidies to private entities (GAO, 1996).

Public-private partnerships. A popular model for improving the quantity and quality of services is to form partnerships between the public and private sectors. Partnerships can also be forged between government and nonprofit groups. For example, the Lila Wallace-Reader's Digest Urban Parks Program has funded the formation of 11 parks partnerships between local governments and nonprofit community-based organizations (Walker, 1999). This model could be applied to larger regional and state park districts.

Public-private partnerships have been formed at all levels of government. At the federal level, partnerships have been implemented to finance projects with the National Park Service, Veterans Administration, and the U.S. Postal Service. At the state level, projects have been carried out between the California Transportation Agency (CALTRANS) and private developers, transit districts, universities, and local governments around the state. Many partnerships revolve around the joint development of real estate, such as the redevelopment of Fort Mason, the Thoreau Center at the Presidio, and Rincon Annex in San Francisco. They typically involve arrangements in which a private entity leases or purchases assets to develop and operate them. These partnerships provide significant benefits to government by providing revenue and bringing technical and entrepreneurial talent to a project.

Privatization. Privatization is the final step on the continuum of promoting competition and accountability into the infrastructure provision process. It involves the transfer of infrastructure service responsibility to a private or nonprofit entity and may include the transfer of ownership of assets. Some of the more common forms of privatization are concessions and lease-develop-operate (LDO), build-operate-transfer (BOT), build-transfer-operate (BTO), build-own-operate-transfer (BOOT), negotiated sale to a strategic partner, competitive sale to strategic partner, or public stock offering (GAO, 1996; Kikeri, Nellis, & Shirley, 1992, 1994; Sheshinski & Lopez-Calva, 1999). In the case of BOT, the government enters into an agreement in which a private developer builds a new facility, operates it for a fixed period of time, and transfers the facility to the government at the end of the term of the agreement. A common example of BOT is the development of bridges by private developers, such as the Skye Bridge in Scotland. In the case of BTO, the developer builds the facility, transfers it to the government, and simultaneously enters into an agreement to operate the facility for a fixed time period. The transfer is effected to reduce tort liability exposure to the private operator. A BOOT scheme is a variation of the BOT scheme with the ownership of the facility vesting with the private operator.

Privatization of existing facilities typically begins by restructuring the entity. Steps are usually taken to streamline operations, cut costs, and focus management on commercial principles. Often the public department is converted to a stock corporation, which during the initial phase, is owned by the government. The objective is to focus the entity on commercial objectives and subject the company to commercial law. Corporatization is commonly used prior to the privatization of state enterprises in the United Kingdom, New Zealand, Mexico, and Argentina (OECD, 1997a).

Perhaps the ultimate form of privatization is divestiture, or the outright sale of the public service institution to a private sector entity. The few examples of divestiture at the federal level include Conrail and the Great Plains Coal Gasification Plant. However, divestiture has been actively pursued in Canada, France, Mexico, New Zealand, and the United Kingdom. The most aggressive program of divestiture has been in New Zealand, where the national government sold assets worth 14.1% of GDP between 1987 and 1991. The United Kingdom also sold assets worth 12% of GDP between 1979 and 1991. The divested entities included agricultural, mining, manufacturing, transportation, financial, and insurance services as well as hotels, housing, and water supply and wastewater treatment authorities. In Mexico, 1,008 out of 1,155 public enterprises were sold between 1982 and 1992.

Forms of divestiture vary according to the goals of the privatization and the size of the entity. It is often important to target the sale of the entity to a firm that can provide suitable technology, know-how, and capital. In such cases, privatization will focus on attracting a strategic investor.

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In other cases, sales can be tendered. Competitive tenders usually serve the public interest best, whereas negotiated sales should be avoided if at all possible. Public offerings are expensive and require a large and active financial marketplace. Private placement is less expensive, but care must be taken to ensure competitive bidding (Klein, 1998).

First and foremost, divestiture needs to be guided by clear goals and objectives. Most governments pursue divestiture for three reasons: to increase efficiency, to reduce the size of the public sector, and to reduce government debt. There is also evidence that privatization fosters economic development and stability (Lopez-de-Silanes, Shleifer, & Vishney, 1995). In the United Kingdom, privatization was carried out to increase the efficiency of service provision. In New Zealand, policy makers were concerned with both increasing efficiency and reducing government debt. Using private sector financial advisors, these governments carefully assessed the market valuations of the entities to be privatized. They also included "clawback" provisions in sales contracts to ensure that the government participated in any windfall profits that occurred shortly after privatization.

Both New Zealand and Mexico included divestiture proceeds in their annual budget statements, presenting debt levels with and without privatization proceeds. In all of the surveyed countries (France, Mexico, Canada, New Zealand, and the United Kingdom), a centralized agency was used to carry out privatization. In most cases, the entity to be privatized was converted to a stock corporation. Entities that were corporatized prior to sale fetched higher prices. Firms to be privatized may also require restructuring to break up monopolies and to foster competition (OECD, 1997b).

Governments typically consider political as well as financial effects of privatization. An excellent GAO report lists six needs for effective state and local privatization:

- a political champion to push for privatization,
- developed implementation structures,
- legislative and resource changes,
- reliable and complete cost and benefit information,
- strategies for building support and managing the workforce transition, and
- monitoring and oversight.

International as well as domestic experience suggests that restructuring government services is controversial. Public employees are concerned that privatization threatens their security, and consumers are concerned that it will reduce the quality or coverage of services. Moreover, privatization is not risk free. Because actors do not always maintain the public's property diligently, privatization can create moral hazards. Consequently, the full costs of implementing privatization schemes are not factored into most programs (Sclar, 1997). All countries engaged in privatization stress the importance of ongoing regulation to ensure fair prices and adequate service coverage and quality (GAO, 1997).

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Financing Infrastructure Provision

Estimates of California's infrastructure requirements between 1999 and 2009 are estimated at \$82.2 billion. These requirements are distributed as illustrated in Table 2.

At the present time, the state can issue \$8.7 billion in bonds to meet this need. This leaves a gap of \$73.5 billion: \$53.3 billion for state capital outlay and \$20.2 for state-funded local infrastructure, which is typically budgeted as local assistance. Funding comes from two basic sources: (a) direct appropriations (pay as you go) and (b) long-term financing (bonds, lease options or installment purchases, and capitalized leases). The California Department of Finance (DOF) estimates that \$33.1 billion will be available from federal and other non-General Fund pay-as-you-go sources. The DOF also estimates that the state could issue \$32.5 billion in general obligation bonds and that \$1.5 billion could be available from the General Fund to finance

Table 2: 10-Year Capital Requirements, 1999-2009

Category	\$ (billions)	%
Business and transportation	27.6	37.6
Higher education	15.4	21.0
K-12 education	8.9	12.1
Corrections	9.5	12.9
Resources	9.0	12.2
Other	3.1	4.2
Total	82.2	100.0

SOURCE: California Department of Finance (1999).

infrastructure projects on a pay-as-you-go basis. The state can therefore expect to cover all but \$6.4 billion in projected infrastructure needs (California Department of Finance, 1999). Obviously, these DOF projections exclude new sources of revenues.

The DOF has suggested some alternatives to address the \$6.4 billion shortfall in funding capacity. These include the following:

- Increasing local school districts' ability to raise construction funds through a simple majority voting requirement and requiring that districts match state funds for school construction.
- Reducing or eliminating state support for other primarily local responsibility infrastructure.
- Developing methods of program delivery (e.g., year-round education) that reduce the need for capital and infrastructure outlay.
- Committing a higher level of general fund resources to pay-as-you-go infrastructure.
- Expanding the use of long-term financing strategies for infrastructure.
- Expanding use of privatization.
- Committing a fixed portion of revenue for infrastructure.

Several other strategies could be added to this list. The state might also (a) use demand management techniques to reduce infrastructure requirements, (b) increase private sector participation in infrastructure provision, and (c) levy user charges and fees to reduce congestion and increase revenues.

Sources of Infrastructure Financing

California uses a variety of sources for financing infrastructure (State of California, Governor's Office of Planning and Research, 1997).

Federal subventions and transfers. The federal government transfers considerable monies to California on an earmarked and revenue-sharing basis. The bulk of the transfers are linked to transportation infrastructure development and maintenance. From 1996 to 1997, for example, California received \$1.52 billion in federal highway trust funds (Brown et al., 1998).

General taxes and special taxes. State and local governments can impose taxes on citizens for the purpose of financing services. Such taxes include income and sales taxes, property taxes, gas taxes, and real estate transfer taxes. According to Proposition 218, however, this power requires voter approval for the imposition of such taxes (LAO, 1996). Proposition 218 reduced all local taxes to either general or special taxes. General taxes pertain to general government services and special taxes pertain to taxes levied for specific purposes. General and special taxes can be used to finance infrastructure services when the distribution of benefits is disbursed across the public.

General taxes pertain to general government services and special taxes pertain to taxes levied for specific purposes.

Special or benefit assessments. Some infrastructure investments (such as flood control, street lighting, and underground utility service) produce spillover benefits. Special assessment districts are designed to levy taxes on property owners directly benefiting from the infrastructure investment. Two thirds of voters or a majority of property owners must approve these special assessments. California's tax increment financing law provides a vehicle for financing infrastructure investments that enhance property values by capturing part of this gain and using it to pay debt services.

Beneficiary charges are levies that are based on the beneficial impact that an infrastructure service has on properties and businesses. They are not associated with actual consumption but, rather, with the benefits generated by the infrastructure service. An example of a beneficiary charge would be a levy for street lighting or flood protection. Beneficiary charges may be deemed user charges if they meet the test of Government Code Section 50076, or they may be viewed as special taxes and therefore require voter approval.

Developer exactions. Developer exactions, also called impact fees, are levies on new development or redevelopment. They are onetime collections that are part of the building approval process. Impact fees are levied to cover the infrastructure costs associated with new development (such as school construction, sewer hookup, and road construction). Such fees are not viewed as special taxes if they reasonably reflect the cost of providing service and if the revenue is not placed in the general fund. The proliferation of developer fees and exactions has led to legislation designed to limit further increases in fees (Dresch & Sheffrin, 1997).

User fees. User fees and charges are levied on the consumption of infrastructure services. Revenues generated by user charges can be used to finance the construction, operation, and maintenance of facilities (OECD, 1998). User charges can also be used to control congestion by varying the prices according to the level of demand during peak and off-peak periods (Humphrey, Keppler, & Montes-Negret, 1997). User fees and charges can be structured in a variety of ways. Fees can vary according to consumption (as with water and electricity) or remain a flat monthly charge (as with garbage collection). User fees are not considered special taxes if they do not exceed the reasonable cost of providing the regulatory service or activity for which they are charged and if they are not levied for general revenue purposes.

User fees can be levied by either a public or private entity. In the case of a government provider, fees need to reflect costs of services to avoid voter approval. Also, the fees must be channeled into infrastructure service. If the service is privatized, the private provider is free to levy fees on users. If the provider is granted a utility franchise for which there are no alternative service providers, the government must regulate pricing and service provision to protect the public's interests.

Given the range of options for financing California's infrastructure services, policy makers must decide which of these methods are most appropriate. In California, as elsewhere, local governments have been slowly shifting costs for infrastructure capital costs from general fund sources to user and beneficiary groups. According to a 1993 International City/County Managers Association survey of 79 cities and nine counties in California, 60% of the respondents indicated that they had shifted costs on to users between 1987 and 1992. Of those stating that they had shifted costs, 62% indicated that they have implemented user fees and charges to finance services. Of cost shifters, 75% said that they required developers to finance infrastructure projects. Unfortunately, the pace of change has been glacial, particularly at the state level.

Planning and Budgeting for Infrastructure Investment

A critical step in infrastructure provision is the linking of planning with budgeting. The Government Performance and Results Act of 1993 seeks to strengthen federal decision making and accountability by focusing on the results of federal activities and spending. Beginning in fiscal year 1999, agencies must prepare annual performance plans containing annual performance goals covering the program activities in agencies' budget requests (GAO, 1999).

California recently adopted a Strategic Planning Guideline, and (according to the DOF) nearly all agencies (98%) are complying with the new law. A new infrastructure planning

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requirement was enacted in 1999. Assembly Bill 1473 (Chapter 606, 1999) will require (beginning in 2001) the governor of California to submit annually a proposed 5-year infrastructure plan to the legislature along with the annual budget. This is certainly a step in the right direction, but there are important aspects that need attention to make the process more effective (GAO, 1998).

Performance budgeting is central to any initiative to improve the effectiveness and efficiency of infrastructure service provision. In essence, funding decisions are based on program results. Far too often, capital budget requests are based on wish lists and are not linked with mission statements about what the agency is trying to do or deliver. In particular, it is critical that projections give full weight to operating and maintenance costs. These cost items need to be fully incorporated into the financial and market analysis. Agencies often underbudget for maintenance, causing the infrastructure assets to rapidly deteriorate. Full-cost recovery tariffs need to be estimated and integrated into project-appraisal assessments of demand.

To sum up, long-term financing as well as user and beneficiary charges provide the most efficient means of procuring infrastructure. Other important financial elements include the following:

- Increasing economic efficiency of project delivery and operations.
- Developing partnerships with the private sector to build, finance, and operate infrastructure projects.
- Devolving responsibility for infrastructure projects that primarily benefit local jurisdictions to those jurisdictions. Cofinancing could be developed for local projects (such as school construction) that generate spillovers to the state at large.
- Using technology, pricing, and demand management to increase capacity of infrastructure facilities.
- Assessing and prioritizing projects using modern methods of capital budgeting and investment planning.

Conclusion: Moving From Provision to Management

This article has outlined how state-provided infrastructure could be made more efficient, cost-effective, and demand responsive. In keeping with the idea of moving from infrastructure provision to infrastructure management, policy makers might consider ways to

- make infrastructure planning and capital budgeting more demand driven,
- apply demand management tools to attenuate the growth in demand for infrastructure capital and better use existing infrastructure facilities,
- shift infrastructure responsibilities from the public to private sector and stimulate competition for infrastructure services,
- use long term-financing and credit enhancements to leverage appropriations and revenue streams to procure infrastructure investments, and
- finance infrastructure through user and beneficiary charges and rely on private provision and financing where possible.

These policy initiatives call for a dramatic change in the institutional environment surrounding state infrastructure provision. Instead of relying on state agencies to provide or finance infrastructure services, the new approach suggests devolving responsibilities for the production of infrastructure to local governments and to private and nonprofit entities. Although government provision of infrastructure would diminish under the proposed model, the state would still be responsible for setting infrastructure policy, managing its provision, ensuring that standards of service coverage and quality are met, and overseeing prices and tariffs.

Far too often, capital budget requests are based on wish lists and are not linked with mission statements about what the agency is trying to do or deliver.

Notes

1. See, for example, Finzi (1994) and Grover (1983).
2. See, for example, Reisner (1986) and Safina (1998).
3. In Lagos, Nigeria, infrastructure services are so poor that manufacturing establishments frequently provide the services themselves by digging water wells, transporting workers, and delivering mail. Lee and Anas (1992) estimated that these investments add 30% to the cost of setting up factories in Lagos. Similar patterns have been identified in Thailand and Indonesia. In the United States, families cite poor inner-city schools as a primary reason for moving to the suburbs.
4. During its 1991 fiscal year, the government of Zambia shifted 12% of its gross domestic product to subsidize the country's transportation sector (World Bank, 1994).

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