

TRANSPORTATION & INFRASTRUCTURE FINANCE



a csg national report

by Sean Slone



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INTRODUCTION

In the summer of 2008, Kansas Gov. Kathleen Sebelius announced she was creating a transportation task force. In doing so, she was facing a political reality of the present, while trying to look toward her state's future.

“With current fuel prices at all-time highs, I cannot support any increase in motor fuel taxes and ask that the task force look to other approaches,” Sebelius said in her charge to the task force. “The state will be best served if the task force reviews a range of transportation investment scenarios and considers approaches that could be implemented in stages if necessary.”¹

Sebelius told the 30-member task force to look at new financing methods including user fees, the creation of transportation development districts, and the leveraging of federal, state and local funding.¹ The idea of expanded tolling was mentioned as a possibility as well, though some questions existed as to whether the state had too many alternate routes available that would allow drivers to avoid paying the tolls.² The state has only one toll road—the Kansas Turnpike.³

Besides holding public meetings around the state, the task force is soliciting public opinion in a more unique way. A task force Web site has a calculator that allows users to develop their own transportation program and determine its costs and funding options.¹

Both the state's current \$13 billion, 10-year transportation program and its predecessor relied on increasing motor fuels and sales taxes and borrowing.¹

The task force, Transportation-Leveraging Investments in Kansas (T-LINK for short), will develop a set of recommendations for the new transportation program. Sebelius asked members that their recommendations be shaped by the following priorities:

- ▶ A commitment to keeping roads and bridges safe and in good repair;
- ▶ A collaborative project selection process that aligns Kansas' transportation investments with the state's economic priorities; and
- ▶ A new approach that reflects today's fiscal realities, but also creates a framework to prepare Kansas for the future.⁴

Kansas' Long Range Transportation Plan, released in June, noted that the state will need \$2.9 billion a year for the next 20 years to meet its future transportation needs. But the state is only expected to take in about \$1.4 billion a year in state, federal and local revenues to fund transportation under current revenue conditions.

The long-range plan identified the following principles to analyze potential funding approaches:

- ▶ **Adequacy**—Will the mechanism generate substantial funding?
- ▶ **Stability**—Will the revenue stream it produces be stable and reliable?
- ▶ **Efficiency**—Is the ratio of administrative costs to revenues low?
- ▶ **Fairness**—Do the system's users compensate the system in proportion to their use of it, and in proportion to their contribution to its need for maintenance or replacement?
- ▶ **Equity**—Is the mechanism even-handed to all income groups and residents of all geographic areas?

- ▶ **Inflation-Neutral**—Will the mechanism produce revenues that increase along with or faster than the growth in construction costs?
- ▶ **Diversification**—Does the mechanism help expand and diversify the sources of state transportation funding?
- ▶ **Viability**—What legal, institutional, political or other types of barriers could stand in the way of implementation? How hard will it be to overcome them?³

Kansas is not alone in considering these issues. Most states have begun to look at and even implement innovative ways to fund transportation. Their efforts come with the realizations that raising fuel taxes is politically difficult and that the future revenue yield from existing funding sources will be inadequate to maintain the nation's existing transportation systems and to increase capacity for the future.

This report examines the transportation funding issues states are faced with, the finance options available to them, and how states can decide which options best fit into their transportation plans. It draws on the work of two federal commissions created by Congress—the National Surface Transportation Infrastructure Financing Commission and the National Surface Transportation Policy and Revenue Study Commission—as well as the research and assessment of numerous other transportation, law and tax policy analysts, expert panels, and state and federal officials.



Most states have begun to look at and even implement innovative ways to fund transportation. Their efforts come with the realizations that raising fuel taxes is politically difficult and that the future revenue yield from existing funding sources will be inadequate to maintain the nation's existing transportation systems and to increase capacity for the future.

CHAPTER 1: DEFINING THE PROBLEM

America's infrastructure is aging and needs rehabilitation. The American Society of Civil Engineers graded the nation's infrastructure in 2005 and found deteriorating conditions approaching dangerous levels of disrepair, with needs outpacing allocated funds.

They estimate that \$1.6 trillion is needed over a five-year period to bring the nation's roads to good condition.⁵ Some 13,000 Americans die each year on the nation's highways due to inadequate roadway maintenance.⁶ Moreover, the Government Accountability Office in 2008 concluded in a report that the federal bridge program "is not sustainable given the anticipated deterioration of the nation's bridges and the declining purchasing power of funding currently available."⁷

At the same time, traffic congestion is clogging the nation's roadways, making travel for business or pleasure a chore, and pointing to the need for expanded roads and additional transportation options. The number of vehicle miles traveled per capita by Americans in 2006 was more than 10,000,⁸ twice that of many European countries.⁹ The Texas Transportation Institute estimates that congestion around urban areas costs the nation more than \$78 billion annually, not to mention more than 4 billion hours lost to delays and nearly 3 billion gallons of wasted fuel.¹⁰ U.S. city officials rank traffic congestion as the fastest deteriorating condition in America's cities, ahead of education and health care.¹¹

Unfortunately, finding the money to improve and expand the transportation system is a significant challenge facing state governments.

"Maintenance costs of existing transportation assets are competing for the same funds needed to expand our transportation system," Mark Florian, the head of Infrastructure Banking for Goldman Sachs, told a Congressional committee in June 2008. "Many states do not have sufficient funds to maintain their roads, much less add needed capac-

ity."¹²

In addition, numerous 21st century factors have exposed flaws in the way the U.S. funds transportation.

The Highway Trust Fund, created by Congress in 1956 to provide a dedicated source of federal funding for highways, relies on receipts from federal excise taxes on motor fuels and truck-related taxes.¹³ But the federal gas tax has not been raised in more than 10 years and investment in transportation has not grown as quickly as the nation's transportation needs over the last three decades. The buying power of fuel taxes has been eroded by inflation and Americans are paying less fuel taxes due both to fuel efficiency improvements on automobiles and cutbacks on driving as gas prices have increased in recent years. And as the National Surface Transportation Infrastructure Financing Commission pointed out in its 2008 interim report, "increasing mobility, a greatly expanded economy and population, regional transportation challenges, and inflation in the costs of construction have rendered the current levels of the (Highway Trust Fund) taxes grossly inadequate for funding even the maintenance, much less the improvement, of the system."¹⁴

The commission's report also observed that current funding mechanisms and levels of revenue are not closely linked to actual use of the transportation system, which has allowed demand and costs to grow faster than revenue. Individual drivers pay only about 3 cents in tax revenue per each vehicle mile traveled. The actual costs of using a highway during congested conditions are on average 10 to

29 cents per vehicle mile traveled.¹²

Moreover, the commission points out that the weak link between driving and fees paid primarily in fuel and vehicle taxes does little to promote efficient use of the transportation system. More directly linked funding mechanisms such as tolling, congestion pricing and fees for vehicle miles traveled may be more effective in this regard.¹² These mechanisms are explored in detail later in this report.

Some also worry that decisions about transportation projects are being made unwisely.

“We are choosing the wrong projects to build,” said Everett Ehrlich, who served as the executive director of the Center for Strategic and International Studies’ Commission on Public Infrastructure. As he told members of Congress in June, “(The highway program) turns money over to states and tells them that whatever they pick will be funded by the feds using a predetermined percentage ... That is not infrastructure policy. That is revenue sharing.”

Ehrlich said while that may have been a good system for building the national highway system, that job was completed more than 30 years ago.

“Today, the same selection process means that we favor new road construction over non-structural solutions, whether they mean variable speed limits, flexible traffic flow patterns, or congestion fees,” he said.¹⁵

It also means that while some carefully chosen congressional districts receive earmarks for pet projects, others are left without the funds to maintain the existing transportation infrastructure. The \$286 million 2005 transportation authorization bill known as SAFETEA-LU is a case in point, critics contend.¹⁶

“The term ‘earmark’ would not be in the public vocabulary today, were it not for the last transportation bill and its bridge to nowhere,” Ehrlich said.¹³

As the members of the National Surface Transportation Infrastructure Finance Commission stated in their interim report, “we need not only more investment in our system, but more intelligent investment complemented by better operation of the system.”

Of course, in addition to getting people from point A to point B, America’s transportation system is also responsible for the movement of goods all around the country.

“Our transportation system is the backbone of our economy,” Pete Ruane, the president of the American Road and Transportation Builders Association



“Our transportation system is the backbone of our economy. It undergirds everything we do economically in our national productivity. And we’re dealing with major competitive issues as other nations are investing more in infrastructure.”

—Pete Ruane
president, American Road and Transportation Builders Association

Transportation Revenues Collected by State and Local Governments: 2005¹

(millions of current dollars)

| State | Total | Highway | Transit | Air | Water |
|----------------------------------|-----------------|-----------------|-----------------|-----------------|----------------|
| Alabama..... | \$ 1,032 | \$ 867 | \$ 7 | \$ 71 | \$ 87 |
| Alaska..... | 329 | 174 | 5 | 107 | 43 |
| Arizona..... | 1,264 | 923 | 39 | 302 | Z |
| Arkansas..... | 699 | 659 | 2 | 37 | 1 |
| California..... | 11,534 | 7,046 | 1,603 | 1,799 | 1,087 |
| Colorado..... | 1,647 | 981 | 74 | 591 | Z |
| Connecticut..... | 839 | 769 | 36 | 33 | 1 |
| Delaware..... | 393 | 349 | 10 | 6 | 28 |
| Florida..... | 7,149 | 5,195 | 208 | 1,403 | 343 |
| Georgia..... | 2,058 | 1,290 | 114 | 506 | 149 |
| Hawaii..... | 722 | 368 | 44 | 228 | 81 |
| Idaho..... | 393 | 360 | 1 | 30 | 1 |
| Illinois..... | 5,479 | 3,993 | 740 | 729 | 17 |
| Indiana..... | 1,499 | 1,343 | 29 | 121 | 6 |
| Iowa..... | 943 | 878 | 16 | 49 | <0.5 |
| Kansas..... | 737 | 705 | 3 | 29 | Z |
| Kentucky..... | 936 | 746 | 15 | 159 | 16 |
| Louisiana..... | 1,046 | 779 | 43 | 119 | 105 |
| Maine..... | 472 | 442 | 1 | 27 | 2 |
| Maryland..... | 2,047 | 1,691 | 126 | 135 | 95 |
| Massachusetts..... | 2,442 | 1,496 | 459 | 423 | 64 |
| Michigan..... | 2,641 | 2,198 | 59 | 384 | <0.5 |
| Minnesota..... | 1,648 | 1,322 | 11 | 275 | 39 |
| Mississippi..... | 653 | 581 | 2 | 29 | 42 |
| Missouri..... | 1,389 | 1,079 | 50 | 257 | 2 |
| Montana..... | 411 | 384 | 1 | 26 | Z |
| Nebraska..... | 513 | 441 | 6 | 66 | Z |
| Nevada..... | 1,015 | 663 | 49 | 304 | Z |
| New Hampshire..... | 361 | 315 | 4 | 42 | Z |
| New Jersey..... | 2,830 | 2,164 | 631 | 13 | 22 |
| New Mexico..... | 476 | 403 | 4 | 68 | Z |
| New York..... | 10,382 | 4,184 | 4,050 | 1,987 | 161 |
| North Carolina..... | 2,285 | 1,967 | 35 | 248 | 35 |
| North Dakota..... | 197 | 183 | 1 | 13 | Z |
| Ohio..... | 3,296 | 2,881 | 98 | 296 | 20 |
| Oklahoma..... | 1,293 | 1,202 | 5 | 82 | 4 |
| Oregon..... | 1,323 | 941 | 97 | 207 | 78 |
| Pennsylvania..... | 4,509 | 3,544 | 459 | 498 | 8 |
| Rhode Island..... | 289 | 201 | 28 | 60 | <0.5 |
| South Carolina..... | 969 | 737 | 13 | 80 | 138 |
| South Dakota..... | 213 | 202 | 1 | 10 | Z |
| Tennessee..... | 1,548 | 1,284 | 27 | 234 | 3 |
| Texas..... | 6,697 | 5,278 | 151 | 1,052 | 217 |
| Utah..... | 708 | 507 | 18 | 183 | Z |
| Vermont..... | 173 | 157 | 3 | 13 | Z |
| Virginia..... | 2,533 | 1,641 | 71 | 598 | 224 |
| Washington..... | 2,424 | 1,543 | 206 | 410 | 265 |
| West Virginia..... | 511 | 489 | 5 | 17 | Z |
| Wisconsin..... | 1,613 | 1,445 | 60 | 103 | 6 |
| Wyoming..... | 158 | 145 | <0.5 | 13 | Z |
| District of Columbia..... | 732 | 69 | 663 | Z | Z |
| United States, total..... | \$97,449 | \$69,203 | \$10,383 | \$14,471 | \$3,393 |

¹State fiscal years ending in 2005.

Key: Z = Data not available, no activity, value of zero, or value too small to report.

Notes: Data include transportation revenues collected by state and local governments, while the data reported in the last year's edition of the report were for state governments only. Data are for Fiscal Year 2005. The fiscal year for most states runs from July 1, 2004, to June 30, 2005. Fiscal Year 2005 for Alabama, the District of Columbia and Michigan runs from Oct. 1, 2004, to Sept. 30, 2005. Fiscal Year 2005 for Texas runs from Sept. 1, 2004, to Aug. 31, 2005. The fiscal year for New York runs from April 1, 2004, to March 31, 2005.

Any agency that does not have a fiscal year that coincides with that of the state has the entirety of its revenues count toward the state fiscal year within which the agency's fiscal year ends. For example, if an airport authority's fiscal year ends Nov. 30, 2005, the data would be reported for the state fiscal year ending June 30, 2006, and not the state fiscal year ending June 30, 2005.

Source: U.S. Department of Commerce, Bureau of the Census, State and Local Government Finances, available at <http://www.census.gov/govs/www/estimate.html> as of Jan. 8, 2008.

ciation, told Environment and Energy TV in 2008. “It undergirds everything we do economically in our national productivity. And we’re dealing with major competitive issues as other nations are investing more in infrastructure.”

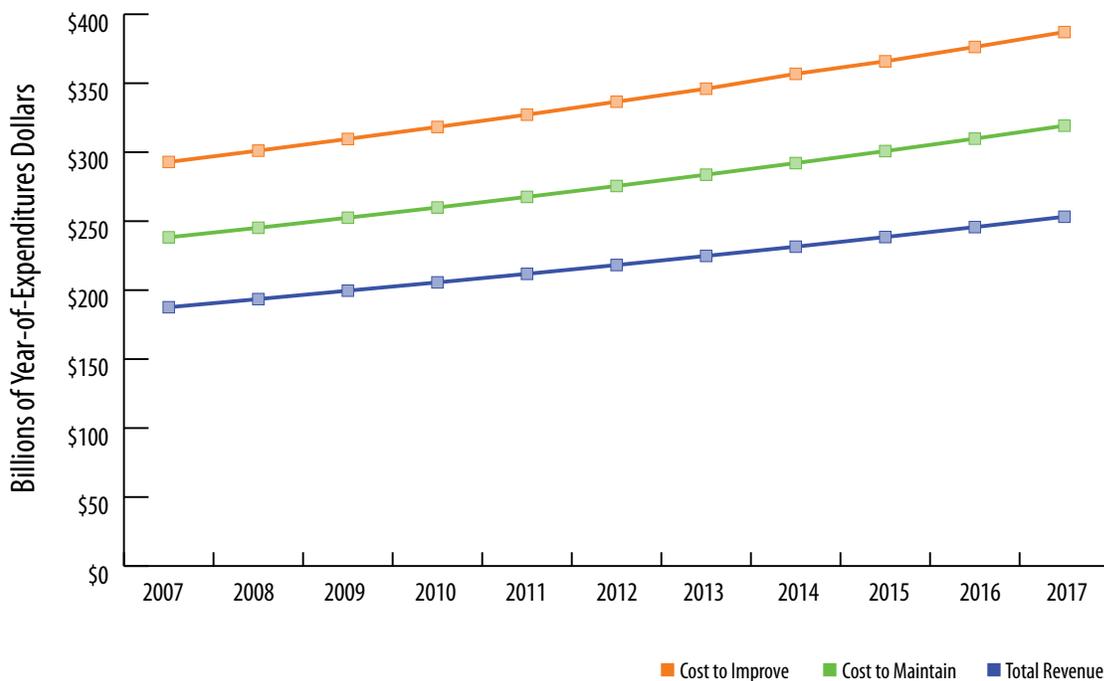
Ruane cites increased infrastructure investment in China, India and the European Union.

“Even Vietnam has plans for a high-speed pas-

senger rail system,” Ruane said.¹⁷

Analysts believe one key to enhancing American competitiveness is integrating the U.S. transportation system with those of Canada and Mexico to form one North American system and market. That will take a huge infusion of capital and a vision for the future.

The Projected Funding Gap



Source: Future Financing Options to Meet Highway and Transit Needs, NCHRP Web-Only Document 102, National Cooperative Highway Research Program, Transportation Research Board of the National Academies, Submitted December 2006, 2-5, A-10.

CHAPTER 2: FUEL TAXES

About 82 percent of federal funds for transportation come from federal fuel taxes. At the state level, 38 percent of revenues for highways come from state fuel taxes.¹⁸

While the federal gas tax has not been raised since 1997, at least 15 states have increased their gas taxes over the last 12 years. But most observers believe that if gas prices return to the levels seen in 2008, lawmakers will have considerable difficulty raising either tax in the future.¹⁰ Raising the fuel tax could generate an estimated \$1.9 billion nationally for each 1 cent increase.¹⁹

As Rudolph Penner of the Urban Institute told Congress in 2008, “it is generally agreed that the current rate of (federal) tax of 18.4 cents per gallon is not sufficient to finance conservatively estimated investment needs or to cover the spending levels authorized in 2005.”²⁰

And as Goldman Sachs’ Florian said, “the fuel tax ... has served our country well since 1956. Nevertheless, this source of funds is no longer sufficient to meet the large and growing needs for transportation infrastructure development in the United States.”¹⁰

Many believe indexing the gas tax to some agreed-upon measure such as the Consumer Price Index could better account for inflation. Simple inflation as measured by the CPI would have increased gas taxes to \$2.94 per gallon today.¹⁰ Yet Americans pay only 18 cents per gallon in federal

gas tax and on average 31 cents per gallon in state fuel taxes.²¹

But Florian also points out that the cost of labor and construction materials for road projects has accelerated even more quickly than the CPI. So indexing the tax to a measure of construction cost might be even more accurate.¹⁰ Others say converting to a gasoline sales tax could help in this regard.¹⁷

The National Surface Transportation Policy and Revenue Study Commission pointed out in its final report that fuel taxes have been the revenue generator of choice at both the state and federal level for a number of reasons. Public acceptance of this mechanism, its ability to raise considerable revenues, relative stability and predictability, ease of implementation and its low administrative and compliance costs are among its advantages.¹⁷

“I suspect that the (political) resistance is less than with other taxes because taxpayers have a better idea what they are getting for their money,” Penner said.

Yet many believe that linking user payments even more closely to actual road use with such instruments as tolls, congestion fees and vehicle miles traveled charges would make more sense and have even greater public support.

125.79

This Sale \$

20.990

Gallons

5.999

**Price Per Gallon \$
All Taxes Included**

State Motor-Fuel Tax Rates: 2006

(cents per gallon)

| State | Gasoline | Diesel | Liquefied petroleum gas | Gasohol |
|----------------------|----------|--------|-------------------------|---------|
| Alabama | 18.00 | 19.00 | 17.00 | 18.00 |
| Alaska | 8.00 | 8.00 | 0.00 | 8.00 |
| Arizona | 18.00 | 26.00 | 18.00 | 18.00 |
| Arkansas | 21.70 | 22.70 | 16.50 | 21.70 |
| California | 18.00 | 18.00 | 6.00 | 18.00 |
| Colorado | 22.00 | 20.50 | 20.50 | 22.00 |
| Connecticut | 25.00 | 26.00 | 0.00 | 25.00 |
| Delaware | 23.00 | 22.00 | 22.00 | 23.00 |
| Florida | 15.30 | 15.30 | 14.50 | 15.30 |
| Georgia | 7.50 | 7.50 | 7.50 | 7.50 |
| Hawaii | 16.00 | 16.00 | 8.10 | 16.00 |
| Idaho | 25.00 | 25.00 | 18.10 | 22.50 |
| Illinois | 19.00 | 21.50 | 19.00 | 19.00 |
| Indiana | 18.00 | 16.00 | 0.00 | 18.00 |
| Iowa | 21.00 | 22.50 | 20.00 | 19.00 |
| Kansas | 24.00 | 26.00 | 23.00 | 24.00 |
| Kentucky | 19.70 | 16.70 | 19.70 | 19.70 |
| Louisiana | 20.00 | 20.00 | 16.00 | 20.00 |
| Maine | 26.80 | 27.90 | 0.00 | 17.80 |
| Maryland | 23.50 | 24.25 | 24.25 | 23.50 |
| Massachusetts | 21.00 | 21.00 | 23.90 | 21.00 |
| Michigan | 19.00 | 15.00 | 15.00 | 0.00 |
| Minnesota | 20.00 | 20.00 | 15.00 | 20.00 |
| Mississippi | 18.40 | 18.40 | 17.00 | 18.40 |
| Missouri | 17.00 | 17.00 | 17.00 | 17.00 |
| Montana | 27.75 | 27.75 | 0.00 | 27.75 |
| Nebraska | 27.10 | 27.10 | 26.10 | 27.10 |
| Nevada | 24.80 | 27.70 | 22.00 | 24.80 |
| New Hampshire | 19.50 | 19.50 | 0.00 | 0.00 |
| New Jersey | 10.50 | 13.50 | 5.25 | 10.50 |
| New Mexico | 18.88 | 22.88 | 12.00 | 18.88 |
| New York | 24.65 | 22.85 | 8.05 | 0.00 |
| North Carolina | 30.15 | 30.15 | 27.10 | 30.15 |
| North Dakota | 23.00 | 23.00 | 23.00 | 23.00 |
| Ohio | 28.00 | 28.00 | 28.00 | 28.00 |
| Oklahoma | 17.00 | 14.00 | 17.00 | 17.00 |
| Oregon | 24.00 | 24.00 | 18.50 | 24.00 |
| Pennsylvania | 30.00 | 38.10 | 22.80 | 31.20 |
| Rhode Island | 30.00 | 30.00 | 30.00 | 30.00 |
| South Carolina | 16.00 | 16.00 | 0.00 | 16.00 |
| South Dakota | 22.00 | 22.00 | 20.00 | 20.00 |
| Tennessee | 21.40 | 18.40 | 14.00 | 20.00 |
| Texas | 20.00 | 20.00 | 15.00 | 20.00 |
| Utah | 24.50 | 24.50 | 24.50 | 24.50 |
| Vermont | 20.00 | 26.00 | 0.00 | 20.00 |
| Virginia | 17.50 | 16.00 | 16.00 | 17.50 |
| Washington | 34.00 | 34.00 | 34.00 | 34.00 |
| West Virginia | 31.50 | 31.50 | 27.00 | 31.50 |
| Wisconsin | 30.90 | 30.90 | 22.60 | 30.90 |
| Wyoming | 14.00 | 14.00 | 14.00 | 14.00 |
| District of Columbia | 20.00 | 20.00 | 20.00 | 20.00 |
| Federal tax | 18.40 | 24.40 | 13.60 | 13.20 |

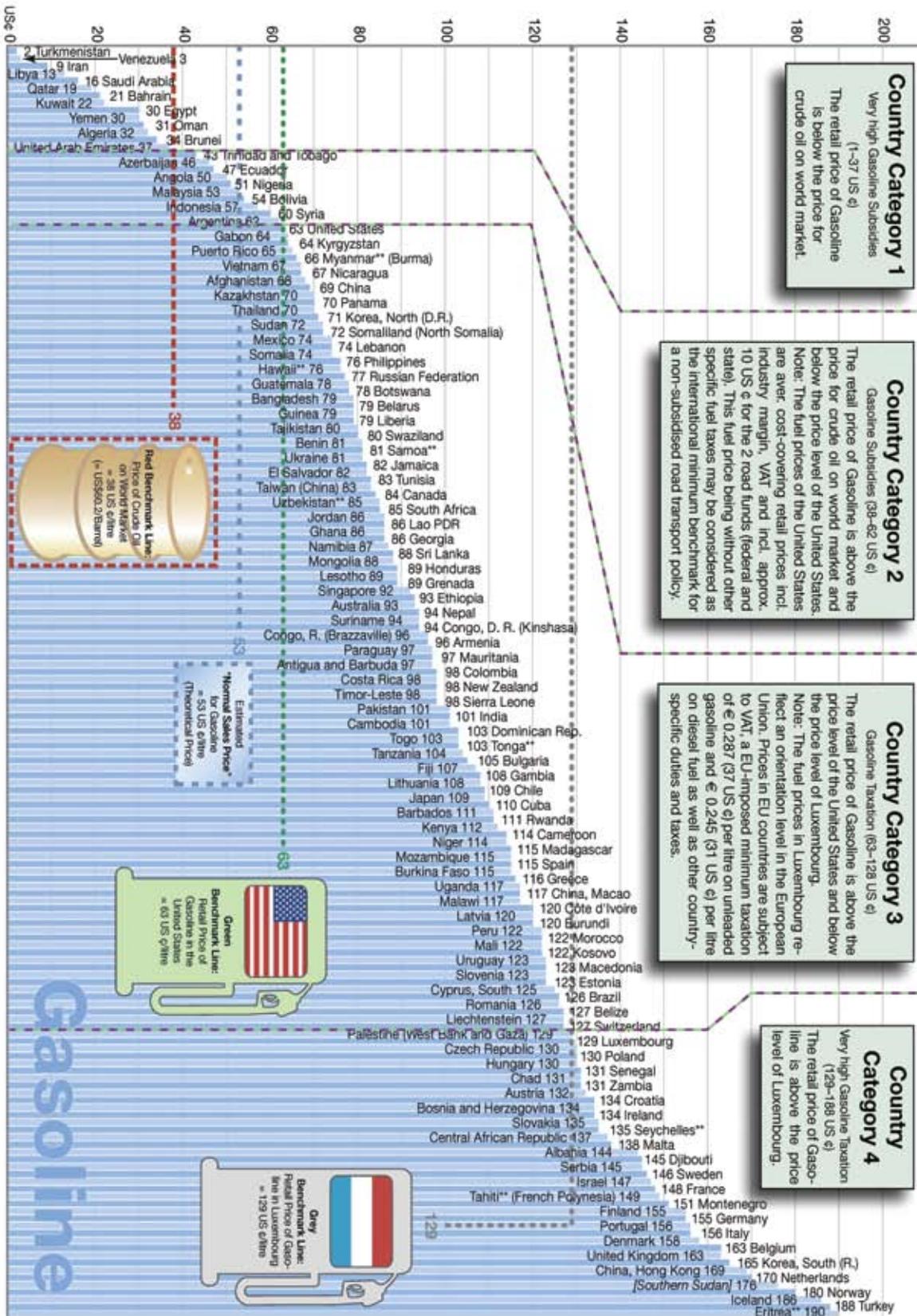
¹Tax rates for gasoline blended with 10 percent ethanol.

Notes: Tax rates in effect as of Jan. 1, 2006. The following states have tax rates changed as of Jan. 1, 2007: gasoline: Florida, and New York; diesel: Florida, New York and West Virginia; liquefied petroleum gas: Massachusetts; gasohol: Florida and West Virginia. The tax rates for Nebraska for diesel and gasohol are effective as of July 1, 2007.

Source: U.S. Department of Transportation, Federal Highway Administration, Highway Statistics 2006, Washington, D.C.: 2008, Table MF-121T.

Retail Prices of Gasoline* in 171 Countries as of November 2006

(in US. cents/litre)



*Normal grade gasoline, if super gasoline is not commonly available in a country.
**For more information, please refer to main document.
Source: German Technical Cooperation

CHAPTER 3: VEHICLE FEES

Idaho's transportation system is faced with a common problem. The state needs at least \$200 million more annually to build and maintain its roads. But many of the options for raising that revenue don't seem palatable for a citizenry that already feels overburdened with taxes and fees.

In early 2008, Idaho Gov. C.L. "Butch" Otter offered a plan to address the situation and raise \$202 million. The governor wanted to raise registration fees on passenger vehicles from the current \$24 to \$48 range to a flat rate of \$150 and establish a rental car tax of 4 percent a day. Another proposal from two state senators would have reassessed registration fees for trucks and brought in an additional \$50 million. To explain his support for the increased registration fees, the governor cited polling data that showed opposition to an increase in the state's gas tax. Seventy-two percent of Idahoans were opposed, while 58 percent supported increased registration fees.²²

But the governor was forced to withdraw his proposal to raise vehicle registration fees after the plan received a critical reception from the public and legislators. A proposal offered by members of the state House of Representatives that would have raised only about \$68 million prompted the governor to remark, "you might as well just get out of town." Idaho's legislative session ended without lawmakers addressing the \$200 million annual shortfall.²³

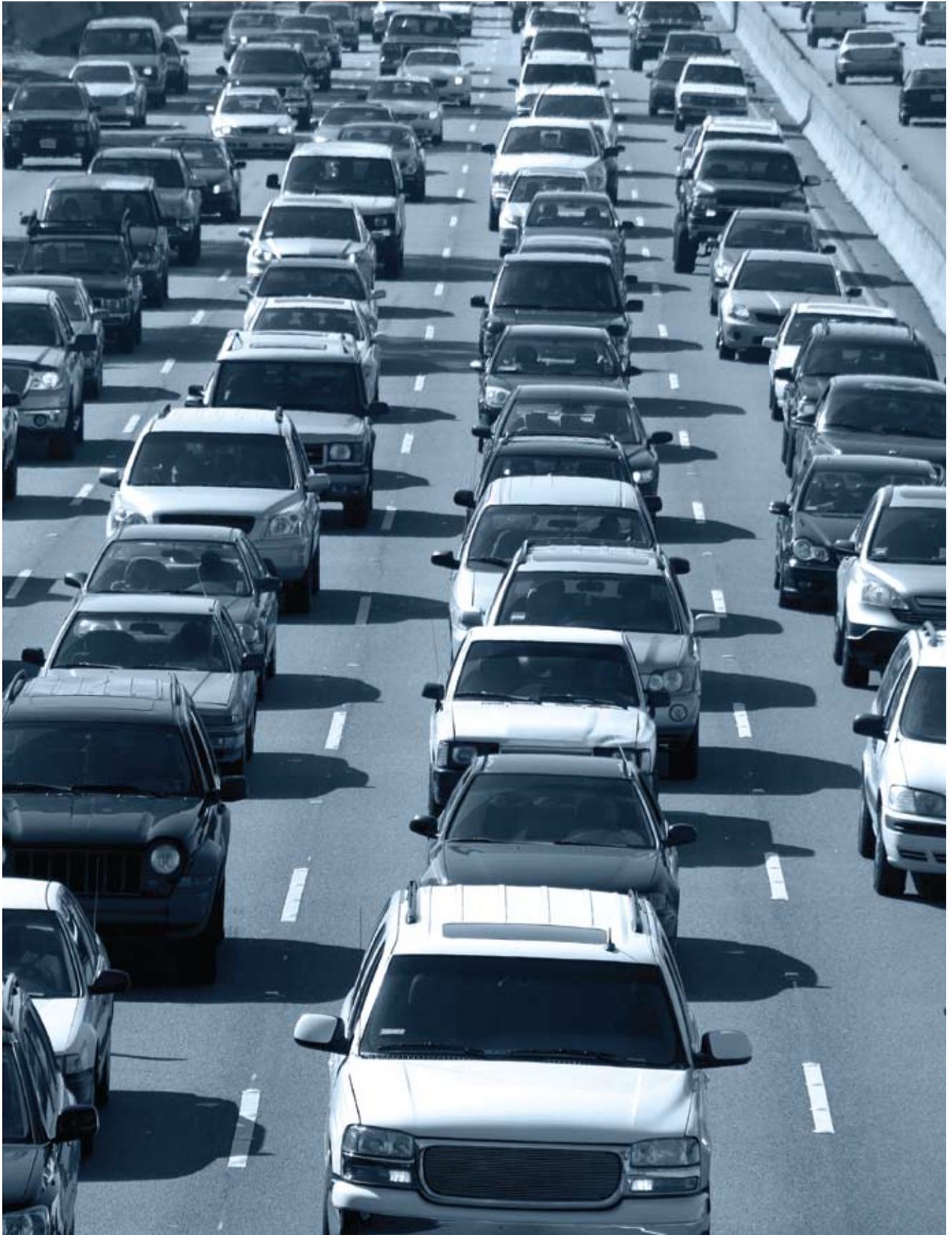
Observers concluded at the end of the session that an increase across multiple revenue sources is more likely to win favor from the public than one that hits one source or one particular group harder than others.²⁴

But states are clearly looking to vehicle registration fees and other highway user taxes to be a part of their revenue equation.

All states have registration fees for light vehicles and somewhat higher and graduated fees for heavy vehicles. These fees are relatively inexpensive to administer in relation to potential yield, can be varied by vehicle size, and can be set in rough relation to highway cost responsibility. The Transportation Research Board's National Cooperative Highway Research Program categorizes registration fee adjustments as "very promising" as both a short- and long-term option for funding highways. Perhaps most importantly in light of the growing popularity of hybrid and other fuel-saving vehicles, registration fees allow for collections from vehicles using alternative fuels without establishing new mechanisms for collection.²⁵

In its interim report, the National Surface Transportation Infrastructure Financing Commission identified vehicle registration, heavy vehicle user taxes, sales taxes, and tire taxes as potential transportation funding mechanisms.¹²

Heavy-truck fees are imposed at the federal and state level on trucks with five or more axles and weighing between 50,000 and 100,000 pounds. These taxes are imposed primarily through a federal tax on diesel fuels and state registration fees based on truck weight. Oregon and New York are among the states that impose a fee based on the weight of the vehicle and the distance traveled in the state. The goal of these efforts is to tie fees more closely to actual costs imposed on the system. Heavy trucks currently pay about 6 cents per mile in federal and state fees, though the actual



cost in terms of wear and tear on roads and highways may be as high as 14 cents per mile for the heaviest trucks.²⁶

At least 12 states collect excise taxes on vehicle sales and dedicate those taxes for transportation. These taxes are normally levied as a percentage of the sales price of a vehicle when it is purchased or first registered in a state. In Nebraska, 100 percent of vehicle sales taxes are dedicated to transportation with the Highway Allocation Fund for local governments and the Nebraska Department of Roads splitting the revenues. In Missouri, half of the revenues from a 4 percent sales tax are distributed among the Missouri Department of Transportation, cities and counties for transportation spending.²³ Analysts believe sales taxes on vehicles have substantial potential to raise revenue and can be fairly progressive. However, some states require all sales tax revenues be deposited into general

revenue accounts, which can provide a barrier to designating and dedicating these revenues for transportation needs. Missouri had to amend its state constitution to redirect a portion of its sales tax levies to the State Road Bond Fund to make debt service payments.²³

Some states and localities have personal property taxes on vehicles that are essentially registration fees based on the value of the vehicle. Such fees are adjusted with inflation since the value of the vehicles owned has continued to increase and, unlike other taxes, the fees are deductible for taxpayers who itemize their federal income taxes. But recent years have seen efforts in states such as Virginia and Washington to reduce or eliminate these fees. The tax was a highly visible target because unlike gas taxes collected at the pump, taxpayers must write a separate check to pay the personal property tax.²³

Potential Contribution of Short-Term Funding Mechanisms to Federal, State and Local Highway and Transit Needs

Years of Expenditure Dollars (in billions of dollars)

| Short-Term Funding Mechanisms | Revenue Generation 2010 | Revenue Generation 2017 | Average Revenue 2010 to 2017 | Revenue Generation Cumulative 2007 to 2017 | Comments |
|---|-------------------------|-------------------------|------------------------------|--|--|
| State Revenue Options | | | | | |
| Index state motor fuel taxes | \$1.4 | \$6.5 | \$3.8 | \$31.9 | If all states indexed fuel taxes by 2010. |
| Increase state motor fuel taxes to catch up for inflation losses since 2000 | \$6.6 | \$8.6 | \$7.6 | \$70.0 | If all states were to catch up for inflation losses by 2010; results in average 5.2 cent increase. |
| Implement motor fuel sales taxes | \$8.9 | \$11.6 | \$10.1 | \$94.3 | Three percent assumed dedicated to transportation. |
| Raise motor vehicle registration fees to keep up with inflation | \$1.8 | \$6.4 | \$4.0 | \$33.4 | If all states were to raise in concert with inflation starting in 2007. |
| Use vehicle sales tax for transportation | \$6.2 | \$8.4 | \$7.2 | \$66.6 | If all states who have sales tax dedicate at least 3 percent of vehicle sales tax to transportation. |
| Portion of state sales tax dedicated to transportation | \$9.0 | \$12.0 | \$10.5 | \$108.8 | Assume one-half percent dedication. |
| Increase tolling/pricing revenues (above current 5 percent per year increase) | \$0.2 | \$2.4 | \$1.1 | \$8.9 | Estimate based on aggressive use of tolling and pricing opportunities in SAFETEA-LU. |
| VMT fees (future); transition from short term toll/pricing innovation | | | | | High potential but widespread deployment assumed after 2015. |

Source: Future Financing Options to Meet Highway and Transit Needs, Table ES.2, Transportation Research Board's National Cooperative Highway Research Program.

Candidate Revenue Sources

| Specific Revenue Tool | Modes | | | | Scope | | Yield | Locations Used |
|---|---------------------------|--------------|-------------------------|---------|---------|---------|------------------------------|--|
| | Highway/ Bridge | | Transit | | Program | Project | | |
| | Preservation, Maintenance | New Capacity | Operations, Maintenance | Capital | | | Potential ^a Yield | |
| Fuel Taxes | | | | | | | | |
| Motor fuel excise (per gallon) tax | • | • | | • | • | | H | All states , Federal |
| Indexing of the motor fuel tax (can be indexed to inflation or to other factors) | • | • | | • | • | | H | FL, IA, KY, ME, NE, NC, PA, WV |
| Sales tax on motor fuel ^d | • | • | | • | • | | H | CA, GA, HI, IL, IN, MI, NY |
| Petroleum franchise or business taxes | • | • | | • | • | | H | NY, PA |
| Vehicle Registration & Related Fees | | | | | | | | |
| Vehicle registration and license fees | • | • | | | • | | H | All states |
| Vehicle personal property taxes | • | • | | | • | | M | CA, KS, VA |
| Excise tax on vehicle sales dedicated to transportation | • | • | | | • | | H | CT, IA, KS, MD, MI, MN, MO, NC, NE, OK, SD, VA; Federal for heavy trucks |
| Tolling, Pricing & Other User Fees | | | | | | | | |
| Tolling new roads and bridges | | • | • | • | | • | M | About half of states (e.g., TX, FL, VA) |
| Tolling existing roads | • | • | • | • | | • | L | VA proposed, others considering |
| HOT lanes, express toll lanes, truck toll lanes | | • | • | • | | • | M | CA, CO, GA, MN, TX |
| VMT fees | • | • | • | • | • | | H | OR testing; recommended by 15 state-pooled fund study |
| Transit fees (fares, park-and-ride fees, other) | | | • | | • | | H | All transit agencies |
| Container fees, customs duties, etc. | | • | | | • | • | M | CA |
| Beneficiary Charges & Local Option | | | | | | | | |
| Dedicated property taxes | • | • | • | • | • | | H | Many local governments |
| Beneficiary charges/value capture (impact fees, tax increment financing, mortgage recording fees, lease fees, etc.) | | • | | • | | • | L | Many states and localities (e.g., CA, FL, OR, NY) |
| Permitting Local Option Taxes for Highway Improvements: | | | | | | | | |
| • Local option vehicle or registration fees | • | • | | | • | • | M | AK, CA, CT ^b , CO, HI, ID, IN, MS ^b , MO, NE, NV, NH, NY, OH, SC, SD, TN ^b , TX, VA ^b , WA, WI |
| • Local option sales taxes | • | • | | | • | • | H | AL, AZ, AR, CA, CO, FL, GA, IA, KS, LA, MN, MO, NE, NV, NM, NY ^b , OH, OK, SC, TN, UT, WY |
| • Local option motor fuel taxes | • | • | | | • | • | M | AL, AK ^b , FL, I, IL, MS, NV, OR, VA, WA |
| Permitting local option taxes for transit: | | | | | | | | |
| • Local option sales taxes | | | • | • | • | • | H | AL, AZ, CA, CO, FL, GA, IL, LA, MO, NV, NM, NY, NC, OH, OK, TX, UT, WA |
| • Local option income or payroll tax | | | • | • | • | • | M | IN, KY, OH, OR, WA |
| Other Dedicated Taxes | | | | | | | | |
| Dedicate portion of state sales tax | • | • | • | • | • | | H | AZ, CA, IN, KS, MA, MS, NY, PA, UT, VA |
| Miscellaneous transit taxes (lottery, cigarette, room tax, rental car fees, etc.) | | | • | • | • | • | L | Various states and localities |
| General Revenue Sources | | | | | | | | |
| General Revenue | • | • | • | • | | | H | Most states and localities |

^aPotential Yield; H = High, M = Medium, L = Low

^bRevenues go into General Fund but can be earmarked or used for transportation.

^cFor purposes of this report, the leveraging of tax subsidies through tax credit bonds and investment tax credits is treated effectively as producing revenue from general fund sources for transportation.

^dIn some states, revenues from sales taxes on motor fuel are not dedicated or only partially dedicated to fund transportation needs.

Source: *Future Financing Options to Meet Highway and Transit Needs*, Table ES.1. Transportation Research Board's National Cooperative Highway Research Program

CHAPTER 4: OTHER TAX & FEE MECHANISMS

States and localities can also rely on specialized state and local sales taxes and so-called value capture fees. In 2004, those mechanisms provided \$15.4 billion for highways and \$9.5 billion for transit at all levels of government.

Revenues from them are dedicated to transportation purposes usually with the approval of voters. These specialized taxes and fees include:

- ▶ **Development Impact Fees**—fees levied by local governments on new developments to pay for the construction or expansion of capital improvements and infrastructure that are necessitated and benefit the new development. Impact fee laws exist in 26 states.²⁷
- ▶ **Special Assessments**—taxes apportioned by local governments to recover the costs of public infrastructure improvements such as new roads in geographic areas in which the market value of real estate is higher due to the improvements.²³
- ▶ **Tax Increment Financing**—a technique in which bonds are issued to finance public infrastructure improvements and repaid with dedicated revenues from the increment in property taxes as a result of the improvements. Arizona is the only state that has not enacted laws allowing tax increment financing. It has been used extensively in states such as Illinois, Minnesota and Wisconsin.²³
- ▶ **Community Facilities Districts**—mechanisms where residential and commercial property owners are charged an annual fee for the

benefit of infrastructure in their area. Used in California and to a lesser extent elsewhere, these mechanisms are well-suited to regional projects and programs since they are not tied to a specific facility. Analysts believe they may have the potential to play a bigger role in future revenue generation.²³

In addition, states rely on a number of other specialized taxes for a portion of their transportation funding. They include:

- ▶ **Rental Car Taxes**—These taxes are a key funding source for public transportation projects in Wisconsin. A portion of the tax is dedicated for transit in Arkansas, Florida and Pennsylvania as well. New York dedicates its rental car taxes to the Dedicated Highway and Bridge Trust Fund.²³
- ▶ **Cigarette Taxes**—Oregon and Pennsylvania are among the states that have derived transit revenue from these taxes.²³

Gambling revenue is also used to some extent for state transportation expenses. For instance, casino revenues are used to fund elderly and disabled programs, including transit, in New Jersey. A portion of lottery revenues are dedicated for transit in Oregon and Pennsylvania.²³



CHAPTER 5: DEBT FINANCING TO REDUCE PROJECT DEVELOPMENT COSTS

With state governments facing significant political challenges to raising gasoline and other taxes and fees for transportation needs, a way of financing new roads from another era is receiving renewed attention. Debt financing, more commonly known as borrowing, is being used more widely to provide capital for projects up front, accelerate construction and reduce total project costs.

There are now a number of financial tools states can take advantage of to support debt financing. They include:

- ▶ **State Credit Assistance**—States can use a portion of their federal transportation funds to capitalize state infrastructure banks, which loan funds to projects with dedicated revenue streams at lower cost than private capital markets. Florida and South Carolina are among the leading states in this area. More than 30 states have entered into more than \$5 billion in loan agreements under the program.
 - ▶ **Federal Credit Assistance**—With the Transportation Infrastructure Finance and Innovation Act of 1998, Congress brought the state infrastructure bank concept to the federal level. The act provides direct federal loans, loan guarantees and lines of credit to projects of regional or national significance and helps reduce the risk and interest rates on debts. The program has provided more than \$3.6 billion in credit assistance to projects since 1999 to fund more than \$16 billion in infrastructure investment including such large-scale projects as the SR-91 Express Lanes and South Bay Expressway in California, the Miami International Center in Florida, the Camino Colombia Toll Road in Texas and the Dulles Greenway in Virginia.²⁵
 - ▶ **GARVEE Bonds**—Grant Anticipation Revenue Vehicles allow states to issue debt backed by future federal gas tax apportionments. States, political subdivisions or public authorities can incur debt through a variety of mechanisms including bonds, leases and mortgages and reserve a portion of future federal-aid highway funds to service the debt. Arkansas, California and Ohio are among the leading GARVEE states. Through 2005, 14 states, Puerto Rico and the Virgin Islands had issued \$4.8 billion in GARVEE debt.²⁸ In Oklahoma, a \$799 million program to finance 12 “corridors of economic significance” was authorized by the state’s legislature in 2000. The state expected to fund \$500 million of that with GARVEE bonds. Examples of proposed projects in the program included extensions of U.S. 77 in Oklahoma City, I-44 in Tulsa and U.S. 183 in southwest Oklahoma.²⁵
 - ▶ **Section 129(a) Loans**—States are authorized to loan a portion of their federal-aid funding 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.²⁶
 - ▶ **Private Activity Bonds**—Under SAFETEA-LU, the 2005 federal authorization for highway programs, states are now allowed to have private participation in tax-exempt facility bonds, while still maintaining the tax exempt status of the bonds. The law authorizes \$15 billion in exempt facility bonds for qualified highway or surface freight facilities.²⁹
- All of these tools have the common purpose of attracting more private capital into transportation finance and are emblematic of a shift in the traditional roles of the federal and state governments in transportation finance. As detailed in Chapter 7, states are also taking advantage of private capital in expanded tolling, long-term leases of transportation assets and other innovative mechanisms.



CHAPTER 6: STATE INFRASTRUCTURE BANKS

In 1998, Arizona established the Highway Expansion and Extension Loan Program, a state infrastructure bank that provides loans or credit enhancement for eligible projects.

A seven member advisory committee accepts loan applications, reviews and evaluates requests for financial assistance and makes recommendations to the state transportation board on loan and financial assistance requests. The program is one of the most active state infrastructure banks in the country and has approved 55 loans worth nearly \$600 million and dispersed \$510 million for projects in 14 of Arizona's 15 counties as of the end of 2007.³⁰

Initially authorized by Congress in 1995, state infrastructure banks are in 32 states and Puerto Rico. All states, territories and the District of Columbia are currently authorized to enter into cooperative agreements with the secretary of transportation to establish revolving funds eligible to be capitalized with federal transportation funds. These revolving funds allow for the leveraging of federal and state resources by lending rather than granting federal-aid funds and can be used to attract non-federal public and private investment.²³

But not all state infrastructure banks are structured exclusively as loan revolving funds capitalized with federal grants and state match. Arizona's infrastructure bank and others rely principally on borrowing through the tax-exempt bond market to obtain lendable funds. Loan repayments then are used to retire the debt that has been issued, rather than being recycled into a second round of project loans.²³

Puerto Rico has also taken the state infrastructure bank concept in a slightly different direction. There, money for the bank is leveraged to support the issuance of highway bonds. The bank used \$15 million in combined federal and state seed money to establish a trust fund that was used as partial se-

curity for a \$75 million bond issue. That bond issue was used to finance highway and bridge projects throughout Puerto Rico.³¹

Any private or public entity may apply for credit assistance from a state infrastructure bank, as long as the project to be financed is eligible to receive federal aid. Eligible projects include highway projects such as roads, traffic signals, intersection improvements and bridges; transit capital projects such as buses, equipment and maintenance or passenger facilities; bikeway or pedestrian access projects on highway right-of-way land.³²

State infrastructure banks around the country vary widely in size, from less than \$1 million to more than \$100 million.

These banks offer several advantages to borrowers including:

- ▶ The interest rate is set by the state.
- ▶ The maximum loan term is 35 years.
- ▶ The state may be willing to take more risk than a commercial bank would for a project with significant public benefits.
- ▶ A state infrastructure bank loan can make a large project affordable by allowing for smaller annual payments.³⁰

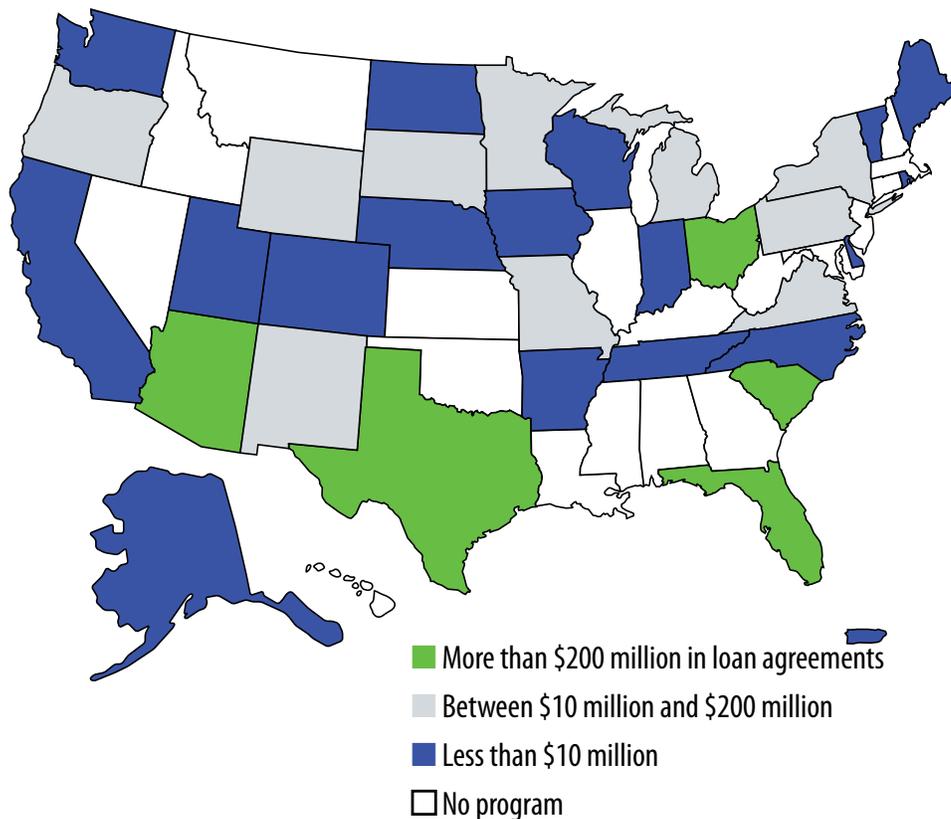
But state governments do face challenges in setting up and operating state infrastructure banks. Managing a revolving loan program is a complex process. In a 2002 Federal Highway Administration review of state infrastructure bank programs, several states cited obstacles or challenges that slowed progress in implementing programs. Among those obstacles:

- ▶ Many states lacked the legislative authority to leverage their funds and thereby increase the capitalization level of the state infrastructure bank. This constrains the maximum loan size and loan portfolio. Additional federal and state capital could alleviate these limitations.
- ▶ Some states cited the complexity of federal requirements as an obstacle to state infrastructure bank activity, particularly for transit projects.
- ▶ Several project sponsors noted that federal requirements for smaller projects can significantly delay construction schedules and increase overall project costs.

- ▶ A few states said there was insufficient demand for loans to make the program a success but some believe that may be attributed to limited marketing efforts.³³

The concept of the infrastructure bank is also being considered on the federal level. U.S. Sens. Chris Dodd and Chuck Hagel in 2007 proposed a national infrastructure bank through which the federal government could finance infrastructure projects of regional or national significance with public and private capital.³⁴ President Barack Obama has expressed his support for the proposal.

State Infrastructure Bank Activity



Source: Highway Statistics 2005, released October 2006.

CHAPTER 7: ALTERNATIVE TRANSPORTATION FUNDING MECHANISMS

Taxation and debt financing mechanisms are clearly only part of the revenue equation, state governments are increasingly concluding. Most states are now also taking advantage of new thinking, new technology and new partners to try to ensure the future viability of their transportation systems. This chapter will examine how public-private partnerships and direct user fees such as tolling, congestion pricing and vehicle miles traveled charges may reshape America's transportation future as well as the challenges states face in implementing them.

Public-Private Partnerships

In the fall of 2008, New York Gov. David Paterson announced he would create an 11-member state commission to recommend ways the state can raise or save money through the use of public-private partnerships involving state assets. With the price of construction commodities such as asphalt and steel increasing, the governor said it was now time to develop new ways to build and pay for infrastructure projects.

"Public-private partnerships are not the only answer, but we need to honestly assess whether they can be part of the solution," Paterson said in a statement.³⁵

Numerous states have already gone down the public-private road in recent years and their experiences provide much food for thought for states like New York that are only beginning to study the concept.

Public-private partnerships, also known as P3s, are collaborations between governments and private companies that aim to improve public services and infrastructure by capturing efficiencies associated with private sector involvement while maintaining the public accountability of government involvement.³⁶

Public-private partnerships can take many different forms in transportation but long-term P3s is the type that has received perhaps the most scru-

tiny. Long-term P3s involve a private company investing risk capital to design, finance, construct, operate and/or maintain a roadway for a specific number of years during which it collects toll revenues from the users. Sometimes the private toll company pays the public agency an upfront fee as part of the agreement. In some cases, the public and private partners share the revenue generated from the road.³⁴

The list of types of P3s includes:

- ▶ **Full-Service Long-Term Concession or Lease**—An existing toll road facility is leased to a private party for a specified number of years. During this period, the private party can collect tolls but must maintain the facilities and in some cases make improvements.¹⁴ Examples of this type include the Chicago Skyway and the Indiana Toll Road, which are detailed later in this chapter.
- ▶ **Multimodal Agreement**—These partnerships include transportation projects that involve more than one mode of transportation, such as park and ride lots, express lanes with Bus Rapid Transit services, airport transit extensions or truck/rail transfer facilities.³⁷ An example of this type is the CREATE project in Chicago, which aims to maximize the use of five train transportation corridors, four handling freight and one primarily handling passenger traffic. The proj-

ect involves 25 new roadway overpasses or underpasses, six new rail overpasses or underpasses, viaduct improvements, grade crossing safety enhancements and upgrades of tracks, switches and signal systems.³⁸

- ▶ **Joint Development or Transit-Oriented Development**—Surface transportation agencies partner with private developers to capture a portion of the increased value resulting from the enhanced accessibility provided by proposed or recent transportation projects.³⁵ Austin, Houston and Miami are among the cities with these kinds of developments.
- ▶ **Build-Own-Operate**—The private entity owns the project and has the right to develop, finance, build, operate and maintain it.¹⁴ The CREATE project in Chicago also uses the Build-Own-Operate model.
- ▶ **Build-Operate-Transfer or Design-Build-Operate-Maintain**—State or local governments, using public funds, contract with a single entity to provide long-term operation and/or maintenance services.¹⁴ Examples include the Hudson-Bergen Light Rail in New Jersey, the Las Vegas Monorail and Route 3 North in Massachusetts.³⁸
- ▶ **Design-Build-Finance-Operate**—Private sector has the responsibilities of designing, building, financing and operating. These projects are mainly financed with tolls, vehicle registration fees or bonds.¹⁴ The state of California used this model in the construction of SR-125, the South Bay Expressway, a toll road in San Miguel.³⁹
- ▶ **Design-Build with Warranty**—The design-builder guarantees to meet material, workmanship and/or performance measures for a specified period after the project has been delivered.³⁵ This approach was utilized for Virginia State Route 288, a \$236 million project.⁴⁰
- ▶ **Design-Build**—Combines two services into one fixed-fee contract for both architectural/engineering services and construction.¹⁴ Examples include the E-470 Toll Road in Denver, the I-15 corridor reconstruction in Salt Lake City and Texas State Highway 130 near Austin.⁴¹
- ▶ **Design-Bid-Build**—The design and construction of a facility are awarded separately to private sector engineering and contracting firms.³⁵ A project using this approach was the airport



“Public-private partnerships are not the only answer, but we need to honestly assess whether they can be part of the solution.”

—Gov. David Paterson
New York

tunnels portion of the Hiawatha Light Rail Transit linking downtown Minneapolis with the Minneapolis-St. Paul Airport and the Mall of America.³⁹

- ▶ **Construction Manager at Risk**—The construction manager is brought into the project development process under a separate contract during the design phase to minimize risk for all parties involved by combining the experience of the engineering design and construction manager firms with the client’s understanding of the project requirements.³⁵ Several transit megaprojects in Utah and Oregon have used this approach.
- ▶ **Fee-Based Contract Services & Maintenance**—The public sector contracts with the private sector in this case usually for operations and maintenance such as snow removal, grass mowing or repairs.¹⁴ Washington, D.C., used this approach to finance the maintenance of city streets, tunnels, pavements, bridges, roadside features, pedestrian bridges, roadside vegetation, guardrails, barriers, impact attenuators and signs.³⁹

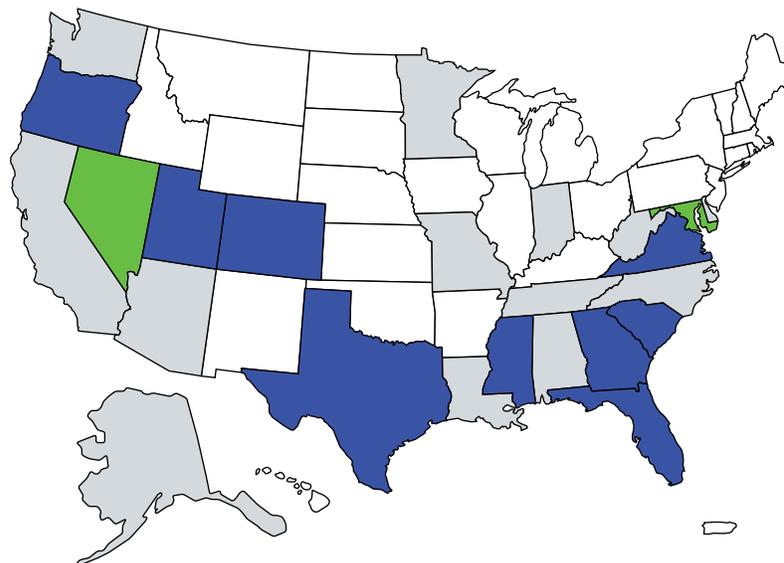
As of July 2008, nine states had broad legislation on the books enabling P3s; 13 states plus Puerto Rico had more limited legislation enabling P3s; and two states authorized only non-highway P3s.⁴²

“The reality is that private money is itching to enter this area, and lots of it,” the Commission on Public Infrastructure’s Everett Ehrlich told Congress in 2008. “Infrastructure is the flavor of the month in asset markets.”

Analysts believe P3s can be an effective way of financing, managing and operating roads while minimizing the costs and risks to taxpayers. The advantages that P3 supporters tout include:

- ▶ More capital (debt and equity) can be raised for a project, creating greater upfront proceeds and savings to local governments.¹⁰
- ▶ Operating risk is shifted to private investors and operators. The private entities assume the responsibility for completion of projects on time and within budget.¹⁰
- ▶ Costs and risks to taxpayers are minimized.
- ▶ They help taxpayers unlock the inherent value

States With Legislation Enabling P3s



- Broad authorization to use P3s for toll roads and other toll facilities
- Authorization to use P3s is limited to specific projects, pilot programs, projects approved by the legislature, or otherwise
- Authorization to use P3s for certain transportation projects, but not for toll roads

Source: U.S. Department of Transportation, “Innovation Wave”

in toll roads lost under government ownership.

- ▶ They maximize the strengths of both the public and private sectors.
- ▶ They take advantage of the more businesslike approach of private sector firms.⁴³ This includes professional business management, greater operating efficiency, lower operating and maintenance costs, better customer service, less political patronage, shareholders who will hold management accountable and opportunities for network economies by operating across state lines.⁴⁰
- ▶ Private firms are quicker to adopt cost-saving and customer-service oriented technology and specialized products and services.
- ▶ They take advantage of the private sector's diversified knowledge and awareness of new methods in design, construction, operations and maintenance.³⁴

Case Studies of Public-Private Partnerships

Examples from Illinois, Indiana and other states reveal much about the promise and perils of public-private partnerships in transportation.

Chicago Skyway

The city of Chicago entered into an agreement in 2005 with a private consortium to operate and maintain the Chicago Skyway, an eight mile toll road that connects the Dan Ryan Expressway on Chicago's South Side with the Indiana Toll Road. The consortium, which was made up of Spanish and Australian toll road developers, paid the city \$1.8 billion upfront and agreed to operate and maintain the road for 99 years. They will collect all toll revenue during the period to fund the road's operation and maintenance, to repay the debt that financed the \$1.8 billion upfront payment and to provide a reasonable return on its members' contribution of equity. The agreement fixes annual toll rate increases through 2017 and caps them thereafter at the greater of 2 percent, the consumer price index or per capita gross domestic product.³⁶

The city used the \$1.8 billion concession payment for a variety of purposes including \$465 million to redeem outstanding debt on the Skyway. The payment highlights the amounts of private capital available for investment in transportation infrastructure in the United States.³⁶

Indiana Toll Road

Shortly after the Chicago Skyway transaction was complete, Indiana launched a competitive bidding process for a concession to operate and maintain the Indiana Toll Road, which runs for 157 miles in northern Indiana between the Chicago Skyway and the Ohio Turnpike. The same Spanish/Australian consortium in Chicago's deal won that bidding process as well and in 2006 made an upfront payment of \$3.8 billion. The group agreed to operate and maintain the toll road for 75 years and collect all toll revenue during the term. Toll rates have similar maximum limits to the Skyway agreement.³⁶

The \$3.8 billion has allowed Indiana to address a \$1.8 billion transportation funding gap and fund a 10 year improvement plan known as the Major Moves program. It supports about 200 new construction and 200 major preservation projects around the state.⁴⁴

The Chicago Skyway and Indiana Toll Road are perhaps the two best-known examples of public-private partnerships involving long-term concessions of existing assets. But the model followed in these agreements is not necessarily one that will work in every case. The two roads were both older facilities with existing traffic, which provided comfort to the private consortium that there is a group of customers who will continue to use the road and pay tolls. Other roads around the country have been in operation for only a few years and don't necessarily have the same proven customer base. In other states, public-private partnerships have been explored not to seek a large upfront payment, but to help bridge a gap in a project's funding. Virginia's Pocahontas Parkway and Colorado's Northwest Parkway are two examples of this type of P3.³⁶

Over the past 15 years, the private sector has also built several new toll roads under long-term franchise agreements with state governments, including facilities in Orange County, Calif., San Diego, northern Virginia and near Laredo, Texas.³⁴

Concerns about Public-Private Partnerships

The leasing of toll roads has not been without controversy. As Everett Ehrlich told Congress in 2008, "It's a bad deal if the government agrees that no new roads will compete with the one (involved in the partnership), or if it makes a 99-year deal for a road that will only last 40 or 50 years. It's a bad

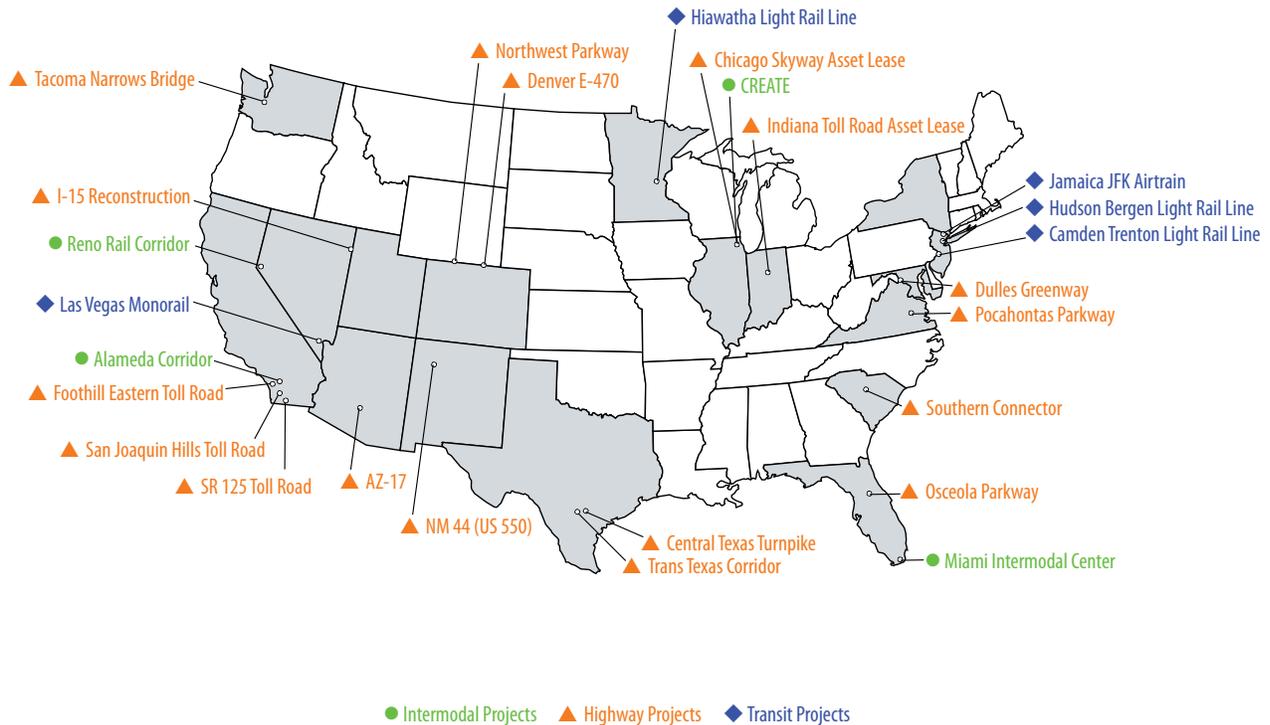
P3s for the Operation and Maintenance of Existing Toll Facilities in the United States

(January 2005–May 2008)

| Project | Location | Status | Type of P3 |
|-------------------------------|----------------|------------|--|
| Chicago Skyway | Illinois | Closed | Long-term concession to operate and maintain 7.8-mile toll road in Chicago |
| Indiana Toll Road | Indiana | Closed | Long-term concession to operate and maintain 157-mile toll road in northern Indiana |
| Pocahontas Parkway | Virginia | Closed | Long-term concession to operate and maintain 14-mile toll road outside of Richmond and to build Richmond Airport Connector |
| Northwest Parkway | Colorado | Closed | Long-term concession to operate and maintain 11-mile toll road outside of Denver and funding commitment for future expansions |
| Dulles Greenway | Virginia | Closed | Refinancing long-term concession to operate and maintain 14-mile toll road between Leesburg and the Dulles International Airport |
| Pennsylvania Turnpike | Pennsylvania | RFQ Issued | Long-term concession to operate and maintain 531-mile turnpike (requires legislative approval) |
| Greenville Southern Connector | South Carolina | RFQ Issued | Long-term concession to operate and maintain 16-mile toll road in Greenville, S.C. |
| Alligator Alley | Florida | RFQ Issued | Long-term concession to operate and maintain 78-mile toll road in South Florida. |

Source: U.S. Department of Transportation, *Innovation Wave*

Benchmark P3 Transactions



Source: *Future Financing Options to Meet Highway and Transit Needs*, NCHRP Web-Only Document 102, National Cooperative Highway Research Program, Transportation Research Board of the National Academies.

deal if the government could have simply securitized its future toll receipts instead of selling the right to impose them.”

While the Chicago City Council passed the Chicago Skyway lease with little opposition, the Indiana state legislature approved legislation for the Indiana Toll Road lease on a close vote. When several Indiana lawmakers were defeated for reelection in November 2006, some attributed it to their votes supporting the deal. Also showing opposition, in early 2007 the Texas legislature passed a bill to impose a two-year moratorium on toll road concessions following several controversial agreements for new projects in the state.⁴⁵ Legislators were concerned the state’s authorizing statute gave the Texas Department of Transportation too much authority when entering into P3s, including sole authority to negotiate all the terms of the agreements. Indiana has also sought to bring balance to the contracting process by giving oversight of any contract entered into between the state and a private entity to two separate review committees.¹⁴

The concerns about public-private partnerships that have been raised by critics include the following:

- ▶ **As is the case in Illinois and Indiana, many of the private toll road companies are foreign companies.** That’s because until recently the United States has used only public-sector agencies to build and operate toll roads. That means a private toll road operator industry has not had an opportunity to grow, although domestic toll road companies have begun to emerge in recent years. Still, the companies with the most competence and a track record of long-term development, operation and management are from Europe and Australia, which have been using transportation public-private partnerships for decades.⁴⁶
- ▶ **Some wonder whether the length of the agreements is too long and whether state governments are committing future generations when the transportation needs of tomorrow can’t be predicted.** Indeed the lengths of the Indiana and Chicago agreements—75 and 99 years respectively—are long. Much can change during that time, including the viability of the roads and their usage. But state governments already commit taxpayers for long periods when they use bonding to pay for infrastructure or when they change pension benefits. Concession

agreements can be written with detailed provisions to permit changes during their term.⁴⁰

- ▶ **Some concession agreements contain controversial non-compete clauses to prevent the construction or improvement of parallel, non-tolled roads which could provide competition.** These clauses evolved after outright bans on alternative roads proved flawed, unnecessary and unpopular. More recent agreements more widely define what the state may build and generally allow the construction of everything in its current long-range transportation plan.⁴⁰
- ▶ **Toll road leasing can lead to higher tolls.** That is sometimes true, analysts say. However, toll rates may have been too low when the road was under state control. In Indiana’s case, tolls had not been increased in 20 years and the impact of inflation meant the cost of collecting the toll was greater than the amount of the toll payment. State governments usually resist toll increases so as not to upset constituents. But when a financial crisis becomes apparent, they are forced to increase tolls by as much as 30 percent or 40 percent. Private toll companies can raise tolls each year by a single digit percentage to keep up with inflation, which is ultimately less disruptive for regular toll payers. Most recent toll road leases place a cap on toll increases based on the consumer price index, the growth in national productivity or other inflation index.⁴⁰
- ▶ **Some question whether they should have to pay a private company through tolls for roads they already paid for through taxes.** However, most toll roads were actually financed with little or no tax-based grant money but instead with borrowings based on prospective toll revenues. Moreover, analysts point out, roads are never fully paid for because they require periodic maintenance, reconstruction and widening.⁴⁰
- ▶ **Some are concerned about states ceding control of the highways to private interests.** But roads built using long-term concessions are not privately owned. The state retains ownership of the roadway and protects the public interest through negotiating and enforcing the terms of the concession agreement.⁴⁷ The private firms are selected according to their expertise and their bids to take over the business functioning of toll roads.⁴⁰

Protecting the Public Interest in Public-Private Partnerships

According to the Reason Foundation, a libertarian public policy research organization, states can protect the public interest in concession agreements by incorporating enforceable, detailed provisions and requirements into the contract to cover the following:

- ▶ Who pays for future road expansions, repairs and maintenance;
- ▶ How decisions on the scope and timing of those projects will be reached;
- ▶ What performance will be required of the private toll company;
- ▶ How the contract can be amended fairly for both parties;
- ▶ How to deal with failures to comply with the agreement;
- ▶ Provisions for early termination of the agreement;
- ▶ What protections, if any, will be provided to the company from state-funded competing routes; and
- ▶ What limits on toll rates or rate of return there will be.⁴⁰

In its final report, the National Surface Transportation Policy and Revenue Study Commission recommended the following conditions be met when states use P3s on the interstate system:

- ▶ Transparency and public participation should be key elements in all aspects of the process. Planning and environmental requirements should also be met.
- ▶ Concessions or other payments to public entities should be used to improve and expand the tolled facilities and to expand capacity on transportation alternatives within the same corridor. They should not be used for non-transportation purposes or to subsidize transportation improvements in other parts of the state.
- ▶ Conflicts of interest involving any parties to the agreement should be prohibited.
- ▶ The private sector financing should provide better value for the money than if the concession were financed using public funds.

Also, the terms of the agreement should include the following provisions:

- ▶ The private partner must adequately maintain the condition and performance of the facility over the life of the agreement and return the facility in good repair to the state at the end of the agreement.
 - ▶ There are no non-compete clauses that prohibit the construction or improvement of adjacent facilities. Provisions that require the public entity to compensate private operators for lost revenues when improvements are made to adjacent facilities are acceptable.
 - ▶ Should the private partner enter into bankruptcy, become insolvent or fail to meet all terms and conditions of the agreement, the facility will revert to the state.
 - ▶ To protect customers' interests, the rate of increase in tolls would be capped at the level of the CPI minus an adjustment factor for productivity improvements.
 - ▶ Revenue-sharing provisions should be included in the lease agreement to ensure the public sector shares in the rewards if toll revenues are higher than projected.
 - ▶ Concession agreements will not exceed a reasonable term. States should seek public input and undertake review before agreements are renewed following their initial term.¹⁷
- Former U.S. Transportation Secretary Mary Peters and the Bush Administration promoted and encouraged states to enter into public-private partnerships. The Federal Highway Administration even offers model legislation on its Web site that lawmakers can modify to authorize the use of P3s in their states. States must have the authority to lease or sell their transportation assets to a private entity before entering into these agreements. The model legislation allows the state's department of transportation to "solicit, receive, consider, evaluate and accept a proposal" for a P3. It establishes the following criteria for evaluating and selecting a bid or proposal to enter into a public-private initiative:
- ▶ The ability of the transportation facility to improve safety, reduce congestion, increase capacity and promote economic growth;
 - ▶ The proposed cost of and financial plan for the transportation facility;
 - ▶ The general reputation, qualifications, industry

experience and financial capacity of the private entity;

- ▶ The proposed design, operation and feasibility of the transportation facility;
- ▶ Comments from local residents and affected jurisdictions;
- ▶ Benefits to the public; and
- ▶ The safety record of the private entity.⁴⁸

But other sectors of government have urged caution in state implementation of P3s. In May 2007, the chairmen of the U.S. House Transportation and Infrastructure Committee and its Highways and Transit Subcommittee warned in a letter to the nation's governors that the federal government may seek to undo any state P3 agreements that "don't fully protect the public interest and the integrity of the national (transportation) system." Reps. James Oberstar and Peter DeFazio wrote in the letter: "Although we invite all financing options be on the table as we evaluate opportunities to increase investment in our nation's infrastructure, we strongly caution you against rushing into PPPs that do not fully protect the public interest, the integrity of the national system and which do not constitute a sustainable national system of transportation financing."

The letter also expresses concerns about non-compete clauses and the length of concession agreements.

Moreover, Oberstar and DeFazio wrote: "Short-sighted and unbalanced PPPs that mortgage our nation's surface transportation infrastructure for generations to come may favor parochial and private interests to the detriment of an improved 21st Century national transportation system."⁴⁹

Texas Gov. Rick Perry was among those who responded to the letter from Oberstar and DeFazio with a letter of his own. "I encourage you to examine the fundamental question of why the states are looking to engage the private sector in the first place," Perry wrote. "I will tell you that the answer in Texas is that we could no longer wait for anyone else to solve our problems. The states have looked to Presidents and Congressional leaders from both parties for years to help us improve transportation, but the assistance we need has not arrived ... As we move forward with our own solutions, I would hope that the federal government would encourage innovation and not stifle it."⁵⁰

Direct User Fees

As states consider new mechanisms to solve shortfalls in financing transportation infrastructure, many agree one issue that should be considered is whether it would be more beneficial to link user payments more closely to actual road use.

"One of the problems with the current set of funding mechanisms is that they are not perceived to be closely linked to direct use of the transportation system; allowing demand and costs for a given asset to grow faster than the revenue that funds it," Florian, the head of infrastructure banking at Goldman Sachs, told Congress in 2008.¹⁰

Examples of direct user fees include tolling, congestion pricing and vehicle miles traveled charges.

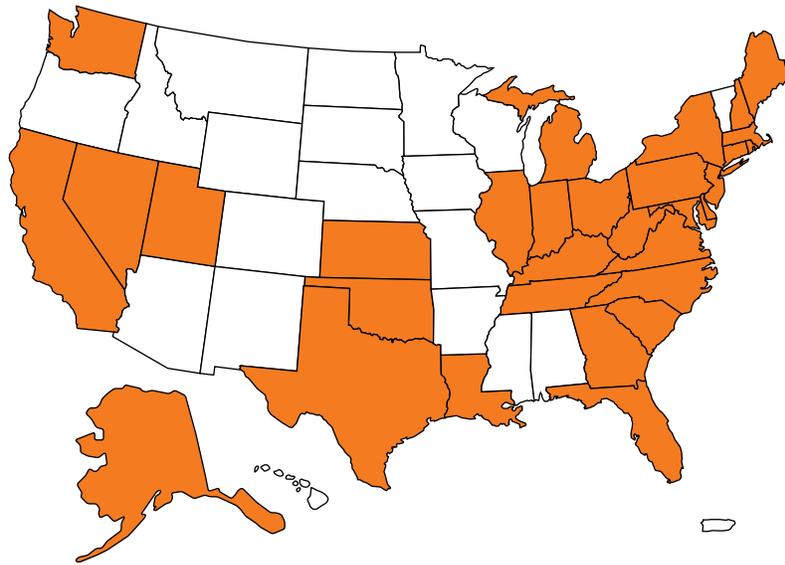
Tolling

Tolling comes in many variations today. The previous model was to build a road with money from bonds, put up some toll booths, collect money for 30 years to pay down the bonds and then remove the tolls. But tolling today is used not just as a way to raise revenue but as a way to optimize performance of transportation systems.

The old concept of traffic backups at toll plazas is in many cases a thing of the past as well. Electronic toll collection technology allows tolls to be charged at full highway speeds in open-road conditions.⁵¹ These technological advances, which include EZ passes and photo imaging, now make more extensive use of tolling possible while greatly reducing both the cost of collection and the inconvenience imposed on motorists.

More than 5,000 miles of roads, bridges and tunnels in the United States are tolled. State and local governments used \$6.6 billion in toll revenues for highway investments in 2004. That's an estimated 7 percent of total revenues used for highways at the state and local levels. Experts believe that while increasing tolling on existing roads is a challenging proposition and is mostly prohibited on the interstate system, tolling on new roads or when adding additional lanes to existing roads hold potential for generating new revenue. Texas, for example, has decided to refrain from tolling existing lanes in the state but is funding new limited-access highway capacity partially through tolls. Several other states have also either established that as policy or have considered it.²³

With an extensive network of toll roads, Florida



Source: *Highway Statistics 2005*, Tables SF-4B and LGF-4B.

derived as much as 11 percent of its annual highway revenue from tolling in recent years. The Florida Turnpike since 1990 has added nine new highway interchanges and 39 lane-miles of widening projects. Substantial improvements have also been made to toll plazas, service plazas and other facilities.²³ In addition, substantial investments have been made in electronic toll collection and intelligent transportation systems, a collection of 16 technology-based systems that can be integrated into infrastructure facilities and vehicles themselves to help alleviate congestion, improve safety and enhance productivity.⁵²

Congestion Pricing

On April 22, 2007—Earth Day—New York City Mayor Michael Bloomberg proposed a plan to charge drivers \$8 to enter parts of Manhattan during peak hours. Although opposition to the plan emerged from residents of neighboring boroughs and businesses outside the city, then-Gov. Eliot Spitzer and the Bush Administration expressed their support. But nearly a year later, Democrats in the New York State Assembly declined to put the plan up for a vote, effectively killing the measure.

The mayor expressed his disappointment in a statement. “Not only won’t we see the realization of a plan that would have cut traffic, spurred our

economy, reduced pollution and improved public health, we also lost out on nearly \$500 million annually for mass transit improvements and \$354 million in immediate federal funds,” he said.⁵³

Bloomberg’s plan was an example of congestion pricing or road pricing, a mechanism that seeks to assess vehicles for the costs they impose on society, which may include time costs, external congestion costs and other variable costs, such as environmental and governmental. Fees can be based either on the time of day (higher charges for peak hours and lower charges for off-peak hours) or directly on the level of congestion on a given roadway.⁵⁴

Charges like these can impact automobile congestion in several ways, experts believe. Those impacts include:

- ▶ The number of trips taken;
- ▶ The total miles traveled;
- ▶ The length of trips;
- ▶ Traffic speeds;
- ▶ Routes taken by travelers;
- ▶ Times at which trips are taken;
- ▶ The amount of carpooling and public transportation used; and
- ▶ The smoothness of the traffic flow.⁴⁸

Highway Congestion in the 50 Largest Urban Areas: 2005

(ranked by hours of delay per person)

| Urban Area | Rank | Population (thousands) | Hours of delay (thousands) | Hours of delay per person | Cost of congestion (\$ millions) | Cost of congestion per person (\$) |
|--|------|---------------------------|----------------------------------|---------------------------------|--|--|
| Los Angeles-Long Beach-Santa Ana, CA | 1 | 12,540 | 490,552 | 39 | 9,324 | 744 |
| Dallas-Fort Worth-Arlington, TX | 2 | 4,445 | 152,129 | 34 | 2,747 | 618 |
| Houston, TX | 3 | 3,790 | 124,132 | 33 | 2,225 | 587 |
| Atlanta, GA | 4 | 4,170 | 132,295 | 32 | 2,581 | 619 |
| San Francisco-Oakland, CA | 5 | 4,140 | 129,919 | 31 | 2,414 | 583 |
| San Diego, CA | 6 | 2,905 | 90,711 | 31 | 1,708 | 588 |
| Denver-Aurora, CO | 7 | 2,090 | 64,997 | 31 | 1,176 | 563 |
| San Jose, CA | 8 | 1,675 | 50,038 | 30 | 899 | 537 |
| Orlando, FL | 9 | 1,360 | 40,595 | 30 | 738 | 543 |
| Washington, DC-VA-MD | 10 | 4,280 | 127,394 | 30 | 2,331 | 545 |
| Detroit, MI | 11 | 4,055 | 115,547 | 28 | 2,174 | 536 |
| Miami, FL | 12 | 5,330 | 150,146 | 28 | 2,730 | 512 |
| Riverside-San Bernardino, CA | 13 | 1,800 | 48,266 | 27 | 955 | 531 |
| Austin, TX | 14 | 855 | 22,580 | 26 | 422 | 494 |
| Phoenix, AZ | 15 | 3,270 | 81,727 | 25 | 1,687 | 516 |
| Tampa-St. Petersburg, FL | 16 | 2,250 | 56,203 | 25 | 1,004 | 446 |
| Chicago, IL-IN | 17 | 8,140 | 202,835 | 25 | 3,968 | 487 |
| Seattle, WA | 18 | 3,005 | 74,098 | 25 | 1,413 | 470 |
| Charlotte, NC-SC | 19 | 860 | 21,205 | 25 | 409 | 476 |
| Baltimore, MD | 20 | 2,315 | 56,769 | 25 | 1,126 | 486 |
| Minneapolis-St. Paul, MN | 21 | 2,520 | 59,746 | 24 | 1,100 | 437 |
| Indianapolis, IN | 22 | 1,035 | 24,318 | 23 | 478 | 462 |
| Boston, MA-NH-RI | 23 | 4,075 | 93,375 | 23 | 1,820 | 447 |
| Louisville, KY-IN | 24 | 905 | 20,559 | 23 | 395 | 436 |
| Sacramento, CA | 25 | 1,750 | 39,577 | 23 | 729 | 417 |
| Nashville-Davidson, TN | 26 | 990 | 21,707 | 22 | 404 | 408 |
| Las Vegas, NV | 27 | 1,365 | 29,493 | 22 | 543 | 398 |
| New York-Newark, NY-NJ-CT | 28 | 17,775 | 384,046 | 22 | 7,383 | 415 |
| San Antonio, TX | 29 | 1,360 | 29,380 | 22 | 530 | 390 |
| Philadelphia, PA-NJ-DE-MD | 30 | 5,300 | 111,703 | 21 | 2,077 | 392 |
| Jacksonville, FL | 31 | 990 | 20,779 | 21 | 376 | 380 |
| Portland, OR-WA | 32 | 1,730 | 33,660 | 19 | 625 | 361 |
| Raleigh-Durham, NC | 33 | 950 | 18,234 | 19 | 347 | 365 |
| Columbus, OH | 34 | 1,195 | 21,958 | 18 | 408 | 341 |
| St. Louis, MO-IL | 35 | 2,105 | 37,771 | 18 | 711 | 338 |
| Memphis, TN-MS-AR | 36 | 1,020 | 17,128 | 17 | 317 | 311 |
| Bridgeport-Stamford, CT-NY | 37 | 870 | 14,510 | 17 | 280 | 322 |
| Virginia Beach, VA | 38 | 1,540 | 25,602 | 17 | 468 | 304 |
| Providence, RI-MA | 39 | 1,245 | 19,482 | 16 | 344 | 276 |
| Cincinnati, OH-KY-IN | 40 | 1,620 | 24,377 | 15 | 459 | 283 |
| Salt Lake City, UT | 41 | 970 | 14,236 | 15 | 250 | 258 |
| Oklahoma City, OK | 42 | 850 | 9,468 | 11 | 171 | 201 |
| Richmond, VA | 43 | 920 | 10,082 | 11 | 181 | 197 |
| Milwaukee, WI | 44 | 1,460 | 15,402 | 11 | 282 | 193 |
| Hartford, CT | 45 | 890 | 9,252 | 10 | 166 | 187 |
| New Orleans, LA | 46 | 1,090 | 10,837 | 10 | 208 | 191 |
| Kansas City, MO-KS | 47 | 1,500 | 13,737 | 9 | 256 | 171 |
| Pittsburgh, PA | 48 | 1,800 | 16,159 | 9 | 285 | 158 |
| Cleveland, OH | 49 | 1,790 | 13,162 | 7 | 236 | 132 |
| Buffalo, NY | 50 | 1,130 | 5,853 | 5 | 112 | 99 |

Note: TTI's methodology changes periodically. When changes do occur, the methods are applied to all years, resulting in changes possibly over the entire period of data available. Consequently, the most recently published figures may not be comparable to those in past editions.

Source: Texas Transportation Institute, 2007 Urban Mobility Report, College Station, TX: 2007, available at <http://mobility.tamu.edu/ums/> as of Feb. 13, 2008

There are several types of congestion pricing. They include:

- ▶ **Facility Pricing**—Charging fees for the use of a bridge, tunnel or small segment of road.
- ▶ **Road Pricing**—Assessing a fee along a specific roadway, usually a road connecting two or more densely populated areas. One variation to road pricing which has become popular in recent years is to open high occupancy vehicle lanes used by carpoolers to paying commuters who may be driving solo. That helps spread traffic more evenly among available lanes and further decreases highway congestion, some contend.
- ▶ **Cordon Pricing**—Establishing a series of congestion toll collection stations in a ring around a congested urban area. Commuters are charged a fee as they enter the area.⁴⁸

Current technology for congestion pricing is relatively easy to implement and makes these pricing schemes both affordable and feasible administratively. It also has made enforcement more effective. Surveillance cameras can be used to photograph the license plates of violators or those who don't have adequate funds to pay the toll.⁴⁸ Sticker tags, battery-operated tags, video tolls, GPS-based tolls and cash cards are used in the tolling process. Cameras and automatic license plate recognition are used to enforce the rules of the tolling.⁵⁵

In setting up a congestion pricing scheme, states can either fund the operation themselves or enlist the services of a private firm.⁴⁸ The Federal Highway Administration provides funding to support studies and implementation of congestion pricing programs in states.⁵⁶ In the absence of federal assistance, state and local governments can support pricing projects through the issuance of revenue bonds that are payable from the funds generated by the congestion tolls.⁴⁸

State Road 91 in Orange County, Calif., is an example of a road pricing scheme that is operated by a private firm. The state contracted with the California Private Transportation Company in 1995 to build and operate four new express lanes along 10 miles in the median of the highway. Automobiles with three or more passengers may use the express lanes for free, but all others pay a toll ranging from \$1.15 during off-peak hours to \$9.25 during peak periods. Revenues from tolling exceeded \$30 mil-

lion in 2004 and the popularity of the express lanes has continued to grow.⁴⁸

Elsewhere in California, San Diego is using a similar road pricing system to address burgeoning traffic. The system, called FasTrak, allows solo drivers to pay a per trip fee to use existing high occupancy vehicles lanes along an eight mile stretch of I-15. When these drivers enter onto a FasTrak lane, they must pass through a particular lane where a transponder inside the car signals a ground-based sensor and a deduction in the amount of the posted fee is made from the user's prepaid account. Carpoolers have their own marked lane and don't have to pay. The impact of the program has been to more than double the average daily traffic on the high occupancy vehicles lanes and to double the number of daily carpools as well. Congestion charge revenues pay for the \$750,000 in operating costs each year and provide \$60,000 for enforcement by the California Highway Patrol.⁴⁸

Advantages of Congestion Pricing

In their final report, the members of the National Surface Transportation Policy and Revenue Study Commission identified several major additional advantages of congestion pricing compared with conventional tolling. Among the advantages:

- ▶ Congestion pricing manages demand on congested facilities, thereby reducing traffic.
- ▶ It can generate additional revenues that could be used to expand highway and transit capacity in the corridor to further reduce congestion.
- ▶ It encourages the use of other routes and other modes of travel, such as public transportation.¹⁷

But analysts believe there is another advantage of congestion pricing, which should be of great interest to state governments.

Rudolph Penner of the Urban Institute told Congress in 2008 that "the collection of congestion fees provides a very useful indicator for allocating highway spending. High collections from a particular area provide a pretty good indicator that investments in expanding capacity in that area would be worthwhile, whereas low collections would suggest that investment is not badly needed."

Moreover, Penner said congestion fees and tolling both have the potential to provide very large amounts of revenue while improving the efficiency of the transportation system.¹⁸

Concerns about Congestion Pricing

There are, however, some important issues that have affected support for congestion pricing schemes. They include issues of inequity and political viability.

With regard to inequity, some argue that if all vehicles of the same type are charged the same fees during the same periods, these fees will be a more significant barrier to travel for lower-income commuters who often have little or no flexibility in setting their schedules. Those with low incomes are also more likely to live far from the city-center and their destination is more often located outside the city's core where public transportation is poor.⁴⁸

But a recent study by researchers at UCLA and USC concluded that tolls are actually a fairer way of raising money to build road capacity than most other funding schemes. The study examined the high-occupancy toll lanes on Orange County's SR 91. It found that the express lanes are disproportionately used by middle- and upper-middle-income households. But the researchers then considered hypothetically how people of different income levels would be affected if the four express lanes had instead been financed with sales tax revenues. They found the very poorest residents would have paid more than \$3 million more under a sales tax than they actually did under the current toll system. Although tolls, like sales and fuel taxes, may be a regressive form of taxation; using sales taxes to fund roadways actually creates substantial savings to drivers by shifting some of the costs of driving from them to consumers at large. In that process, sales taxes disproportionately favor the more affluent at the expense of the poor.

The researchers do have some suggestions for policymakers who may be worried about low-income, peak-period commuters paying tolls. One is to provide discounted pricing based on income levels, as is done by utility companies, or to provide travel credits to lower-income commuters. They also suggest using toll revenues to enhance transit services along the tolled corridors so the lower-income commuters have an alternative to driving on them.⁵⁷

Other studies point out that those with low incomes stand to receive disproportionate benefits from reduced traffic congestion that can result from congestion pricing, including fewer pedestrian deaths and less air and noise pollution.⁴⁸

The political viability-related concerns about congestion pricing include the following:

- ▶ Many drivers are unable to accept the notion that they should be charged for congestion and don't want to pay for roads that are currently free.
- ▶ Commuters don't see themselves as part of a larger problem, but as victims of congestion. They feel they already pay for congestion through delays and stress.
- ▶ Some commuters don't consider traffic conditions to be bad enough to warrant congestion pricing.⁴⁸

This lack of public support appears to have translated into a lack of support among elected officials as well, analysts say. Their concerns highlight the need for more public awareness and communication as congestion pricing plans are considered.

Urban planning researchers at UCLA recently proposed a way to create political support for congestion pricing on urban freeways. They suggest distributing toll revenue to cities with the tolled freeways. The idea is that receiving the revenue will convince local elected officials to become political champions of congestion pricing. The reasoning behind this, the researchers say, is that the absence of advocates for congestion pricing is a far greater hindrance than the presence of opponents. Congestion pricing currently lacks a constituency that derives concentrated benefits from the tolled roadways. The researchers point out that some have suggested rebates for toll revenue directly to motorists might be a better idea. But they contend drivers make poor recipients for congestion toll revenue because they are too difficult to organize in support of the issue. Cities, on the other hand, have lobbyists and elected officials who can be effective advocates at the state and national level.⁵⁸

Other concerns about congestion pricing include the belief by some that drivers act without regard to road charges so that congestion pricing will not change their behavior—they won't or can't switch the times they drive; they won't begin to carpool; and they won't take public transportation. But data from successful congestion pricing schemes—including one that has been in place in Singapore since 1975—appears to contradict that belief.⁴⁸

But some are uneasy with the technologies for electronic tolling technologies saying government tracking of an individual's car trips could lead to

invasions of privacy. Others point out the potential benefits for law enforcement of being able to check alibis of suspected criminals or track down the location of a stolen vehicle. But there are technological solutions to privacy concerns, including systems that erase information about place and time from the record as soon as appropriate charges are deducted.⁴⁸

Another fear is that revenues from congestion pricing will not be used to further alleviate congestion but instead might become an easy rainy-day fund when additional tax revenue is needed for other programs. Regulations or state laws mandating the revenues be used only for transportation or urban social programs is one way to prevent this from happening. As mentioned earlier, private firms can also be brought in to collect the tolls and decide how the revenue is distributed.⁴⁸

Vehicle Miles Traveled Charges

Beginning in April 2006, the Oregon Department of Transportation launched a yearlong pilot program to test the technological and administrative feasibility of replacing the gas tax with a mileage-based fee based on miles driven in the state, which would be collected at gas stations. The program included 285 volunteer vehicles, 299 motorists and two Portland service stations.⁵⁹

The mileage-fee based experiment worked like this: A GPS-based receiver was used to estimate miles driven in different zones. Mileage data was then transmitted wirelessly on a short-range radio frequency to receivers at gas stations. Participants were charged 1.2 cents per mile. In addition, some were charged premiums for traveling during peak periods to determine if such charges would impact travel behavior.¹⁷

The key findings of the pilot project included the following:

- ▶ **The mileage-fee concept is viable.** Existing technology can be used in new ways to implement a mileage fee to replace the gas tax as the principal revenue source for road funding. It worked so well that at the conclusion of the pilot, 91 percent of participants said they would agree to continue paying the mileage fee in lieu of the gas tax if the program were extended statewide.
- ▶ **Paying at the pump works.** The pilot program demonstrated the mileage fee could be paid at the pump, with minimal difference in process or

administration for motorists, when compared to how they pay the gas tax.

- ▶ **The mileage fee can be phased in.** Because retrofitting all vehicles in the state with mileage-calculating equipment would require considerable money and time, it is significant that the study showed that the mileage fee could be phased in gradually alongside the gas tax. Vehicles not equipped with the technology could continue to pay the gas tax, while equipped vehicles could pay the mileage fee.
- ▶ **Integration with current systems can be achieved.** The mileage fee can integrate well with both the gas station point-of-sale system and the gas tax collection system.
- ▶ **Congestion and other pricing options are viable.** The concept allows different pricing zones to be established electronically and the assigned fees charged for driving in each zone, even at particular times of day. That means it could be used to support not only congestion pricing but also assessment and collection of local revenues from different zones. The area pricing strategy applied in the pilot program also did have an impact on driver behaviors and congestion. It produced a 22 percent decline in driving during peak periods.
- ▶ **Privacy is protected.** Under the pilot program no specific vehicle point location or trip data could be stored or transmitted and all on-vehicle device communication had to be short range. Also, the only centrally stored data needed to assess mileage fees were vehicle identification, zone mileage totals for each vehicle and the amount of fuel purchased.
- ▶ **The system would place minimal burden on business.** Distributors and gas stations would bear some new accounting burdens. But administration is essentially automated and can be integrated easily into existing transaction processes.
- ▶ **Potential for evasion of the fees is minimal.** If a motorist attempts to tamper with the on-vehicle device, it can be engineered such that it would result in default payment of the gas tax. The degree to which equipment tampering will occur will depend on the eventual fee level, on-vehicle engineering, fee structure, fuel tax rates and penalties for tampering.

► **Cost of implementation and administration is low.** Gas station capital costs include installing the mileage reading equipment while operating costs include communications of the mileage information with a central database in order to calculate mileage fees and modifications to the station's point-of-sale system. On-vehicle capital costs will be determined by auto manufacturers and included in the price of new vehicles. The state department of transportation incurs operating costs for auditing and providing technical assistance to gas stations and motorists.⁵³

As the National Surface Transportation Policy and Revenue Study Commission points out in its final report, three major studies in recent years have all identified some form of Oregon's vehicle miles traveled fee as the most promising mechanism to serve as a long-term replacement for the fuel tax. But numerous technical and institutional questions remain. As Oregon continues to tout its success, Washington state and the University of Iowa have conducted mileage-based fee pilot projects of their own, which may help answer some of those questions.¹⁷

The study commission identifies several potential strengths of a mileage-based fee. They include:

- The fee could readily be converted to a congestion pricing charge or a weight-distance fee that would better reflect the impact of the vehicle on road wear and tear.
- The revenues directly reflect the amount of travel, which is a key factor affecting the costs of supplying, operating and maintaining highway services.
- Revenues can be collected from vehicles regardless of the type of fuel they use.¹⁷

Challenges of Implementing Vehicle Miles Traveled

But the commission concluded the technological and institutional challenges are significant and must be resolved before a mileage-based system can be implemented. The technological challenges include:

- Identifying a method for calculating the mileage traveled in each taxing jurisdiction;

- Identifying the way this mileage information would be transmitted to the tax collection agency;
- Identifying the way the system would deal with equipment failures as a result of either malfunction or tampering;
- Establishing policies for dealing with evasion of Vehicle Miles Traveled fees;
- Making sure communication of the data is seamless; and
- Convincing motorists that detailed information on their travel patterns will not be accessible to others.¹⁷

The institutional challenges identified by the commission include:

- Developing mechanisms for administering a Vehicle Miles Traveled fee, both in the short run when only a few states will have such systems and in the long run when all states would be expected to have such systems.
- Determining how to phase in Vehicle Miles Traveled charges over time due to the cost of outfitting all vehicles on the road with on-board computers, GPS receivers and wireless communications.
- Identifying how to limit the increase in the burden for federal and state tax collection agencies, which would receive frequent payments from operators of every registered vehicle. Many Vehicle Miles Traveled fee concepts assume a third-party collection agency would actually receive information on mileage traveled in each jurisdiction, bill the motorist and distribute the funds among the jurisdictions based on miles traveled and the appropriate tax rate.
- Developing broader consensus on the basic architecture and formula for creating a Vehicle Miles Traveled fee.¹⁷

The study commission concludes that "a VMT fee has many promising features; but, until more is known about collection and administrative costs, ways to minimize evasion, and the acceptability of such a mechanism to the taxpayers, it is premature to rule out other types of taxes and fees to supplement traditional fuel tax revenues."¹⁷

CHAPTER 8: ASSESSING FUNDING MECHANISMS & IMPLEMENTING THEM

The interim report of the National Surface Transportation Infrastructure Financing Commission listed 19 potential transportation funding mechanisms the panel identified along with a preliminary list of 15 criteria for evaluating them.

These criteria may be useful for state governments as they consider funding options. They include:

- ▶ **Revenue Potential**—How does the mechanism’s revenue potential at various politically acceptable rates match investment needs?
- ▶ **Sustainability**—Can the mechanism be adjusted easily by system operators or policymakers to meet needs?
- ▶ **Political Viability**—How easy is it to gain political acceptance of the mechanism compared to other mechanisms?
- ▶ **Ease/Cost of Implementation**—How easy and costly is it to implement and administer compared to other mechanisms?
- ▶ **Ease of Compliance**—To what extent does the mechanism minimize evasion compared to others?
- ▶ **Ease/Cost of Administration**—To what extent is the mechanism a cost-effective means of raising revenue?
- ▶ **Level of Government**—Which level of government is appropriate for the mechanism?
- ▶ **Promotes Efficient Use**—To what extent will the mechanism incentivize efficient use of the system?
- ▶ **Promotes Efficient Investment**—To what extent does the mechanism incentivize infrastructure investments based on transparent and performance-based criteria?
- ▶ **Promotes Safe and Effective System Operations/Management**—To what extent does the

mechanism incentivize owners and operators of transportation infrastructure to more effectively and efficiently operate and manage?

- ▶ **Address Externalities**—To what extent does the mechanism improve the way the funding system takes into account beneficial and harmful side effects, including pollution, noise and economic development?
- ▶ **Minimize Distortions**—To what extent does the mechanism affect other markets or public policies, such as energy independence?
- ▶ **Promotes Spatial Equity**—To what extent does the mechanism help fund system improvements in places that are economically or geographically disadvantaged or that suffer disproportionate use?
- ▶ **Promotes Social Equity**—To what extent does the mechanism limit costs for those who face the most difficulty in paying?
- ▶ **Promotes Generational Equity**—To what extent does the mechanism charge current and future users for current and future benefits?

The commission points out that any funding mechanism is unlikely to score well on all the criteria, so the choice of an optimal approach will require value judgments to be made by policymakers on the goals they most want to advance.¹²

Ultimately, the most significant item in this list for many policymakers may be political viability. Regardless of how a funding mechanism may look on paper, decisions about how to enhance revenue to fund transportation are never made in a vacuum. Po-

litical considerations always play an important role in determining the direction a state ultimately takes.

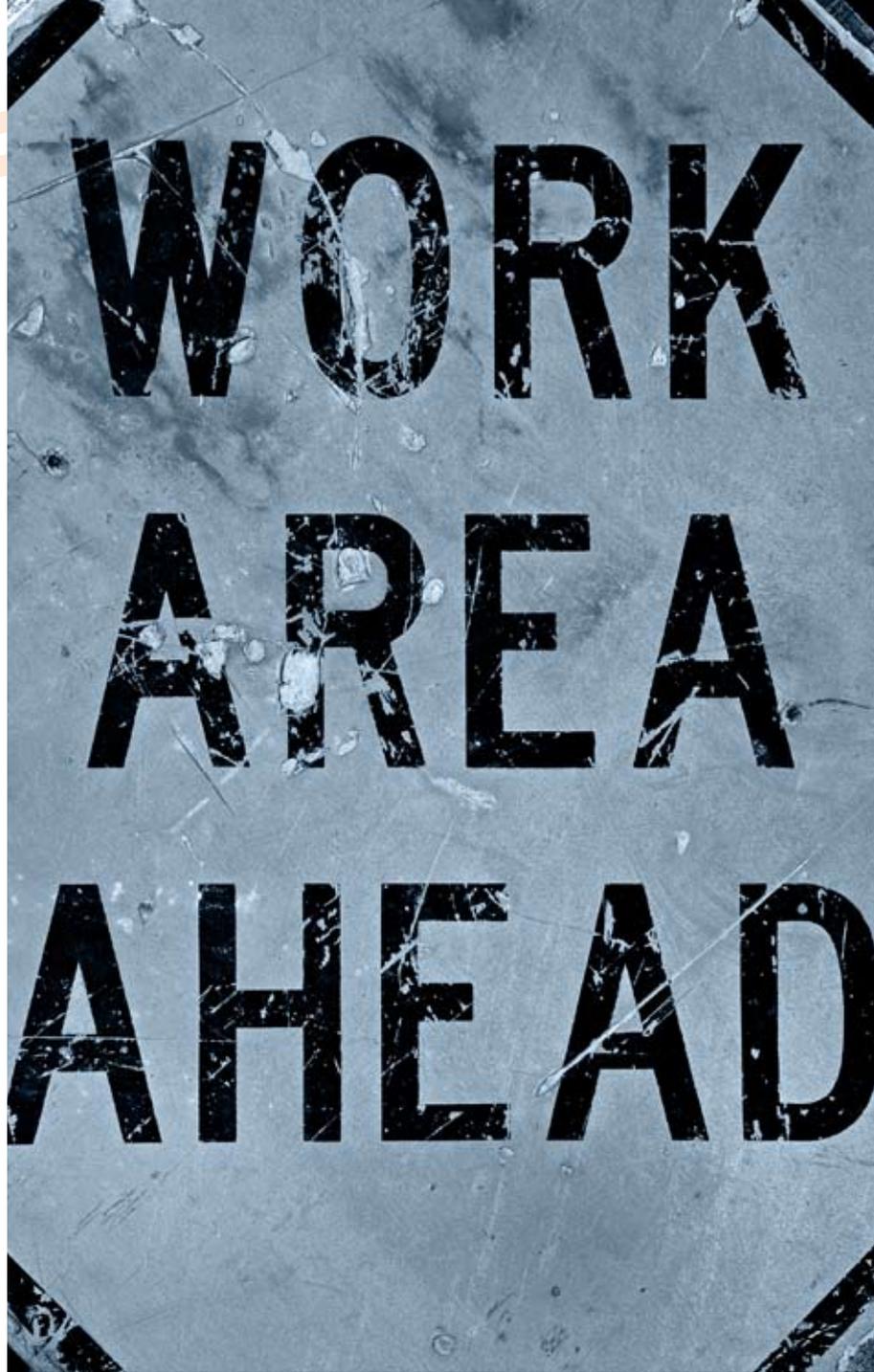
Nevertheless, drawing on important lessons learned over the years in many states, a consensus appears to have emerged about the steps necessary to successfully propose and enact new or enhanced revenue measures to fund transportation.

As the Transportation Research Board's National Cooperative Highway Research Program points out in a 2007 report, most funding initiatives come about either through legislative actions or through ballot initiatives and referenda. But regardless of how they are generated, the same steps are required to achieve success. They include:

- ▶ Developing a consensus on the scope of current and future transportation needs and on the importance of acting to address them;
- ▶ Developing a specific plan and program of investments for which additional funding is needed and demonstrating what benefits are expected from the proposed investments;
- ▶ Identifying clearly established roles, responsibilities and procedures for executing the plan and implementing the proposed improvements;
- ▶ Describing the revenue sources in detail and providing the rationales for their use;
- ▶ Designing and carrying out a public education and advocacy plan and campaign;
- ▶ Developing sustained leadership and demonstrable, sustained support; and
- ▶ Planning for and laying out a clear and reasonable timetable.²³

Assessing the political landscape, researching the options, educating the electorate and implementing new revenue-enhancing measures will occupy a substantial amount of time for state governments in the next few years. The choices and the efforts they make will determine whether our nation's transportation system ends up on the road to success.

—Sean Slone is a transportation policy analyst at The Council of State Governments.



Regardless of how a funding mechanism may look on paper, decisions about how to enhance revenue to fund transportation are never made in a vacuum. Political considerations always play an important role in determining the direction a state ultimately takes.

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