NGA Center for BEST PRACTICES

Issue Brief

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State Policy Options for Funding Transportation

Executive Summary

States face two significant and immediate challenges with respect to transportation finance. First, investment is insufficient to meet demand. A recent National Chamber Foundation of the U.S. Chamber of Commerce study estimates that $222 billion (2005 dollars) in public investment in highways and transit is needed annually simply to maintain our current surface transportation system. Present total annual investment in the system is about $177 billion, far short of that amount. Moreover, the Chamber study estimates that an annual public investment of $288 billion (2006 dollars) is needed to advance the system to a level that enhances the nation's economic productivity. Estimates of future transportation needs are even higher.[1]

Second, there are concerns that in the near future federal policy may shift away from grant support to the states for transportation. The Government Accountability Office (GAO) estimates that the growth in entitlement programs, as the baby boom generation ages, requires "a fundamental reexamination of all federal programs, including those for highways," and it predicts that federal grant assistance for transportation may decline or even terminate in the future.[2] The GAO has even questioned "whether a federal role is still needed, whether program funding can be better linked to performance, and whether program constructs are ultimately sustainable."[3] Given these constraints, the prospects for future inflation-adjusted increases in federal transportation assistance are uncertain.

The federal-state partnership in transportation finance is entering a period of transition. In the future, states may bear more responsibility for funding transportation systems. While the states and other stakeholders continue to work to determine the appropriate federal role in transportation finance, states can use new financing tools, as well as federal policies allowing (and even encouraging) states to impose tolls on federal-aid highways and bridges to meet some of their transportation finance needs. These new financing tools and tolling strategies can help manage highway capacity, fight congestion, and improve total system performance. In addition, a variety of demand-side strategies are available to help states reduce their financing needs by diffusing demand across the entire transportation network, taking trips off congested facilities, and managing transportation for a broader array of societal outcomes.

Among the tools at states' disposal to address demands for increased transportation capacity are the following:

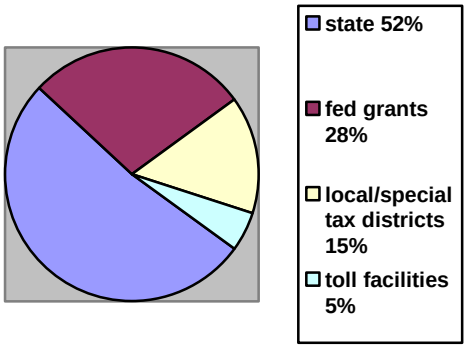
- Tax-based strategies for increasing revenue.
- Tolls and road-pricing strategies.
- Debt financing.

- Asset leases.
- Strategies to shift transportation finance responsibilities to other levels of government.
- Strategies to reduce the growth in travel demand.

It is not within the scope of this *Issue Brief* to discuss what role the federal government should play in transportation finance. This *Issue Brief* is intended to provide information and policy options to governors and states, based on current policy trends.

Background—The Changing State and Federal Relationship

Responsibility for construction, operation, and maintenance of our national transportation network of highways, transit facilities, ports, airports, passenger rail, and nonmotorized transportation (bicycle and pedestrian facilities) is distributed across federal, state and local governments. States and localities play the largest role, both in system finance and in terms of owning and managing highway, road, and bridge networks, as well as some transit, port, airport, and commuter rail facilities. In 2004, of the approximately $177 billion in public funds spent on highway and transit facilities at all levels of government, states revenues represented 52 percent of expenditures; federal grants 28 percent; local governments and special tax districts generated 15 percent; and toll facilities (some of which are state owned) 5 percent.[4]



Public Highway and Transit Facilities Expenditures 2004 ($177 billion)

Federal transportation assistance is financed primarily through the federal gasoline tax.[5] The most recent federal surface transportation authorization, enacted in August 2005, provides $284.6 billion in federal transportation grant assistance over five years,[6] a spending increase of approximately 30 percent over the previous authorization. However, few new revenue sources were added in this law. The result is that the federal Highway Trust Fund is projected to run a deficit by 2009. This deficit could be covered either by (1) higher federal gas taxes to replenish the Fund, or (2) additional funding from the general account. Given the constraints on the federal budget mentioned above, the states likely will bear an increasing share of the responsibility for financing future transportation needs.

States are already taking steps to address a potentially decreasing federal role in transportation finance, but they face several challenges in making this transition. Higher state match levels will likely be required, as federal grant funding for the federal-aid system declines.[7] There may be more system bottlenecks across all modes as congestion increases, especially in metropolitan areas, where 79 percent of the U.S. population lives.[8] Another challenge is the growing need for system reconstruction, as the Interstate Highway System reached its 50-year anniversary in 2006. Land costs are rising rapidly, and construction and materials costs

are both rising faster than the rate of inflation. As costs for maintenance are rising, transportation investments are offering reduced productivity gains, which have declined from more than 20 percent annually in the 1960s to less than 5 percent in the 1990s. In addition, there is legislative and popular resistance to both new state and local fuel taxes and transportation fees such as tolls, especially absent assurance that increased expenditures will significantly improve system performance. Finally, states face reduced buying power as a result of slower growth of gasoline tax revenues, as automakers increase fuel efficiency and offer vehicles using alternative fuels.

Weaknesses in the Present Structure of Transportation Finance

The present transportation finance structure does not appear sustainable. Although the public was willing to be taxed to build the national transportation system over the last 50 years, there seems to be less support for the more diffuse benefits of system reconstruction, maintenance, operation, and integration—the financing needs of the future. State and regional proposals to increase gas, sales, and property or other taxes to fund transportation needs may draw less public support as well.

Nevertheless, the need to finance the operation, maintenance, integration, and future growth of the national transportation network remains. A recent National Chamber Foundation of the U.S. Chamber of Commerce study estimates that $222 billion (2005 dollars) in public investment in highways and transit is needed annually simply to maintain our current surface transportation system. Present total annual investment in the system is about $177 billion, far short of that amount. Moreover, the Chamber study estimates that an annual public investment of $288 billion (2006 dollars) is needed to advance the system to a level that enhances the nation's economic productivity (where additional investment produces a positive benefit/cost ratio). Estimates of future transportation needs are even higher.[9] There are several key challenges:

Revenue adequacy (federal). The Interstate Highway System, the premier federal project justifying a high level of federal highway expenditure, is now 50 years old and is in need of significant reconstruction, while simultaneously accommodating existing high levels of travel. In addition, about 35 percent of the nation's major roads are rated in poor or mediocre condition.[10] At present capital funding levels, transit capital needs face a 50-year backlog. However, while funding needs are increasing, the Federal Highway Trust Fund is projected to run a deficit in 2009. States, which own and operate the federal-aid highway system, their own state highway systems, and some transit systems, airports, and ports, may no longer count on ever-increasing federal transportation assistance for these various components of the nation's transportation infrastructure.[11]

Revenue adequacy (state). States, on average, own and manage about 20 percent of total nationwide road mileage but actual amounts vary widely. A few states (**Delaware**, **Virginia, South Carolina**) own more than 60 percent of the system, and a few (**New Jersey, New Hampshire**) own less than 10 percent.[12] State gas taxes, which fund most of the costs of building and maintaining the system, have not kept pace with inflation over the last 50 years.[13] Reduced state transportation purchasing power has led to some of the costs of transportation improvements being financed at the regional and local government levels (primarily through increased matching requirements, as well as through regional and local ballot proposals to tap local property and sales tax revenues) and to bonding of new capital investments against future state and federal tax

revenues. Although increased local financing of transportation may be more aligned with the benefits derived from such improvements, transportation must compete with local government services such as schools, housing, police, fire and rescue, and the like, for which revenues often are formally reserved.[14]

Congestion. Total traffic delay increased to 3.7 billion hours in 2003, or an average of 47 hours per peak-period traveler.[15] Thirty-six percent of major urban highways are congested during peak travel times.[16] Total costs in wasted fuel and delay reached $63 billion in 2003. A panel of transportation finance experts recently concluded that the present system of transportation finance was generally adequate to maintain present conditions and to fund growth in capacity over the next 15 years, *but that such growth would not reduce congestion*.[17] Furthermore, because of the tendency of added capacity to stimulate additional (and longer) vehicle trips, it is unclear whether *any* level of transportation expenditure can adequately address congestion. The seemingly intractable issue of congestion management has a direct relationship to transportation finance, inasmuch as public support for new funding initiatives appears to require public confidence that congestion levels will decline. This is not happening under the present finance system.

Performance. Congestion is only one of several measures of system performance, along with economic productivity, environmental performance (air and water pollution, land consumption, watershed and habitat protection, energy use, environmental impacts of construction materials, etc.), social equity (access to transportation services), and improvement of overall quality of life (community development). A central problem appears to be the structure of transportation finance, in that taxing fuel consumption, rather than street and highway use, disconnects the price travelers pay for using the transportation system from the actual cost of providing the capacity they use. Free parking exacerbates this problem. As a result, efficient use of the system is not rewarded, and inefficient use (e.g., discretionary trip making at times of peak demand) is not penalized, precipitating a variety of adverse productivity, environmental, and community impacts. Revenue allocation can be problematic depending on states' statutory and constitutional restrictions on how they can spend state gas tax revenues. Moreover, the proliferation of project earmarking has meant that there is simply not enough money available.

Strategic investment. The lack of specific investment criteria for transportation capital expenditures can make the process problematic. Authorizations for projects specifically designated by the U.S. Congress increased from 1 percent of all highway expenditures in the 1982 and 1987 federal highway acts to over 10 percent in the 2005 SAFETEA-LU Act. About 25 percent of transit capital funds are earmarked, as are most authorizations for inland waterway improvements. State transportation trust funds in 30 states also restrict expenditures to "public highway uses."[18] Such provisions reduce state flexibility and can drive up costs.

Credit risk. State borrowing for highway capital construction increased 92 percent in the period 1995–1999 and represented 9.5 percent of state revenue for highways in 2001.[19] Federal policy now encourages states to secure new sources of revenue for both highways and transit through private capital markets. Borrowing is cost-effective when the costs saved through accelerated construction, plus future project revenues, exceed the cost of interest paid on the borrowed funds. However, states are increasingly borrowing against future state and federal gas tax receipts, or against general revenues, to fund present capital needs. States depend on future gas tax revenues to fund future capital needs—and they will be increasingly unavailable if such funds

are already earmarked to pay off debt. In addition, emerging national policies favoring oil independence, energy conservation, reduced air pollution, and controls on carbon emissions should increase fuel economy, thus gradually reducing gas tax revenues per vehicle mile traveled. This could reduce bond ratings and make bond financing for transportation infrastructure more expensive.

Transportation Finance Policy Options for Governors

The federal role in transportation finance appears to be changing from grantor and regulator of the federal-aid system, to financial adviser, banker, and joint venture partner to states within a more relaxed regulatory structure. This includes attracting private capital to transportation facility finance by allowing private investors a reasonable return on capital. Simply put, if private investors can't make money in the transportation system, whether it be in toll roads or in publicly owned infrastructure that serves their developments, they won't invest. Equally important is the duty of public agencies to manage the entire surface transportation system for public benefit. That requires balanced transportation finance policies. States have several options for creating such a balanced financial framework:

- Tax-based strategies for increasing revenues.
- Toll and road-pricing schemes to raise revenues.
- Debt financing to reduce project development costs.
- Asset leases to raise revenues.
- Shifting transportation finance responsibilities to local governments.
- Strategies to reduce long-term growth in highway travel demand.

These initiatives can be pursued alone or in combination, with taxes, pricing, and demand-side solutions all being part of a comprehensive financing structure. The particular combination of financing strategies will vary according to state size, demographics, and system characteristics. The strategies, and their policy implications for states, are discussed in the following sections.

A. Tax-Based Strategies for Increasing Revenues

The traditional strategy for increasing transportation revenues is to raise state gasoline and excise taxes, registration and license fees, truck weight fees, and other transportation-related revenue streams. Twenty-eight states raised their state gasoline taxes between 1993 and 2003. The total state gas tax burden now varies among the states from 4 cents per gallon to 32.9 cents. [20] Some states tax diesel fuel at a higher rate and ethanol at a slightly lower rate than regular gasoline.

The argument for focusing on these tax-based user fees is that they are generally fair under the concept that the user pays. However, as more total transportation revenue is derived from sales taxes, property taxes, or general state and local revenues, the connection between users and payers has weakened. Still, there is at least a general correlation between use of the system and taxes and fees paid on the vehicles and fuels consumed to gain access to the system, and the costs imposed on the system. Virtually every state relies on these taxes and

fees as a foundation for transportation finance. States have adopted various strategies to increase these taxes and fees:

1. Heavy-truck fees. Trucks with five or more axles, between 50,000 and 100,000 pounds pay about 6 cents per mile in federal and state user fees. Their actual cost in terms of wear and tear on roads and highways varies from 3 cents per mile, to 14 cents per mile for the heaviest trucks (all in 1997 dollars).[21] Current taxes are imposed primarily through a 6-cent-per-gallon added federal tax on diesel fuels and higher state registration fees based on truck weight. A few states, such as **Oregon** and **New York,** impose a fee based on the weight of the vehicle and the distance traveled in the state, in an effort to tie fees more closely to actual costs imposed on the system. The federal heavy vehicle use tax was last increased in 1984.[22]

Increasing truck fees to align them more closely with the costs to the system has two general benefits: (1) it raises revenues, and (2) where private rail service is competitive, it can move some heavy truck traffic off the highway system to private rail, thus reducing congestion and the costs of highway and bridge reconstruction and maintenance. However, imposing these fees through gas and excise taxes, on a variable basis by truck weight and size, requires finely tuned implementation, and cost allocation studies are routinely challenged by whichever interest is assigned the largest share of the costs. As discussed below, tolls may have some advantages over taxes in raising revenues and allocating the costs of heavy-truck traffic.

2. Gas taxes. The average state gas tax is 20.9 cents, in addition to a federal gas tax of 18.4 cents on gasoline and 24.4 cents on diesel fuel. Gas taxes and vehicle taxes are the source of about 75 percent of state highway expenditures.[23] They are funded by users, are inexpensive to administer, and have provided steady and predictable revenues for building and operating both highway and transit systems. However, gas taxes can be unpopular, particularly in rural states where trips are long and transportation options, other than driving, are few. Other problems with gas taxes as the dominant form of state transportation finance include the following:

- Unreliability. As energy prices increase, so will fuel efficiency, thus reducing the long-term reliability of gas taxes as a revenue stream. Because some states bond against future gas tax revenues to capitalize new projects, bond ratings could slip if gas taxes are the only source of funding for debt service payments.

- Variance between price and cost. Taxing fuel consumption rather than highway use disconnects price from the actual cost of providing the system capacity used. Rather than charging the user for the actual use of the highway, the user is being charged for consuming fuel, which does not directly correlate to highway use or capacity. This leads to inefficient use of the system, driving up the cost of system management. An alternative fee structure that addresses this concern is “mileage-based pricing,” which charges users based on the use of the vehicle (vehicle miles traveled) instead of the use of a road or the amount of gasoline consumed. This approach is discussed in more detail in section B.

- Lack of flexibility. Many states restrict the transportation uses to which state gas taxes can be applied. This can complicate the project funding process when both restricted and permissible uses are proposed as part of a single project.[24]

Despite these problems, the gasoline tax remains the cornerstone of state transportation financing. In attempts to retain the buying power of gas taxes, several states have secured legislative or voter approval of variable gasoline tax rates, also known as "gas tax indexing." Methods of indexing vary, but most are based on the consumer price index (CPI) or the FHWA highway construction cost index. **Florida, Nebraska, New York, North Carolina,** and **Wisconsin** varied their rates often between 1998 and 2004 based on one or the other of these indexes. In addition to maintaining the buying power of gasoline taxes, indexing avoids the need to secure repeated legislative approval to adjust the rate.

States have also experimented with a gas tax that varies with the price of gasoline, rather than the CPI, either a sales tax or an ad valorem tax. Ad valorem taxes as the primary method of calculating gas tax revenues can be unpredictable, as gasoline prices are subject to spikes and troughs. **California** imposes both a sales tax and a gallonage tax, while other states have found stability and predictability by simply indexing to the CPI. In addition to the five states listed above, **Iowa** (variable based on ethanol blend formula)**, Kentucky** (two-part variable rate based on average wholesale price of gas)**, Maine** (indexed to inflation), and **West Virginia** (motor fuel tax is not variable, but consumer sales and service tax imposed on sales of gasoline or special fuels is variable and determined by the state tax commissioner) have variable rate, cents-per-gallon gasoline taxes.[25] In addition to California, states that impose a **sales tax on gasoline** include **Georgia, Hawaii, Illinois, Indiana, Michigan, New York,** and **West Virginia**.[26] It should be noted that receipts from sales taxes on gasoline are not necessarily dedicated to transportation uses.

3. Vehicle and passenger taxes and fees. Although most state and local user fee revenues are in the form of fuel taxes, thirteen states, including **California, Illinois, Michigan, New Jersey,** and **Texas,** collected more in registration and license fees than in state fuel taxes in 2004.[27] A number of states are applying higher fees to specific categories of highway user groups such as heavy trucks, first-time car registrations, or car rentals. Other types of special fees are being applied to nonhighway transportation facilities. Airports, for example, are imposing passenger facility charges and security charges to cover the costs of increased airport security. These actions represent state efforts to connect fees to a particular cost imposed on the system or to nonlocal users (as in the case of car rental surcharges). A variety of other taxes are applied to all sorts of transportation products and services, such as tire and battery fees and even bicycle registration fees. These taxes and fees are an additional, but minor, source of revenue.[28]

Despite the wide array of state excise taxes and fees on highway travel, these taxes and fees do not fully cover all public highway expenditures. In 2004 total highway user tax revenues, as defined by the Federal Highway Administration, totaled $106.8 billion, while total highway expenditures totaled $136.4 billion.[29] This is in sharp contrast to Europe, where highway user fees on average exceed highway spending by a ratio of 2 to 1, and in some countries 3 to 1.[30] Policymakers in Europe, which has few sources of oil, have chosen to use high gasoline taxes to control demand for oil as well as to fund alternative transportation services.

4. Sales taxes, property taxes, and general tax revenues. Although gas taxes are the mainstay of state transportation finance, states have supplemented this form of user fee with other taxes not directly tied to use of the transportation system. General revenues (including state income taxes and other nondedicated state tax receipts) presently fund 15 percent of state and local transit expenditures and 22 percent of state and local highway expenditures.[31] State and local sales taxes, sometimes imposed on gasoline sales along with the gas tax (called a "dual tax" system), represent 2 percent of state and 14 percent of local transit expenditures.[32] States that apply both a gas tax and a sales tax to gasoline include **California, Georgia, Hawaii, Illinois, Indiana, Michigan,** and **New York**.[33] Property taxes are almost exclusively collected at the local level and represent 25 percent of local highway expenditures.[34]

The shift from transportation funding based on the "user pays" principle to funding from general (nontransportation based) sources has created a policy dilemma for state leaders.[35] There is decreasing support for new user taxes because users are concerned about diversion of the proceeds to unrelated projects. There is also decreasing support among the general public for nonuser taxes for transportation (sales taxes, property taxes, general revenues, etc.) because they encroach on revenues needed for other public purposes. The result is a general decline in public support for tax-based financing of any sort for transportation.

B. Tolls and Road-Pricing Strategies

Despite the 1956 decision by the U.S. Congress to favor tax-based financing over tolling for construction of the federal-aid highway system, toll financing was never abandoned. Tolls are presently collected on roads, tunnels, or bridges in 33 states, mostly on the state highway systems. In 2002 there were 102 road and bridge authorities in the United States, generating annual receipts of $11 billion.[36] Since 1991 at least 167 new toll projects, representing 5,228 miles of potential tolled roadway, have moved into various stages of development. Of this amount 50 projects, representing 746 miles of new tollway, are open and another 25 projects representing 529 miles of tollway are under construction. **Texas** and **Florida** are among the leading states in building new tollways, with a combined 67 projects under way and 23 new projects in operation. Toll projects tend to be located in fast-growing states and represent more than 30 percent of new major highway mileage.[37]

In addition to tolls on state highways, in fifteen "value pricing" pilot states the federal government now allows states to impose tolls on Interstates, as well as on new express bus lanes (15 projects) and new High Occupancy Toll (HOT) lanes as part of the federal-aid system.[38] About 2,880 miles of the Interstate system, or 6 percent of total mileage, is now tolled.[39]

States have responded to the relaxation of prohibitions on tolls on the federal-aid system. Five states have opened new toll roads or lanes since 1990 (**California, Colorado, Minnesota, South Carolina,** and **Utah**), and a number of others are planning their first toll roads (including **Alabama, Arkansas, Missouri, North Carolina, Oregon,** and **Washington**).[40] Advances in electronic collection have greatly reduced the cost of collecting tolls, as well as the inconvenience to drivers of having to stop to pay them, thus making tolling more affordable while reducing public opposition. On the other hand, there are no widely accepted standards for electronic toll systems, raising concerns about interoperability across jurisdictions.

State experience with tolling can be divided into two primary categories: tolls on existing facilities and toll financing of new highway and bridge capacity.

1. Tolling existing facilities. Converting existing road space to tolled facilities can be difficult, as the public perceives this as charging for a service that now is free. Success in such efforts has been limited to conversion of High Occupancy Vehicle (HOV) lanes to High Occupancy Tolled (HOT) lanes because (1) high occupancy vehicles can continue to use the tolled lanes at no cost, (2) HOV lanes are generally not used to full capacity, and (3) the addition of HOT lanes provides toll payers with an added benefit (faster travel) without raising the cost to current users. **California** was the first state to successfully convert an HOV lane, on SR 91 in Riverside County, to HOT lane use. Municipalities that have successfully converted HOV lanes to HOT lanes include Minneapolis, **Minnesota** (I-394), San Diego, **California** (I-15), and Houston, **Texas** (Harris County Toll Roads). Use of toll revenues is decided locally, and San Diego, for example, has used the money to fund express bus service in the corridor.

Where HOV lanes are unavailable, HOT lanes are generally acceptable only if they are applied to an added lane, or when a new lane is added in addition to conversion of an existing free lane to HOT lane use. At least one state has had to cancel a plan to convert a free (non-HOV) lane to a HOT lane because of concern that such action favored wealthy drivers over those unable to pay the toll. To address this concern, a combination of one new lane and one converted HOT lane is now under consideration. Extensive public education is needed to overcome public concerns about equity, loss of a free good, and more travel lanes' generating more traffic. However, successful conversion of existing lanes to HOT lanes can generate new revenues and improve traffic flow—a double benefit. They may also attract private investors to the capitalization and/or management of HOT lane systems.[41]

At the regional level, **Washington** is studying the adoption of a comprehensive tolling scheme for the Puget Sound area, first through the conversion of HOV lanes to HOT lanes throughout the region, and eventually through the addition of HOT lanes and even more extensive tolling and pricing as the ability to build new capacity is constrained. Lessons learned so far from extensive public outreach include the need to assure that where appropriate, tolls are (1) imposed fairly and equitably throughout the system, (2) designed to optimize system performance, (3) designed to avoid diversion of traffic to other routes, and (4) retained in place to fund capital rehabilitation, maintenance and operations and to optimize use of the system.[42] San Francisco, **California,** is studying a similar plan to apply tolls on all vehicles entering the city center, also known as a "cordon fee," based on London's experience with such a program.

2. Tolling new capacity. Tolls were initially adopted to build and operate new highway facilities. **Oklahoma** established the Oklahoma Turnpike Authority in 1947 to build and operate a road between Oklahoma City and Tulsa (Turner Turnpike), and the system has gradually been expanded to own and operate 10 turnpikes statewide. Tolls are used to operate and maintain this road network and to retire the bonds issued to pay for the capital cost of building it. In addition, the motor fuel taxes generated from use of the system (about $60 million annually) are paid into the state highway trust fund and used to support the remainder of the state highway system.[43] The **New York Thruway**, as well as the **Massachusetts and New Jersey**

Turnpikes, were initially built by, and are still managed by, state turnpike authorities even though they have been incorporated into the Interstate Highway System.

More recently the Dulles Metrorail Project, along the Dulles Toll Road in **Northern Virginia**, the **Florida Turnpike Enterprise,** and the **Central Texas Turnpike Project (CTTP)** are examples of state initiatives that will use tolls to fund new highway and transit capacity.[44] The CTTP is by far the most ambitious, a $3.6 billion project that uses tolls and a variety of bonding and credit enhancement tools to fund a new system of multiuse corridors (road, transit, pipelines, broadband, etc.) across the state. The Dulles Metrorail Project, a new, 18-mile transit facility partly located within the Dulles Toll Road, will be funded in part by road toll revenues and is projected to be built in less than half the time, and at lower cost, than if it were built through traditional transit capital funding programs.

Whether tolling existing roads or using tolls to fund new capacity, states face three primary challenges: (1) opposition from those who view such tolls as double taxation (gasoline taxes and tolls), (2) regional equity concerns, especially when toll revenues in one part of a state are used to fund projects in another part of the state, and (3) practical difficulties such as obtaining authority to toll, managing diversion of traffic from tolled roads, and coordinating among jurisdictions.[45] In **Florida** (Florida Turnpike Enterprise), **Virginia** (Dulles Toll Road), and **Indiana** (Indiana Toll Road) the states have made commitments to recycle toll revenues, in whole or in part, back into the areas of the state where they are generated; and that has enhanced local support.

3. Road pricing. "Road pricing" refers to tolling schemes that have the specific purpose of rationing scarce road space by discouraging demand and encouraging competition in the use of transportation facilities and services. Road-pricing schemes are designed primarily to influence travel behavior, can vary by time of day and type of vehicle, and can change at set times or in real time in response to varying traffic conditions. They can be applied to certain types of vehicle lanes, such as truck-only toll lanes (TOT), or to certain shared-use lanes such as High Occupancy or Express Toll Lanes (HOT), where tolled vehicles share lanes with non-tolled high occupancy vehicles or express buses. They can be applied to single lanes, to entire road segments, or to entire road networks in certain central city areas (called "cordon pricing"). The roads on which such pricing schemes are applied are called "managed roads" or "managed lanes."[46]

Variable pricing has long been used in the water and power industries and is now finding wider application in transportation. In May 2006, U. S. Department of Transportation (USDOT) Secretary Norman Mineta announced a National Strategy to Reduce Congestion on America's Transportation Network, with a particular focus on highway, freight, and aviation congestion.[47] Road pricing is a central element of this strategy. The federal government has also proposed a special $100 million program to test a network (cordon) pricing initiative and is gradually opening up the federal-aid highway system generally to pricing solutions.[48] Congress has established a special study commission on transportation revenue policy to consider these various financing schemes; its final report is due in August 2007.

The importance of these new pricing initiatives extends significantly beyond the projects themselves. The initiatives provide a policy signal that a portion of the funding that will be needed to unclog the nation's roads

and deal with future congestion will come from tolling schemes approved and implemented at the state and local levels. The federal government role will be to prime the pump for these new schemes by funding pilot projects and research and helping the states secure access to private partners attracted by the revenue-generating potential of road pricing. However, the responsibility will be increasingly with the states to find the resources and generate the public support necessary to implement road-pricing strategies. The challenges to garnering public support for road pricing include the perceptions that a previously free asset now will cost the user and that in some instances keeping track of registered users may involve technology that raises privacy concerns.

States are already moving ahead on "congestion pricing"—charging users to drive in certain areas, and possibly at certain times. HOT lane projects that include congestion pricing elements include I-25 in Denver, **Colorado,** I-394 in Minneapolis, **Minnesota,** I-15 on San Diego, **California,** SR-91 in Orange County, **California**, and I-10 and US 20 in Houston, **Texas**. Variable tolls have also been adopted on existing tolled facilities such as New York City area water crossings, Lee County (**Florida**) bridges, and the **New Jersey** Turnpike. While no cordon area pricing scheme (charging users a fee to drive in a certain area, such as a city center) with a congestion management focus has been implemented in the United States (internationally, a number of large cities have implemented such programs), San Francisco, **California,** is conducting a feasibility study, and the Seattle, **Washington,** area is doing a comprehensive tolling study.[49] Cordon area pricing schemes can raise privacy issues (cameras photograph license plates to identify cars without transponders) and face other technological challenges, but there are some indications that the public may support such projects if they actually reduce congestion.

"Mileage-based pricing" is a form of road pricing in which the charge is based on use of the vehicle, not on the use of a particular road or the amount of gasoline consumed. In mileage-based pricing a global positioning system (GPS) receiver in a vehicle indicates where it is, how fast it is traveling, and miles driven. GPS systems used for traffic navigation can be adapted for this purpose. It allows for pricing for total system use, not simply use of specific road capacity. It does not require instrumentation of the road system itself, just the vehicle. One approach to determining how much tax a vehicle incurs is for mileage data to be wirelessly transmitted to the fuel pump when the vehicle is refueling. This scheme could supplement, but not replace, gas taxes.[50]

Mileage-based pricing is being tested in **Oregon** under the federal value-pricing program; about 200 vehicles in the Portland area have been equipped with GPS receivers to support this pricing scheme.[51] It has raised privacy concerns because of the potential for abuse of the tracking technology, and there are environmental concerns that mileage-based fees would remove the incentive to buy fuel-efficient cars. Mileage-based pricing has some support as an alternative to bonding against state gas tax revenues, which may decline because of increased fuel efficiency and movement to alternative fuels. Bonding against mileage-based revenue streams may be more reliable than bonding against future gas tax receipts, thus improving bond ratings and reducing the cost of capital.[52]

C. Debt Financing

Because of the challenges associated with raising gasoline and vehicle taxes and fees and continued public skepticism about tolls, there is renewed interest in borrowing, otherwise known as "debt financing." Debt financing was a favored way for building new roads in the pre-Interstate era. State legislatures set up quasi-governmental organizations called "revenue bond authorities" or "special district authorities" to provide a single transportation service to a particular area. They received government authority to take land by eminent domain, to assess tolls, and to obtain funds by offering bonds on the private bond market, with principal and interest paid from toll receipts. Over 100 such toll road and bridge authorities now manage 4,600 miles of roadway and 308 bridges and raise more than $11 billion annually.[53]

The Eisenhower Administration initially recommended that the Interstate system be financed through bonds backed by tolls, but Congress rejected the recommendation in favor of a tax-based financing structure.[54] Under this approach fuel and vehicle taxes are collected as the system is built, so no borrowing is required (called "pay as you go"). It saves the cost of paying interest on debt and was considered a responsible and cost-efficient approach to transportation finance.

Borrowing or debt financing is again being used widely for two primary reasons: (1) needs outstripped the revenue that fuel taxes alone can generate, and (2) the pay-as-you-go system stretches construction over several years, as funding is available, increasing total project costs. Borrowing can capitalize projects up front, accelerate construction, and reduce total project costs. The many new financial tools in support of borrowing are too complex to discuss in detail here, but a general description of the programs and how states have taken advantage of them follows:

1. State credit assistance. Rather than use federal transportation funds only to pay for project costs, states can now use a portion of that money to capitalize **state infrastructure banks (SIBs),** which then loan funds to projects with dedicated revenue streams at lower cost than private capital markets. To date, 33 states have entered into more than $5 billion in loan agreements under this program, with **South Carolina** ($2.6 billion in loans) and **Florida** ($867 million in loans) being the state leaders.[55]

2. Federal credit assistance. In 1998 the U.S. Congress took the SIB idea to the federal level by enacting the **Transportation Infrastructure Finance and Innovation (TIFIA)** program. TIFIA provides direct federal loans, loan guarantees, and lines of credit to projects of regional or national significance, often by providing subordinated debt that reduces the risk (and the interest rate) on senior debt. Since 1999 TIFIA has provided more than $3.6 billion in credit assistance to projects representing more than $16 billion in infrastructure investment, at an initial cost to the federal government of less than $200 million. States have tapped this federal program to help finance such projects as the Central Texas Turnpike Project (CTTP); the Miami, Florida, Inter-modal Center (MIC); and State Route 125 in San Diego, **California**.

3. GARVEE bonds. The **Grant Anticipation Revenue Vehicle (GARVEE)** is a debt financing instrument that allows states to issue debt backed not by tolls but by future federal gas tax

apportionments. This allows states and their political subdivisions or public authorities to incur debt through a variety of instruments (bonds, leases, mortgages, etc.) and to reserve a portion of future federal-aid highway funds to service the debt. Through 2005 more than $4.8 billion in GARVEE debt has been issued by 14 states, **Puerto Rico,** and the **Virgin Islands,** with leading GARVEE states being **California** ($615 million), **Arkansas** ($575 million), and **Ohio** ($339 million).[56]

4. Section 129 (a) loans. Under Section 129(a) of Title 23 of the U.S. Code, states are authorized to loan some of their federal-aid funding, which would otherwise be used to directly fund federal-aid projects, to projects that generate tolls or some other dedicated revenue stream. The states must receive a pledge that the project sponsor (usually a political subdivision or local government) will use toll revenues to repay the loan.[57]

5. Private activity bonds (PAB). SAFETEA-LU contains a new financing tool that allows private participation in tax-exempt facility bonds, while still maintaining the tax exempt status of the bonds.[58] The law authorizes $15 billion in exempt facility bonds for qualified highway or surface freight facilities, giving private partners access to this low-cost method of financing projects that serve a public transportation purpose. The effect of these bond revenues is yet to be determined since none have been issued to date.

A significant shared characteristic of these enhanced debt financing tools is their purpose, which is to attract more private capital into transportation finance. These tools signal a possible shift in the nature of the federal-state financing partnership. In the future the federal government may make it easier for states to tap private capital markets not only through borrowing but by opening up the federal-aid system to tolls and allowing long-term asset leases of the federal-aid system itself (see below for a broader discussion of these partnerships). It is important to note that, although debt financing can reduce total project costs by accelerating construction, the debt must be repaid, with interest. While the federal government now strongly encourages states to tap private markets for needed transportation revenues, the resulting debt service will be a state obligation.[59]

D. Asset Leases

Asset leases are a type of public-private partnership (PPP) in which private investors assume some (or all) management control over a transportation facility in return for an equity interest in the revenues it generates or a negotiated payment based on performance or capacity availability. This type of arrangement is well accepted in the airline industry, where private companies often manage airports, and among port authorities, as private companies often manage port operations, but it has rarely been used in the United States to manage tolled highway corridors.

Asset leases are different from arrangements in which private partners help transportation agencies access private capital markets or help them design and build facilities. In asset leases, the private partner takes control of a tolled highway or a bridge and manages it for cash, a portion or all of which it retains, depending on lease terms. Public policy issues must be addressed in the lease itself (called a "concession agreement") and can involve everything from how often and to what extent tolls can be raised, to how often the highway must be policed for dead animals. In addition, PPPs that involve a federal or federally assisted project are subject to federal law.[60] Public agencies that own tolled highways will ultimately decide how to use the capabilities the private sector offers based on the public benefits of entering into asset leases and the urgency of their current financial condition.[61]

Highlight: Indiana Toll Road

In June 2006 Indiana entered into a 75-year lease agreement with the Indiana Toll Road Concession Company (ITRCC) to lease the Indiana Toll Road for $3.8 billion. ITRCC will manage and operate the Toll Road according to the agreement. Through Governor Mitch Daniels's Major Moves Program, Indiana is using the revenues from the lease to fund new construction, resurfacing, and preservation projects across the state. The seven counties along the Toll Road are also receiving record amounts of funds through the lease. The counties will have discretion to spend the funds on projects such as construction of roads, bridges, and highways, and economic development projects.

A key policy issue with asset leases involves "non-compete" provisions. These are lease terms by which the public agency agrees not to build a road of similar capacity within a certain distance of the leased road. Non-compete agreements are prohibited in leases involving the federal-aid system. In one instance, a state authority that negotiated a "design-build-operate" lease on an HOT lane project had to buy back the lease as a result of equity concerns related to the non-compete agreement.[62] The state of **Indiana** recently negotiated a 75-year lease of the Indiana Toll Road to a private consortium, which includes an agreement by the state not to construct more than 20 contiguous miles of an interstate-quality facility within 10 miles of the Indiana Toll Road. In this case, Indiana had no plans in its long-range transportation outlook that would call for such a facility. Maintenance and expansion of existing facilities are not prohibited by the non-compete clause. In addition, the Indiana Toll Road Concession Company that will manage and operate the Indiana Toll Road is mandated by the lease agreement to take steps to relieve congestion (such as adding more lanes) when state congestion standards require such actions. This makes construction of any parallel, competing road unnecessary.

Asset leases represent a revenue option for state owners of public infrastructure that is, or could be, tolled. As noted above, the net asset value of our existing, built public highway and bridge infrastructure nationwide is more than $2 trillion. Because it was built on a pay-as-you-go basis it is largely debt free. Two recent asset leases, a municipally owned toll road (the Chicago Skyway) and a state-owned tollway (the Indiana Toll Road), raised $1.8 billion (99-year lease) and $3.8 billion (75-year lease) respectively in up-front lease payments. An independent analysis of the net present value of the Indiana Toll Road was $1.92 billion. The state received roughly double that figure in a lump sum payment. The potential therefore exists that the nationwide system is worth significantly more than the estimated $2 trillion.

The possibility of bringing in such large revenues from lease payments has galvanized state interest in asset leasing deals. These deals can be negotiated to provide sizable up-front capital, which can be used to fund new projects. Yet in some cases it may be of more strategic value for states to adopt scaled leasing plans that balance the need for up-front revenues with other policy objectives necessary to achieve political support for the lease.

There are a number of considerations for states as they consider asset leases, including (1) length of lease, (2) retained control over operations, (3) control over tolling policy (exempt users, timing and method of calculating toll increases, or rate of return), (4) allocation of toll revenues between the owner and the lessee, (5) uses to which toll revenues will be put (roads and bridges, all transportation uses, general revenue needs, etc.), (6) geographic allocation of revenues (in the corridor where they are generated, statewide, or some other allocation), (7) equity issues, (8) environmental compliance, (9) stakeholder engagement, (10) dual-use issues (rail, pipelines, broadband, etc.), (11) cross-corridor access (pedestrian bridges, tunnels, bridges, etc.), and (12) general public policies concerning stewardship of public assets. States that enter into asset lease agreements may face challenges relating to these considerations, such as public concern over toll pricing, private management of the asset, and distribution of the revenues.

There may be public concern that revenues generated from an asset in one geographic region will be used to fund projects elsewhere in the state or that revenues generated from an asset may be used to fund unrelated projects that do not directly benefit the users. In **Indiana**, roughly 66 percent of all toll revenue on the Indiana Toll Road came from out-of-state traffic. Following the lease of the facility, the state agreed to spend a corresponding 66 percent of the lease revenue on projects statewide, while the remaining 34 percent was allocated to the seven counties that the Indiana Toll Road traverses. These policy issues are presently decided within the four corners of individual concession agreements, but states such as Indiana are beginning to establish new institutional policy frameworks to guide such agreements on a more programmatic basis.

As states address policy considerations in asset leases, one strategy for balancing public and private interests is the idea of creating high-performance corridors through enforceable performance agreements between public and private partners. Under such agreements the priority management focus would be on improving operational efficiency through such strategies as improved transit and vanpool service, rush-hour shoulder lanes, ramp metering, and peak-hour congestion charges. Only after implementing all available and cost-effective operational improvements would new physical capacity be built. The private manager ("concessionaire") would be paid an agreed percentage of toll revenues, with bonus payments (perhaps coming from variable peak-hour tolls) earned through meeting specific performance goals such as total system throughput, congestion levels within agreed-upon limits, environmental compliance, and so forth. Under such arrangements the public partner would be the steward of public benefits to be derived from the leased facility, while the private partner would maximize return on investment through achievement of these public benefits.[63]

E. Strategies to Shift Funding Responsibilities to Regional and Local Governments

Shifting transportation funding responsibilities to regional and local governments is a growing trend in transportation finance.[64] As the federal-state partnership in transportation finance enters a period of transition, localities are increasingly funding transportation projects through tax revenues and ballot measures. From 1995 to 1999, state transportation user taxes increased 18 percent, while local funding for transportation through property taxes increased 22 percent, through local general funds 28.6 percent, and through local sales and other taxes 57.7 percent.[65] Since 2000 this trend has accelerated, with successful regional and local transportation ballot measures in 33 states authorizing more than $70 billion in new taxes for transportation project funding.[66]

There are concerns that using local government revenues for transportation finance could siphon money needed for schools, libraries, police, fire and rescue, and other essential local public services. Additionally, there are concerns that local governments are servicing nonlocal travel, and in that sense a statewide taxing system could be considered more efficient and equitable than asking each locality to raise its own transportation revenues. As a counterpoint, local financing has the benefit of attaching specific fees to specific transportation projects and services, allowing taxpayers to see more clearly their taxes at work rather than sending gas taxes to the state, where the benefits may be more diffuse. In addition, local land use decisions often generate traffic that is then exported onto the state system, increasing the logic of assigning the financing of expansions to accommodate this new traffic to local jurisdictions as well.[67] A number of states are shifting responsibility for capital funding of new projects to the regional and local levels, while state taxes pay more of the costs of maintaining and operating the system.[68]

Governors and state legislators have responded to local tax equity concerns by tying local taxes to specific local benefits, while increasing taxes on nonlocal taxpayers. **Florida** has imposed a $2 surcharge on rental cars to support local projects, and **Virginia** is considering a 5 percent hotel surcharge in Northern Virginia, as well as increased car rental fees, to support regional transportation improvements.[69] **Indiana** has measured local use of the Indiana Toll Road and is allocating an equal amount of the $3.8 billion in state revenues from the lease for road and bridge improvements in the seven counties where the toll road is located. **Virginia** is also financing a new transit extension to Dulles International Airport by accepting an airport authority offer to finance a large portion of the nonfederal costs of the extension through toll increases on the Dulles Toll Road, which it owns and operates. While the shift from state to local financing of transportation improvements may impose a burden on local governments, states have created financial structures that facilitate local revenue generation while also assuring that revenues generated within substate regions remain in that region.

Local governments also rely directly on the private sector in highway and transit finance. Local governments often require developers to provide (or pay for) the transportation infrastructure needed to directly serve their developments, as well as pay for part of the cost that traffic generated by development imposes on the broader transportation network. These special assessments may be called “impact fees,” “offsets,” or “exactions” and may be passed on through the creation of special assessment districts with the power to tax end-users (homeowners and commercial businesses) for the costs. It is estimated that residential developers

pay about $5 billion annually to construct almost 12,000 lane-miles of roads and that commercial developers pay another $7 billion annually, accounting for another 11,000 lane-miles.[70] **New Jersey** is beginning to structure state, local, and private partnerships on state road projects through municipalities, in which the state funds a "right-sized" or context-sensitive improvement of the state road segment while street connectivity improvements that serve both local and regional needs are financed locally or by private developers. Such options leverage limited state funds on projects that serve both local and regional transportation needs.[71] Relying on developers to fund transportation projects does not necessarily meet all needs in a region, however, and it is more a piecemeal approach than a comprehensive strategy. The approach might leave underserved regions that are not as attractive to developers without the resources to fund necessary projects.

State and local governments are now also beginning to fund transit capital improvements through **tax increment financing** (TIF) programs that supplement or even replace state dedicated transit funding. TIF is a program that captures a portion of the increase in taxes (usually sales or property taxes) that a public infrastructure improvement generates to pay for part of the cost of that improvement. In the case of transit, for example, bonds are issued backed by the TIF to build the transit improvement itself—usually a transit station or new fixed-rail service. Transit TIFs are an indication of how the economics of transit have turned around: States previously created transit incentive districts that provided tax waivers for building multiuse housing and other developments close to transit. New York City, **New York**, Portland, **Oregon,** and Seattle, **Washington,** have established TIF programs for transit improvements, and the state of **New Hampshire**, in cooperation with the City of Nashua, is considering the creation of a TIF program to help finance the extension of commuter rail to Nashua from Lowell, **Massachusetts**. As the economic value of transit-oriented development continues to improve, the financing of transit capital improvements through such value-capture tax programs may become increasingly popular.[72]

F. Strategies to Reduce Growth in Travel Demand

An increasing number of states, especially states experiencing high levels of traffic congestion, are looking at strategies to reduce growth in travel demand as an alternative to financing new construction. Strategies to reduce funding needs by reducing traffic demand include (1) coordinating transportation and land development to promote growth patterns that minimize growth in new traffic demand, (2) improving trip choices to avoid congested highways, (3) encouraging shorter trips, including bicycle and pedestrian trips, (4) providing financial incentives to use alternative modes of travel, and (5) improved access management to divert traffic from congested highway corridors. The benefit to transportation finance reform from such demand-side approaches is twofold: (1) less need for financing new road capacity, and (2) more options for financing the transportation system from sources other than fuel and vehicle taxes. In addition, when there are more trip choices public resistance to tolls is reduced, as options for avoiding the tolls increase.[73] Following are some state demand-side strategies to improve transportation finance:

Improve coordination between transportation infrastructure and land use planning. One approach to managing growth in transportation needs is to improve coordination between land use planning and transportation infrastructure, so that states can direct growth to areas that have the necessary capacity. This

approach can limit the need for additional transportation funding and helps states to maximize the effectiveness of their transportation investments.

New Jersey has launched a New Jersey Future in Transportation (NJFIT) initiative to link project finance to smart growth planning. Under this program **New Jersey** is focusing its capital investments in communities where sound land use planning will preserve the state's investment in new capacity. It is also funding more planning, as well as a broader array of investments in local improvements in system connectivity to avoid funneling trips onto the state road system. On occasion it has helped municipalities draft redevelopment plans that minimize traffic generation. The stated goal of the NJFIT initiative is to help New Jersey's Department of Transportation succeed in its mission to provide more and better traveling options for both passenger and freight movement throughout New Jersey.[74]

Virginia has also tackled land use as part of a strategy to address a shortfall in transportation funding. The state enacted legislation in 2006 granting local governments more power to manage growth, to require traffic studies, and to coordinate land use with transportation planning. In a first application of this new law Virginia DOT conducted a traffic analysis of a proposal to develop 30,000 new homes in a relatively undeveloped region of Loudoun County, one of the fastest growing counties in America. The study concluded that the proposed development would result in hours of daily gridlock on several major roads, stimulating local debate over the project. Governor Tim Kaine has announced that VDOT will become increasingly involved in measuring the traffic impact of large-scale land development projects before they are built.[75]

California has taken a more regional approach to transportation and land use planning. Rather than conduct land use analyses at the state level, in 1997 California decided to distribute 75 percent of the state's transportation funding to its metropolitan planning organizations (MPOs) to better coordinate transportation and land use decisions.[76] The MPOs have used the funds in part to aggressively promote land use planning that reduces highway travel demand. Examples include the "Compass Two Percent" program, under which the Southern California Association of Governments provides grant funds to localities to guide and promote mixed use developments along transit corridors and within urban areas. In the San Francisco Bay Area, the Metropolitan Transportation Commission adopted standards for minimum levels of housing development around transit stations along new transit corridors as a condition of transit funding. These minimum-level-of-development standards, which vary from 750 housing units for ferry station improvements to 3,850 housing units around stations for heavy rail (BART) extensions, are estimated to add 42,000 new housing units near transit stations and increase transit ridership by 59 percent by 2030.[77]

Massachusetts drafted a new project development manual that focuses on reducing the footprint, and cost, of new projects. It has also combined several state capital assistance programs for housing, transportation, and public works into a Commonwealth Capital Fund that allocates funding to localities based in part on how effectively land use plans protect the state investment in the projects. **Pennsylvania** undertook a program to right-size its capital program in the context of local land uses, resulting in the shelving of $5 billion in transportation projects. By right-sizing construction of Route 202 between Montgomeryville and Doylestown from four lanes to two lanes, plus local road connectivity improvements, PennDOT was able to reduce project costs from $450 million to $200 million.[78] **New Hampshire** turned over development of its Long-

Range Transportation Plan to a citizen commission chaired by a community foundation, which concluded that "by improving land use planning…we can make better use of our existing highway system and reduce project costs."[79] **Utah, Minnesota, Kentucky, Maryland, Florida, Washington, New York, New Jersey,** and **New Hampshir**e have also developed context-sensitive solutions (CSS) initiatives to build projects faster, better, and cheaper while meeting transportation needs.[80]

Use transit and other modes of transportation to reduce vehicle miles traveled. Municipalities with robust rail, transit, bus, ferry, and bicycle/pedestrian networks are taking advantage of a new federal tax benefit to encourage commuters to shift from road travel to alternative modes. The Internal Revenue Code allows up to $100 per month ($1,200 annually) in pretax deductions to employees enrolled in qualified "commuter choice" programs. These programs allow employers to buy transit vouchers of up to $100 per month for their employees on a pretax basis, thus removing such expenditures from payroll taxes.[81] Some states are leveraging this federal program to further stimulate transit ridership by adding a state tax benefit as well. **Maryland** provides a 50 percent monthly credit against state income taxes ($50 per month maximum) for employers who offer a qualified commuter choice program.[82] These federal and state, tax-based incentives help finance transit service by increasing fare revenues from increased ridership, while reducing highway costs by shifting trips off the road system.

Leverage transit block grants to increase transit capacity. To facilitate the purchase of capital equipment and lower purchase costs for transit, states can use debt financing backed by the future receipt of federal transit block grants. **New Jersey** Transit and nine **California** transit systems (including Los Angeles County Metropolitan Transportation Authority) have issued debt instruments backed by future federal transit block grants to lease or purchase buses.

Highlight: Procurement Tools

While states pursue new strategies to reduce the growth of travel demand and fund transportation expenditures, they are also using new procurement tools to reduce the costs of transportation projects. Through agreements between state departments of transportation and private partners, states can collapse several stages of the project development process into one contract including design-build (DB), design-build-operate (DBO), and design-build-operate-maintain (DBOM) provisions. These new tools, unlike traditional contracts, do not require separate bidding processes and separate contracts for every stage of the design-and-build process. **New Jerse**y has used DB contracts to collapse the redecking of Route 1 in Trenton, reducing project time by 22 months and costs by $2.25 million. DB was successfully used to reconstruct I-15 in **Utah** in four years rather than six (in time for the 2002 Olympics) and to rebuild I-10 in **Louisiana** following Hurricane Katrina. Special state legislation is required to authorize and regulate the use of these procurement tools. For example, **Massachusetts** enacted legislation in 1999 authorizing a design-build-finance-operate (DBFO) model to reconstruct Route 3 North. The state set up a nonprofit organization to manage the bond financing of the project, building it, and then leasing it back to the state. As of 2005 at least 32 states have procedures in place to facilitate such procurement contracts. Federal law now permits all federal-aid highway construction projects to use DB contracting. These procurement public-private partnerships can accelerate project construction and allow governments to share financing responsibilities and risk.

This is similar to the use of GARVEE bonds on the highway side, in which state highway bonds are backed by federal gas tax receipts. It allows transit agencies to accelerate the purchase of capital equipment and lowers purchase costs, while providing the network with more travel choices.[83] Whereas these programs are a supply-side approach to transit capacity, they are a demand-side approach to highway travel, in that they extend transit coverage, provide more trip choices, and shift travel off congested highway routes.

Provide funding and incentives for transit-oriented development. States and transit agencies (and states that run transit agencies) are now managing land they own around transit stations for mixed-use development, especially in congested urban locations. **Massachusetts** has established a transit-oriented development bond program that provides financial assistance for pedestrian improvements, bicycle facilities, housing projects, and parking within a quarter-mile of transit, as well as a $10 million grant program to finance affordable housing within the same areas.[84] In **California**, the Metropolitan Transportation Commission, in the San Francisco Bay area, has established a Housing Incentive Program that makes incentive grants to local governments that locate affordable housing near transit.[85] **New Jersey** provides special smart growth grants to transit-friendly villages that have adopted a land use strategy for achieving compact, transit-supportive, mixed-use development within walking distance of transit.[86] By providing incentives for affordable housing and mixed-use development around transit stations, states are able to leverage public housing dollars and private investment to boost transit ridership while taking trips off the road network.

Encourage partnerships with passenger rail and freight rail. States can work to create partnerships with passenger rail and freight rail to provide additional passenger rail capacity and improve the cost-effectiveness of both types of service. Since 1990, **California** has issued state general revenue bonds for the purpose of financing private passenger and freight rail. By supporting passenger rail on private rail corridors it has improved the efficiency and cost-effectiveness of both passenger and freight rail service. Bond revenues have helped to fund improvements on the BNSF San Joaquin Valley Line, the double-tracking of the Union Pacific corridor west of Sacramento, and the Los Angeles Metro link system. Bond funds also supported the Alameda Corridor Project, a $2.4 billion expenditure on 20 miles of new track from the Ports of Los Angeles and Long Beach, though Los Angeles, to the BNSF and UP yards in the east of the city. This public-private rail partnership established the Alameda Corridor Transportation Authority, which issued bonds to be retired through railroad user fees over 30 years. Public agencies and authorities also contributed over $900 million in grants.[87]

Improve flexibility in state transportation finance. Almost all states are facing large gaps in highway funding, but some are responding by funding alternative transportation modes as a more strategic and cost-effective means of relieving traffic congestion. These efforts, however, can be subject to legal restrictions on how state gasoline tax receipts can be spent, and states should examine their own gasoline tax spending restrictions when considering these options. A number of states have constitutional restrictions limiting use to public highway purposes. Some have similar statutory restrictions on use of gasoline tax receipts. These limitations can prevent states from using gasoline tax revenues for transit and alternative modes. Many other states allow gasoline tax receipts to support general transportation purposes.[88] Most federal transportation assistance is flexible funding that can be spent on alternative modes.

States vary widely in the amount of federal flexible funding they spend on alternative (nonhighway) modes. **New York** has taken greatest advantage of this flexibility by allocating over 54 percent of its flexible federal funding to alternative modes in the period 1992–1999.[89] Reforming state transportation finance structures to make them more flexible does not increase total transportation revenues, but it does promote more effective investment in the system by allowing financial resources to be applied where they do the most good.

Conclusion

State leaders face a daunting challenge: the need to address a growing crisis in transportation finance caused in part by federal and state financing structures that do not allow the system to be effectively managed. Many of the deficiencies are now being recognized and addressed by Congress, states, and transportation policy leaders. However, the burden of implementing these finance reforms falls squarely on the states.

Congress has opened up the uses to which transportation funds can be put and has eased restrictions on pricing the federal-aid system based on market principles, but the public is largely unaware of the need for, and the benefits derived from, such reforms. Since new revenue generation is a fundamental goal of transportation finance, the lack of public awareness of the funding crisis and the need for reform heightens the difficulty of convincing the public to pay more for the transportation services they use.

Success in securing public support for new transportation revenues appears to rest on a two-part strategy: (1) a long-term program of study, public education, and demonstration projects, with (2) a short-term program maximizing all available opportunities to invest in low-cost, high-return system improvements that will increase the likelihood of securing public support for broader actions in the future. Such investments will place a high priority on achieving demonstrable improvements in total system performance. Where tolling or road-pricing strategies are proposed, dedicating at least part of the resulting revenues to expand travel choices in the immediate geographic area of the tolled facility is likely to increase public acceptance.

Actions for states to consider in expanding the diversity, reliability, size, and effectiveness of their transportation finance structures include these:

- Review how well present state transportation finance policy (the sources and uses of transportation funding across all modes) supports total system performance, including whether the state uses price signals to promote efficient use of existing system capacity.

- Engage regional and local partners in discussions on how to tie financing proposals to specific performance goals for the system, including a system for holding agencies accountable for outcomes.

- Consider the use of tolling, road pricing, and asset leases to raise revenues, while also addressing the risks of such financing mechanisms. Engage the public in the development of such policy to build support.

- Establish institutional frameworks that provide oversight of the use of market-based financing tools, with a particular emphasis on the uses to which revenues from tolls and asset leases will be put.

- Consider strategies for increasing flexibility in transportation finance, including a review of the continued utility of statutory and constitutional restrictions on the uses to which state gasoline and vehicle excise taxes can be put.

- Review planning and project development processes to identify ways to build projects faster, better, and cheaper and to embrace public-private partnerships in financing, project development, construction and management.

- Review state transportation capital transportation investment programs to better align them with overall state economic development and environmental policies.

- Consider cross-agency and cross-jurisdictional initiatives to increase trip choices, reduce trips on the most overburdened segments of the system, and coordinate transportation and land development decisions for mutually supportive outcomes.

State and federal reliance on gas and vehicle excise taxes will remain the foundation of transportation finance for at least a decade. However, state and local partnerships with both supply-side (new priced capacity) and demand-side (shorter trips, more trip choices, transportation coordination with land use, etc.) elements appear to hold promise for achieving public support for a broader array of transportation financing options.

Appendix A

I. Background and Context of Transportation Finance

The modern era of transportation finance is marked by the enactment of the Federal-Aid Highway Act of 1956. This law authorized the construction of a 41,000-mile Interstate Highway System and improvement of related federal-aid roads. It also approved an excise tax of 4 cents per gallon of gasoline to pay for the system. The year 2006 is the 50th anniversary of this law. The Interstate system is now over 46,800 miles in length, and the total federal-aid system includes another 115,319 miles of National Highway System (NHS) roads (primary roads, connectors, and major urban arterial highways). This represents about 4 percent of the total of 3,997,461 miles of public roads nationwide.[90] The federal gas tax, which largely funds the federal transportation assistance program, is now 18.4 cents a gallon (24.4 cents for diesel), with about 18 percent of federal gas tax revenues allocated to funding transit systems as well as highways. State gas taxes, which also support this system, average 20.9 cents a gallon and vary from 6 cents to 49 cents.[91]

Responsibility for financing the construction, operation, and maintenance of our national transportation network is distributed among federal, state, and local levels and now extends beyond funding for transit and highways. At every level of government, the entire system (airports, highways, transit, passenger rail, ports, ferries, local roads and streets, and bicycle and pedestrian facilities) is generally financed on the principle that the user pays. User fees are assessed through (among other things) gas and excise taxes (which account for about 60 percent of total dedicated transportation revenues), passenger and facility fees, tolls, and vehicle fees such as license and registration fees. However, a significant amount of transit costs and about 20 percent of highway expenditures are funded from non-user sources such as property taxes, sales taxes, and general revenues. Intercity passenger rail (Amtrak) is funded from passenger fees supplemented by federal assistance of about $1 billion annually, from general revenues not the highway trust fund.

States and localities account for about 75 percent of all public transportation expenditures, with funding largely derived from gas and vehicle excise taxes at the state level, and sales, property, and general tax revenues at the local level (although sales taxes may be applied both statewide and at local option and may also apply to sales of gasoline). Over the last 50 years this system of tax-based revenue generation has been the means to finance the construction and expansion of the nation's federal-aid highway program (including the Interstate system), as well as state and local road, street, and transit systems.[92]

II. Transportation Expenditures: A Short Tutorial

A. Highways, Roads, Streets and Walkways/Bikeways

Highway spending dominates transportation finance.[93] Governments at all levels (federal, state, local) raised $106.8 billion in highway user fees and spent $136.4 billion to build and operate highways in 2004.[94] Highways represent the major portion of state transportation spending; 60 percent of all highway spending and 72 percent of all capital highway spending are by the states.[95] Highways accounted for 9 percent of state and 4 percent of local government direct expenditures in 2003.[96]

Highway and vehicles user fees (gas taxes and vehicle taxes and fees) are collected, deposited in federal and state transportation trust funds, and distributed at all levels of government in accordance with their respective roles and interests in different elements of the transportation system. However, the various road systems are so geographically intertwined, and governmental interests so redundant, that overall collection and distribution can best be described as random.[97] In addition, the user fee system is managed more for the purpose of raising revenue than for promoting efficient use. Access to most of the highway system is free to all users (no tolls), with congestion being the primary regulator of use. Virtually all modes are subsidized, with larger subsidies allocated to modes perceived as providing greater public benefits. Despite these shortcomings, the principle of "user pays" is generally considered fair, and issues that arise tend to concern (1) how to keep revenues from transportation fees and taxes focused exclusively on transportation uses (generally defined) and (2) whether each mode of travel should have priority access to revenues generated from its own particular users.

B. Transit

State support for transit represents about 18 percent of total annual transit expenditures of $41.3 billion. It is derived from general revenues (7 percent), dedicated statewide sales tax revenues (2 percent), and other sources such as gas taxes, registration, title, and license fees, and bond proceeds (9 percent).[98] Total state support for transit was $9.5 billion in 2005, more than the $7.4 billion in federal transit support in that year.[99] Of the state support, about 70 percent ($6.65 billion) was for operations and 30 percent ($2.85 billion) was capital support. Only four states provided no state support for transit in 2005.

In general, for both highways and transit the federal role has been primarily to fund the major share of capital costs for highways of importance to interstate commerce (including the Interstate Highway System), transit capital costs, commercial airport safety and traffic control, and some passenger rail (Amtrak) and port facilities. States are generally responsible for both capitalization and maintenance of the state highway system (which varies from 10 percent to 60 percent of the entire road system, depending on the state), some transit and commuter rail (except where the transit system is a state agency), and some ports and airports. Other airports, ports, ferries, and public transit and rail terminals are generally run by regional or municipal agencies. Toll roads and bridges can be owned and managed at any level of government (state, regional, local, or independent authority). Local road and street construction and facilities for nonmotorized vehicles (sidewalks, bicycle routes), are usually a local responsibility.

Although transportation finance is a responsibility distributed among all levels of government, it is possible that with the completion of the major highway construction programs of the last half of the twentieth century, the federal role in financing new capital construction will level off or even recede. However, the need continues to grow for construction of new transportation facilities, system integration, and reconstruction of the built system itself. With increasing financing needs and a receding federal commitment to meeting those needs, transportation finance will most likely become a more prominent state policy issue in the future.

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[1] National Chamber Foundation, *Future Highway and Public Transportation Finance: Phase I; Current Outlook and Short-term Solutions,* 1. The $288 billion for improving the system to benefit the nation's productivity is from the Executive Summary of this report at 2.
[2] The Government Accountability Office (GAO) was established by Congress in 1921 and changed its name from the Government Accounting Office in 2003. Its mission is to improve the performance and assure the accountability of the federal government on behalf of the American people. It advances its mission by providing Congress with professional, objective, fact-based, nonpartisan, and nonideological information.
[3] Ibid, at 19-20.
[4] The $177 billion expenditure figure represents expenditures of about $136 billion in highway and $41 billion in transit. It does not include public funds spent on passenger rail, airports, ports, or inland waterways. AASHTO, *Transportation Invest in America: The Bottom Line*, 2 (2002). The revenue allocation figures are from GAO, *Highway Finance: States Expanding Use of Tolling Illustrates Diverse Challenges and Strategies,* GAO-06-554, June 2006.
[5] The federal gasoline tax was last increased in 1993 and is presently 18.4 cents on regular gasoline, 24.4 cents on diesel.
[6] The Safe, Accountable, Flexible, and Efficient Transportation Equity Act—A Legacy for Users (SAFETEA-LU), P.L. 109-59 (10 August 2005).
[7] "The federal-aid highway" means any highway eligible for federal assistance under title 23 of the United States Code. The federal-aid system is any highway system defined in 23 USC 103, including the Interstate Highway System and the National Highway System. 23 USC 101(a) (5), (6).
[8] A metropolitan area is an urbanized area of over 50,000 as determined by the Bureau of the Census and included in a metropolitan planning organization under 23 USC 134.
[9] National Chamber Foundation, *Future Highway and Public Transportation Finance: Phase I; Current Outlook and Short-term Solutions,* 1. The $288 billion for improving the system to benefit the nation's productivity is from the Executive Summary of this report at 2.
[10]TRIP (2006) *Key Facts about America's Road and Bridge Conditions and Federal Funding*, 2. Based on USDOT sources. While alarming, this is an improvement from historical levels.
[11] Federal funding for airports is derived from taxes on fuel and airport fees and is sequestered in the Airports and Airways Trust Fund. Public assistance to aviation is not covered in this paper.
[12] States own and operate the federal-aid highway system (including the Interstate system) as well as state roads, highways, and bridges. The federal government only owns and operates roads on some (not all) federal lands such as National Parks.
[13] Surface Transportation Policy Project, *Measuring Up: The Trend Towards Voter-Approved Transportation Funding* (2002). According to STPP the average state gas tax in 2002 of 20.3 cents was about 90 percent of the average state gas tax in 1957 (5.7 cents) when adjusted for inflation. Five states (Florida. Nebraska, New York, North Carolina, and Wisconsin) adjust gas taxes to inflation almost annually without legislative action.
[14] See Martin Wachs, *Improving Efficiency and Equity in Transportation Finance* (Washington, D.C.: Brookings Institution, Center for Urban and Metropolitan Policy, 2003). This study indicates that over the

four-year period 1996–1999 local taxes, including sales taxes, for transportation increased 57 percent, local general funds spent on transportation increased 28 percent, and local property taxes spent on transportation increased 22 percent. In contrast, state user fees (gas taxes, registration and license fees, and excise taxes) increased only 18 percent. However, state borrowing for transportation increased a remarkable 92 percent, from $4.3 billion to $8.3 billion.

[15] Texas Transportation Institute (2005), *Urban Mobility Report 2005*, 1 (May 2005).

[16] TRIP, Key *Facts*, 2.

[17] Committee for the Study of the Long-Term Viability of Fuel Taxes for Transportation Finance, *The Fuel Tax and Alternatives for Transportation Funding,* Transportation Research Board Special Report 285, Washington, D.C. (2006), 186.

[18] For a list of states that restrict state gas tax expenditure to public highway uses, indicating whether the restriction is statutory or constitutional, see Robert Puentes and Ryan Prince, Fueling Transportation Finance: A Primer on the Gas Tax, The Brookings Institution (March, 2003). Available at: http://www.brook.edu/es/urban/publications/gastax.htm

[19] Wachs, *Improving Efficiency and Equity,* 5. This percentage has almost certainly increased since enactment of additional state borrowing assistance in the 1998 and 2005 federal transportation authorization acts.

[20] See www.taxpolicycenter.org/taxfacts. Florida also imposes local gas taxes that vary between 9.7 cents and 17.7 cents, plus a 2.07 cents pollution tax.

[21] See *1997 Federal Highway Cost-Allocation Study* (Washington, D.C.: USDOT, 1997), 14.

[22] , Committee for the Study of the Long-Term Viability of Fuel Taxes for Transportation Finance, *The Fuel Tax and Alternatives for Transportation Funding,* Transportation Research Board Special Report 285, Washington, D.C. (2006), 49.

[23] Federal Highway Administration, *Highway Statistics 2005*, U.S. Department of Transportation (2006), Table HF-10. Available at: www.fhwa.dot.gov/policy/ohpi/hss.
See also Gary Maring, "Additional Revenue Mechanisms; Taxes, Tolls, Bonds, Loans, etc.," available at www.surfacecommission.gov/agendaJuly26.htm. slide 4.

[24] For a listing of allowable gas tax uses, by state, see Robert Puentes and Ryan Prince, Fueling Transportation Finance: A Primer on the Gas Tax, The Brookings Institution (March, 2003). Available at: http://www.brook.edu/es/urban/publications/gastax.htm

[25] , Committee for the Study of the Long-Term Viability of Fuel Taxes for Transportation Finance, *The Fuel Tax and Alternatives for Transportation Funding,* Transportation Research Board Special Report 285, Washington, D.C. (2006), 47.

[26] Matt Sundeen and James R. Deer, *Surface Transportation Funding: Options for States,* National Conference of State Legislatures, (2006), 28.

[27] Committee for the Study of the Long-Term Viability of Fuel Taxes for Transportation Finance, *The Fuel Tax and Alternatives for Transportation Funding,* Transportation Research Board Special Report 285, Washington, D.C. (2006), 25, citing *Highway Statistics* (FHWA 2005a, Tables MV-2, MF-1).

[28] For a complete of such fees on transportation products and services see Sundeen and Deer, *Surface Transportation Funding,* 31-35.

[29] *The Fuel Tax,* 24-25.

[30] Ibid, 39.

[31] Maring, "Additional Revenue Mechanisms,"10, slide 16.
[32] *The Fuel Tax*, 38.
[33] Maring, "Additional Revenue Mechanisms,". 10, slide 16
[34] *Highway Statistics,* Table LGF-1
[35] *The Fuel Tax*, 41.
[36] AASHTO, *Bottom Line Report*, 61.
[37] Stephen Lockwood, *Financing for the Future*, TRB Joint Summer Meeting, LaJolla, Ca., 10 July 2006 (unpublished presentation).
[38] SAFETEA-LU also allows tolling on three additional interstate highways as a pilot program.
[39] GAO, *Highway Finance*, 7. Interstates are attractive targets for toll proposals since they have high traffic volumes, they are already access-controlled, and they tend to have a high percentage of nonresident travelers.
[40] GAO, *Highway Finance*, 21, 23.
[41] Since HOV lanes generally are not used to capacity, managing entities have sometimes allowed access to unused capacity to promote other public goals or services. Police and emergency service vehicle, for example, generally have access to HOV lanes. Some states also allow alternative-fueled vehicles or hybrid vehicles to access HOV lanes regardless of occupancy. HOT lane conversions may compete with or replace some of these additional HOV lane uses.
[42] Jeffery Buxbaum, Cambridge Systematics *Comprehensive Tolling Study Policy Briefing*, 17 May 2006, available at www.watollingstudy.com. The final **Washington** State Comprehensive Tolling Study, prepared for the **Washington** State Transportation Commission by Cambridge Systematics and submitted September 20, 2006, can be found at www.watollingstudy.com.
[43] Joseph M Giglio, "*Mobility" America's Transportation Mess and What to Do About It* (Washington, D.C.: Hudson Institute, 2005), 91-92.
[44] The Dulles Toll Road Authority already supports the toll road and will dedicate a portion of future toll revenues to help underwrite the Dulles Metrorail project, which it will develop.
[45] GAO, *Highway Finance*, 4. State policies (sometimes laws) requiring tolls to be eliminated when debt has been paid off are sometimes adopted to secure public support for tolls. Some state tolling authorities avoid this problem by rolling over debt when it becomes due, thus allowing tolls to continue. Other states, such as **Washington**, stick to their initial commitment and eliminate tolls when debt is retired.
[46] "Road pricing" can refer to all types of tolls. However, when it is used to refer to tolling schemes that are focused on managing demand and congestion relief they are also referred to as "value pricing" or "congestion pricing."
[47] *U.S. Transportation Secretary Mineta Launches New National Initiative to Tackle Highway, Freight and Aviation Congestion*, DOT 57-06, 16 May 2006, available at www.dot.gov/affairs/dot5706.htm.
[48] This test program, tentatively called the "Urban Partnership Agreement," will include new or expanded bus rapid transit (BRT) service, a telecommuting component, and key new capacity projects as well as congestion pricing.
[49] Stockholm initiated an eight-month test of a cordon area pricing scheme that terminated on 31 July 2006; a public vote on whether to continue the scheme was scheduled in September 2006.

[50] SAFETEA-LU mandates a study of "an approach to assessing user fees based on actual mileage driven by a specific vehicle on specific types of highways by use of an onboard computer." Section 1919(a), P.L. 109-59 (August 10, 2005).
[51] For a discussion of mileage-based pricing see David J. Forkenbrock and Paul F. Hanley, "Mileage-Based Road User Charges," *Public Roads 69*, no. 5 (March-April 2006), available at www.tfhrc.gov/pubrds/06mar/02.htm.
[52] See "Oregon Explores Mileage-Based Gas Fees," *Bond Buyer Magazine*, 16 June 2006.
[53] AASHTO, *Bottom Line Report*, 61.
[54] For an analysis of the legislative and political history that led to the selection of a tax-based over a toll-based scheme for funding the Interstate Highway System, see Daniel J.B. Mitchell "Earl Warren's Fight for California's Freeways: Setting a Path for the Nation," *Southern California Quarterly 88*, no. 2 (2006): 1-32.
[55] For a summary of SIB activity through 2005 see www.fhwa.dot.gov/innovativefinance.
[56] www.fhwa.dot.gov/innovativefinance. .
[57] 23 USC Section 129(a)(7).
[58] SAFETEA-LU, Title IX, Section 11143 (P.L. 109-59, 10 August 2005).
[59] For a more detailed description of these federal debt financing programs from the state perspective see Sundeen and Deer, *Surface Transportation Funding*, 44-46.
[60] See FHWA, *Manual for Using Public-Private Partnerships on Highway Projects*, 25.
[61] For a discussion of policy implications of asset leases beyond transportation financing see Robert Poole and Peter Samuel, "The Return of Private Roads," *Public Roads 69*, no. 5 (March-April 2006), available at www.tfhrc.gov/pubrds/06mar/06.htm.
[62] SR-91 is a tolled road that connects mostly bedroom communities in Riverside County with job-dense areas of Orange County. Workers who lived in Riverside County because they could not afford to live in Orange County were primarily affected by the toll, and the non-compete agreement prevented construction of any new free capacity along the corridor.
[63] See Michael Replogle, *High Performance Corridors: Emerging Transportation Management Framework?* paper presented at the First International Conference on Funding Transportation Infrastructure, Banff, Alberta, Canada, 2006; Patrick DeCorla-Souza, *A New Financing Approach to Transportation Infrastructure Expansion*, paper presented at Transportation Research Board Annual Meeting, Washington, D.C., 2006; and Michael Replogle and Keri Funderburg, *No More Just Throwing Money out the Window: Using Road Tolls to Cut Congestion, Protect the Environment, and Boost Access for All* (Washington, D.C.: Environmental Defense, 2006).
[64] See Wachs, *Improving Efficiency and Equity*.
[65] Ibid., 6, Table 3.
[66] Center for Transportation Excellence, *Transportation Finance at the Ballot Box:Voters Approve Increased Investment and Choice*, August 2005, available at www.cfte.org.
[67] The funding ratio for most federally funded highway and transit projects is 80 percent federal, 20 percent state or local. Since many states have prohibitions against using state gasoline tax revenues to fund nonhighway projects, regional and local funding is needed to provide the local 20 percent match requirement.
[68] California made this arrangement a formal policy by delegating 75 percent of its transportation funds to regional authorities (metropolitan planning authorities) in 1997 for funding capital improvements, while

retaining 25 percent of its funds to maintain the system. However, unlike California, other states are increasingly assigning the capital costs of projects to regional and local governments without allocating state revenues to offset these costs because of the large cost of maintaining the built state system.

[69] "GOP Plan Would Raise N. Va. Taxes to Generate Roads Funds for Area," *Washington Post*, 27 June 2006, B1.

[70] AASHTO, *Bottom Line Report*, 61.

[71] For a description of this 11-project pilot program see www.state.nj.us/transortation/works/njfit/case. The particular project discussed here is Route 31.

[72] Nashua is also considering dedicating the parking fees generated at the new station to pay for part of the operational costs of the new rail service. Although prohibited by the state constitution from funding transit or rail services, the New Hampshire DOT has authority to help fund the parking facility.

[73] For a summary of state DOT actions using this approach see Christopher Swope, "Rethinking the Urban Speedway," *Governing Magazine*, October 2005, 26-34.

[74] www.state.nj.us/transportation/works/NJFIT.

[75] "Virginia to Weigh Impacts of Projects," *Washington Post*, 28 August 2006, B1.

[76] California SB 45 (1997).

[77] "MTC Resolution 3434 TOD Policy for Regional Transit Extension Projects," Metropolitan Transportation Commission (27 July 2005).

[78] See AASHTO, *Coordinating Transportation and Land Development, Executive Seminar Summary*, 6-8 September 2005, NCHRP Project 20-24 (45), available at www.lgc.org.

[79] The citizen transportation plan is available at www.nhtranplan.com.

[80] For a summary of CSS best practice see www.contextsensitivesolutions.org.

[81] This program benefits both employers and employees since payroll taxes are paid by both parties. See www.wageworks.com.

[82] For a summary of commuter choice programs see www.commuterchoice.com Employers can also pay employees who agree to bicycle or walk to work the same $100 monthly voucher on a tax-free basis, extending the benefit to areas where no sufficient alternative public mode of travel exists.

[83] Testimony of Jeffrey A. Parker on How Public Transit Benefits Communities in the United States, Testimony before the House Transportation and Infrastructure Committee, Subcommittee on Highways and Transit at "Hearing on Benefits of TEA-21 Guaranteed Funding for Transit," (April 17, 2002).

[84] See "TOD Infrastructure and Housing Support Program," www.mbta.com/projects_underway/tod.

[85] www.mtc.ca.gov/planning/smart_growth.

[86] www.state.nj.us/transportation/community/village/critieria.htm.

[87] Proposition 1B on the California ballot in the fall of 2006 is a $20 billion transportation bond measure to promote transit and rail, including $400 million in capital assistance for Amtrak.

[88] Bruce Katz and Robert Puentes, eds., *Taking the High Road: A Metropolitan Agenda for Transportation Reform* (Washington, D.C.: Brookings Institution, 2005), 62. A listing of state restrictions on the use of transportation trust fund revenues is available at Robert Puentes and Ryan Prince, Fueling Transportation Finance: A Primer on the Gas Tax, The Brookings Institution (March, 2003). Available at: http://www.brook.edu/es/urban/publications/gastax.htm.

[89] Surface Transportation Policy Project, *Changing Direction* (Washington D.C., 2000), 17, table 4.

[90] *Pocket Guide to Transportation 2006* (Washington, D.C.: Research and Technology Administration, USDOT, 2006), 2 (figures are as of 2004).
[91] Figures from American Petroleum Institute as of April 2006.
[92] While pipelines and inland waterways are also transportation facilities, they are not addressed in this paper. Private freight systems (rail, truck, and air) are considered where they use public facilities or financing. Bicycle and pedestrian systems (including off-road systems such as side paths and rail-trails) are considered as an element of the highway system since they are funded from highway programs.
[93] As indicated in the title to this section, "highways" refers to all road improvements, including nonmotorized improvements. Most walkways and bikeways are considered "public highways" under state law.
[94] Committee for the Study of the Long-Term Viability of Fuel Taxes for Transportation Finance, *The Fuel Tax and Alternatives for Transportation Funding,* Transportation Research Board Special Report 285, Washington, D.C. (2006), 24.
[95] Ibid.
[96] Ibid.
[97] Ibid., 18: "There is little systematic information on how the existing structure of charges, subsidies, and grant programs affects the decisions of transportation users and transportation agencies."
[98] Ibid., 34, Table 2-4.
[99] *Survey of State Funding for Public Transportation: 2005* (Washington, D.C.: Bureau of Public Transportation (BTS), U.S. Department of Transportation, May 2006), Table 1-2. State support for ferry service is included in these figures. Of the remainder, about 25 percent of transit expenditures are covered by fare box revenues and about 38 percent are covered from local sources such as general revenues, local sales taxes, and property taxes.