FINANCING INFRASTRUCTURE INVESTMENTS

JOINT HEARING

BEFORE THE

COMMITTEE ON THE BUDGET

AND THE

COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE

HOUSE OF REPRESENTATIVES

ONE HUNDRED TENTH CONGRESS

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FINANCING INFRASTRUCTURE INVESTMENTS

THURSDAY, MAY 8, 2008

HOUSE OF REPRESENTATIVES,
COMMITTEE ON THE BUDGET,
COMMITTEE ON TRANSPORATION AND INFRASTRUCTURE,
Washington, DC.

The Committees met, pursuant to call, at 10:09 a.m., in room 2167, Rayburn House Office Building, Hon. John Spratt [chairman of the Committee on the Budget] presiding.

Present for Committee on the Budget: Representatives Spratt, Blumenauer, Scott, Baird, Ryan, Simpson, Alexander, and Smith.

Present for Committee on Transportation and Infrastructure: Representatives Oberstar, Taylor, Tauscher, Schmidt, Latta, and Sires.

Chairman SPRATT. Despite the numerous votes we are about to have today, I think it behooves us to begin the hearing. Before turning to the two witnesses we have today for their testimony, let me ask unanimous consent that the committee agree to the following rules to facilitate this hearing. First of all, for the purpose of questioning witnesses, we will alternate between the two committees beginning with the Budget Committee Democrats, followed by the Budget Committee Republicans and then proceed to the Transportation and Infrastructure Committee Democrats, Republicans. As usual, members who were present at the beginning of this hearing will be recognized by seniority, and the members arriving later will be recognized in the order that they appear. Members will have 5 minutes to ask questions, to make statements.

After all members have had a chance to address the witnesses, members may follow up with an additional 5 minutes if time permits. All members will be allowed to submit an opening statement for the record. Those members who do not have the opportunity to ask questions will be given 14 days to submit questions for the record. And the written testimony of all witnesses will be made part of the record so that they may summarize their testimony to allow time for questions and answers. Is there any objection to those rules and procedures before we begin this hearing? Hearing none, so ordered.

I told Mr. Oberstar that I felt a bit self-conscious sitting in his chair here to which he has long established the right. I have a feeling we are being set up for something on the Budget Committee by the gracious hospitality that they have extended to us, but we are delighted to meet with them today. I look forward to this hearing. This is a joint hearing of the Committee on the Budget and the Committee on Transportation and Infrastructure. Today's hear-

ing is the first joint hearing, to the best of my knowledge, held by these two committees.

Historically, our committees have not always seen eye to eye. And I hope this hearing signals the commitment to work together on infrastructure issues because they are vitally important. Today we will put our budget and infrastructure experience together to explore how we can fund or finance capital projects in the Federal budget. Our witnesses include Dr. Peter Orszag, Director of the Congressional Budget Office, and Ms. Patricia Dalton, managing director of GAO's physical infrastructure team. Public infrastructure is vital to us and to our economy, whether we are talking about highways or mass transit or rail or aviation or drinking water or wastewater treatment. Despite their vital importance, infrastructure investments have not kept pace with repair, maintenance and the need for expansion and replacement.

As a result, there is a growing interest in how we can maintain the appropriate level and the proper kind of infrastructure investment. The Transportation and Infrastructure Committee understands our infrastructure needs, after all, it is their charter. The Budget Committee wants to better understand ways that we can fund or finance such investments and how we can evaluate the assorted options. The Federal support for infrastructure usually comes in the form of grants embodied in the authorizing legislation and funded during the appropriations process. But there are numerous means of financing. Some are described as banks, some as revolving funds. Some increase borrowing or create new forms of borrowing. Some establish entities to manage or operate such projects.

All of these proposals, along with a new highway bill looming on the horizon in the not too distant future, give these two committees a chance to put our heads together. And putting these two committees together, there are a lot of heads. Maybe a third of the House, Mr. Oberstar. We want to understand the budgetary implications, the amount and manner by which we increase our capital investments. We want to know under what scenarios it is appropriate to consider investment mechanisms other than direct Federal financing, of any policy tradeoffs of one mechanism over the other. We need to understand the new proposals for financing infrastructure improvements, keeping in mind there is never, in the end, such a thing as a free lunch. We hope this hearing will be a starting point for a longer and larger conversation about how to fund and finance infrastructure investments and how to evaluate such proposals. I now turn to Chairman Oberstar for his opening statement.

Mr. OBERSTAR. Thank you very much, Mr. Chairman. Welcome to our committee. I am glad to have you here and I am glad to be, once again, part of the Budget Committee, which I served on for my limited 6 years in the 1980s and into 1990. And I want to welcome the gentleman from Wisconsin, Mr. Ryan, who represents three of the most important constituents in the United States, my granddaughters in Kenosha, Wisconsin.

And as I said to him, we could be having this meeting at Tenuta's Deli in Kenosha, a wonderful welcoming place. But I want to welcome everyone back to the subject of capital budgeting. Let me just read a few brief highlights—13 percent of the Nation's

aging dams are classified as "high hazard." Municipal water systems need $100 billion to keep up with demand. Nearly 1 of every 2 miles of paved highways needs resurfacing or reconstruction.

Half of America's bridges are too old, too weak to adequately and safely handle today's traffic; 56 of the 184 principal locks in the Nation's inland waterways will require major repairs over the next 20 years. Deepwater ports have insufficient capacity and are stifling trade. That from a report by the Subcommittee on Economic Development, which I chaired in 1982, a report that my then-colleague and later Chair of the House Government Reform Committee, Bill Clinger from Pennsylvania, spent an enormous amount of time working on, developing the hearings. We spent months crafting this report.

We concluded in our recommendations to the committee and to the House the adoption of a capital investment budget is a move toward a prospective public policy, rather than the retrospective action that is too often indicative of public works decisions. A capital budget would provide important information not available to the Congress and the executive branch so that they can then make capital decisions weighing the evidence, evaluating resources and projecting future needs. That is what we need.

In the course of that hearing, there was an extraordinary moment when David Stockman turned around and said, yes, I think a capital budget would be a good thing. But as an annex to the Federal budget, not as an integral part of it. Now, those figures I read off from 1982, you can say that today, 260 of the Nation's inland waterway locks are inadequate to handle the capacity. Today it takes 820 hours round trip from Clinton, Iowa to New Orleans to export grain from America's heartland. That is 3 weeks travel one way. We have to do better than that, because the locks are 600 feet long and the barge tows are 1,200 feet long, and you have to split them in half, send 600 feet through—the next 600 feet through tie them together and then go onto the next of those five inadequate locks.

And on the Illinois-Ohio river system, they need an additional 12 each—1,200 foot lock—we passed that legislation through this committee, through the House, by an overwhelming vote, overrode a presidential veto. Yet not a dime, not a single project entered into the President's budget for the coming fiscal year.

I don't want to go back and update all these figures. But just on bridges we said half. That meant 73,784 structurally deficient bridges in the U.S. that are on the verge of collapse. We need to invest in America. On Monday, I participated as the keynote speaker for the European transport ministers' meeting in Slovenia, the land of half of my ancestors, to talk about our investment needs in infrastructure in waterways, highways, airways, railways and ports and to exchange with the European ministers on their plan. This is their plan—the Trans-European Transport Network (TEN–T).

But this plan was formally presented to the council of ministers, all 27 of them, yesterday, by Jacques Barrat, who is the European Union Transport Commissioner. The TEN–T Plan would provide $350 billion over 10 years for highway, railway, high-speed passenger, high-speed rail, ports and lockage systems that will link

the Atlantic Ocean through the English Channel to the Black Sea, to the Seine River, to the Rhine, to the Danube and to the Black Sea to link with a water highway. They already ship enormous amounts of goods. $350 billion. They have every one of their priority projects listed page by page, process by process, funding source by funding source.

We don't have that kind of capital budgeting. We need to do that. Some say it will be too much money, it will be too big a challenge. But if we don't know what the picture is, then how can you prioritize? How can you make choices? We have to make those choices. They are tough choices to make, of course. But that is our responsibility as Members of Congress.

So I plead to develop a capital budgeting process. I think we need to have a roadmap, a water map, an airways map, a railways map as Europe is doing or we will fall behind. Just one final observation. In 1989, China had 168 miles of interstate quality highway. Today, they have 22,500 miles and in 10 years they will have 55,000 miles. With their investment, they have reduced the travel time by truck from Beijing to Hong Kong from 55 hours to 25 hours. Nowhere in America, with all of our investments, have we reduced truck travel time by 30 hours on any stretch of roadway. We have increased it by that amount of time. They have reduced the travel time by truck from Beijing to Shanghai from 35 hours to 14 hours. We have not made those kinds of investments and improvements. If we are going to compete in this world economy, then we have to make those investments. Thank you very much.

Chairman SPRATT. Thank you, Mr. Oberstar. Mr. Ryan.

Mr. RYAN. Thank you, Chairman Spratt. And I also want to thank Chairman Oberstar for his gratitude and his kind invitation to bring us here. I hope I get invited back after I read my opening statement. I also want to thank our witnesses for joining us today, Director Orszag and Patricia Dalton, managing director of GAO's physical infrastructure team, welcome. And I look forward to your testimony. Before I share my statement on the subject of this hearing, I am going to take just a brief moment to talk about the transportation issue first on the minds of the American people. And I hear the bell, so I realize we have some time constraints here. And the issue that is first on the minds of the American people is clearly the skyrocketing price of gasoline.

One of the things almost certain to come up today as we look at alternative financing mechanisms for public infrastructure is the possibility of increasing the gas tax. I think that is the last thing we want to do at this time. We need to be looking at ways of reducing the gas price burden on the American people. And that is why today I will introduce legislation that will suspend the 18.4 cent tax on gasoline for the summer and give American families at least a little relief. I know there is a concern, probably a lot in this room about the impact this proposal will have on the highway trust fund.

So my bill holds the highway trust fund harmless and it goes a step further. It will actually shore up the trust fund by eliminating its 2009 shortfall. This may sound impossible, but it is not. We can address both these high priority issues, relief from high gas prices and needed infrastructure improvements. And we can do it without costing the taxpayers a single dime. We will do it by addressing a

third issue that is also on the list of the American people's concerns and that is Congress' pork-barrel spending. If Congress will agree to give up earmarks for just one year as laid out in the Kingston-Wolf proposal, we could save $14.8 billion. This is a proposal that proposes a bipartisan commission to make sure that we have a system that is transparent and accountable to the American people who have lost faith in the way we spend their dollars. We could use that money to give taxpayers a little relief at the pump for the summer and still have more than enough money left over to shore up the trust fund in 2009, something that I know is a major priority for the transportation and infrastructure committee. Now, while my bill takes care of the highway trust fund's short-term financing problem, there is—there is a longer-term issue on highway financing and that is what we are here to talk about today, clearly public infrastructure, from roads and bridges to dams and sewers is vitally important to the growth and productivity of our economy and to our way of life. There are two issues before us. First, how do we ensure Federal funding is allocated to high priority infrastructure that has a high benefit cost ratio. And second, what is the best means of financing this activity? Today we are here to discuss this second issue, what role, if any, alternative financing mechanisms can or should play in the funding of Federal investment in public infrastructure.

In the past, the Budget Committees have concluded, as have CBO and GAO, that these alternative financing mechanisms from sale-leasebacks to third-party financing to tax credit bonds to be a more expensive, less transparent way to acquire and use capital assets when compared to conventional appropriations in treasury borrowing. And as Dr. Orszag notes in his testimony, there is no free money here. It is pay me now or pay me later. Regardless of what kind of mechanisms we use, alternative or otherwise, the bills still have to be paid.

And while we have many worthy demands of Federal spending, the American taxpayers and thus Congress don't have a limitless supply of money to fund them. So Congress has got to set priorities so we can ensure that our most critical public infrastructure projects get every bit of funding they need in the most cost effective way.

Finally, as Dr. Orszag knows and has testified before the Budget Committee, the question of how we might finance extra spending on infrastructure or anything else will soon be moot if we don't get to the business of reforming our entitlement programs. If we continue to push off entitlement reform, these programs will make most of our funding decisions for us. Because after paying for them, there simply won't be enough money left in the budget to even finance our highest domestic priorities. This will take place regardless of what financing methods we use for these other programs.

Federal infrastructure makes an important contribution to our economy. The chairman is right to point out the needs for America in the future. And I hope we can find the best way to address these key priorities in a transparent and a responsible way. And once again, I thank every one for being here. I thank you, chairman, for your invitation. And I look forward to the views of Dr. Orszag and Ms. Dalton.

Chairman SPRATT. Mr. Mica, the ranking member of this committee is not here, I believe. Mr. Oberstar, Mr. Ryan, if it is agreeable to you, I thought we would start with Dr. Orszag, give him 5 minutes and that will leave us about 5 minutes to get to the floor. We have got 6 votes, nearly an hour on the floor. And I beg your pardon, but we didn't set the schedule. Let's go ahead and see if we can't make use of what time is available. Dr. Orszag, we will give you 5 minutes. But you can take your time when we come back to make sure you have a full presentation of your testimony.

STATEMENT OF PETER ORSZAG, DIRECTOR, CONGRESSIONAL BUDGET OFFICE

Mr. ORSZAG. Thank you very much, Mr. Spratt. I will try to be brief in this initial period. Mr. Oberstar, Mr. Ryan, members of the two committee, thank you for having me this morning. Growing delays in air travel and surface transportation, bottlenecks in transmitting electricity, inadequate school facilities all suggest that some targeted additional infrastructure spending would be economically justifiable.

First, let's get some facts. As the first slide shows, the Nation spends about $400 billion a year on infrastructure. And I tried to give you a breakdown. I don't know if you can see that of that $400 billion. Of that, the Federal Government provides about $60 billion. This is from 2004. And Federal Government spending is very concentrated, particularly in highways.

So $30 billion of the $60 billion or so in Federal spending on infrastructure is dedicated towards highway spending. State and local governments spend a disproportionate share of their money in other areas. You see that on utilities and other. And similarly, the private sector spending on infrastructure is disproportionately concentrated in things like electricity generation and transmission.

The second slide that I have may be of more interest to people. For the first time, the Congressional Budget Office has gone through the various studies that exist on what would be needed to maintain current service levels from our infrastructure and what could be economically justifiable; that is, what projects could generate larger benefits than costs. And let me focus, for example, on highways. We currently spend about $67 billion a year on highway spending. The Federal Highway Administration has estimated that it would cost about $79 billion a year to maintain current levels of service. And so an additional, let's say, $10 to $12 billion a year would be required to maintain current levels of service and that as much as $132 billion a year could be justified in terms of benefits exceeding costs. So that would be an extra roughly $60 billion or so.

In aggregate for transportation infrastructure, additional spending to maintain current levels of spending—current levels of service would amount to perhaps $20 billion a year and perhaps as much as $80 billion a year could pass an economically justifiable test. Now, it is important to remember that although the economic rationale for some additional infrastructure spending is strong, it depends very specifically on the individual projects. Some projects generate large additional benefits, others not so much.

So to say that these levels of spending may be economically justifiable is not to say that just pumping that amount of money into infrastructure would generate benefits. It depends very sensitively on which specific projects are chosen or where the money is directed. It is also the case that these estimates are dependent on and sensitive to what else is happening. And in particular, if we priced and used the existing infrastructure that we have more efficiently, these numbers would go down.

So, for example, the Federal Highway Administration has suggested that widespread implementation of congestion pricing would reduce investment needed to maintain the current highway system by $20 billion, significantly reducing the necessary investments that we are showing there. Fourth, I want to note that the existence of additional economically justifiable investments does not determine who should pay for it. And in general, the benefits principle suggests that Federal taxpayers are often the least efficient source for financial support of an infrastructure investment after the direct beneficiaries of the investment and local and State taxpayers. Even when Federal support for a given type of infrastructure is justified in principle, implementation problems may make it undesirable in practice. GAO for example, found that States offset roughly half of the increase in Federal highway grants between 1982 and 2002 by reducing their own spending and that the rate of substitution increased during the 1980s.

Let me just finally say in my final 30 seconds that I think there is a lot that the Federal Government could be doing to better utilize and make more efficient the support that we already provide for infrastructure. My testimony goes through the inefficiencies in the current tax subsidies for tax exempt State and local bonds and ways that that could be made more efficient. And I would also note that we own a significant amount of property and other forms of infrastructure that could be much more efficiently managed and that could provide offsets or sources of funding for new investments in things like highways. Thank you very much, Mr. Chairman.

[The statement of Peter Orszag follows:]

PREPARED STATEMENT OF PETER R. ORSZAG, DIRECTOR, CONGRESSIONAL BUDGET OFFICE

Chairman Spratt, Chairman Oberstar, Representative Ryan, Representative Mica, and Members of the Committees, thank you for inviting me to testify today on the challenges the nation faces in maintaining and upgrading its infrastructure. Growing congestion on the nation's transportation networks, high-profile events such as the tragic collapse of the I-35 bridge in Minneapolis last year, and concerns that the nation is underinvesting in its physical infrastructure raise important policy questions for the Congress.

"Infrastructure" is notoriously difficult to define because it can encompass such a wide array of physical assets. Today's testimony adopts a relatively broad definition; in this testimony, infrastructure includes transportation, utilities, and some other public facilities. Our nation currently invests more than $400 billion per year in infrastructure defined this way, and about $60 billion of that amount—primarily for highways and other transportation networks—is financed by the federal government each year.

The Congress would face several challenges if it sought to enhance the quality of the nation's infrastructure—among them determining what kinds of projects the nation requires; how those projects should be funded and by whom; and how to provide an environment that fosters private development, where that is an appropriate approach.

My testimony draws on past work done by the Congressional Budget Office (CBO) and others, and it sets the stage for more detailed analysis to identify economically justifiable infrastructure spending and appropriate funding mechanisms. The testimony makes the following key points:

- Estimates from the Federal Highway Administration (FHWA) and other sources indicate that additional spending of up to tens of billions of dollars each year on transportation infrastructure projects could be justified. Some of that spending would simply maintain the current performance of existing infrastructure; other projects would improve performance to the extent that the economic benefits exceeded the costs (although some projects would have net benefits that were smaller than those that could be obtained from spending on items besides infrastructure).

- In general, additional government spending for nontransportation infrastructure appears more difficult to justify. In some instances, the interaction of private producers and consumers in the marketplace determines an appropriate level of spending on infrastructure. In other instances, the case for a government role might be strong, but the case for specific additional spending either is not well documented or is difficult to justify from an economic perspective.

- Although the rationale for some additional spending is probably strong, the economic returns on specific projects vary widely. The evidence suggests that a relatively large share of net benefits would come from a relatively small share of projects. Accordingly, even if the Congress were to increase spending, it would be important to identify which projects provided the largest potential benefit from limited budgetary resources.

- Some of the demand for additional spending on infrastructure could be met by providing incentives to use existing infrastructure more efficiently and by devoting current budgetary resources to their highest valued uses. For example, the Department of Transportation has reported that the demand for new spending on highways could be reduced by as much as $20 billion annually if congestion pricing were implemented to encourage efficient use of existing infrastructure.

- The question of whether projects are economically justifiable is distinct from determining who should pay for them. There is a strong economic rationale for charging beneficiaries for the costs of infrastructure. For example, it can be more efficient to impose taxes and fees on identifiable groups of users, such as drivers, than to rely on general revenues to fund an infrastructure project. Similarly, for projects whose benefits are mostly local or regional, state or local funding can be more efficient than federal funding.

- A special-purpose entity, such as a federally chartered infrastructure bank, could provide funding for infrastructure outside of the annual appropriation process but would not be a source of "free money": Any reduction in the federal shares of project costs (obtained by reducing grant sizes or by shifting from grants to loans or loan guarantees with smaller subsidy costs) would require greater shares to be borne by project users, state or local taxpayers, or both.

Current Spending on Infrastructure

Under any definition, "infrastructure investment" encompasses spending on a variety of projects. For present purposes, it is useful to distinguish transportation, which receives the bulk of federal support, from other types of infrastructure, such as utilities. Both types of assets promote other economic activities: An adequate road, for example, facilitates the transport of goods from one place to another and thereby promotes economic activity; utilities that provide such services as electricity, telecommunications, and waste disposal are also essential to modern economies. (Appendix A describes spending on research and development and on education. Those categories form the basis for supporting intellectual and human capital, respectively, and can provide benefits that are similar to those generated by infrastructure spending.)

The most recent comprehensive data, for 2004, indicate that total capital spending from all sources on transportation, utilities, and selected other public facilities—specifically, prisons, schools, and facilities related to water and other natural resources, such as dams—was more than $400 billion in 2004 (see Table 1).[1] The federal government financed about $60 billion (including federal grants to state and local governments), or roughly 15 percent of the total.[2] State and local governments (net of the federal grants) funded 42 percent of the investment, and the private sector provided the balance. Those funding shares have changed over time and vary greatly from one infrastructure category to another.

Federal spending on infrastructure is dominated by transportation, which accounted for nearly three-quarters of the roughly $60 billion total federal investment in infrastructure in 2004. Highways alone accounted for nearly half of the total. Spending by state and local governments that year was primarily for schools, highways, and water systems. Together, those categories accounted for about $135 billion in state and local government spending, which is about 80 percent of the $170 billion spent on infrastructure by state and local governments.

In contrast, private-sector investment in infrastructure is dominated by spending on energy and telecommunications, which in 2004 represented nearly 80 percent of the sector's total infrastructure spending of about $175 billion. Private entities provide most of the nation's electricity and telecommunications services (typically, under federal or state regulation) and account for nearly all capital spending on those utilities.

To examine trends in infrastructure spending, CBO has compiled data on public spending on transportation, water resources, and drinking water and wastewater systems, which together account for the majority of the federal investment in infrastructure. From 1956 to 2004, public spending on infrastructure capital grew by 1.7 percent annually (after adjustment for inflation; see Figure 1, top panel). Since 1987, real annual spending has grown more rapidly, rising by 2.1 percent a year. As a share of gross domestic product (GDP), however, public spending on capital infrastructure has been relatively constant for the past several decades (see Figure 1, bottom panel).

1. The data in Table 1 include capital spending on infrastructure but exclude spending to maintain that infrastructure. The distinction can be somewhat arbitrary—some forms of maintenance extend the useful life of an asset and thus can have long-term benefits in much the same way new infrastructure can—and can vary from category to category. That variation affects the comparability of the rows in the table.

2. The federal government also funds investments in infrastructure through "tax expenditures," which represent the cost of tax receipts that are forgone because of the exclusion of interest on tax-exempt municipal bonds from personal and corporate gross income and certain other tax preferences. In 2006, tax expenditures for transportation, water resources, and water supply and wastewater treatment systems totaled about $8 billion.

Table 1.

Capital Spending on Infrastructure in 2004, by Category

(Billions of 2004 dollars)

	Public		Total		
	Federal	State and Local	Public	Private	Total
		Transportation Infrastructure			
Highways	30.2 [a]	36.5 [a]	66.7	n.a.	66.7
Mass Transit[b]	7.6 [a]	8.0 [a]	15.5	0 [c]	15.5
Freight Railroads	0 [a]	0 [a]	0	6.4 [c]	6.4
Passenger Railroads	0.7 [d]	0 [a]	0.7	0 [c]	0.7
Aviation	5.6 [a]	6.8 [a]	12.4	2.0 [c]	14.4
Water Transportation[e]	0.7 [a]	1.7 [a]	2.4	0.1 [c]	2.5
Total Transportation	44.7	53.0	97.7	8.5 [c]	106.2
		Other Infrastructure			
Drinking Water and Wastewater	2.6 [a]	25.4 [a]	28.0	n.a.	28.0
Energy[f]	1.7 [g]	7.7 [h]	9.4	69.0 [i,j]	78.4
Telecommunications[k]	3.9 [l]	n.a. [h]	3.9	68.6 [i]	72.5
Pollution Control and Waste Disposal[m]	0.8 [i]	1.8 [j]	2.6	3.6 [k]	6.2
Postal Facilities	0.9 [g]	0 [j]	0.9	0	0.9
Prisons	0.3 [g]	2.6 [j]	2.9	n.a.	2.9
Schools[n]	0.4 [g]	75.5 [j]	75.9	23.8 [k]	99.7
Water and Other Natural Resources[o]	7.1 [a]	4.3 [j]	11.3	n.a.	11.3
Total Utilities and Other	17.6	117.2	134.9	165.0	299.9
Total	**62.4**	**170.2**	**232.6**	**173.5**	**406.1**

Continued

Highways and roads have been the largest category of federal capital spending for decades (see Figure 2). In 2007, the federal government spent approximately $32 billion (in 2006 dollars) on highways and roads, $8.5 billion on mass transit, $5.8 billion on aviation, and $3.5 billion on water resources. Over time, the relative shares have fluctuated. The growth in highway spending in the late 1950s was associated with the development of the Interstate Highway System. Spending on water systems increased sharply in the 1970s, after passage of the Clean Water Act; more recently, the combined share of aviation, mass transit, and rail has increased significantly.

Potential for Additional Investment in Infrastructure

Growing delays in air travel and surface transportation, bottlenecks in transmitting electricity, and inadequate school facilities all suggest that some targeted additional infrastructure spending could be economically justifiable. CBO's review of

Table 1. **Continued**

Capital Spending on Infrastructure in 2004, by Category

Source: Congressional Budget Office.

Note: n.a. = not available.

a. See Congressional Budget Office, *Trends in Public Spending on Transportation and Water Infrastructure, 1956 to 2004* (August 2007), Supplemental Tables.

b. Includes subways, bus transportation, and commuter rail.

c. Department of Commerce, Bureau of Economic Analysis, National Economic Accounts, Fixed Asset Tables, Table 3.7ES, Historical-Cost Investment in Private Fixed Assets by Industry, www.bea.gov/national/FA2004/TableView.asp?SelectedTable=53&FirstYear=2001&LastYear=2006&Freq=Year. Private spending for transportation equipment is primarily for vehicles, which can be used anywhere in the system and therefore is not considered part of infrastructure spending.

d. See *Amtrak Strategic Plan, FY 2004–2008* (April 25, 2003), p. 7, www.amtrak.com/pdf/strategic.pdf. Data represent infrastructure and fleet/facilities.

e. Includes inland waterways, harbors, and port facilities.

f. Includes electricity generation, transmission, and distribution; natural gas transmission and distribution; and oil pipelines.

g. CBO analysis of data reported in *Budget of the United States Government, Fiscal Year 2006: Analytical Perspectives,* 2006, Table 6.2.

h. Census Bureau, *Annual Survey of State and Local Government Finances and Census of Governments, 2006, 2007,* www.census.gov/govs/www/estimate.html.

i. Department of Commerce, Bureau of Economic Analysis, National Economic Account, Fixed Asset Tables, Table 3.7ES (includes equipment).

j. Includes a small amount of private spending on drinking water and wastewater treatment systems.

k. Includes wired and wireless telecommunications, Internet service providers, fiber-optic networks, and broadcasting.

l. CBO analysis of data provided by Universal Service Administrative Company.

m. Includes disposal of hazardous waste and solid waste.

n. Includes primary, secondary, higher, vocational, and special education.

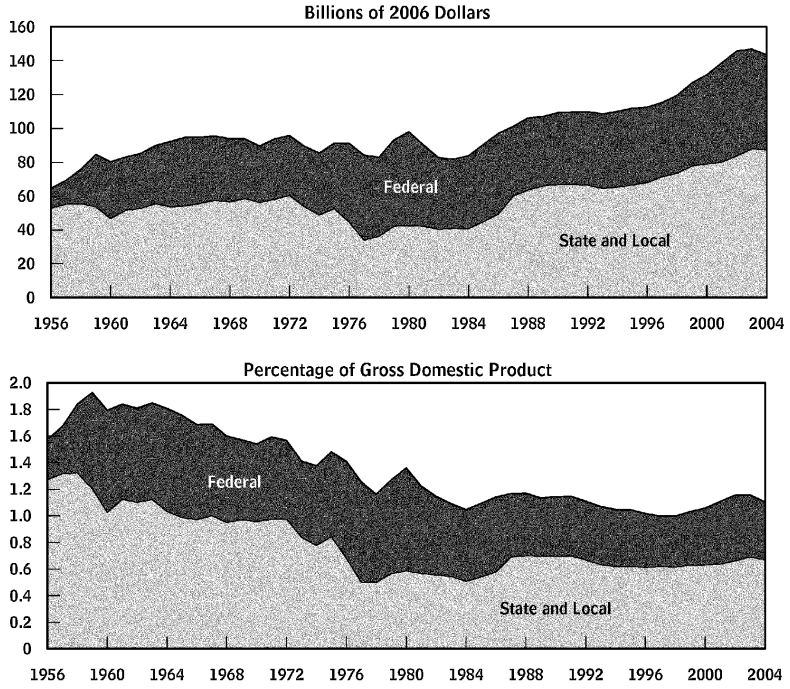
o. Includes conservation, dams, and flood control.

the evidence suggests that tens of billions of dollars of additional infrastructure spending each year could be justified on an economic basis. The need for such spending, however, could be substantially reduced by user fees that encourage more efficient use of infrastructure.

Estimates of requirements for additional infrastructure are available from a variety of sources that often define "need" differently. Some analyses seek to quantify the spending required to maintain the current performance of an asset or to provide improvement that is considered desirable according to certain engineering or public health standards (such as standards for the smoothness of pavement or allowable concentrations of a contaminant in drinking water). Other analyses attempt,

Figure 1.

Public Capital Spending on Transportation and Water Infrastructure, 1956 to 2004



Source: Congressional Budget Office.

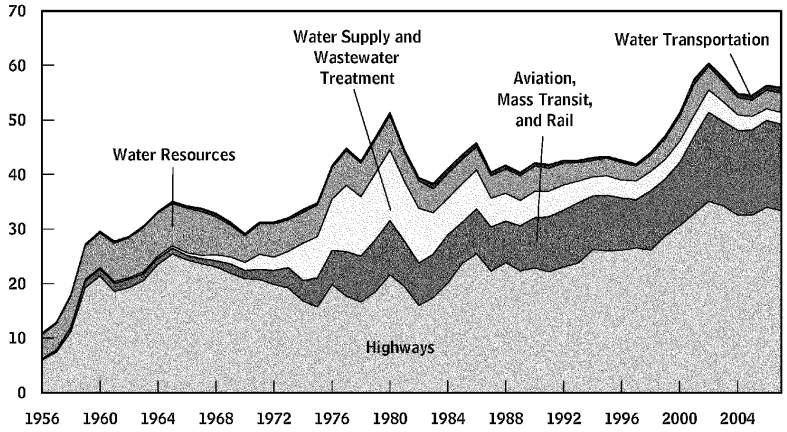
Note: Includes spending on highways, mass transit, rail, aviation, water transportation, water resources, and water supply and wastewater treatment systems.

through evaluation of private and social benefits and opportunity costs, to estimate the maximum investment that could be justified on economic grounds. The discussion below provides more detail for transportation than for other types of infrastructure because federal investment is concentrated in transportation and because more information is available on those estimates. However, the general issues raised about the transportation estimates apply to utilities and other types of infrastructure as well.

Figure 2.

Federal Capital Spending on Transportation and Water Infrastructure, 1956 to 2007

(Billions of 2006 dollars)



Source: Congressional Budget Office.

Transportation

Although capital spending on transportation infrastructure already exceeds $100 billion annually, studies from the FHWA, the Federal Aviation Administration (FAA), and elsewhere suggest that it would cost roughly $20 billion more per year to keep transportation services at current levels. Those studies also suggest that substantially more than $20 billion in additional capital spending on transportation would be justified on economic grounds if well targeted (because such spending would generate benefits whose value would exceed its cost).

Table 2 provides data on current public and private spending (reproducing the totals from Table 1) and estimates from various sources of the annual spending that would maintain each category of infrastructure at its current service level, given expected growth in demand (see the column "Spending to Maintain Current Levels of Service"). The table also provides estimates of the maximum annual investment that might be justified on economic grounds—investments whose

Table 2.

Annual Spending on U.S. Transportation Infrastructure

(Billions of 2004 dollars)

	Current Spending (Total Column, Table 1)	Spending to Maintain Current Levels of Service[a]	Economically Justifiable Investment[b]	Other
Highways[c]	66.7	78.8 [d]	131.7 [d]	*
Mass Transit[c,e]	15.5	15.8 [d]	21.8 [d]	*
Freight Railroads[c]	6.4 [f]	10.7 [g]	12.3 [g]	*
Passenger Railroads[c]	0.7	0.5 [h]	n.a.	2.1 [i]
Aviation[c]	14.4	17.9 [j]	18.9 [j]	*
Water Transportation[c,k]	2.5	2.7 [l]	n.a.	7.9 [m]
Total Transportation	**106.2**	**126.5**	**184.8**	

Source: Congressional Budget Office.

Notes: n.a. = not available; * = not applicable.

a. Given expected growth in demand.

b. Based on estimates from other sources of investments for which private and social benefits at least equal economic costs.

c. Excludes private investment in transportation equipment (primarily vehicles).

d. Department of Transportation, Federal Highway Administration (FHWA), *2006 Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance* (updated March 15, 2007), Chapter 7, www.fhwa.dot.gov/policy/2006cpr/. The study contains specific estimates of the "cost to maintain" and "cost to improve" based on models of highway and mass transit infrastructure. FHWA derived the "cost to improve" estimates through analyses that compared total costs of various types of projects with their discounted future public and private benefits. Other recent studies (such as that by the National Surface Transportation Policy and Revenue Study Commission, *Transportation for Tomorrow* [December 2007], www.transportationfor tomorrow.org/final_report/) contain larger estimates for investments. However, those estimates assume substantial service improvements or include investments that may not pass a benefit–cost test.

e. Includes subways, bus transportation, and commuter rail.

f. A substantial amount of current capital spending is being used to increase railroad capacity. See "New Era Dawns for Rail Building," *Wall Street Journal,* February 13, 2008, p. A1.

g. *Transportation for Tomorrow,* Exhibit 4-16, provides estimates of additional freight rail investment required to accommodate expected traffic growth and to improve service. The estimate of "investment to maintain" reflects widespread improvements in infrastructure performance that are thought to be needed to maintain rail's share of the freight market.

Continued

Table 2. Continued

Annual Spending on U.S. Transportation Infrastructure

h. Statement of Mark R. Dayton, Senior Economist, Department of Transportation, Office of Inspector General, before the Subcommittee on Transportation, Treasury, the Judiciary, Housing and Urban Development, and Related Agencies, Committee on Appropriations, U.S. Senate, *Intercity Passenger Rail and Amtrak* (March 16, 2006), p. 2. The *Amtrak Strategic Plan, FY 2004–2008* (April 25, 2003), p. 7, www.amtrak.com/pdf/strategic.pdf, presents a slightly higher average of $669 million (in 2007 dollars) per year over five years for infrastructure and fleet/facilities.

i. Estimate by David Gunn, then-president of Amtrak, quoted in "Gunn: Amtrak Needs Up to $2 Billion Yearly to Repair Tracks and Bridges," *AASHTO Journal,* vol. 103, no. 4 (January 23, 2003), p. 5. Gunn was speaking of capital requirements for all Amtrak service at that time. Other sources, such as *Transportation for Tomorrow,* Exhibit 4-17, report a much higher estimate, $7.4 billion (in 2007 dollars), for a substantial expansion of intercity passenger service. Concerns about the long-term economic viability of Amtrak service outside the Northeast corridor, and the economic viability of a substantial expansion of intercity passenger service, prevent CBO from concluding that such investments would be economically justifiable. See Congressional Budget Office, *The Past and Future of U.S. Passenger Rail Service* (September 2003).

j. Federal capital spending on airports: Federal Aviation Administration, *National Plan of Integrated Airport Systems (NPIAS), 2007–2011* (2006), p. v, www.faa.gov/airports_airtraffic/airports/planning_capacity/npias/reports/media/2007/npias_2007_narrative.pdf. State and local capital spending on airports, net of Airport Improvement Program grants: CBO analysis of data from the Census Bureau, *Annual Survey of State and Local Government Finances and Census of Governments, 2006, 2007,* www.census.gov/govs/www/estimate.html. Air traffic control: Federal Aviation Administration, *Capital Investment Plan for Fiscal Years 2009–2013* (2008), Appendix C, p. 4, www.faa.gov/about/office_org/headquarters_offices/ato/service_units/operations/sysengsaf/cip/. "Air traffic control" includes $4.082 billion for the Next Generation Air Traffic System (NGATS) over five years.

   Other estimates of NGATS are $1 billion or more per year higher. See statement of David A. Dobbs, Assistant Inspector General for Aviation and Special Program Audits, Department of Transportation, *Perspectives on the Progress and Actions Needed to Address the Next Generation Air Transportation System,* before the Subcommittee on Aviation, Committee on Commerce, Science and Transportation, U.S. Senate (July 25, 2006), p. 11. Private investment to implement NGATS is estimated to be roughly equal to public investment. See Federal Aviation Administration, Joint Planning and Development Office, *Business Case for the Next Generation Air Transportation System* (August 24, 2007), p. 15, www.jpdo.gov/library.asp.

k. Includes inland waterways, harbors, and port facilities.

l. Inland waterways and harbors: Department of the Army, Office of the Assistant Secretary of the Army (Civil Works), *Civil Works Budget for the U.S. Army Corps of Engineers, Fiscal Year 2009* (February 2008), pp. 3 and 4. Port facilities: Department of Transportation, U.S. Maritime Administration, *U.S. Public Port Development Expenditure Report* (July 2007), Table 7, www.marad.dot.gov/Publications/ports.htm.

m. Inland waterways and harbors: Department of the Army, Army Corps of Engineers, "Database of Internal Analysis of Approved and Ongoing Construction for Inland Waterways and Harbors." Port facilities: *U.S. Public Port Development Expenditure Report,* Table 7. Concerns about the quality of the Corps' benefit–cost analyses prevent CBO from accepting its estimate as economically justifiable. (See General Accounting Office, *U.S. Infrastructure: Agencies' Approaches to Developing Investment Estimates Vary,* GAO-01-835 [July 2001], p. 36.)

private and social benefits would be at least equal to their economic costs (see the column "Economically Justifiable Investment").[3]

Highways constitute by far the largest category of current spending on transportation infrastructure, and they dominate the estimates of investment required to maintain current performance. FHWA estimates that, without a significant change in the way highways are paid for, it would cost $79 billion per year to maintain performance—$12 billion more than total current spending. The next largest category is aviation, which has seen burgeoning demand for air travel and a commensurate growth in congestion. According to estimates from the FAA and other sources, annual investment of $18 billion, about $4 billion above current annual spending for airports and air traffic control, would be necessary to maintain performance under current pricing policies. Freight railroads also would require annual investment of about $4 billion more than is currently spent. (Some current spending on freight rail is for projects that will expand service by boosting capacity on major routes.[4])

For mass transit and water transportation, the best estimate of investment to maintain current services is only slightly above the current amount; and for passenger rail, it is below current spending. The latter fact could be the result of differences among sources in the definitions of capital spending and maintenance, or it could indicate that some efforts to maintain performance are simply inefficient—that is, they cost more than is necessary. The figures for freight and passenger rail illustrate an important general point: Not all current investment is effective in maintaining, or even is intended to maintain, the performance of the existing infrastructure. Likewise, future increases in investment might or might not be targeted to that purpose.

Similar distinctions apply to the estimates of spending that might be justified on economic grounds. In most instances, those estimates are for amounts well above

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3. Because the estimates in Table 2 were derived from a variety of sources using different methodologies and periods, it is difficult to compare modes. The table does not present estimates of economically justifiable investments for passenger rail or water transportation. David Gunn, then-president of Amtrak, was quoted providing an estimate for passenger rail in "Gunn: Amtrak Needs Up to $2 Billion Yearly to Repair Tracks and Bridges," *AASHTO Journal,* American Association of State Highway and Transportation Officials, vol. 103, no. 4 (January 24, 2003), p. 5; the National Surface Transportation Policy and Revenue Study Commission, *Transportation for Tomorrow* (December 2007), www.transportationfortomorrow.org/final_report, also presented figures. The Army Corps of Engineers and the Maritime Administration have developed estimates for water transportation. However, concerns about the quality of the analyses prevent CBO from placing confidence in the estimates. See the notes to Table 2 and Congressional Budget Office, *The Past and Future of U.S. Passenger Rail Service* (September 2003) and General Accounting Office, *U.S. Infrastructure: Agencies' Approaches to Developing Investment Estimates Vary,* GAO-01-835 (July 2001), p. 36.

4. See Daniel Machalaba, "New Era Dawns for Rail Building," *Wall Street Journal*, February 13, 2008, p. A1.

current spending or the estimate of investment required to maintain current services. The estimates, however, are approximations because they are based on analyses of broad samples of generic projects and not detailed analyses of individual projects. Moreover, the estimates do not justify increases of those amounts in infrastructure spending unless such spending is carefully targeted to economically efficient projects. Otherwise, the spending would not generate the same benefits as the estimates suggest—and indeed it could produce costs that exceed the benefits.

A related point is that, even within a group of economically justifiable projects, the benefits from some would greatly exceed their costs while the benefits from others would just barely do so (and might not exceed the benefits available from other types of federal or private spending). Carefully ranking and funding projects to implement those with the highest net benefits would yield a disproportionate share of the total possible benefits at a fraction of the total spending that is potentially economically justifiable. For example, according to a detailed analysis that the FHWA provided to CBO, over the next five years, investments required to maintain current levels of highway service would represent 58 percent of the total spending for all economically justifiable investments for highways, but they would provide 83 percent of the net benefits.

Table 2 on page 8 provides information about the potential for additional spending, but it provides no information about who should pay. The "benefits principle" suggests that federal taxpayers are often the least efficient source of financial support for an infrastructure investment—after the direct beneficiaries of the investment and local or state taxpayers. From the standpoint of economic efficiency, the ideal is to charge users of infrastructure according to the marginal costs of their use. For example, people who use water can be charged for the costs of acquiring, storing, treating, and distributing the water they consume.

One characteristic of many infrastructure services, however, is that some costs are not associated with anyone's marginal use. For example, to the extent that water pipes deteriorate with time, independent of the volume of water flowing through them, investments in pipes cannot be financed solely through marginal-cost pricing. Telecommunications networks provide a similar example: Until a network begins to experience congestion effects, the marginal cost of another phone call is essentially zero. In such cases, the most efficient solution might be a two-part tariff, which includes an access charge (for example, a monthly fee) as well as use charges. Although two-part tariffs pose the risk of discouraging some uses that would be cost-efficient, they demonstrate the willingness of users to pay for the services that are made possible by an infrastructure investment, and thus they provide an indication of that investment's efficiency. (Indeed, the term "infrastructure demand" should arguably be reserved for desires that are supported by beneficiaries' willingness to pay.)

Although it is generally desirable from an economic efficiency perspective, charging the beneficiaries of infrastructure investments is not always feasible,

even when the benefits of such investments would exceed their costs. In some cases, the key problems are technical, such as the limitations of 20th-century methods for collecting highway tolls. In other cases, the difficulty arises because the benefits are widely distributed and preventing nonpayers from receiving the benefits is difficult or impossible, as in the case of a dam that provides flood control services. In those instances, taxpayer funding can be the most efficient solution, if the projects to be funded are chosen on the basis of benefit–cost analyses.

Even under taxpayer funding, a version of the benefits principle still applies: The more closely the group being taxed matches the set of beneficiaries, the more efficient the investment decisions are likely to be. In particular, if the benefits of a project are concentrated locally or regionally, state or local governments spending their own money are likely to be in a better position to make efficient choices, weighing benefits against costs, than the federal government would be. For example, partial taxpayer support for a mass transit system could be economically efficient, to the extent that the system benefits nonriders by reducing congestion on area roads. However, decisions about the amount to invest might be less efficient if the taxes being collected come from areas that extend beyond the region served by the system.

Conversely, the case for support from federal taxpayers is strongest for investments with benefits that accrue to broad geographic areas or to the nation as a whole and are not restricted to a class of users that can be charged more directly. Infrastructure with such widespread benefits arguably includes the Interstate Highway System and wastewater treatment plants for communities whose water eventually flows into a major resource such as the Chesapeake Bay or the Gulf of Mexico. Even when federal support for a given type of infrastructure is justified in principle, implementation problems might make it undesirable in practice. If the federal government decides to channel additional infrastructure funds through state governments, some of those funds ultimately might not finance additional infrastructure; instead, federal funding might merely substitute for state and local government funding, with little or no effect on the total. The Government Accountability Office (GAO) has confirmed earlier analyses showing that federal grants to state and local governments do not always serve their intended purposes. In its analysis of increases in federal highway grants between 1982 and 2002, GAO reported that states offset roughly half of the increases by reducing their own funding, and that "the rate of substitution increased during the 1990s."[5]

A final and crucial point regarding Table 2 on page 8: The estimates generally assume that the economic and policy environment remains unchanged. In

5. See Government Accountability Office, *Federal-Aid Highways: Trends, Effects on State Spending, and Options for Future Program Design,* GAO-04-802 (August 2004), summary page. Another factor that undermines the efficiency case for federal funding is the formulaic approach commonly used to divide federal resources among the states, which can be an obstacle to funding for the projects with the best benefit–cost ratios.

particular, the estimate for highways assumes no expansion in the use of congestion pricing—that is, tolls that are higher during peak times and lower during off-peak times.[6] However, the FHWA estimates that widespread implementation of congestion pricing would reduce the investment needed to maintain the highway system by more than one-fourth, or about $20 billion annually. Thus, the estimate of the investment to maintain current services would decline from nearly $80 billion to slightly less than $60 billion per year, which is less than the current spending of $66.7 billion.[7] Similarly, congestion pricing would reduce the amount of highway investment that would be economically justifiable by almost 16 percent, to roughly $110 billion per year.

Utilities and Other Types of Infrastructure

Most energy and telecommunications systems are privately owned and operated, and their funding comes from sales to consumers. Current capital spending on energy-related infrastructure exceeds $75 billion annually—about 90 percent of it in private investment. Estimates prepared for the Edison Electric Institute indicate that electric utilities would need to invest an annual average of $28 billion for generation, $12 billion for transmission, and $34 billion for distribution of electricity to maintain current levels of service, given expected growth in demand.[8] To justify such investment to shareholders and regulatory authorities, businesses typically conduct thorough financial analyses before undertaking large investments. Comparable figures for electricity generation, oil pipelines, and natural gas distribution are not readily available. The Department of Energy's Energy Information Administration arrived at an estimate of $2.6 billion per year for economically justifiable investment in the natural gas transmission network.[9]

Systems for wastewater and drinking water are dominated by the public sector. The nation spends about $26 billion per year on those systems, and CBO has previously estimated that investment from 2000 to 2019 would need to average between $29.7 billion and $47.2 billion annually (converted to 2004 dollars) to maintain current service standards and allow some modest improvements to meet

6. Other policy changes, such as the implementation of a carbon tax or a cap-and-trade system for carbon dioxide emissions, also could affect the amount of spending that could be justified on economic grounds.

7. See Federal Highway Administration, *2006 Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance* (updated March 15, 2007), p. 10-6.

8. See Brattle Group, "Transforming America's Power Industry: The Investment Challenge—Preliminary Findings" (presented at the Edison Foundation Conference, "Keeping the Lights On—Our National Challenge," New York, April 21, 2008).

9. See Department of Energy, Energy Information Administration, *Natural Gas 1998: Issues and Trends*, p. 126. (The estimate given here was converted to 2004 dollars by CBO to be consistent with Table 2.) A more recent but less well documented estimate appears in J. Alex Tarquinio, "There's a Light at the End of the Energy Pipelines," *New York Times*, February 26, 2006.

current or future regulations imposed by the Environmental Protection Agency (a somewhat different standard than that presented in Table 2 on page 8).[10]

The available estimates for investment in other categories of infrastructure included in Table 1 on page 4—pollution control and waste disposal facilities, postal facilities, prisons, schools, and water and other natural resources—are limited. Two estimates are available for schools: Survey data from the National Center for Education Statistics indicate that a one-time investment of $142 billion beyond current amounts would be necessary to bring school facilities into a good state of repair; the National Education Association has estimated that a one-time investment of $360 billion beyond current spending would be necessary to "modernize" schools (both figures are in 2004 dollars).[11] However, neither estimate makes any allowance for the opportunity cost of the capital invested or specifies the period over which the investment would be made.

The Association of State Dam Safety Officials has estimated that maintaining nonfederal dams in their current condition would cost $0.8 billion per year and that $3.2 billion (in 2004) in annual spending is economically justifiable.[12] CBO has no information on the methods by which those estimates were produced. Other available estimates for public facilities include the Environmental Protection Agency's $8.3 billion per year for cleaning up waste sites and the Postal Service's $2.9 billion for capital spending from 2007 to 2016.[13]

Conversely, for one category of public facility not covered in Table 1—federal buildings—the government could reduce total investment and operating costs by changing the way it acquires, manages, and disposes of property. Agencies could construct more federal facilities rather than enter into more costly long-term leases of private facilities; better manage unused, underused, and inefficient buildings; and maximize proceeds from the disposal of federal property (see Box 1).

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10. See Congressional Budget Office, *Future Investment in Drinking Water and Wastewater Infrastructure* (November 2002).

11. See Department of Education, National Center for Education Statistics, *Condition of America's Public School Facilities: 1999,* NCES 2000-32 (June 2000), p. iv; and National Education Association, *Modernizing Our Schools: What Will It Cost?* (April 2000), p. 1.

12. See Association of State Dam Safety Officials, *The Cost of Rehabilitating Our Nation's Dams, 2002*, as cited in American Society of Civil Engineers, *Report Card for America's Infrastructure, 2005,* www.asce.org/reportcard/2005/index2005.cfm.

13. For the former, see Environmental Protection Agency, Office of Solid Waste and Emergency Response, *Cleaning Up the Nation's Waste Sites: Markets and Technology Trends, 2004 Edition,* EPA 542-R-04-015 (September 2004), pp. viii; the latter is based on data the Postal Service provided to CBO.

Economic Returns on Public Spending for Infrastructure

Another approach that sheds light on the appropriateness of additional spending on infrastructure reaches broadly similar conclusions. In particular, spending on infrastructure benefits the economy by reducing the cost of private business transactions; over the past 20 years, economists have attempted to measure those benefits and have obtained a wide range of estimates. The literature supports two conclusions: First, public spending on infrastructure often produces positive economic returns, and second, there is significant variation—both in the average returns and in the range of returns among projects—that depends on several factors. Second, the research suggests that the returns on the initial phase of a system of public investments, such as the creation of the Interstate Highway System, can be large but that the economic payoff declines as the system grows.

Federal spending on infrastructure increases the stock of publicly owned capital and, in that sense, represents an investment in the future productivity of the private sector. The economic payoff from public spending on infrastructure depends on the usefulness of the investments themselves and the extent to which the spending "crowds out"—or reduces the funding available for—investment in private capital. The early research on infrastructure spending identified substantial returns on that investment. One prominent study from the late 1980s concluded that, from 1949 to 1985, a 1 percent increase in the stock of "core infrastructure" (transportation, water supply and wastewater treatment, and electrical and natural gas facilities) was associated with a 0.24 percent increase in the level of national output.[14] Because annual national output was roughly four times the estimated value of the stock of core infrastructure, that result suggested that public capital enhanced the economy's ability to produce goods and services to the extent that $1 spent on infrastructure could generate close to $1 of output within roughly a year. An implication of such findings was that a substantial part of the productivity slump of the 1970s and 1980s was the result of a shortfall of investment in infrastructure.

Estimates of such large returns, however, have been persuasively challenged by subsequent researchers. For example, some of those estimates have been found to be overly sensitive to minor changes in the data from which they were derived (as

14. Most of the issues considered in the 1990s were raised by David Alan Aschauer, "Is Public Expenditure Productive?" *Journal of Monetary Economics,* vol. 23, no. 2 (March 1989), pp. 177–200, and discussed in a large number of papers reviewed by Alicia H. Munnell, "Policy Watch: Infrastructure Investment and Economic Growth," *Journal of Economic Perspectives,* vol. 6, no. 4 (Autumn 1992), pp. 189–198, and Edward M. Gramlich, "Infrastructure Investment: A Review Essay," *Journal of Economic Literature,* vol. 32, no. 3 (September 1994), pp. 1176–1196. See also Congressional Budget Office, *The Economic Effects of Federal Spending on Infrastructure and Other Investments* (June 1998); and Jeffrey P. Cohen and Catherine J. Morrison Paul, "Public Infrastructure Investment, Interstate Spatial Spillovers, and Manufacturing Costs," *Review of Economics and Statistics,* vol. 86, no. 2 (May 2004), pp. 551–559. There is variation in the definitions of public capital and the periods covered by those papers.

Box 1.

Management of Federal Buildings and Facilities

The General Services Administration (GSA) reports that the federal government owns about 1.2 million structures, which together have an estimated replacement value of more than $1.5 trillion. The list includes standard office buildings, hospitals, courthouses, dams, and utility systems. GSA's list also includes specialized research and industrial facilities—60 percent of which are controlled by the Department of Defense.

GSA reports that about 10 percent of all government facilities are either underused or empty and that there is no information on the market value of those facilities. GSA notes that each year federal agencies destroy thousands of unused and surplus structures because they have little or no market value and demolition can reduce operating costs. Some of the structures do not meet current building and safety codes and might also pose environmental hazards.

Federal agencies that seek to dispose of unneeded facilities must follow legislatively prescribed procedures for property disposition. In particular, before they can be sold at auction, facilities must first be screened for use by other federal, state, or local agencies or evaluated for use by organizations that serve the homeless. Transfers of federal property to nonfederal entities are called public benefit conveyances and typically are executed for $1. Many federal civilian agencies that control real property are authorized to spend any proceeds from the disposal of surplus property; in some cases they also have the option of leasing unneeded assets and either spending the rental income or, more commonly, receiving services such as building improvements or construction of new facilities. In most years, net receipts to the Treasury from the sale of surplus civilian properties are relatively small, generally less than $50 million. The Base Realignment

Continued

occurs if the time period or the sectors of the economy covered by the analysis are changed only slightly). Follow-up research has identified other weaknesses in methodology and, after attempting to correct for them, has in some cases resulted in a different conclusion about the economic returns on public spending for infrastructure. For example, the size of the stock of public capital and the level of economic output can vary together over time for reasons unrelated to a causal link between them. One study that attempted to control for that spurious correlation

Box 1. Continued

Management of Federal Buildings and Facilities

and Closure (BRAC) process—by which the Department of Defense identifies opportunities to relocate military organizations, consolidate facilities, and eliminate excess infrastructure to reduce annual costs for operating, sustaining, repairing, and modernizing defense facilities—has generated about $1 billion in receipts since 1990, but the process has not been designed to maximize receipts.[1]

To improve the management of federal facilities and maximize proceeds from the sale of surplus properties, the Congress could consider creating incentives for the quick identification and disposal of unneeded facilities. Resources also would be necessary to pay for identifying and marketing those facilities that have a value in the private sector, and laws related to public conveyances would need to be amended.

Reforms to the process that agencies follow when making property acquisition decisions also could yield long-term budget savings. According to the Government Accountability Office, in many cases it is less expensive for the government to build new facilities for its own long-term use than it is to lease property from private landlords.[2]

1. According to estimates from the Department of Defense, the up-front costs of the first four rounds of BRAC were recouped in one-time savings from canceled construction and restoration projects, and annual net savings of about $6.5 billion in operations costs are now being realized. CBO has not verified those estimates. The fifth round of BRAC, which began in 2005, is years away from producing net savings.

2. See Government Accountability Office, *Federal Real Property: Strategy Needed to Address Agencies' Long-standing Reliance on Costly Leasing*, GAO-08-197 (January 2008).

identified no positive association of public capital with economic performance.[15] Even the direction of causality is open to question: For example, it could be that states that are more productive and more prosperous choose to spend more on

15. See Charles R. Hulten and Robert M. Schwab, "Public Capital Formation and the Growth Process in Developing Countries," *National Tax Journal*, vol. 44, no. 1, part 1 (December 1991), pp. 121–134. A criticism of efforts that focus on year-to-year changes is that they can mask long-term relationships between accumulated stocks of public capital and subsequent economic performance when additions to the stock of public capital could influence economic activity for years after they occur.

infrastructure and not that spending more on infrastructure makes states more productive or prosperous. One study concludes that, once such state-specific characteristics are recognized, public capital plays no role in the differences among states' economic performance.[16]

However, recent surveys that involve the United Sates and other nations show positive returns from investment in public capital. One study from 2007 concludes that the recent literature reflects more consensus about the "growth-enhancing effect of public capital" than existed before. Similarly, a study sponsored by the Organisation for Economic Co-operation and Development reports a "positive effect of infrastructure."[17] The implications of those findings for public spending on infrastructure in the United States, though, are unclear because much of the newer research supporting those favorable assessments analyzed circumstances that might not be relevant in this country. The studies range from analyses of national and regional spending on infrastructure within various countries in Europe, South America, and Asia to investigations of economic returns on infrastructure spending in a large sample of countries at different stages of development. Moreover, some important results cited by those surveys rely on a broader concept that includes public investment in basic telecommunications, for example, and in other areas that in the United States are privately owned and funded.[18]

All together, recent research indicates that the returns on investment in public capital in the United States are positive but below earlier estimates. One 2006 study concludes that a dollar of capital or maintenance spending for highways and roads in 1996 reduced annual congestion costs to drivers by $0.11 that year.[19] Total benefits over time would be greater; whether they would be large enough to

16. See Douglas Holtz-Eakin, "Public-Sector Capital and the Productivity Puzzle," *Review of Economics and Statistics,* vol. 76, no. 1 (February 1994), pp. 12–21.

17. For a comprehensive overview of the relevant economic literature with brief descriptions of individual papers and their results, see Ward Romp and Jakob de Haan, "Public Capital and Economic Growth: A Critical Survey," *Perspektiven der Wirtschaftspolitik,* vol. 8, special issue no. 1 (April 2007), pp. 6–52. See also Vincent Ribeyrol, "Impact of Infrastructure on the Economy: Review of the Literature" (paper presented at the Organisation for Economic Co-operation and Development's conference on Global Infrastructure Needs: Prospects and Implications for Public and Private Actors, Paris, June 3, 2005).

18. See Lars-Hendrik Röller and Leonard Waverman, "Telecommunications Infrastructure and Economic Development: A Simultaneous Approach," *American Economic Review,* vol. 91, no. 4 (September 2001), pp. 909–923; and António Afonso and Miguel St. Aubyn, "Macroeconomic Rates of Return of Public and Private Investment: Crowding-In and Crowding-Out Effects," European Central Bank Working Paper 864 (Frankfurt, February 2008).

19. Congestion costs reflect both the amount of gasoline consumed and the value of the time that motorists lose to traffic delays. See Clifford M. Winston and Ashley Langer, "The Effect of Government Highway Spending on Road Users' Congestion Costs," *Journal of Urban Economics,* vol. 60, no. 3 (November 2006), pp. 463–483.

justify the costs would depend on the opportunity cost of the spending and the rate at which the highway construction or improvements deteriorate.

Consistent with such findings, other economic research points out that the payoff from investments in public infrastructure, such as highways, falls off significantly after the initial impact on economic activity. For example, according to data spanning 1953 to 1989, construction of the Interstate Highway System in the United States made vehicle-intensive industries in particular more productive; however, the capital spending that took place after completion of that system in 1973 appears not to have had an effect on differences in those industries' productivity.[20] The evidence thus suggests that the positive returns on investments in infrastructure depend on the type of infrastructure and the amount of infrastructure already in place.

Options for Meeting Demand for Infrastructure Services

Broadly speaking, the federal government can take four basic approaches—separately or together—to contribute to meeting the growing demand for services associated with the nation's infrastructure: It can increase spending, improve the cost-effectiveness of tax expenditures, reduce the cost of providing infrastructure, and promote reductions in demand for services to an economically efficient level.

Increase Federal Spending

If the Congress were to decide that there is justification for building additional infrastructure, it could choose to increase federal spending (although such increases might not translate dollar for dollar into increased total spending if state governments or other funders decided in response to redirect some of their own spending away from infrastructure). Increases in federal support for infrastructure could come from any combination of increased receipts, reduced spending elsewhere, and higher deficits. However, most such funding currently comes either from dedicated receipts or through tax expenditures.

Most of the federal government's programs for surface transportation are financed through the Highway Trust Fund (see Appendix B). About 90 percent of total revenues credited to the trust fund come from two taxes on motor fuels. The tax of 18.4 cents per gallon on gasoline and gasoline–ethanol blends currently accounts for about two-thirds of the trust fund's total revenues. The levy of 24.3 cents per

20. See John Fernald, "Roads to Prosperity? Assessing the Link Between Public Capital and Prosperity," *American Economic Review,* vol. 89, no. 3 (June 1999), pp. 619–638.

gallon on diesel fuel accounts for about one-quarter more.[21] Both tax rates have been unchanged since 1993. In 2007, receipts to the Highway Trust Fund from those taxes totaled about $38.8 billion.

The trust fund's taxes are scheduled to expire in 2011. If they are reauthorized at current levels, CBO projects that, over the coming decade, revenues credited to the trust fund will rise at an average annual rate of about 2 percent. However, they will decline as a share of GDP (which CBO expects to rise at an average annual rate of 4.4 percent during the same period), from 0.28 percent of GDP in 2007 to 0.20 percent of GDP in 2018. The main reason for that relative decline is that fuel tax collections depend on the quantity of fuel consumed rather than on the price of gasoline. Moreover, the purchasing power of fuel taxes has eroded since 1993. On the basis of a price index produced by the Bureau of Economic Analysis to analyze spending by state and local governments, CBO estimates that a current gasoline tax would need to be about 30 cents per gallon to match 1993 purchasing power.

CBO projects that, even before the current taxes expire, the trust fund's highway account will be depleted because revenues are not keeping pace with the outlays that have increased under the latest two authorization acts (see Appendix B). To avoid that result, spending must be reduced or the revenues going into the trust fund must be increased.

On the basis of information supplied by the Joint Committee on Taxation (JCT), CBO estimates that a 1 cent increase in gasoline and diesel taxes would raise about $1.8 billion per year for the trust fund over the next 10 years and that a 10 cent increase would raise about $18 billion annually.[22] The National Surface Transportation Policy and Revenue Study Commission recommended that the Congress raise fuel taxes between 25 cents and 40 cents per gallon, by 2012, to help finance infrastructure investments. Using information from JCT, CBO estimates that an increase of 25 cents per gallon would generate $44 billion per year for the trust fund; an increase of 40 cents would generate $70 billion annually.

Current law requires states to provide matching funds—generally about 20 percent of a project's costs—on most highway projects that they undertake using federal money. If that matching requirement was retained, an increase of roughly 6.5 cents per gallon in gasoline and diesel taxes would bring in enough revenue to meet

21. The Omnibus Budget Reconciliation Act of 1993 increased the gasoline tax by 4.3 cents; the added receipts initially were not deposited into the trust fund but went into the general fund of the Treasury. A share of one-tenth of a cent per gallon goes to the Leaking Underground Storage Tank Trust Fund.

22. Because excise taxes reduce the tax base of income and payroll taxes, higher excise taxes would lead to reductions in income and payroll tax revenues. The estimates cited here do not reflect those reductions. Those reductions would amount to an estimated 25 percent of the estimated increase in excise tax receipts.

FHWA's estimate of the amount necessary to maintain service at current levels.[23] A 6.5 cent increase would boost revenue by about $11.6 billion annually. Currently, 87 percent of that total, or about $10.1 billion, would be deposited into the trust fund's highway account. The remaining $1.5 billion would go to the mass transit account. (The increase in mass transit revenue could allow spending to exceed FHWA's estimated cost of maintaining performance, although not its estimate of economically justifiable investment.) Those figures assume that states would not substitute the increased federal funding for their own funds and that they would be willing and able to support the increase with the 20 percent match. Without the state match, the required increase in gasoline and diesel taxes would be about 8 cents per gallon.

Improve the Cost-Effectiveness of Tax Expenditures

The federal government could substantially increase the efficiency with which it subsidizes debt financing of state and local spending by replacing federal tax exemptions on income from municipal bonds with carefully designed tax-credit bonds.

According to JCT, tax-exempt bonds will cost the federal government an average of $31.2 billion per year between 2007 and 2011. However, the savings that state and local entities receive will be considerably less, and the difference will accrue to investors in higher-income tax brackets who receive greater tax savings through those exemptions than would be necessary for them to purchase such bonds. For 2006 and 2007, the observed yield spreads between high-grade municipal bonds and corporate bonds suggest that the marginal tax rates of the "market-clearing" municipal bond buyers—those who purchase the last units of the bond issues—averaged 21 percent.[24] That figure implies that all bonds issued in those years that are held by taxpayers whose marginal rates are above 21 percent cost the federal government more in forgone tax revenues than they save the issuers in reduced interest costs.

A relatively new debt instrument, the tax-credit bond, has gained some favor as a way to finance public expenditures. Tax-credit bonds allow bond purchasers to receive credits against federal income tax liability instead of all or some of the cash interest that is typically paid on the borrowing the bonds represent. Current-law tax-credit bonds are designed to provide investors with a credit that is the

23. Based on its analysis of the trust fund's revenues and outlays, CBO estimates that closing the gap between them in 2008 through higher fuel taxes would require an increase of about 2 cents per gallon. That amount would grow over time.

24. For more information on the tax treatment of municipal bonds and the benefit to bond issuers, see Joint Committee on Taxation, *Present Law and Background Relating to State and Local Government Bonds*, JCX-14-06 (March 14, 2006). Table 1 of that report (p. 6) shows interest rates on corporate and high-grade municipal bonds and the resulting implied tax rate of the market-clearing municipal bond buyers for 1986 through 2005. CBO used the same method and data sources to derive estimates for 2006 and 2007.

equal of 100 percent of the interest that would otherwise be paid on the bonds. With a 100 percent credit, the federal government bears virtually all of the cost of borrowing in the form of forgone revenues. That structure provides a subsidy to issuers of such bonds that is deeper than the subsidy provided to issuers of tax-exempt bonds (which is limited to the difference between tax-exempt and taxable interest rates). However, bonds with a partial tax credit could be designed to deliver a subsidy to state and local governments that is equivalent to the subsidy provided by current-law, tax-exempt bonds, or any other desired level of subsidy. For a given subsidy, the federal cost is lower for tax-credit bonds than for tax-exempt bonds because the revenues forgone by the federal government through tax-credit bonds reduce state and local borrowing costs, dollar for dollar, rather than partially accruing to investors in high marginal tax brackets.

To illustrate, assume that the inefficiency associated with current tax-exempt financing is between 10 percent and 20 percent, so that 80 percent to 90 percent of the federal tax expenditures actually translates into lower borrowing costs for states and localities. Then, if the outstanding stock of tax-exempt debt during the 2007–2011 period instead took the form of tax-credit bonds designed to deliver the same amount of federal subsidy, the federal government would save between $3 billion and $6 billion per year. (However, the savings would not be recognized in the federal budget; for budgetary purposes, the tax expenditures are not classified as federal spending.)

Reduce the Cost of Providing Infrastructure

In addition to using tax expenditures more efficiently, the federal government also could encourage efficiency by lowering the costs of supplying infrastructure services. One way to accomplish that is to encourage funding of high-value projects through more systematic use of rigorous analysis, and conversely, to minimize funding of potentially low-value projects—for example, by careful scrutiny of projects initiated by the Congress, which represent significant portions of federal investments in infrastructure. The Department of Transportation estimated that $5.7 billion, or about 15 percent of the $36.6 billion appropriated to FHWA programs in fiscal year 2006, was earmarked, as was $2.4 billion of the $8.6 billion (28 percent) in funding for Federal Transit Administration programs.[25] In some cases, earmarks might be used to improve efficiency, compensating for the rigidity of the formula that allocates funds to the states or for problems with the process or criteria for project selection by state or local governments. In other cases, policymakers earmark projects on the basis of criteria for fairness or equity, or other

25. The estimates are based GAO's definition of an earmark as a Congressional directive in legislation to a federal agency to spend a specific amount of its budget for a specific entity, project, or service. Other estimates of earmarks were $408 million for FAA programs and $56 million for all other transportation programs. See Government Accountability Office, Office of the General Counsel, *Principles of Federal Appropriations Law*, 3rd edition, vol. 2 (February 2006); and Department of Transportation, *Review of Congressional Earmarks Within Department of Transportation Programs*, AV-2007-066 (September 7, 2007).

noneconomic goals, although doing so raises the total cost of providing any given set of infrastructure services.

More generally, the federal government can encourage the use of "asset management" to maximize the benefit from existing and future infrastructure. Asset management relies on monitoring the condition of equipment and the performance of systems and analyzing the discounted costs of different investment and maintenance strategies. For existing infrastructure, the key issue is making efficient choices about maintenance and replacement. In constructing new infrastructure, asset management involves evaluating total life-cycle costs—both the initial capital costs and the subsequent costs for operation, maintenance, and disposal—to ensure not only that projects are prioritized appropriately, but also that they are built cost-effectively.[26]

The principles of asset management apply to all types of infrastructure, although specific applications differ. In the case of highways, asset management can involve making a larger initial investment in thicker pavement, which could provide a more-than-proportional increase in pavement life. It also might involve shortening the period between pavement overlays, which could reduce the fuel and maintenance costs of highway users.

The potential for managing assets efficiently in the case of wastewater and drinking water systems has increased with the advent of sophisticated analytical tools that can optimize the design of pipe networks (in some cases, identifying links that can be abandoned rather than replaced) and that can be used to evaluate the trade-offs involved in maintaining or replacing equipment. Asset management has been shown to produce significant payoffs in extending the life of equipment, eliminating redundant systems, reducing the cost of operations and maintenance by as much as 40 percent, and improving systems' reliability by roughly 70 percent.[27]

Promote Reductions in Demand

Finally, the government could reduce the demand for additional infrastructure by implementing fees and charges that raise the cost to users of existing infrastructure. One factor that can contribute to the high cost of infrastructure services is that users often are not asked to pay the full marginal cost of the services they use.

A classic case is the excessive crowding of a highway for which users pay no congestion charge. In economic terms, society would be better served by reducing demand for travel on such a highway during the hours when traffic is heaviest instead of investing to increase the road's capacity to accommodate traffic. One

26. Another approach the federal government could take to reduce the cost of meeting demands for infrastructure (in addition to promoting more use of asset management) would be to conduct or support research and development in cost-saving technology.

27. See Congressional Budget Office, *Future Investment in Drinking Water and Wastewater Infrastructure* (November 2002).

way to reduce that inefficient demand is to impose congestion pricing—that is, to charge tolls that are higher during peak times of the day and lower during off-peak hours. Besides dampening demand for the highway during the most congested periods—some motorists would alter their travel plans and use the road when it is less crowded, find alternative routes, or switch to public transit—congestion pricing also helps to signal the places where additional investment in road capacity is warranted. FHWA has estimated that widespread use of congestion pricing would reduce by about $20 billion per year both the investment required to maintain services in their current condition and the total economically justifiable investment.

Congestion pricing is in use in the New York City area, for example, where, since March 2001, the Port Authority of New York and New Jersey has charged more for vehicles to cross the Hudson River during peak hours than during off-peak hours. The crossing's six bridges and tunnels carry about 350,000 vehicles in each direction every day. Initially, drivers who paid with cash were charged a $6 toll, regardless of the hour of the day; drivers who used the E-ZPass electronic toll collection system paid $5 during peak hours and $4 during off-peak hours—a 20 percent discount for off-peak E-ZPass users. After the program took effect, traffic in the morning peak period declined by 7 percent from May 2000 to May 2001, and evening peak traffic declined by 4 percent (overall traffic volume remained the same).[28] Six percent of trucking carriers shifted their operations to off-peak hours.[29] Tolls from the Port Authority's facilities raised $750 million in 2006, more than covering their operating and capital expenses.[30] Those funds are used exclusively to build, operate, and maintain transportation facilities in the New York–New Jersey area.[31] Tolls on the crossings went up March 2, 2008. The cash charge is now $8; E-ZPass rates are $8 during peak hours and $6 during off-peak hours.

Similar pricing systems have been adopted for more than half a dozen bridges, tunnels, and highways in the United States. In Orange County, California, express toll lanes built in a 10-mile section of the median strip of State Route 91 give motorists a choice between driving in toll-free lanes and driving in new lanes on which tolls are charged according to time of day. More than a dozen similar

28. See Mark F. Muriello and Danny Jiji, *The Value Pricing Toll Program at the Port Authority of New York & New Jersey: Revenue for Transportation Investment and Incentives for Traffic Management* (New York: Port Authority of New York and New Jersey, September 30, 2003), http://knowledge.fhwa.dot.gov/cops/hcx.nsf/384aefcefc48229e85256a71004b24e0/f28934ff571ff3c685256db10063e81b?OpenDocument.

29. See José Holguín-Veras, Kaan Ozbay, and Allison de Cerreño, *Evaluation Study of Port Authority of New York and New Jersey's Time of Day Pricing Initiative, Final Report* (March 2005), p. 7.

30. See Port Authority of New York and New Jersey, *Annual Report* (2006), p. 92.

31. See José Holguín-Veras, Kaan Ozbay, and Allison de Cerreño, *Evaluation Study of Port Authority of New York and New Jersey's Time of Day Pricing Initiative,* p. 7.

highway capacity expansions are either in operation, under construction, or in planning. On Interstate 15 in San Diego, drivers of single-occupant vehicles may pay a toll to use high-occupancy vehicle (HOV) lanes. At least a half a dozen existing HOV lanes have been converted or soon will be converted to "high-occupancy toll" (HOT) lanes.

The concept of marginal-cost pricing extends beyond congestion, however. To maximize efficiency, users would be charged for all of the incremental costs they impose on the system. For example, the incremental damage imposed by trucks on highways does not depend on a vehicle's total weight but rather on its weight per axle.[32] Because that fact is not reflected in the current taxes on truck ownership and use, there are wide disparities in the degree to which different types of trucks pay the cost of the highway damage that is associated with their use. For example, researchers have estimated that the taxes paid for a five-axle tractor–semitrailer with a gross vehicle weight of 55,000 pounds on rural interstate highways are about 20 percent more than the marginal cost of use. In contrast, the taxes paid by a vehicle with the same configuration and a gross weight of 80,000 pounds represent only one-third of the marginal costs on rural interstate highways. Marginal costs on urban interstate highways, which are more expensive to repair, or on lighter-duty roads, which incur more damage, are even higher. Instituting charges that are tied to axle weight and to the number of miles traveled by a truck could reduce the need for spending on highways by inducing motor freight carriers to reconfigure their vehicles or shippers to switch from trucks to rail. If the charges also varied by the type of road, some carriers might adjust their routes to travel on more durable roads.[33]

Financing Infrastructure Through a Special-Purpose Entity

Through the years, the Congress has considered proposals to charter banks, corporations, or other special-purpose entities to help finance investment in infrastructure outside of the annual appropriation process. Two issues in the makeup of such entities—which could be designed in a variety of ways—are particularly important: first, the entity's relationship to the federal government and the extent to which it relies on federal funding rather than on income from its own operations; second, the types of financing tools that the entity is authorized to use to support infrastructure investment.

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32. See Congressional Budget Office, *Paying for Highways, Airways, and Waterways: How Can Users Be Charged?* (May 1992).

33. See Kenneth A. Small, Clifford Winston, and Carol A. Evans, *Road Work: A New Highway Pricing and Investment Policy* (Washington, D.C.: Brookings Institution, 1989), as cited in Congressional Budget Office, *Paying for Highways, Airways, and Waterways*, p. 19.

Although special-purpose entities can be designed to allow a given level of federal spending to support a greater volume of infrastructure projects, they are not sources of "free money." To the extent that such an entity would reduce the federal share of projects' costs, it would do so by increasing the shares borne by the projects' users, state or local taxpayers, or both. Relying more heavily on user fees to fund infrastructure might improve economic efficiency if doing so encouraged better selection, operation, and maintenance of projects. However, an infrastructure entity that issued its own debt would incur higher interest and issuance costs than the Treasury does and could expose the federal government to the risk of default on such debt. Moreover, some entities might be designed primarily as special conduits for federal funds, removing the spending from the oversight of the regular appropriation process but not drawing on larger shares of funding from state and local taxpayers or infrastructure users.

If the Congress wishes to increase the extent to which federally supported infrastructure projects draw their funding from user fees, it need not create a special entity to do so. Under authority provided by the Transportation Infrastructure Finance and Innovation Act (TIFIA) of 1998 (Public Law 105-178, sections 1501–1504), the Department of Transportation provides assistance to public or private surface transportation projects that have dedicated revenues for repayment. As of February 2008, the department reported that it had provided $4.3 billion in assistance under TIFIA, supporting $17.2 billion in total project investments.[34] Federal support for infrastructure investment that draws on user fees occurs through other vehicles as well, such as the state revolving funds for water supply and wastewater treatment systems that are capitalized with grants made by the Environmental Protection Agency; the Airport Improvement Program, which provides grants for the development or improvement of airports that are significant to national air transportation; and tax expenditures on revenue bonds, which are issued by states and localities to finance construction of toll roads, utilities, and other user-supported infrastructure.

Options in Designing a Special-Purpose Entity

A special-purpose entity could be designed as an independent federal agency or corporation, as a government-sponsored enterprise (GSE), as a fully independent corporation owned by the private sector or by state government, and perhaps in other ways as well. One trade-off to be considered in designing such an entity is between federal control and budgetary status: The more authority the Congress or the Administration has over project selection, fund-raising, and other management choices of an entity, the more likely the entity is to be considered part of the federal budget. Conversely, the activities of an entity that is essentially independent of federal control would not be recorded in the budget, but such an entity would be subject to little if any control over its operations. For example, the Tennessee

34. See Department of Transportation, *TIFIA Credit Program Overview* (updated February 2008), http://tifia.fhwa.dot.gov/tifia_bkgrnd_slides_080211.pdf.

Valley Authority (TVA) is supported by its sales of electricity, receives no federal appropriations, and can issue its own debt instruments. But ultimately, it is under federal control—all nine of TVA's directors are nominated by the President and confirmed by the Senate—and its activities are recorded in the budget. Other federal corporations or "independent" agencies could be designed not to be self-supporting but to serve primarily or exclusively as conduits for federal funds.

GSEs are privately owned—although they are more constrained than are most private businesses by their charters and by federal regulation and oversight—and have only a minority of federally appointed directors, if any. For example, 5 of 18 directors each on the boards of Fannie Mae and Freddie Mac are federal appointees (those positions currently are vacant).

GSEs and fully independent private entities are alike in that they typically sustain their operations from business income. GSEs are distinguished from other chartered private entities by investors' perception of an implicit federal guarantee of GSEs' debt obligations; that perception arises in part from various legal characteristics that they tend to share. For example, a GSE's corporate earnings may be exempt from state and local income taxes, and its securities, like Treasury debt, may be exempt from Securities and Exchange Commission registration or eligible to be held in unlimited amounts by federally regulated banks and thrifts.[35]

The National Cooperative Bank is one example of a fully independent corporation. It was established as a federal agency in 1978 and then was converted to private, cooperative ownership in 1981. The legislation that privatized the bank provided start-up funding in a long-term subordinated loan at a below-market interest rate.[36]

A corporation owned by state governments could be similar to an independent private corporation in several ways, such as its independence from federal control. However, it might differ from most private corporations in having more access to federal funds to support its operations.

In addition to the governance structure, another issue in the design of an infrastructure bank or corporation is the set of financing tools available to it, perhaps including direct subsidies, loans, loan guarantees, lines of credit, bond insurance and reinsurance, debt or equity purchases, issuance of bonds on behalf of a supported project, insurance for project development costs, or technical assistance on project development or financing. Because the degree of support the entity can provide to projects depends on its availability of funds, any direct subsidies are likely to be

35. See Congressional Budget Office, *Controlling the Risks of Government-Sponsored Enterprises* (April 1991), pp. 6–8.

36. That approach to support investment in infrastructure is discussed in Congressional Budget Office, *An Analysis of the Report of the Commission to Promote Investment in America's Infrastructure* (February 1994).

small unless the entity receives continuing federal appropriations or has some other source of external support.

Comparing Special-Purpose Entities and Other Methods for Financing Infrastructure

Infrastructure banks, corporations, or other special entities can be compared with other vehicles for federal support—annual appropriations, direct spending authority, and tax expenditures—in terms of the associated budgetary cost and economic efficiency.

The budgetary cost of federal support for infrastructure investment depends on two factors: the share of project costs drawn from nonfederal funds—such as user fees and state and local tax revenues—and the federal cost per dollar of effective project aid. Some proposals for infrastructure entities call for nonfederal shares that are much higher than is common under current appropriated programs (for example, the 20 percent typically required for projects supported through the Highway Trust Fund), and such entities would therefore stretch federal dollars further. However, because Treasury securities are highly liquid and free of default risk, any given federal share of project costs could be provided at lower budgetary cost through a program funded by appropriations or direct spending, such as TIFIA, rather than through a special entity. TVA's bonds, for example, typically pay 30 to 40 basis points more than comparable Treasury securities (a basis point is one one-hundredth of a percentage point). The interest rates on bonds and other debt instruments from GSEs are higher than are those from independent agencies, and those paid by fully private corporations are higher still. Because of their comparatively smaller offerings, special entities also would face higher costs than the Treasury does in issuing bonds.

Economic efficiency focuses on the use of real resources, and so the source of investment funds matters less than the way the funds are used.[37] In that light, the important questions to ask about any given funding vehicle involve whether it tends to select the most cost-beneficial projects for support and whether it promotes efficient operations, maintenance, and use. To the extent that an infrastructure bank or corporation funds projects that are supported by user fees, rather than by tax dollars, it is possible that inefficient demands would be reduced and that market discipline would improve project selection and management. (See the discussion of public–private partnerships below.) Again, however, the federal government already supports projects that rely on user fees through various spending programs and through tax expenditures, and policymakers could choose to increase such support without establishing a special entity.

37. Funding mechanisms matter for efficiency to the extent that some have lower "transaction costs" than others—that is, they use fewer resources to verify project quality, issue the bonds, and the like. Essentially, the interest payments themselves are transfers that do not consume real resources.

Current Proposals

Three proposals in the current Congress illustrate the options for structuring an infrastructure investment entity: the National Infrastructure Bank Act of 2007 (S. 1926 and H.R. 3401); the National Infrastructure Development Act of 2007 (H.R. 3896); and the Build America Bonds Act of 2007 (S. 2021). (The European Investment Bank, described in Box 2, is an example of such an entity outside the United States.)

The National Infrastructure Bank (NIB) would be an independent federal entity with a five-member board of directors appointed by the President and confirmed by the Senate. The bank would evaluate and finance infrastructure projects "of substantial regional and national significance" with a potential federal investment of at least $75 million per project. The NIB would serve as a conduit for federal funding. It would be authorized to issue $60 billion in bonds—the proceeds of which could be used to finance direct subsidies, loans, and loan guarantees—but the Treasury would pay the interest on the bonds. Because the bonds would carry the full faith and credit of the United States, the Treasury also would have ultimate responsibility for paying the principal in the event that the bank's own funds (for example, from repayments of project loans the bank had made) were insufficient.

The National Infrastructure Development Act would create a National Infrastructure Development Corporation (NIDC) and a subsidiary National Infrastructure Investment Corporation (NIIC). Initially, both would be federal corporations, but the bill would give the NIDC five years to develop a plan to convert both entities to GSEs. The NIDC would be capitalized with up to $9 billion in appropriations authorized over three years. Thereafter, it would be self-financed through business income, presumably through fees on users of infrastructure, and (once converted to a GSE) through the sale of public stock. The NIDC would be authorized to make senior and subordinated loans and to buy debt and equity securities issued by others to fund infrastructure projects; the NIIC would be authorized to insure and reinsure debt instruments and loans, insure leases, and issue letters of credit.

The Build America Bonds Act would grant consent and recognition to a transportation finance corporation established by two or more state infrastructure banks. The corporation would be under the control of the participating states, but it would be authorized to issue up to $50 billion in bonds providing federal tax credits in lieu of interest. The rate of the credits would be set so as to equal the average yield of long-term corporate debt obligations at the time the bonds were issued.

Public–Private Partnerships

Some advocates of increased spending on infrastructure suggest that greater use of public–private partnerships (PPPs) would facilitate such increases. (A PPP is an institutional arrangement in which a private entity assumes some level of risk

Box 2.

The European Investment Bank

The European Investment Bank (EIB), a major lender for projects in the European Union (EU), was established under the terms of the 1957 Treaty of Rome (the founding contract for the European Economic Community, the forerunner of the EU). The EIB is the European Union's long-term lending institution, financing an array of projects that contribute to economic policy objectives in the energy, infrastructure, and industrial sectors. The nonprofit bank raises funds through bond issues and other debt instruments; it makes loans to public and private enterprises.

Each of the EU's 27 member states owns a proportional share of the bank and provides a proportional share of its total capital—currently 164 billion euros (equivalent to $255 billion as this was written). A country's share is set by its relative gross domestic product within the EU at the time of its accession, and each member provides 5 percent of that share and agrees to make the rest available to the EIB as deemed necessary to cover the cost of loan defaults. The EIB's board of governors consists of ministers (usually the finance ministers) from all of the EU member states; its board of directors has a representative from each member state. The governors supervise the bank's operations, defining lending policies, deciding on capital increases, and approving the balance sheet. The directors manage the bank's lending and borrowing operations.

Mainly, the EIB provides low-interest loans to finance the capital projects of public- and private-sector enterprises. Borrowers include large corporations and countries and small enterprises and municipalities. More than 85 percent of the 45.8 billion euros (roughly $70 billion) lent in 2006 went to organizations located within the EU. Lending to borrowers outside the European Union supports the EU's development and cooperation policies. External projects have promoted the enlargement of the EU toward southern and eastern Europe, supported nearby countries in the Mediterranean and Eurasia, assisted development in Africa, and aided the EU's programs in Asia and Latin America.

Repayment periods for EIB loans range from four years to two decades, and borrowers may use the loans to finance up to 50 percent of the total cost of a project. To be eligible, projects must contribute to the EU's economic policy objectives. Included on the list are projects that support small and medium-sized enterprises; develop transportation, energy, and telecommunications infrastructure; protect, remediate, or ameliorate the rural or urban landscape; develop human capital through health care or

Continued

Box 2. Continued

The European Investment Bank

projects; and support industry and manufacturing. Eligible projects must be economically, financially, technically, and environmentally sound. Projects that can demonstrate compliance with those criteria are subjected to detailed appraisals by EIB's project teams, which consist of economists, engineers, and loan contact officers. All approved projects are monitored by the EIB for the lifetime of the loan.

As a nonprofit, policy-driven bank, the EIB can provide loans to its clients at relatively low interest rates. The rates are determined by three factors: the bank's cost of funds (that is, the interest rate the EIB pays to borrow in capital markets), which is fully passed along to the borrower; a markup to cover administrative costs; and an additional risk-related charge for certain projects. Those rates are attractive to the EIB's borrowers because of the bank's AAA credit rating, which is a function of the quality of its investments; the high amount of capital available through the reserve fund provided by the member states; and its size.

The EIB also offers technical assistance and loan guarantees to its clients. Its specialist economists and engineers help assess and advise borrowers with their projects. The assistance often is provided during project formulation and preparation and focuses on regulatory issues, questions of feasibility, and challenges in project management. The aid helps streamline the loan application process.

For some clients of the EIB, loan guarantees are more cost-effective than loans. The EIB provides the largest loan guarantee program for the Trans-European Networks (TENs), the infrastructure networks for transportation, energy, and telecommunications that cover the entire EU. The EIB program provides a guarantee against revenue risk for a short period after the construction of a TENs project.

The EIB is part of the EIB Group, which was established in 2000 to coordinate the activities of the EIB with the European Investment Fund (EIF), which itself was chartered to promote development of small and medium-sized enterprises in Europe's rapidly expanding new-technologies sector. The EIF finances venture capital funds that invest in projects that contribute to the EU's economic policy objectives. The EIB is the EIF's majority shareholder with 61 percent of the fund's shares; the European Commission controls 30 percent, and the 26 European banks and financial institutions control the remaining 9 percent.

beyond that traditionally associated with supplying its services to a government agency.) In the infrastructure arena, such partnerships appear to be most common for projects that lend themselves to private operation: roads, rail, and water supply and wastewater treatment. A private entity could control access to and charge for the use of a toll road or a drinking water system, for example, but it would be harder to charge users to recoup costs given the more diffuse benefits from a dam or flood control project.

Public–private partnerships can take a variety of forms that differ in the amount of risk assumed by the private entity. For example, private entities bidding on long-term contracts to supply services, such as maintaining public roads or operating water supply facilities, would face relatively modest risks concerning their ability to deliver services at the agreed-upon price over the length of the contract.[38] In other cases, however, the private entity could have almost complete responsibility for the project and accept a variety of risks, including uncertainties about construction, the cost of financing, and the demand for the infrastructure that it provided. In some public–private partnerships for highway and road construction, for example, the private entity could raise most or all of the funds and also would be responsible for design, construction, operation, and maintenance. That entity would recoup its investment through user fees.[39]

A recent report by the Government Accountability Office provides examples of PPPs for highway infrastructure in the United States, and it illustrates the use of both private management and private financing.[40] Two of the four partnerships reviewed involve long-term lease concessions of existing toll roads: Chicago has entered into a 99-year lease with a private entity. That business paid the city $1.83 billion in consideration of the right to operate, maintain, and collect the tolls on the Chicago Skyway. Similarly, Indiana received $3.85 billion for a 75-year lease on the Indiana Toll Road. The other two cases involve plans for new toll roads. The winning bid for the first segment of the Trans-Texas Corridor (a projected 4,000-mile network of roads, railways, and utility rights-of-way) included $6 billion in capital investment for a new toll road between Dallas and San Antonio and $1.2 billion in concession payments to the state for the right to

38. An extensive treatment of public–private partnerships in transportation can be found in Department of Transportation, *Report to Congress on Public Private Partnerships* (December 2004), www.fhwa.dot.gov/reports/pppdec2004/index.htm.

39. The risk to the private entity of not recouping its investment often is mitigated by advantageous financing available through government sponsorship of the project and through terms that grant the private entity exclusive rights to provide the services in question.

40. See Government Accountability Office, *Highway Public–Private Partnerships: More Rigorous Up-front Analysis Could Better Secure Potential Benefits and Protect the Public Interest*, GAO-08-44 (February 2008).

operate the facility for 50 years.[41] And in Oregon, three projects have been studied under an agreement between the state and a private group to determine suitability for PPPs that would combine design services, financing, construction, and operation. Two of the three projects have been found to have insufficient toll revenue potential, but the third is moving forward to the environmental assessment phase.

PPPs have been used in many other cases to obtain private-sector financing of new toll roads, including the Dulles Greenway in Virginia and the State Route 91 and State Route 125 toll roads in California. PPPs also have been used to finance transit projects, such as the Hudson–Bergen Light Rail system in New Jersey, and freight railroad projects, including the Alameda Corridor in Los Angeles.

The potential advantages and disadvantages of PPPs include the possible reductions in investment requirements that would come with more efficient management (including cost-based pricing) and the potential increases in the costs of financing, respectively. Whether the use of private management in PPPs would help to reduce total spending on infrastructure depends on the extent to which savings from improved asset management exceed the costs of using the private services. To maximize profits, a private partner might reduce life-cycle costs through higher construction standards, more frequent maintenance, or investments in cost-saving technology. Efficiencies also could result if a private entity charged prices that were more closely aligned with costs, thereby reducing inefficient demands for services and thus perceived investment needs. However, if there is insufficient competition, public oversight could be needed to guard against the risk that the private entity might use monopoly power to raise prices excessively.

CBO's recent analysis of spending on transportation and water infrastructure reported that PPPs do not yet account for a significant share of nationwide spending in those categories. According to a regularly cited survey, the cumulative project costs of such partnerships in the United States that had been funded or completed by October 2006 totaled a bit over $48 billion (in nominal dollars).[42] In contrast, nominal capital spending on those types of infrastructure by the federal government and by states and localities totaled $1.6 trillion between 1985 and 2004 (averaging $80 billion annually). Other studies have come to a similar conclusion regarding highway and transit projects.[43]

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41. Public opposition to the Trans-Texas Corridor and other PPPs resulted in the Texas Legislature's enacting a two-year moratorium on future highway PPPs (other than regional projects in the Dallas area). The moratorium will expire on September 1, 2009.

42. That figure is based on data from the 2006 International Major Projects Survey, which accompanied *Public Works Financing,* vol. 209 (October 2006). The data have important limitations: For the purposes of this analysis in particular, they do not distinguish between the public- and private-sector components of such projects. More generally, the data were not collected to provide an exhaustive inventory of public–private partnerships and, as a result, they probably understate their extent.

43. See General Accounting Office, *Highways and Transit: Private Sector Sponsorship of and Investment in Major Projects Has Been Limited,* GAO-04-419 (March 2004).

Proposals for Capital Budgeting

Questions about the adequacy of current investment in infrastructure are sometimes accompanied by questions about whether capital spending should be treated differently in the federal budget. Capital budgeting would involve distinguishing certain investments from other expenditures in the budget. Under many proposals for capital budgeting, the full cost of those investments would not be counted at the time of purchase; rather, it would be apportioned over the expected life of the resulting assets. Spreading the cost into the future, however, would deviate from current budgetary treatment, which generally requires funding for the full cost of a project up front and records expenditures when cash is disbursed.

The federal budget is a statement of the government's expenditures and revenues for a given fiscal year. That statement is designed to serve many purposes: It provides a mechanism for making decisions to allocate resources to serve national objectives, provides constraints and direction for agencies' management of fiscal resources, gives the Treasury information needed for its management of cash resources and the public debt, and provides businesses and individuals with the information they need to assess the government's stewardship of the public's money and resources.

Proponents of capital budgeting often assert that the current budgetary treatment of capital investment creates a bias against capital spending and that additional spending would benefit the economy through future increases in productivity. Even if a change in budgetary treatment would increase federal capital spending, the degree to which such increased spending benefited the economy would depend on how well the additional funds were targeted and the extent to which they were offset by reduced spending by others.

Moving to a budget that is more reliant on accrual-based accounting could increase complexity, diminish transparency, and make the federal budget process more sensitive to small changes in assumed parameters, such as depreciation rates. (Indeed, other nations have considered adopting capital budgets, but generally decided against it for those same reasons.) Adopting an accrual approach to only one aspect of the budget could raise concerns about whether the budgeting system would provide a fair basis for allocating the government's resources among competing priorities. In addition, providing special treatment to certain areas of the budget, such as capital spending, could make the process more prone to manipulation. For example, arriving at a definition of "capital" for budgeting purposes could be a significant challenge.

More limited reform of the current process might still accomplish the goal of focusing on capital investment but be simpler to implement. One approach would be to create a category for capital spending as part of a restoration of the statutory budget enforcement procedures that expired in 2002. Such a category within overall discretionary spending limits could help highlight important policy goals. By carving out separate limits for certain programs, however, lawmakers would forgo flexibility to meet other needs. Another alternative might be to attribute a portion of the cost of assets each year to the programs that use them. Requiring users to pay the costs might improve incentives for agencies to sell assets that were no longer appropriate to their needs.

Appendix A:
Spending for Research and Development and for Education

Total public and private spending on research and development (R&D) is currently about 2.6 percent of gross domestic product (GDP) (see Figure A-1).[1] In fiscal year 2007, the federal government's budget authority for the conduct of R&D totaled $135 billion, slightly less than 1 percent of GDP. The government spent an additional $3.6 billion for acquisition and construction of R&D facilities and equipment.

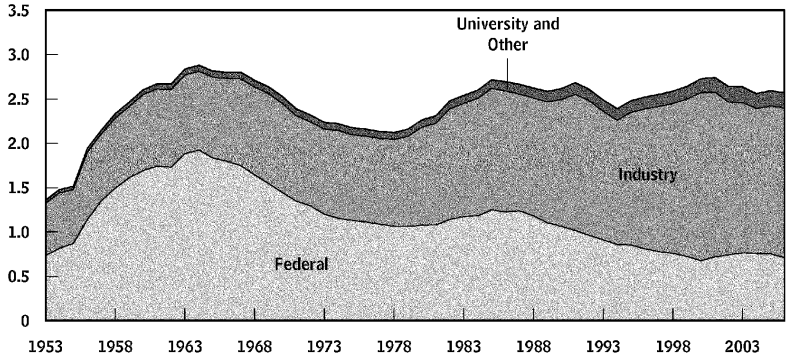
About $78 billion of the $135 billion went to the Department of Defense, and 92 percent of that spending was for developing programs and systems that support national defense. Conversely, 84 percent of the rest of the federal government's spending of $57 billion went to basic and applied research. During the past 20 years, federal funding has typically represented between 40 percent and 50 percent of all research funding nationwide. Except in the case of the Department of Defense and other agencies where R&D is linked to an explicit mission, economists generally view federal funding of research more favorably than development; even though research might not be conducted with a specific commercial purpose in mind, the knowledge it produces has large potential for wider use, both by other researchers and in later commercial endeavors. Still, economic returns are difficult to measure because the resulting progress can be difficult to discern and the economic payoff might take years or even decades to become clear.

The life sciences account for more than half of federal spending on research. Although some observers have attributed high rates of return to research in the life sciences, others state that there are benefits to supporting a wide range of scientific fields because researchers reach across disciplines for new ideas and tools. In the past decade, as more than 40 percent of federal research funding has gone to university researchers, federal laboratories have seen their share fall to near 20 percent, and federally funded R&D centers have received about 15 percent. Industry and nonprofits account for the rest. Besides supporting increases in knowledge, federal funding of academic research also contributes to the education

1. See Congressional Budget Office, *Federal Support for Research and Development* (June 2007).

Figure A-1.

U.S. R&D Spending as a Percentage of GDP, 1953 to 2006



Sources: Congressional Budget Office and National Science Foundation.

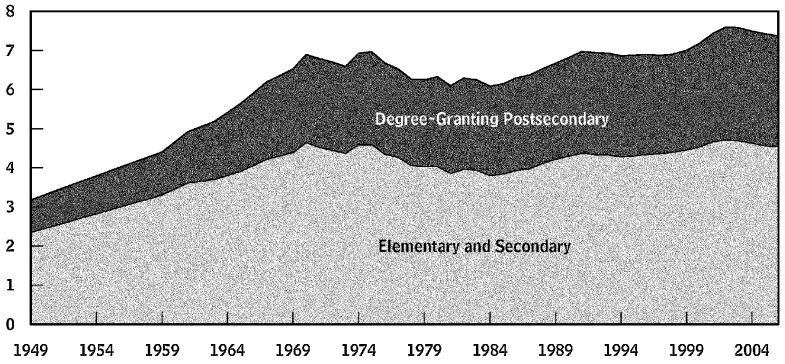
Note: R&D = research and development; GDP = gross domestic product.

of the next generation of researchers: In 2005, more than 55,000 science and engineering graduate students received financial support through federally funded research assistantships.

The United States spends more than 7 percent of its GDP on elementary, secondary, and postsecondary education (see Figure A-2). State and local governments provide about 75 percent of the funding, mostly for elementary and secondary education. The federal government pays about 12 percent, about two-thirds of which goes to elementary and secondary schools, primarily in the form of grants distributed by states. The rest is mostly for student financial aid for postsecondary education. The remaining 13 percent of the funds come from families and other private sources. Families often pay part of the cost of the higher education of their children, and some families pay tuition to private elementary and secondary schools.

Figure A-2.

Expenditures by Educational Institutions as a Percentage of GDP, 1949 to 2005



Sources: Congressional Budget Office and Department of Education.

Note: GDP = gross domestic product.

On average, the private rate of return on investment in education is estimated to be about 10 percent. In addition, as with other forms of capital, investment in education can produce benefits for the larger economy and for society that exceed those to the individual student. Although the spillover benefits of education are most easily documented in developing countries, some economists believe that even in developed countries, increasing the educational attainment of the population fosters productivity growth—for example, by increasing the body of knowledge that makes up modern science, technology, and management. To the extent they exist, such effects could provide an economic rationale for investments in education. Research has suggested significant social returns on investment in high-quality early-childhood education, in the form of fewer retentions in grade, higher achievement, less involvement in criminal activity, and lower rates of participation in welfare programs.[2]

2. See James J. Heckman and Dimitriy V. Masterov, *The Productivity Argument for Investing in Young Children,* Working Paper 13016 (Cambridge, Mass.: National Bureau of Economic Research, April 2007); and Art Rolnick and Rob Grunewald, *Early Childhood Development: Economic Development with a High Public Return,* Federal Reserve Bank of Minneapolis (December 2003).

Appendix B: Overview of the Highway Trust Fund

The Highway Trust Fund is the source of funding for most of the federal government's surface transportation programs (certain transit programs receive appropriations from the Treasury's general fund), and the programs are administered by the Federal Highway Administration (FHWA) and the Federal Transit Administration.[1]

The Highway Trust Fund is an accounting mechanism in the federal budget that comprises two separate accounts, one for highways and one for mass transit. It records specific cash inflows (revenues from certain excise taxes on motor fuels and trucks) and cash outflows (spending on designated highway and mass transit programs). By far, the largest component of the trust fund is the Federal-Aid Highway program.

Spending from the trust fund is not automatically triggered by tax revenues credited to it. Authorization acts provide budget authority for highway programs, mostly in the form of contract authority (the authority to incur obligations in advance of appropriations). Annual spending is largely controlled by limits on the amount of contract authority that can be obligated in a particular year.

Such obligation limitations are customarily set in annual appropriation acts. The most recent authorization law governing spending from the trust fund, called SAFETEA-LU, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, was enacted in 2005 and is due to expire at the end of 2009. The law provides specific amounts of contract authority for the period from 2005 to 2009, and it authorizes appropriations for certain programs that are not funded through contract authority. It also specifies annual obligation limitations, which may be superseded each year by limitations set in appropriation acts.

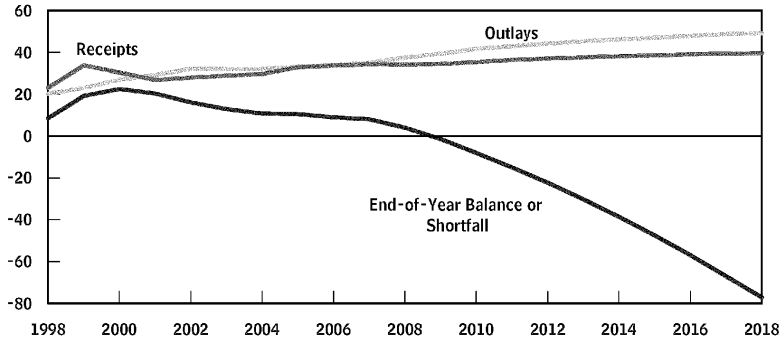
In 2007, the obligation limitation included in the appropriations act was $47.7 billion, and the total in outlays from both accounts of the trust fund came to $39.2 billion. In 2008, the Congress added $1 billion to the obligation limitation for highways, specifically to repair bridges; the total obligation limitation was $50.2 billion.

1. Other agencies within the Department of Transportation that also receive funding from the Highway Trust Fund include the Federal Motor Carriers Administration and the National Highway Transportation Safety Administration. In 2007, those two entities received a total of about 3 percent of the trust fund's budgetary resources.

Figure B-1.

Actual and Projected Highway Account Receipts, Outlays, and Balances or Shortfalls, 1998 to 2018

(Billions of dollars)



Source: Congressional Budget Office.

Note: Actual data are in nominal dollars for 1998 through 2007. Data projections for 2008 to 2018 assume that the Highway Trust Fund's taxes, which are scheduled to expire in 2011, will be reauthorized at current levels. Under current law, the Highway Trust Fund cannot incur negative balances. A negative level is a projected shortfall, reflecting the trust fund's inability to pay obligations out of estimated receipts. Assumptions are based on authorization levels for SAFETEA-LU, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users.

Spending from the trust fund started to increase rapidly in 1999 because of changes enacted in the Transportation Equity Act for the 21st Century (TEA-21), which provided budget authority and contract authority of $218 billion over the 1998–2003 period (an average of $36.3 billion per year). Consequently, annual outlays rose by 40 percent from 1999 to 2003. SAFETEA-LU, which provided contract authority of $286 billion (an average of $57.2 billion per year), represented a further significant increase in funding. From 2005 to 2007, outlays from the trust fund grew from about $30 billion to $35 billion, an increase of about 3 percent per year.

Balances in the highway account were steady during the 1980s and in the first half of the 1990s—they stayed in the vicinity of $10 billion. Receipts substantially exceeded outlays from 1996 to 2000, and the unexpended balance in the highway account (sometimes called the cash balance) grew from $10 billion in 1995 to a peak of about $23 billion in 2000 (see Figure B-1). Revenues fell sharply in 2001 but have increased steadily since then—at an average rate of about 3.4 percent per year through 2007. Spending generally has exceeded revenues since 2001, and by the end of 2007, unspent balances in the highway account had declined to about

Table B-1.

Actual and Projected Highway Trust Fund Receipts, 1998 to 2018

	Highway Account		Transit Account		Total Trust Fund	
	Receipts (Billions of dollars)	Share of GDP (Percent)	Receipts (Billions of dollars)	Share of GDP (Percent)	Receipts (Billions of dollars)	Share of GDP (Percent)
1998	23.1	0.26	3.5	0.04	26.6	0.30
1999	33.8	0.36	5.5	0.06	39.3	0.42
2000	30.3	0.31	4.6	0.05	35.0	0.36
2001	26.9	0.27	4.6	0.04	31.5	0.31
2002	28.0	0.27	4.6	0.04	32.6	0.31
2003	29.0	0.26	4.8	0.04	33.7	0.31
2004	29.8	0.25	4.9	0.04	34.7	0.30
2005	32.9	0.26	5.0	0.04	37.9	0.30
2006	33.7	0.26	4.9	0.04	38.5	0.29
2007	34.3	0.25	5.1	0.04	39.4	0.28
2008	34.1	0.24	5.0	0.03	39.1	0.27
2009	34.5	0.23	5.0	0.03	39.6	0.26
2010	35.4	0.22	5.2	0.03	40.6	0.26
2011	36.4	0.22	5.3	0.03	41.6	0.25
2012	37.1	0.21	5.3	0.03	42.4	0.24
2013	37.6	0.21	5.4	0.03	43.1	0.24
2014	38.2	0.20	5.5	0.03	43.6	0.23
2015	38.6	0.19	5.5	0.03	44.1	0.22
2016	39.0	0.19	5.5	0.03	44.6	0.21
2017	39.4	0.18	5.5	0.03	44.9	0.21
2018	39.7	0.18	5.6	0.02	45.3	0.20

Source: Congressional Budget Office.

Notes: After 2007, revenues are estimated; GDP = gross domestic product.

$7.4 billion. In general, balances in the mass transit account also have been falling since 2000, although more slowly than in the highway account. At the end of 2007, the balance in the mass transit account totaled about $7.3 billion. If recent trends persist and spending from the trust fund continues to exceed its revenues, the balances in the highway account will be depleted during fiscal year 2009.[2]

The highway account receipts shown in the figure also are shown in the Table B-1, which expresses those receipts as a share of GDP and provides comparable figures for the mass transit account and for the trust fund as a whole. Because of decreased consumption of gasoline and diesel fuel, CBO projects, receipts will not keep pace with GDP over the next 10 years, and total receipts will decline as a share of GDP, from 0.27 percent in 2008 to 0.20 percent in 2018.

2. The Highway Trust Fund cannot incur negative balances. A negative number indicated in the figure represents a projected shortfall, reflecting the trust fund's inability to pay obligations out of estimated receipts.

Chairman SPRATT. We will recess——

[Recess.]

Chairman SPRATT. We will let you proceed with your testimony.

Mr. ORSZAG. I thought I was done, Mr. Chairman.

Chairman SPRATT. You are completed?

Mr. ORSZAG. For now, yeah, sure.

Chairman SPRATT. Okay. Ms. Dalton, we are glad to have you and we look forward to your testimony. As in the case of Dr. Orszag, your complete statement has been made a part of the record. You can summarize it as you see fit, but take your time.

STATEMENT OF PATRICIA A. DALTON, MANAGING DIRECTOR, PHYSICAL INFRASTRUCTURE TEAM, GOVERNMENT ACCOUNTABILITY OFFICE

Ms. DALTON. Thank you, Chairman Spratt and members of the committee. I really appreciate the opportunity to testify on infrastructure financing issues today. These are important issues because the Nation's physical infrastructure is under strain raising a host of safety, security and economic concerns. My remarks today are going to focus on the challenges associated with our infrastructure, principles that we at GAO have identified to help guide efforts to address these challenges and existing and proposed options to fund investments in the nation's infrastructure. The challenges are numerous.

For example, just by increases in transportation spending at all levels of government and improvements to the physical condition of highways and transit facilities over the past 10 years, congestion has worsened and safety gains have leveled off. In addition, demand has outpaced the capacity of our Nation's surface transportation and aviation systems resulting in decreased performance and reliability. Water utilities nationwide are under increased pressure to make significant investments. Needs across the country are estimated to range between $485 billion and $1.2 trillion over the next 20 years. For example, about a third of our water utilities report that 20 percent of their pipes are at the end of their useful life. Clearly these and other challenges need to be addressed. Additional investment is clearly warranted. However, calls for increased investment in infrastructure come at a time when traditional funding is increasingly strained and the Federal Government's fiscal outlook is worse than many may understand.

Addressing these challenges is complicated by the breadth of the Nation's physical infrastructure which is owned, funded and operated by all levels of government and the private sector. Moreover, infrastructure policy decisions are inextricably linked with economic, environmental and energy policy concerns. Given these types of challenges and the Federal Government's fiscal outlook, it is clear that the Federal Government cannot continue with business as usual. Rather a fundamental re-examination of government programs, policies and activities is needed, including in the infrastructure area. Questions to be asked include what are our goals and are they tied to the national interest? What is the Federal role? Are performance and accountability built into the funding decisions? Are we using the right tools, the best tools? Is the approach physically sustainable? Funding for the Nation's infrastructure comes from a variety of Federal, State, local and private

sources. As primary owners of the infrastructure, State and local governments and the private sector generally account for a larger share of infrastructure funding than the Federal government, however the Federal Government has played and continues to play an important role in funding infrastructure.

Various existing funding approaches could be altered or new funding approaches could be developed to help fund investments in our infrastructure. These various approaches can be grouped into two categories for funding, taxes and user fees. An example of a tax is clearly the Federal fuel taxes on gasoline and jet fuel, which are attractive because they provide a relatively stable stream of revenue and their collection and enforcement costs are relatively low. Examples of user fees include air passenger facility charges or highway tolls. The concept underlying user fees; that is, users pay directly for the infrastructure they use is a long standing aspect of infrastructure programs.

Financing strategies on the other hand can provide flexibility to bridge gaps when traditional pay as you go funding sources are scarce as they are nowadays. Financing mechanisms can create potential savings by accelerating projects to offset rapidly increasing construction costs and offer incentives for investment from State and local governments and from the private sector. The Federal Government currently offers several programs that provide infrastructure financing. For example, the TIFIA program provides loans for transportation projects of national significance. The government also has authorized a number of revolving funds that are used to dedicate capital to be loaned for qualified infrastructure projects.

In general, loan dollars are repaid, recycled back into the revolving funds and subsequently reinvested in the infrastructure through additional loans. Such funds exist at both the Federal and State level. They include State infrastructure banks, the clean water State revolving fund and the drinking water State revolving fund. Several proposed bills would make additional financing mechanisms available for infrastructure. For example, the proposed Build America Bond Fund would provide $50 billion in new infrastructure funding through bonds. The National Infrastructure Development Act bill introduced by Ms. DeLauro, would establish a loan program administered by a government sponsored entity to fund a variety of infrastructure projects.

A National Infrastructure Bank Act would provide an infrastructure bank at the national level as a revolving fund. Although each of these financing mechanisms has different merits, each mechanism in the final analysis is a form of debt, but ultimately must be repaid with interest. Furthermore, since the Federal Government's cost of capital is generally lower than that of the private sector, financing mechanisms such as bonding should be recognized as more expensive than full upfront funding.

To help policymakers make explicit decisions about how much overall Federal spending should be devoted to investment, we previously have proposed establishing an investment component within the unified budget by recognizing the different effects of various types of Federal spending. An investment focus within the budget

would provide a valuable supplement in the unified budget's consideration of macroeconomic issues.

Moreover, with direct attention to the consequent choices within the budget under existing budget limitations, a level which is now not determined explicitly by policymakers but is simply the result of numerous individual decisions. In conclusion, various investment options have been and likely will be continued to be identified to repair, upgrade, expand and better use our Nation's infrastructure.

Ultimately, Congress and other Federal policymakers will have to determine which option or more likely which combination of options best meets the needs of the Nation. There is no silver bullet. The suitability of any of these options will depend on the level of Federal involvement the policymakers decide in a given area. We look forward to continuing to work with the committees as you consider these various options. Thank you, Mr. Chairman.

[The statement of Ms. Dalton follows:]

United States Government Accountability Office

GAO

Testimony Before the Committee on the Budget and the Committee on Transportation and Infrastructure, U.S. House of Representatives

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PHYSICAL INFRASTRUCTURE

Challenges and Investment Options for the Nation's Infrastructure

Statement of Patricia A. Dalton, Managing Director
Physical Infrastructure Issues

GAO-08-763T

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Accountability·Integrity·Reliability

Highlights

Highlights of GAO-08-763T, a testimony before the Committee on the Budget and the Committee on Transportation and Infrastructure, U.S. House of Representatives

Why GAO Did This Study

Physical infrastructure is critical to the nation's economy and affects the daily life of virtually all Americans—from facilitating the movement of goods and people within and beyond U.S. borders to providing clean drinking water. However, this infrastructure—including aviation, highway, transit, rail, water, and dam infrastructure—is under strain. Estimates to repair, replace, or upgrade aging infrastructure as well as expand capacity to meet increased demand top hundreds of billions of dollars. Calls for increased investment in infrastructure come at a time when traditional funding for infrastructure projects is increasingly strained, and the federal government's fiscal outlook is worse than many may understand.

This testimony discusses (1) challenges associated with the nation's surface transportation, aviation, water, and dam infrastructure, and the principles GAO has identified to help guide efforts to address these challenges and (2) existing and proposed options to fund investments in the nation's infrastructure. This statement is primarily based on a body of work GAO has completed for the Congress over the last several years. To supplement this existing work, GAO also interviewed Department of Transportation officials to obtain up-to-date information on the status of the Highway Trust Fund and various funding and financing options and reviewed published literature to obtain information on dam infrastructure issues.

To view the full product, including the scope and methodology, click on GAO-08-763T. For more information, contact Patricia Dalton at (202) 512-2834 or daltonp@gao.gov.

PHYSICAL INFRASTRUCTURE

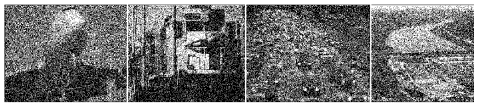
Challenges and Investment Options for the Natio Infrastructure

What GAO Found

The nation faces a host of serious infrastructure challenges. Demand h outpaced the capacity of our nation's surface transportation and aviatic systems, resulting in decreased performance and reliability. In additior utilities are facing pressure to upgrade the nation's aging and deteriorat water infrastructure to improve security, serve growing demands, and r new regulatory requirements. Given these types of challenges and the f government's fiscal outlook, it is clear that the federal government can continue with business as usual. Rather, a fundamental reexamination government programs, policies, and activities is needed. Through prior analyses of existing programs, GAO identified a number of principles th could guide a reexamination of federal infrastructure programs. These principles include

- creating well-defined goals based on identified areas of national int
- establishing and clearly defining the federal role in achieving each g
- incorporating performance and accountability into funding decisior
- employing the best tools and approaches to emphasize return on investment, and
- ensuring fiscal sustainability.

Various options are available to fund infrastructure investments. These options include altering existing or introducing new funding approache employing various financing mechanisms, such as bonds and loans. Fo example, a variety of taxes and user fees, such as tolling, can be used t fund infrastructure projects. In addition, some have suggested includin infrastructure component in a future economic stimulus bill, which cou provide a one-time infusion of funds for infrastructure projects. Each c options has different merits and challenges, and choosing among them likely involve trade-offs among different policy goals. Furthermore, the suitability of the various options depends on the level of federal involve or control that policymakers desire. However, as GAO has reported, w infrastructure investment decisions are made based on sound evaluatio these options can lead to an appropriate blend of public and private fur match public and private costs and benefits. To help policymakers mal explicit decisions about how much overall federal spending should be c to investment, GAO has previously proposed establishing an investmen component within the unified budget.



Source: Corbis. Source: U.S. Army Corps c

Messrs. Chairmen and Members of the Committees:

We appreciate the opportunity to testify on infrastructure financing issues. As you know, the nation's physical infrastructure is critical to the nation's economy and affects the daily life of most Americans—from facilitating the movement of goods and people within and beyond U.S. borders to providing clean drinking water. However, as illustrated by the 2007 bridge collapse in Minnesota and numerous water main breaks across the country, the nation's physical infrastructure is under strain. Estimates of the costs to repair, replace, or upgrade aging infrastructure so that it can safely, efficiently, and reliably meet current demands, as well as expand capacity to meet increasing demands, top hundreds of billions of dollars.

Addressing these challenges is complicated by the breadth of the nation's physical infrastructure—including aviation, highway, transit, rail, water, and dam infrastructure—which is owned, funded, and operated by all levels of the government and the private sector. Moreover, infrastructure policy decisions are inextricably linked with economic, environmental, and energy policy concerns. Calls for increased investment in infrastructure coincide with increasing strains on traditional funding for infrastructure projects. For example, without significant changes in funding or planned spending, the Highway Trust Fund is projected to incur significant deficits in the years ahead.[1] Furthermore, the federal government's financial condition and fiscal outlook are worse than many may understand.[2] Specifically, the federal budget is on an unsustainable path—raising questions about whether people should assume federal funds will be available to help solve the nation's current infrastructure challenges. We have also previously reported that state and local governments will likely face persistent fiscal challenges starting within the next few years.[3] Consequently, a range of investment options for the

[1]The Highway Trust Fund is the mechanism used to account for federal highway user taxes (e.g., federal excise taxes on fuel) that are dedicated for highway- and transit-related purposes. The Highway Trust Fund has two accounts: the Highway Account and the Mass Transit Account.

[2]GAO, *Long-Term Fiscal Outlook: Action Is Needed to Avoid the Possibility of a Serious Economic Disruption in the Future*, GAO-08-411T (Washington, D.C.: Jan. 29, 2008) and *Fiscal Stewardship: A Critical Challenge Facing Our Nation*, GAO-07-362SP (Washington, D.C.: January 2007).

[3]GAO, *State and Local Governments: Persistent Fiscal Challenges Will Likely Emerge within the Next Decade*, GAO-07-1080SP (Washington, D.C.: July 18, 2007).

nation's physical infrastructure is currently being explored and proposed by some policymakers and industry stakeholders.

Prudent use of taxpayer dollars is always important. The economic and social importance of the nation's infrastructure and the current fiscal environment make it even more important that federal, state, and local governments make prudent decisions on how to invest limited available resources. In making these decisions, governments will face an array of challenges that include repairing and maintaining aging infrastructure, making more efficient use of existing infrastructure, accounting for population growth, and incorporating new technologies in funding for infrastructure. In this environment, the infrastructure improvements that all levels of government want may not reflect what they need or what the nation can afford. Accordingly, decisions about the appropriate level of distribution and spending on infrastructure are both difficult and enormously important.

My remarks today focus on (1) challenges associated with the nation's surface transportation, aviation, water, and dam infrastructure, and the principles we have identified to help guide efforts to address these challenges and (2) existing and proposed options to fund investments in the nation's infrastructure. My comments are based primarily on a body of work that we have completed over the past several years for the Congress.[4] To supplement our existing work, we also interviewed Department of Transportation (DOT) officials and reviewed published literature to obtain up-to-date information on the status of the Highway Trust Fund, various funding and financing options, and dam infrastructure issues. We conducted this work between March and May 2008 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Summary

The nation faces a host of serious infrastructure challenges. For example, demand has outpaced the capacity of our nation's surface transportation

[4]See Related GAO Products at the end of this testimony statement. We conducted these performance audits in accordance with generally accepted government auditing standards.

and aviation systems, resulting in decreased performance and reliability. Furthermore, as we recently reported, federal surface transportation programs are not effectively addressing key challenges, such as congestion, because the federal goals and roles are unclear, many programs lack links to performance or needs, and the programs often do not employ the best tools and approaches. In addition, water utilities are facing pressure to upgrade the nation's aging and deteriorating water infrastructure to improve security, serve growing demands, and meet new regulatory requirements. Given these types of challenges and the federal government's fiscal outlook, it is clear that the federal government cannot continue with business as usual. Rather, a fundamental reexamination of government programs, policies, and activities is needed. Through our prior analyses of existing programs, we identified a number of principles that could help guide a reexamination of the federal surface transportation program. While these principles are designed specifically to reexamine the surface transportation program, most, if not all of them, could be applicable to other federal infrastructure programs. These principles are

- creating well-defined goals based on identified areas of national interest,
- establishing and clearly defining the federal role in achieving each goal,
- incorporating performance and accountability into funding decisions,
- employing the best tools and approaches to emphasize return on investment, and
- ensuring fiscal sustainability.

A wide variety of options are available to fund infrastructure investments. These options include altering existing or introducing new funding approaches and employing various financing mechanisms, such as bonds and loans. For example, a variety of taxes and user fees, such as tolling, can be used to help fund infrastructure projects. In addition, some have suggested including an infrastructure component in a future economic stimulus bill, which could provide a one-time infusion of funds for infrastructure projects. Each of these options has different merits and challenges, and choosing among them will likely involve policy trade-offs. Furthermore, the suitability of any of these options depends on the level of federal involvement or control that policymakers desire in a given policy area. However, as we have reported, when infrastructure investment decisions are based on sound evaluations, these options can lead to an appropriate blend of public and private funds to match public and private

costs and benefits. To help policymakers make explicit decisions about how much overall federal spending should be devoted to investment, we have previously proposed establishing an investment component within the unified budget.

Background

The economic well-being of the United States is dependent on the reliability, safety, and security of its physical infrastructure. The nation's infrastructure is vast and affects the daily lives of virtually all Americans. In total, there are about 4 million miles of roads, 117,000 miles of rail, 600,000 bridges, 79,000 dams, 26,000 miles of commercially navigable waterways, 11,000 miles of transit lines, 500 train stations, 300 ports, 19,000 airports,[5] 55,000 community drinking water systems, and 30,000 wastewater treatment and collection facilities. Collectively, this infrastructure connects communities, facilitates trade, provides clean drinking water, and protects public health, among other things.

The nation's infrastructure is primarily owned and operated by state and local governments and the private sector. For example, state and local governments own about 98 percent of the nation's bridges and the private sector owns almost all freight railroad infrastructure. The federal government owns a limited amount of infrastructure—for instance, the federal government owns and operates the nation's air traffic control infrastructure. In addition, through its oversight role, the federal government plays an important role in ensuring the safety, security, and reliability of the nation's infrastructure. Table 1 provides information on infrastructure ownership.

[5]About 3,400 of these airports are in the national airport system.

Table 1: Physical Infrastructure Ownership

Surface transportation	• Ninety-seven percent of the nation's roads and highways are owned by state and local governments, with local governments owning approximately 77 percent of the miles of roadway. • About 98 percent of the nation's bridges are owned by state and local governments. • Most transit systems are owned and operated by public agencies that are created by state and local governments. • Most freight railroad infrastructure is owned by private freight railroads. The federal government owns about 650 miles of Amtrak's 22,000-mile rail network. • The maritime transportation infrastructure, including ports, is generally owned and operated by state and local agencies and private companies. Many ports are publicly owned and privately operated.
Aviation	• Most commercial service airports are owned by local or state governments, either directly or through an authority, a quasi-governmental body established to operate the airport. • Air traffic control facilities are owned by the federal government.
Water	• About half of the nation's drinking water systems and an estimated 20 percent of the wastewater systems are privately owned. Private owners range from homeowners' associations, mobile home parks, and other entities whose primary business is unrelated to water supply or wastewater treatment, to larger, investor-owned companies. Publicly owned drinking water systems and wastewater utilities are owned by municipalities, townships, counties, water or sewer districts, and water or sewer authorities.
Dams (including levees)	• The majority of dams in the United States are privately owned. The federal government owns and operates about 5 percent of the nation's dams. • Levees are typically constructed by the federal government, and local governments are responsible for their operation and maintenance.

Source: GAO summary of information from the Airport Cooperative Research Program, Department of Transportation, Environmental Protection Agency, Federal Emergency Management Agency, National Academy of Public Administration, and the National Railroad Passenger Corporation.

Funding for the nation's infrastructure comes from a variety of federal, state, local, and private sources. For example, the private and local public owners of water infrastructure as well as multiple federal agencies fund drinking water and wastewater capital improvements. As owners of the infrastructure, state and local governments and the private sector generally account for a larger share of funding for infrastructure than the

federal government. However, the federal government has played and continues to play an important role in funding infrastructure. For example:

- From 1954 through 2001, the federal government invested over $370 billion (in 2001 dollars) in the Interstate Highway System.
- Federal Airport Improvement Program grants provided an average of $3.6 billion annually (in 2006 dollars) for airport capital improvements between 2001 and 2005.
- From fiscal year 1991 through fiscal year 2000, nine federal agencies provided about $44 billion (in 2000 dollars) for drinking water and wastewater capital improvements.
- Through the New Starts program, the federal government provided over $10 billion in capital funds for new fixed-guideway transit (e.g., commuter rail and subway) projects between fiscal year 1998 and fiscal year 2007.

To increase the nation's long-term productivity and growth, the federal government invests in various activities and sectors, including infrastructure.[6] While providing long-term benefits to the nation as a whole, much of this spending does not result in federal ownership of the infrastructure assets. For the most part, the federal government supports infrastructure investments through federal subsidies to other levels of government or the private sector. To address concerns about the state of the nation's infrastructure, Members of Congress have introduced several bills that are intended to increase investment in the nation's infrastructure by, for example, issuing bonds and providing tax credits for infrastructure investments. (See table 2.)

Table 2: Examples of Proposed Legislation Related to Infrastructure Investment

Proposed title	Description
National Infrastructure Bank Act (S. 1926 / H.R. 3401)	Would establish an independent National Infrastructure Bank to: (1) designate qualified transit, public housing, water, highway, bridge, or road infrastructure projects for loans, loan guarantees, and other financial assistance; and (2) issue general purpose and project-based infrastructure bonds exempt from state and local taxation.

[6]In addition to federal spending designed to increase economic activity, some federal spending on infrastructure is motivated by noneconomic policy goals, such as improved safety.

Proposed title	Description
Build America Bonds Act (S. 2021)	Would provide $50 billion in new transportation infrastructure funding through bonding to empower states and local governments to complete significant infrastructure projects across all modes of transportation, including roads, bridges, rail and transit systems, ports, and inland waterways, and for other purposes.
American Infrastructure Investment and Improvement Act (S. 2345)	Would provide $3.4 billion to the Highway Trust Fund and establish a rail infrastructure tax credit, among other things.
Our Nation's Trade, Infrastructure, Mobility, and Efficiency Act (H.R. 5102)	Would direct the Secretary of Transportation to establish and collect a fee based on the fair market value of articles imported into the United States and articles exported from the United States in commerce and to use amounts collected from the fee to make grants to carry out certain transportation projects in the transportation trade corridors for which the fee is collected, and for other purposes.
Dam Rehabilitation and Repair Act of 2007 (H.R. 3224)	Would provide $200 million over five years to repair state and locally owned dams. The grants would be part of the National Dam Safety Program, a federal-state partnership aimed at reducing the risk to life and property from dam failure. The federal government's share of repair costs would be limited to 65 percent. Dams that do not meet state safety standards or that pose a risk to the public would be eligible for funding under the program.
Freight Rail Infrastructure Capacity Expansion Act (H.R. 2116 / S. 1125)	Would provide incentives to encourage investment in the expansion of freight rail infrastructure capacity and to enhance modal tax equity. Specifically, the bill amends the Internal Revenue Code to allow: (1) a tax credit for 25 percent of the cost of new qualified freight rail infrastructure property and qualified locomotive property; and (2) a taxpayer election to expense the cost of qualified freight rail infrastructure property (i.e., deduct all costs in the current taxable year).

Source: GAO analysis of legislation introduced in the 110th Congress.

Congress previously established two commissions to study the condition and future needs of the surface transportation system, including financing options. It created the National Surface Transportation Policy and Revenue Study Commission (Policy Commission) to examine the condition and future needs of the nation's surface transportation system and short- and long-term alternatives to replace or supplement the fuel tax as the principal revenue source supporting the Highway Trust Fund. In January 2008, the Policy Commission released its final report. Congress also created the National Surface Transportation Infrastructure Financing Commission and charged it with analyzing future highway and transit needs and the finances of the Highway Trust Fund and with recommending alternative approaches to financing transportation

infrastructure. This commission issued its interim report in February 2008, and its final report is expected in November 2008.

The Nation Faces Significant Challenges Associated with Its Infrastructure

We have previously reported that the nation's surface transportation, aviation, water, and dam systems face numerous challenges related to their infrastructure. Increasing congestion has strained the capacity of our nation's surface transportation and aviation systems, decreasing their overall performance in meeting the nation's mobility needs. Furthermore, significant investments are needed in our nation's drinking and wastewater systems to address deteriorating infrastructure and deferred maintenance. In light of these and other challenges, we have called for a fundamental reexamination of government programs and developed a set of principles that could help guide such a reexamination.

Growing Congestion Challenges the Nation's Surface Transportation System, While Federal Programs Face Funding Uncertainties

Despite increases in transportation spending at all levels of government and improvements to the physical condition of highways and transit facilities over the past 10 years, congestion has worsened and safety gains have leveled off. For example, according to DOT, highway spending by all levels of government has increased 100 percent in real dollar terms since 1980, but the hours of delay during peak travel periods have increased almost 200 percent during the same period. In addition, demand has outpaced the capacity of the system, and projected population growth, technological changes, and increased globalization are expected to further strain the system. We have previously reported that federal surface transportation programs are not effectively addressing these key challenges because federal goals and roles are unclear, many programs lack links to needs or performance, and the programs may not employ the best tools and approaches.[7] In addition, federal transportation funding is generally not linked to specific performance-related goals or outcomes, resulting in limited assurance that federal funding is being channeled to the nation's most critical mobility needs. Federal funding is also often tied to a single transportation mode, which may limit the use of federal funds to finance the greatest improvements in mobility.

[7]GAO, *Surface Transportation: Restructured Federal Approach Needed for More Focused, Performance-Based, and Sustainable Programs*, GAO-08-400 (Washington, D.C.: Mar. 6, 2008).

To address these surface transportation challenges, various stakeholders have called for increasing significantly the level of investment by all levels of government in surface transportation. For example, in its January 2008 report, the Policy Commission recommended that all levels of government and the private sector collectively invest at least $225 billion each year to maintain and improve the surface transportation system, which would be about $140 billion more than is currently invested. However, without significant changes in funding, planned spending, or both, the balance of the Highway Account of the Highway Trust Fund—the major source of federal highway funds—is projected to be exhausted at some point during fiscal year 2009. To address this gap between revenues and spending, in its fiscal year 2009 budget request, the administration proposed granting the Secretary of the Treasury, in consultation with the Secretary of Transportation, the flexibility to transfer funds between the Highway and Transit Accounts of the Highway Trust Fund. However, this solution, if enacted, would provide only a short-term reprieve—both the administration and the Congressional Budget Office project that the balances of the Highway and Transit Accounts would be exhausted by the end of fiscal year 2010.

Increasing Demand Strains the Aviation System and Traditional Funding Approaches

The Federal Aviation Administration (FAA) faces significant challenges in keeping the nation's current airspace system running as efficiently as possible as the demand for air travel increases and the air traffic control system ages. System congestion, and the resulting flight delays and cancellations, are serious problems that have worsened in recent years. For example, according to DOT, 2007 was the second-worst year for delays since 1995. To accommodate current and expected demand for air travel, FAA and aviation stakeholders are developing the Next Generation Air Transportation System (NextGen) to modernize the nation's air traffic control infrastructure and increase capacity. This effort is complex and costly. Although there is considerable uncertainty about how much NextGen will cost, FAA estimates that NextGen infrastructure will cost the federal government between $15 billion and $22 billion through 2025. Other key challenges for FAA include managing a timely acquisition and implementation of NextGen and dealing effectively with the environmental concerns of communities that are adjacent to airports or under the flight paths of arriving and departing aircraft. For example, as we have previously testified, if not adequately addressed, these concerns, particularly about the noise that affects local communities and the

emissions that contribute to global warming, may constrain efforts to build or expand the runways and airports needed to handle the added capacity envisioned for NextGen.[8] In addition, airports face similar funding challenges in attempting to expand their capacity. For example, planned airport development costs total at least $14 billion annually (in 2006 dollars) through 2011—exceeding historical funding levels by about $1 billion per year.

We have previously testified that FAA's current funding mechanisms—the Airport and Airway Trust Fund (Trust Fund) and the U.S. Treasury's general fund—can potentially provide sufficient resources to support FAA activities, including NextGen.[9] However, there are a number of uncertainties—including the future cost of NextGen investment, the volume of air traffic, the future costs of operating the National Airspace System, and the levels of future appropriations for the Airport Improvement Program—that may influence the funding necessary to support FAA's activities. In addition, uncertainties surrounding the status of FAA's reauthorization could have adverse effects on FAA's ability to carry out its mission unless other revenue sources and spending authority are provided. Without legislative action, both the excise taxes that fund the Trust Fund and FAA's authority to spend from the Trust Fund will expire on June 30, 2008. Failing to meet these infrastructure challenges in aviation may have significant economic consequences, since aviation is an integral part of the economy.

Aging and Deteriorating Water Infrastructure Presents Challenges

Water utilities nationwide are under increasing pressure to make significant investments to upgrade aging and deteriorating infrastructures, improve security, serve a growing population, and meet new regulatory requirements.[10] Water infrastructure needs across the country are estimated to range from $485 billion to nearly $1.2 trillion over the next 20 years. According to the Environmental Protection Agency's (EPA) June 2005 Drinking Water Infrastructure Needs Survey, the largest category of

[8]GAO, *Federal Aviation Administration: Challenges Facing the Agency in Fiscal Year 2009 and Beyond*, GAO-08-460T (Washington, D.C.: Feb. 7, 2008).

[9]GAO-08-460T.

[10]In October 2007, EPA made several changes to the monitoring and public notice provisions in the Lead and Copper Rule under the Safe Drinking Water Act, the principal federal regulation protecting public water system consumers from exposure to lead and copper in drinking water.

need is the installation and maintenance of transmission and distribution systems—accounting for $183.6 billion, or about 66 percent of the needs projected through 2022. For wastewater systems, EPA's 2004 Clean Watersheds Needs Survey projected infrastructure-related needs for publicly owned wastewater systems of $202.5 billion through 2024.[11] Many drinking water and wastewater utilities have had difficulty raising funds to repair, replace, or upgrade aging capital assets; comply with regulatory requirements; and expand capacity to meet increased demand. For example, based on a nationwide survey of several thousand drinking water and wastewater utilities, we reported in 2002 that about one-third of the utilities (1) deferred maintenance because of insufficient funds, (2) had 20 percent or more of their pipelines nearing the end of their useful life, and (3) lacked basic plans for managing their capital assets.[12] Other GAO work suggests that the nation's water utilities could more effectively manage their infrastructure at a time when significant investments are needed.[13]

Several factors have contributed to the nation's deteriorating water infrastructure over the years. The adequacy of available funds, in particular, has been a key determinant of how well utility infrastructure has been maintained. However, according to our nationwide survey, a significant percentage of the utilities serving populations of 10,000 or more—29 percent of the drinking water utilities and 41 percent of the wastewater utilities—were not generating enough revenue from user charges and other local sources to cover their full costs of service. In addition, when asked about the frequency of rate increases during the period from 1992 to 2001, more than half the utilities reported raising their rates infrequently: once, twice, or not at all over the 10-year period. Citing communities' funding difficulties, many have looked to the federal government for financial assistance. However, if budgetary trends over the past few years serve as any indication, federal funding will not close the gap. For example, the trends and overall funding levels associated with the Clean Water and Drinking Water State Revolving Funds, the key federal programs supporting water infrastructure financing, suggest that they will

[11]U.S. Environmental Protection Agency, *Clean Watersheds Needs Survey 2004 Report to Congress*, (Washington, D.C.: January 2008).

[12]GAO, *Water Infrastructure: Information on Financing, Capital Planning, and Privatization*, GAO-02-764 (Washington, D.C.: Aug. 16, 2002).

[13]GAO, *Water Infrastructure: Comprehensive Asset Management Has Potential to Help Utilities Better Identify Needs and Plan Future Investments*, GAO-04-461 (Washington, D.C.: Mar. 19, 2004).

have only a marginal impact in closing the long-term water infrastructure funding gap. We have previously reported that comprehensive asset management, a technique whereby water systems systematically identify their needs, set priorities, and better target their investments, can help utilities make better us of available funds. Additional funds, however, will ultimately be needed to narrow the funding gap.

Aging Dam Infrastructure Raises Safety and Funding Challenges

Our nation's dam infrastructure is an important component of the nation's water control infrastructure, supplying such benefits as water for drinking, irrigation, and industrial uses; flood control; hydroelectric power; recreation; and navigation.[14] However, as evidenced by the events of Hurricanes Katrina and Rita, the failure of dam infrastructure, which includes levees, also represents a risk to public safety, local and regional economies, and the environment. In particular, the aging of dam infrastructure in the United States continues to be a critical issue for dam safety because the age of dams is a leading indicator of potential dam failure.[15] According to the American Society of Civil Engineers, the number of unsafe dams has risen by more than 33 percent since 1998, to more than 3,500 in 2005.[16] In addition, the number of dams identified as unsafe is increasing faster than the number of dams that are being repaired.

To address the challenges facing our nation's dams, the Federal Emergency Management Agency and the National Dam Safety Review Board identified both short- and long-term goals and priorities for the National Dam Safety Program[17] over the next 5 to 10 years. They include identifying and remedying deficient dams, increasing dam inspections, increasing the number of and updating of Emergency Action Plans, achieving the participation of all states in the National Dam Safety Program, increasing research products disseminated to the dam safety community, and achieving cost efficiencies. However, according to the

[14]The term "dam" includes conventional dams, navigation locks, levees, canals (excluding channels), or other similar types of water retention structures.

[15]A number of factors, including age, construction deficiencies, inadequate maintenance, and seismic or weather events contribute to the likelihood of dam failure.

[16]American Society of Civil Engineers, *2005 Report Card for America's Infrastructure*, March 2005.

[17]The National Dam Safety Program, which is administered by FEMA, is a partnership of the states, federal agencies, and other stakeholders to encourage individual and community responsibility for dam safety.

Congressional Research Service, most federal agencies do not have funding available to immediately undertake all nonurgent repairs, and at some agencies, dam rehabilitation projects must compete for funding with other construction projects.[15] The Association of State Dam Safety Officials reported similar funding constraints on dam investment at the state level.

GAO Principles Could Guide Efforts to Reexamine Federal Programs in Light of Challenges

Given the nation's infrastructure challenges and the federal government's fiscal outlook, we have called for a fundamental reexamination of government programs. Addressing these challenges requires strategic approaches, effective tools and programs, and coordinated solutions involving all levels of government and the private sector.[16] Yet in many cases, the government is still trying to do business in ways that are based on conditions, priorities, and approaches that were established decades ago and are not well suited to addressing 21st century challenges. A reexamination offers an opportunity to address emerging concerns by eliminating outdated or ineffective programs, more sharply defining the federal role in relation to state and local roles, and modernizing those programs and policies that remain relevant. Through our prior analyses of existing programs, we identified a number of principles that could help drive an assessment for restructuring and financing the federal surface transportation program. While these principles are designed specifically to reexamine the surface transportation programs, most, if not all of these principles could be informative as policymakers consider how to address challenges facing other federal infrastructure programs. These principles include

- creating well-defined goals based on identified areas of national interest, which involves examining the relevance and relative priority of existing programs in light of 21st century challenges and identifying emerging areas of national importance;
- establishing and clearly defining the federal role in achieving each goal in relation to the roles of state and local governments, regional entities, and the private sector;

[15]Congressional Research Service, CRS Report for Congress, *Aging Infrastructure: Dam Safety*, updated March 25, 2008.

[16]GAO, *21st Century Challenges: Reexamining the Base of the Federal Government*, GAO-05-325SP (Washington, D.C.: Feb. 2005).

- incorporating performance and accountability into funding decisions to ensure resources are targeted to programs that best achieve intended outcomes and national priorities;
- employing the best tools, such as benefit-cost analysis, and approaches to emphasize return on investment at a time of constrained federal resources; and
- ensuring fiscal sustainability through targeted investments of federal, state, local, and private resources.

Various Options Are Available or Have Been Proposed to Fund Investments in the Nation's Infrastructure

Various options exist or have been proposed to fund investments in the nation's infrastructure. These options include altering existing or introducing new funding approaches and employing various financing mechanisms. In addition, some have suggested including an infrastructure component in a future economic stimulus bill, which could provide a one-time infusion of funds for infrastructure. Each of these options has different merits and challenges, and the selection of any of them will likely involve trade-offs among different policy goals. Furthermore, the suitability of any of these options depends on the level of federal involvement or control that policymakers desire for a given area of policy. However, as we have reported, when infrastructure investment decisions are made based on sound evaluations, these options can lead to an appropriate blend of public and private funds to match public and private costs and benefits.[20] To help policymakers make explicit decisions about how much overall federal spending should be devoted to infrastructure investment, we have previously proposed establishing an investment component within the unified budget.

Funding Approaches Can Be Altered or Developed to Help Fund Infrastructure Investments

Various existing funding approaches could be altered or new funding approaches could be developed to help fund investments in the nation's infrastructure. These various approaches can be grouped into two categories: taxes and user fees.

[20]GAO, *Freight Transportation: Strategies Needed to Address Planning and Financing Limitations*, GAO-04-165 (Washington D.C.: Dec. 19, 2003).

A variety of taxes have been and could be used to fund the nation's infrastructure, including excise, sales, property, and income taxes. For example, federal excise taxes on motor fuels are the primary source of funding for the federal surface transportation program. Fuel taxes are attractive because they have provided a relatively stable stream of revenues and their collection and enforcement costs are relatively low. However, fuel taxes do not currently convey to drivers the full costs of their use of the road—such as the costs of wear and tear, congestion, and pollution. Moreover, federal motor fuel taxes have not been increased since 1993—and thus the purchasing power of fuel taxes revenues has eroded with inflation. As Congressional Budget Office (CBO) has previously reported, the existing fuel taxes could be altered in a variety of ways to address this erosion, including increasing the per-gallon tax rate and indexing the rates to inflation.[21] Some transportation stakeholders have suggested exploring the potential of using a carbon tax, or other carbon pricing strategies, to help fund infrastructure.[22] In a system of carbon taxes, fossil fuel emissions would be taxed, with the tax proportional to the amount of carbon dioxide released in the fuel's combustion. Because a carbon tax could have a broad effect on consumer decisions, we have previously reported that it could be used to complement Corporate Average Fuel Economy standards, which require manufacturers meet fuel economy standards for passenger cars and light trucks to reduce oil consumption.[23] A carbon tax would create incentives that could affect a broader range of consumer choices as well as provide revenue for infrastructure.

Another funding source for infrastructure is user fees. The concept underlying user fees—that is, users pay directly for the infrastructure they use—is a long-standing aspect of many infrastructure programs. Examples of user fees that could be altered or introduced include airport passenger facility charges; fees for use of air traffic control services; fees based on

[21]CBO, *Status of the Highway Trust Fund: 2007*, March 27, 2007.

[22]Another carbon pricing strategy is a cap-and-trade program, which combines a regulatory limit or cap on the amount of carbon that can be emitted into the atmosphere with market elements such as the opportunity to buy additional allowances to emit additional carbon. Auctioning the allowances of a cap-and-trade program would generate revenue for the government, which could be used for a variety of purposes, including infrastructure investments.

[23]GAO, *Vehicle Fuel Economy: Reforming Fuel Economy Standards Could Help Reduce Oil Consumption by Cars and Light Trucks, and Other Options Could Complement These Standards*, GAO-07-921 (Washington, D.C.: Aug. 2, 2007).

vehicle miles traveled (VMT) on roadways; freight fees, such as a per-container charge; highway tolls; and congestion pricing of roads and aviation infrastructure.

- **Aviation user fees.** Many commercial airports currently impose a user fee on passengers—referred to as a passenger facility charge—to fund airport capital projects.[24] Over $2 billion in passenger facility charge revenues are collected by airports each year, representing an important source of funding for airport capital projects. In contrast, FAA's activities, including the transition to NextGen, are largely funded by excise taxes through the Airport and Airway Trust Fund. To better connect FAA's revenues with the cost of air traffic control services that FAA provides, the administration has proposed, in its FAA reauthorization bill, to replace this excise tax funding system with a cost-based user fee system. This new system would aim to recover the costs of providing air traffic control services through user fees for commercial operators and aviation fuel taxes for general aviation. According to the administration, cost-based user charges would link revenues more closely to costs and could create incentives for more efficient use of the system by aircraft operators. We have previously testified that a better alignment of FAA's revenues and costs can address concerns about long-term revenue adequacy, equity, and efficiency as intended, but the ability of the proposed funding structure to link revenues and costs depends critically on the soundness of FAA's cost allocation system in allocating costs to users. We found that the support for some of FAA's cost allocation methodology's underlying assumptions and methods is insufficient, leaving FAA unable to conclusively demonstrate the reasonableness of the resulting cost assignments.[25]

- **VMT fees.** To more directly reflect the amount a vehicle uses particular roads, users could be charged a fee based on the number of vehicle miles traveled. In 2006, the Oregon Department of Transportation conducted a pilot program designed to test the technological and administrative feasibility of a VMT fee. The pilot program evaluated whether a VMT fee could be implemented to replace motor fuel taxes as the principal source of transportation revenue by utilizing a Global Positioning System (GPS) to track miles driven and collecting the VMT fee ($0.012 per mile traveled) at fuel pumps that can read information from the GPS.[26] As we have

[24]The majority of commercial airports charge a passenger facility charge of between $1 and $4.50 per enplaned passenger.

[25]GAO-08-460T.

[26]Oregon's Mileage Fee Concept and Road User Fee Pilot Program: Final Report.

previously reported, using a GPS could also be used to track mileage in high-congestion zones, and the fee could be adjusted upward for miles driven in these areas or during more congested times of day such as rush hour—a strategy that might reduce congestion and save fuel.[27] In addition, the system could be designed to apply different fees to vehicles, depending on their fuel economy. On the federal level, a VMT fee could be based on odometer readings, which would likely be a simpler and less costly way to implement such a program. A VMT fee—unless it is adjusted based on the fuel economy of the vehicle—does not provide incentives for customers to buy vehicles with higher fuel economy ratings because the fee depends only on mileage. Also, because the fee would likely be collected from individual drivers, a VMT fee could be expensive for the government to implement, potentially making it a less cost-effective approach than a motor fuel or carbon tax. The Oregon study also identified other challenges including concerns about privacy and technical difficulties in retrofitting vehicles with the necessary technology.

- **Freight fees.** Given the importance of freight movement to the economy, the Policy Commission recently recommended a new federal freight fee to support the development of a national program aimed at strategically expanding capacity for freight transportation.[28] While the volume of domestic and international freight moving through the country has increased dramatically and is expected to continue growing, the capacity of the nation's freight transportation infrastructure has not increased at the same rate as demand.[29] To support the development of a national program for freight transportation, the Policy Commission recently recommended the introduction of a federal freight fee. The Policy Commission notes that a freight fee, such as a per-container charge, could help fund projects that remedy chokepoints and increase throughput. The Policy Commission also recommended that a portion of the customs duties, which are assessed on imported goods, be used to fund capacity improvements for freight transportation. The majority of customs duties currently collected, however, are deposited in the U.S. Treasury's general fund for the general support of federal activities.[30] Therefore, designating a

[27] GAO-07-921.

[28] *Transportation for Tomorrow: Report of the National Surface Transportation Policy and Revenue Study Commission,* January 2008.

[29] GAO, *Freight Transportation: National Policy and Strategies Can Help Improve Freight Mobility,* GAO-08-287 (Washington, D.C.: Jan. 7, 2008).

[30] GAO, *Marine Transportation: Federal Financing and a Framework for Infrastructure Investments,* GAO-02-1033 (Washington, D.C.: Sept. 9, 2002).

portion of customs duties for surface transportation financing would not create a new source of revenue, but rather transfer funds from the general fund.

- **Tolling.** We have previously reported that roadway tolling has the potential to provide new revenues, promote more effective and rational investment strategies, and better target spending for new and expanded capacity for surface transportation infrastructure.[31] For example, the construction of toll projects is typically financed by bonds; therefore, projects must pass the test of market viability and meet goals demanded by investors, although even with this test, there is no guarantee that projects will always be viable. Tolling potentially can also leverage existing revenue sources by increasing private-sector participation and investment through such arrangements as public-private partnerships. However, securing public and political support for tolling can prove difficult when the public and political leaders perceive tolling (1) as a form of double taxation, (2) unreasonable because tolls do not usually cover the full costs of projects, or (3) unfair to certain groups. Other challenges include obtaining sufficient statutory authority to toll, adequately addressing the traffic diversion that might result when motorists seek to avoid toll facilities, limitations on the types of roads that can be tolled, and coordinating with other states or jurisdictions on a tolling project.

- **Congestion pricing.** As we have previously reported, congestion pricing, or road pricing, attempts to influence driver behavior by charging fees during peak hours to encourage users to shift to off-peak periods, use less congested routes, or use alternative modes. Congestion pricing can also help guide capital investment decisions for new transportation infrastructure. In particular, as congestion increases, tolls also increase, and such increases (sometimes referred to as "congestion surcharges") signal increased demand for physical capacity, indicating where capital investments to increase capacity would be most valuable. Furthermore, these congestion surcharges can potentially enhance mobility by reducing congestion and the demand for roads when the surcharges vary according to congestion to maintain a predetermined level of service. The most common form of congestion pricing in the United States is high-occupancy-toll lanes, which are priced lanes that offer drivers of vehicles that do not meet the occupancy requirements the option of paying a toll to

[31]GAO, *Highway Finance: States' Expanding Use of Tolling Illustrates Diverse Challenges and Strategies*, GAO-06-554 (Washington, D.C.: June 28, 2006).

use lanes that are otherwise restricted for high-occupancy vehicles. In its FAA reauthorization proposal, the administration proposed extending congestion pricing to the aviation sector as a means of managing air traffic congestion. Specifically, the administration proposed that FAA establish a fee based on time of day or day of the week for aircraft using the nation's most congested airports to discourage peak-period traffic. Under such a fee, cargo carriers could pay lower fees by operating at night than they would pay by operating at peak periods of the day, creating an incentive for some cargo carriers to switch daytime operations to nighttime. Like tolling, congestion pricing proposals often arouse political and public opposition, raise equity concerns, and face statutory restrictions.

Various Financing Mechanisms Can Also Help Fund Infrastructure Projects

Financing strategies can provide flexibility for all levels of government when funding additional infrastructure projects, particularly when traditional pay-as-you-go funding approaches, such as taxes or fees, are not set at high enough levels to meet demands. The federal government currently offers several programs to provide state and local governments with incentives such as bonds, loans, and credit assistance to help finance infrastructure. Financing mechanisms can create potential savings by accelerating projects to offset rapidly increasing construction costs and offer incentives for investment from state and local governments and from the private sector. However, each financing strategy is, in the final analysis, a form of debt that ultimately must be repaid with interest. Furthermore, since the federal government's cost of capital is lower than that of the private sector, financing mechanisms, such as bonding, may be more expensive than timely, full, and up-front appropriations. Finally, if the federal government chooses to finance infrastructure projects, policy makers must decide how borrowed dollars will be repaid, either by users or by the general population either now or in the future through increases in general fund taxes or reductions in other government services.

A number of available mechanisms can be used to help finance infrastructure projects. Examples of these financing mechanisms follow:

Bonding. A number of bonding strategies—including tax-exempt bonds,[32] Grant Anticipation Revenue Vehicles (GARVEE) bonds, and Grant Anticipation Notes (GAN)—offer flexibility to bridge funding gaps when traditional revenue sources are scarce. For example, state-issued GARVEE bonds or GANs provide capital in advance of expected federal funds, allowing states to accelerate highway and transit project construction and thus potentially reduce construction costs. Through April 2008, 20 states and two territories issued approximately $8.2 billion of GARVEE-type debt financing and 20 other states are actively considering bonding or seeking legislative authority to issue GARVEEs. Further, SAFETEA-LU authorized the Secretary of Transportation to allocate $15 billion in private activity bonds for qualified highway and surface freight transfer facilities. To date, $5.3 billion has been allocated for six projects. In aviation, most commercial airports issue a variety of bonds for airport capital improvements, most notably general revenue bonds that are backed by general revenues from the airport—including aircraft landing fees, concessions, and parking fees—and passenger facility charges. Several bills introduced in this Congress would increase investment in the nation's infrastructure through bonding. For example, the Build America Bonds Act would provide $50 billion in new infrastructure funding through bonding. Although bonds can provide up-front capital for infrastructure projects, they can be more expensive for the federal government than traditional federal grants. This higher expense results, in part, because the government must compensate the investors for risks they assumed through an adequate return on their investment.

- **Loans, loan guarantees, and credit assistance.** The federal government currently has two programs designed to offer credit assistance to states for surface transportation projects. The Transportation Infrastructure Finance and Innovation Act of 1998 (TIFIA) authorized FHWA to provide credit assistance, in the form of direct loans, loan guarantees, and standby lines of credit for projects of national significance. A similar program, Railroad Rehabilitation and Improvement Financing (RRIF) offers loans to acquire, improve, develop, or rehabilitate intermodal or rail equipment or facilities. To date, 15 TIFIA projects have

[32]Tax-exempt bonds are government bonds that are used for purposes such as infrastructure, schools, libraries, general municipal expenditures or refunding of old debt. Tax-exempt means that the interest paid to bondholders is generally not included in their gross income for federal income tax purposes. Examples of tax-exempt bonds include municipal bonds, and private activity bonds that allow tax-exempt debt to be used by private entities to help finance qualified facilities.

been approved for a total of about $4.8 billion in credit assistance and the RRIF program has approved 21 loan agreements worth more than $747 million. These programs are designed to leverage federal funds by attracting substantial nonfederal investments in infrastructure projects. However, the federal government assumes a level of risk when it makes or guarantees loans for projects financed with private investment.[33]

- **Revolving funds.** Revolving funds can be used to dedicate capital to be loaned for qualified infrastructure projects. In general, loaned dollars are repaid, recycled back into the revolving fund, and subsequently reinvested in the infrastructure through additional loans. Such funds exist at both the federal and the state levels and are used to finance various infrastructure projects ranging from highways to water mains. For example, two federal funds support water infrastructure financing, the Clean Water State Revolving Fund (CWSRF) for wastewater facilities, and the Drinking Water State Revolving Fund (DWSRF) for drinking water facilities. Under each of these programs, the federal government provides seed money to states, which they supplement with their own funds. These funds are then loaned to local governments and other entities for water infrastructure construction and upgrades and various water quality projects. In addition, State Infrastructure Banks (SIB)—capitalized with federal and state matching funds—are state-run revolving funds, make loans and provide credit enhancements and other forms of nongrant assistance to infrastructure projects. Through June 2007, 33 SIBs have made approximately 596 loan agreements worth about $6.2 billion to leverage other available funds for transportation projects across the nation.[34] Furthermore, other funds—such as a dedicated national infrastructure bank—have been proposed to increase investment in infrastructure with a national or regional significance. A challenge for revolving funds in general is maintaining their capitalized value. Defaults on loans and inflation can reduce the capitalized value of the fund—necessitating an infusion of capital to continue the fund's operations.

[33]According to DOT, federal requirements necessitate that a credit risk premium be provided to insure the federal government against the risk of loans defaulting. As a result, these loans are closely examined for risk of loss and, to date, none of the TIFIA or RRIF loans have defaulted.

[34]Eight states—Arizona, Florida, Minnesota, Missouri, Ohio, South Carolina, Texas, and Wyoming—account for 95 percent of the total loan agreements reached through fiscal year 2006.

Designing an Economic Stimulus Package to Increase Infrastructure Investment Would Be Difficult

Another option proposed for temporarily increasing investment in the nation's infrastructure is including an investment component in a future economic stimulus bill. According to supporters, including funding for "ready to build" infrastructure projects in a stimulus bill would serve to both boost the economy and improve the nation's infrastructure through a one-time infusion of funds. For example, the American Association of State Highway and Transportation Officials estimates 42,000 jobs are created for every $1 billion dollars invested in transportation projects.

We have previously identified important design criteria for any economic stimulus package.[35] Specifically:

- **Economic stimulus package should be timely.** An economic stimulus should not be enacted prematurely, delayed too long, or consist of programs that would take too long to be implemented to lessen any economic downturn. For example, if fiscal stimulus is undertaken when it is not needed, it could result in higher inflation or if fiscal stimulus is enacted too slowly, it could take effect after the economy has already started to recover.
- **Economic stimulus package should be temporary.** An economic stimulus should be designed to raise output in the short run, but should not increase the budget deficit in the long-run. If a stimulus program is not temporary and continues after the economy recovers, it could lead to higher inflation.
- **Economic stimulus package should be targeted.** An economic stimulus should be targeted to areas that are most vulnerable in a weakening economy and should generate the largest possible increase in short-run gross domestic product.

Designing and implementing an economic stimulus package with an infrastructure investment component that is timely, temporary, and targeted would be difficult. First, while an effective stimulus package should be timely, practically speaking, infrastructure projects require lengthy planning and design periods. According to CBO, even those projects that are "on the shelf" generally cannot be undertaken quickly enough to provide a timely stimulus to the economy.[36] Second, spending on

[35] GAO-08-411T.

[36] CBO, *Options for Responding to Short-Term Economic Weakness*, January 2008.

infrastructure is generally not temporary because of the extended time frames needed to complete projects. For example, initial outlays for major infrastructure projects supported by the federal government, such as highway construction, often total less than 25 percent of the total funding provided for the project. Furthermore, the initial rate of spending can be significantly lower than 25 percent for large projects.[37] Third, because of differences among states, it is challenging to target stimulus funding to areas with the greatest economic and infrastructure needs. For example, two possible indicators for targeting infrastructure aid to states, gross state product and lane miles per capita, are not correlated. Furthermore, as we have previously reported, states tend to substitute federal funds for funds they would have otherwise spent—making it difficult to target a stimulus package so that it results in a dollar-for-dollar increase in infrastructure investment.[38]

Investment Component within Unified Budget Could Guide Federal Investment in Infrastructure

We have previously reported that the budget process can favor consumption over investment because the initial cost of an infrastructure project looks high in comparison to consumption spending.[39] Thus, adopting a capital budget is suggested as a way to eliminate a perceived bias against investments requiring large up-front spending when they compete with other programs in a unified budget. However, proposals to adopt a capital budget at the federal level often start with certain concepts and models extended from state and local governments and the private sector, which are not appropriate because of fundamental differences in the role of the federal government. Specifically, when state and local governments and the private sector make investments, they typically own the resulting assets, while this is frequently not the case for the federal government. For example, although the federal government invests in surface transportation, aviation, water, and dam infrastructure, a significant portion of this infrastructure is owned by state and local governments. This makes it difficult to fully apply traditional capital

[37]CBO, *Options for Responding to Short-Term Economic Weakness*, January 2008.

[38]GAO, *Federal-Aid Highways: Trends, Effect on State Spending, and Options for Future Program Design*, GAO-04-802 (Washington, D.C.: Aug. 31, 2004).

[39]See GAO, *Budget Trends: Federal Investment Outlays, Fiscal Years 1981-2003*, GAO/AIMD-98-184 (Washington, D.C.: June 15, 1998); *Budget Structure: Providing an Investment Focus in the Federal Budget*, GAO/T-AIMD-95-178 (Washington, D.C.: June 29, 1995); and *Budget Issues: Incorporating an Investment Component in the Federal Budget*, GAO/AIMD-94-40 (Washington, D.C.: Nov. 9, 1993).

budgeting approaches, such as depreciation, which might be considered when assets are fully owned. Moreover, there are fundamental differences between the roles of the state and local governments and the federal government. In an inclusive, unified budget, it is important to disclose up front the full commitments of the government. Federal fiscal policy, as broadly conceived, plays a key role in managing the short-term economy as well as promoting the savings needed for long-term growth.

Rather than recommend adopting a capital budget, we have previously proposed establishing an investment component within the unified budget to address federal spending intended to promote the nation's long-term economic growth.[40] By recognizing the different effects of various types of federal spending, an investment focus within the budget would provide a valuable supplement to the unified budget's concentration on macroeconomic issues. Moreover, it would direct attention to the consequences of choices within the budget under existing budget limitations—a level which is now not determined explicitly by policymakers but is simply the result of numerous individual decisions. If an investment component within the unified budget was adopted, Congress could decide on an overall level of investment in a budget resolution or other macro framework, which would be tracked and enforced through the authorizing and appropriations process to ensure that individual appropriations actions supported the overall level. This approach has the advantage of focusing budget decision makers on the overall level of investment supported in the budget without losing sight of the unified budget's effect on the economy. It also has the advantage of building on the current congressional budget process. Finally, it does not raise the problems posed by capital budgeting proposals that use depreciation and deficit financing.[41]

[40]GAO, *Budget Trends: Federal Investment Outlays, Fiscal Years 1981-2002*, GAO/AIMD-97-88 (Washington, D.C.: May 1997), GAO/AIMD-95-178, and GAO/AIMD 94-40. Numerous definitions of investment are possible and can include more than physical capital. We have reported that an appropriate definition would include federal spending, either direct or through grants, directly intended to enhance the nation's long-term productivity. This definition includes spending on some intangible activities such as research and development; human capital designed to increase worker productivity, particularly education and training; and spending for physical capital to improve infrastructure, such as highways and bridges.

[41]Paul Posner, Trina Lewis, and Hannah Laufe, *Budgeting for Federal Capital* (Washington, D.C.: Public Budgeting and Finance, Fall 1998).

Although the investment component would be subject to budget controls, the existence of a separate component could create an incentive to categorize many proposals as investment. If an investment component within the budget is to be implemented in a meaningful fashion, it will be important to identify what to include. Any changes in the budgetary treatment of investment need to consider broader federal responsibilities. While well-chosen investments may contribute to long-term growth, financing such programs through deficits would undermine their own goal by reducing savings available to fund private investment.[42] Accordingly, reforms in the federal government's budget for investment should be considered within the overall constraints of fiscal policy based on unified budget principles.

Concluding Observations

The nation's physical infrastructure is under strain, raising a host of safety, security, and economic concerns. Given these concerns, various investment options have been, and likely will continue to be, identified to help repair, upgrade, and expand our nation's infrastructure. Ultimately, Congress and other federal policymakers will have to determine which option—or, more likely, which combination of funding and financing options—best meets the needs of the nation. There is no silver bullet. Moreover, although financing mechanisms allow state and local governments to advance projects when traditional pay-as-you-go funding approaches, such as taxes and fees, are insufficient, ultimately these borrowed dollars must be repaid by the users or the general population. Consequently, prudent decisions are needed to determine the appropriate level of infrastructure investment and to maximize each dollar invested. We will continue to assist the Congress as it works to evaluate various investment options and develop infrastructure policies for the 21st century.

Messrs. Chairmen, this concludes my prepared statement. I would be pleased to respond to any questions that you or other Members of the Committee might have.

[42] Because the deficit absorbs private savings otherwise available for domestic investment, it exerts the single most important federal influence on investment. The surest way to increase national savings and investment would be to reduce the unprecedented level of federal dissaving by reducing the deficit.

GAO Contact and Staff Acknowledgments

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Related GAO Products

Drinking Water: The District of Columbia and Communities Nationwide Face Serious Challenges in Their Efforts to Safeguard Water Supplies. GAO-08-687T. Washington, D.C.: April 15, 2008.

Surface Transportation: Restructured Federal Approach Needed for More Focused, Performance-Based, and Sustainable Programs. GAO-08-400. Washington, D.C.: March 6, 2008.

Highway Public-Private Partnerships: More Rigorous Up-front Analysis Could Better Secure Potential Benefits and Protect the Public Interest. GAO-08-44. Washington, D.C.: February 8, 2008.

Federal Aviation Administration: Challenges Facing the Agency in Fiscal Year 2009 and Beyond. GAO-08-460T. Washington, D.C.: February 7, 2008.

Surface Transportation: Preliminary Observations on Efforts to Restructure Current Program. GAO-08-478T. Washington, D.C.: February 6, 2008.

Long-Term Fiscal Outlook: Action Is Needed to Avoid the Possibility of a Serious Economic Disruption in the Future. GAO-08-411T. Washington, D.C.: January 29, 2008.

Freight Transportation: National Policy and Strategies Can Help Improve Freight Mobility. GAO-08-287. Washington, D.C.: January 7, 2008.

A Call For Stewardship: Enhancing the Federal Government's Ability to Address Key Fiscal and Other 21st Century Challenges. GAO-08-93SP. Washington, D.C.: December 17, 2007.

Transforming Transportation Policy for the 21st Century: Highlights of a Forum. GAO-07-1210SP. Washington, D.C.: September 19, 2007.

Railroad Bridges and Tunnels: Federal Role in Providing Safety Oversight and Freight Infrastructure Investment Could Be Better Targeted. GAO-07-770. Washington, D.C.: August 6, 2007.

Vehicle Fuel Economy: Reforming Fuel Economy Standards Could Help Reduce Oil Consumption by Cars and Light Trucks, and Other Options Could Complement These Standards. GAO-07-921. Washington, D.C.: August 2, 2007.

Public Transportation: Future Demand Is Likely for New Starts and Small Starts Programs, but Improvements Needed to the Small Starts Application Process. GAO-07-917. Washington, D.C.: July 27, 2007.

Surface Transportation: Strategies Are Available for Making Existing Road Infrastructure Perform Better. GAO-07-920. Washington, D.C.: July 26, 2007.

Highway and Transit Investments: Flexible Funding Supports State and Local Transportation Priorities and Multimodal Planning. GAO-07-772. Washington, D.C.: July 26, 2007.

Intermodal Transportation: DOT Could Take Further Actions to Address Intermodal Barriers. GAO-07-718. Washington, D.C.: June 20, 2007.

Federal Aviation Administration: Observations on Selected Changes to FAA's Funding and Budget Structure in the Administration's Reauthorization Proposal. GAO-07-625T. Washington, D.C.: March 21, 2007.

Performance and Accountability: Transportation Challenges Facing Congress and the Department of Transportation. GAO-07-545T. Washington, D.C.: March 6, 2007.

U.S. Infrastructure: Funding Trends and Opportunities to Improve Investment Decisions. GAO/RCED/AIMD-00-35. Washington, D.C.: February 7, 2007.

High-Risk Series: An Update. GAO-07-310. Washington, D.C.: January 2007.

Fiscal Stewardship: A Critical Challenge Facing Our Nation, GAO-07-362SP. Washington, D.C.: January 2007.

Intercity Passenger Rail: National Policy and Strategies Needed to Maximize Public Benefits from Federal Expenditures. GAO-07-15. Washington, D.C.: November 13, 2006.

Freight Railroads: Industry Health Has Improved, but Concerns about Competition and Capacity Should Be Addressed. GAO-07-94. Washington, D.C.: October 6, 2006.

Aviation Finance: Observations on Potential FAA Funding Options. GAO-06-973. Washington, D.C.: September 29, 2006.

National Airspace System Modernization: Observations on Potential Funding Options for FAA and the Next Generation Airspace System. GAO-06-1114T. Washington, D.C.: September 27, 2006.

Highway Finance: States' Expanding Use of Tolling Illustrates Diverse Challenges and Strategies. GAO-06-554. Washington, D.C.: June 28, 2006.

Highway Trust Fund: Overview of Highway Trust Fund Estimates. GAO-06-572T. Washington, D.C.: April 4, 2006.

Highway Congestion: Intelligent Transportation Systems' Promise for Managing Congestion Falls Short, and DOT Could Better Facilitate Their Strategic Use. GAO-05-943. Washington, D.C.: September 14, 2005.

Freight Transportation: Short Sea Shipping Option Shows Importance of Systematic Approach to Public Investment Decisions. GAO-05-768. Washington, D.C.: July 29, 2005.

Highlights of an Expert Panel: The Benefits and Costs of Highway and Transit Investments. GAO-05-423SP. Washington, D.C.: May 2005.

21st Century Challenges: Reexamining the Base of the Federal Government. GAO-05-325SP. Washington, D.C.: February 2005.

Highway and Transit Investments: Options for Improving Information on Projects' Benefits and Costs and Increasing Accountability for Results. GAO-05-172. Washington, D.C.: January 24, 2005.

Federal-Aid Highways: Trends, Effect on State Spending, and Options for Future Program Design. GAO-04-802. Washington, D.C.: August 31, 2004.

Surface Transportation: Many Factors Affect Investment Decisions. GAO-04-744. Washington, D.C.: June 30, 2004.

Highways and Transit: Private Sector Sponsorship of and Investment in Major Projects Has Been Limited. GAO-04-419. Washington, D.C.: March 25, 2004.

Water Infrastructure: Comprehensive Asset Management Has Potential to Help Utilities Better Identify Needs and Plan Future Investments. GAO-04-461. Washington, D.C.: March 19, 2004.

Freight Transportation: Strategies Needed to Address Planning and Financing Limitations. GAO-04-165. Washington, D.C.: December 19, 2003.

Marine Transportation: Federal Financing and a Framework for Infrastructure Investments. GAO-02-1033. Washington, D.C.: September 9, 2002.

Water Infrastructure: Information on Financing, Capital Planning, and Privatization. GAO-02-764. Washington, D.C.: August 16, 2002.

Budget Trends: Federal Investment Outlays, Fiscal Years 1981-2003. GAO/AIMD-98-184. Washington, D.C.: June 15, 1998.

Budget Trends: Federal Investment Outlays, Fiscal Years 1981-2002, GAO/AIMD-97-88. Washington, D.C.: May 21, 1997.

Budget Structure: Providing an Investment Focus in the Federal Budget. GAO/T-AIMD-95-178. Washington, D.C.: June 29, 1995.

Budget Issues: Incorporating an Investment Component in the Federal Budget. GAO/AIMD-94-40. Washington, D.C.: November 9, 1993.

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Chairman SPRATT. Thank you very much. Just to start off the questions. We have had several hearings here at which the topic of capital budgeting has been raised as if it is a beginning at least towards more rational planning, more rational budgeting and funding of infrastructure projects. How would we take the Federal budget and recast it into capital and noncapital operating budgets? Is that a viable idea and does it accomplish anything that we couldn't do by other means just as easily?

Mr. ORSZAG. I guess I will start on that, Mr. Chairman. As you know, we released a study this morning on a capital budget. And let's separate how you would do it from whether you would want to. With regard to whether you would want to, there are trade offs, but I would note it is awkward to move to accrual accounting,

which is what a capital budget is, just for part of the budget. Most of the budget is cash based. And moving to accrual accounting for capital spending but not for entitlement spending or lots of other parts of the budget is an awkwardness and it raises the question of whether one should move to full accrual accounting. And on that, I would just note that there are lots of countries that have evaluated that question, decided not to do it and that also there are many countries that have not moved to a capital budget for precisely that reason, that it is awkward to do it just for this part of the budget. Secondly, that if you were going to do it, just for part of the budget, there is a lot of pressure that would come to bear on the definition of what capital is. So if you have one system for capital and another system for noncapital, it becomes very attractive to start labeling everything as capital and one would have to pay particular attention to the definition of capital spending.

With regard to how you could do it, that is frankly not as complicated as the normative question of whether you should. It would involve simply taking out—moving away from a cash basis system of accounting for capital investments, however defined, instead of when you buy something for a dollar of capital, that currently is scored as a dollar. Instead, what would happen is that you would not score that dollar; but instead as the capital depreciated, there would be an allocation each year, a charge each year for the depreciation.

Chairman SPRATT. Mr. Dalton, do you have any observation about capital budgeting and what it might offer us?

Ms. DALTON. The one additional point I would make is one thing to consider where I don't think it will work very well at the Federal level is that we don't own a lot of the infrastructure. We do fund a lot of it, but it is owned at the State and local levels. So therefore, when you are looking at capital budgeting, fundamentally it assumes that you are owning the infrastructure and from an accrual basis, you are using that asset over time and depreciating that. When the Federal Government doesn't own the infrastructure, you don't have that opportunity from an accounting standpoint.

Chairman SPRATT. Would human investments be considered—could they be considered a capital investment as part of the capital budgeting?

Mr. ORSZAG. Well, I think you're touching upon one of the tensions which is that the theory behind a capital budget is that there are things that we pay for today that have long-term economic benefits. It is traditionally interpreted as physical capital, but many of the same arguments would apply to research and development spending, to education spending. Some people would even argue things like——

Chairman SPRATT. Do you need a discrete or several discrete revenue streams or income streams that you can then attach, levy or tax in order to repay the front-end capital costs?

Mr. ORSZAG. Not conceptually with regard to a capital budget. You do need that sort of thing with regard to other financing mechanisms that have been under discussion. But with regard to a capital budget by itself, you know, conceptually at least you could just say that amount of capital or that definition of capital is not count-

ed when it is purchased but rather as it depreciates. And that can be independent of whether there are user fees or specific tax revenues that are tied to that capital.

Chairman SPRATT. And how would you treat the funding of capital projects differently from, say, other projects which is funded on a year-to-year basis? Would you borrow and then have an identified source of money to pay back the capital outlays?

Mr. ORSZAG. Well, one of the consequences, again, would be—and maybe this is getting to your question—one of the consequences would be there would be more of a divergence than currently exists between the reported deficit and the amount of financing that the Federal Government would require. So if we went out and we purchased a dollar of investment goods or of capital goods and that was excluded from the budget, only the depreciation would be counted in future years, we would still need to finance that dollar in terms of borrowing or some other financing mechanism. And that would be another source of divergence between the reported deficit and the treasury's borrowing needs.

Chairman SPRATT. Ms. Dalton?

Ms. DALTON. There is nothing I could add to that.

Chairman SPRATT. There are different ideas being proposed that would give us a different way of identifying activities that generate expenses and are different from—that could be used to complement existing revenue sources. The gasoline tax, for example, which could be complemented by a congestion tax. Is a potential congestion tax sufficient to really put much stock in what could be done with it in terms of financing capital improvements and highway improvements, transportation improvements of various kinds?

Mr. ORSZAG. I will take a crack at that. Congestion pricing has—it is almost a twofer. It has two potential benefits. I know there are concerns about it that we could talk about also, but it has two significant benefits. First it could raise revenue that could be used to finance new investments; and secondly, it reduces the amount of investment that is necessary to undertake or to maintain current services or to exhaust the economically beneficial projects that are out there. It allows us to use the infrastructure that we have or that we would build much more efficiently and the evidence on this is very clear. When you price something by time of day or by congestion, you do get the results that you are looking for in terms of reducing congestion costs and more efficiently using the infrastructure that we have. And that would apply to highways. It applies frankly to landing rights at airports. It applies in lots of different settings.

Chairman SPRATT. You can see how cities like London and New York can apply taxes of this kind. But is it feasible for the Federal Government to apply a congestion tax which depends very much on local conditions?

Ms. DALTON. You are correct, Mr. Chairman, in that it does depend on local conditions. And traditionally the congestion taxes have been imposed at the local level or the State level reflecting the demand on the infrastructure in trying to spread that demand over time usually.

Mr. ORSZAG. But, for example—and I agree that this is traditionally not a Federal role. But, for example, one could construct sce-

narios or policy options—I will just give you one possibility—that you could require a higher State and local match on Federal grants for projects that do not have congestion pricing relative to those that do. There are lots of different ways that you can have the Federal Government encourage this and try to recapture some of the potential benefits.

Chairman SPRATT. Thank you very much. Let me turn now to Mr. Simpson.

Mr. SIMPSON. Thank you, Mr. Chairman. And thank you for setting up this hearing. I appreciate it. It is a subject that is of interest to me and should be of interest to all of us, because, you know, no matter where you travel in the world, you come back with the conclusion that one of the reasons that we have become the strong economy of the world is because of our infrastructure and the investment that we have made in it over the years, that our forefathers made in it.

In fact, it is kind of interesting, I would have liked to have heard the debate when the Eisenhower administration proposed the interstate highway system. I am sure the debate was are you kidding me, we are not going to need interstates in Idaho and Montana and Wyoming. And in fact, when they built them there, I can remember driving 50 miles down the road and never passing another car. And while it was real nice, now those areas—actually some of them have some pretty good congestion in them. Those were forward looking individuals that did that. And I am afraid that we haven't done the same or aren't doing the same and future generations are going to pay for that if we don't invest in the infrastructure of this country, not only roads and bridges and railways and waterways, and as you said, our water systems and so forth. Let me ask you, does capital budgeting make much sense without capital planning?

Ms. DALTON. I certainly don't believe so. I think one of the things that we need to be looking at is having a comprehensive capital plan identifying what we are trying to achieve, what our goals are, what the role we should be having in this infrastructure or any type of capital expenditures so that we have a way to prioritize what needs to be done. Clearly there is an awful lot that we need, we would like. What are our highest priorities and how do we set those. I think a capital planning approach would assist in that decision making.

Mr. ORSZAG. And I would just agree that again, the return to different projects vary substantially and just kind of throwing money at infrastructure does not get you what at least economists would hope for.

Mr. SIMPSON. Let me express one of my frustrations that I have had here, is that we don't have plans for those kinds of things. And as you know, we are sometimes accused of doing congressional directive spending, otherwise known as earmarking things, which I'm not opposed to. The problem is I never know where that stands in terms of a national need when you start looking at what projects are. And my assumption is that a local person that represents a district knows that district better than I do and so forth. So I have a tendency to listen to them.

But I don't know how it fits the national need. And another example is that I sit on the Energy and Water Subcommittee. The Army Corps of Engineers comes in and wants to dredge harbors to make deepwater harbors and so forth. There are harbors all over this country. And I don't know that there is—well, I know there is not a plan to say how are the ones that we are going to actually make deepwater harbors going to fit into the overall transportation system? We need a plan somehow. Then we've got to sit down and say how are we going to pay for that plan. And it obviously can't be just the gas tax and the local units are about property taxed out. Registration fees in most places are getting high. We've got to find some alternative ways of doing it.

And as we were mentioning before this hearing started, I think people are willing to pay when they see improvement in the system. If they are just hiring more employees and stuff, they have got some concerns. Go ahead and respond if you would like.

Ms. DALTON. One of the things I was going to point out was one of the things that capital planning will do is that it helps you in choosing between projects, because there may be three or four different solutions for a particular problem; which one is the best? A rigorous analysis and evaluation of the project through a capital planning approach lets you choose.

You know, you may be presented with two different things. Well, one person says this is the best; another one will say that. Well, how do you tell? And through that rigorous analysis, hopefully it will lead you to better decision-making, so that the return on that investment will be greater.

What kind of performance can I expect out of a rail project versus building another highway?

Mr. SIMPSON. Mr. Oberstar, I appreciated his opening statement; he seems very interested in this. And I would hope the T&I Committee would actually sit down and take some time and work on how to put together a capital plan, because, to me, that is a multiyear project of putting that together.

Ms. DALTON. It is one of the reasons that we at GAO believe that having an investment component as part of the unified budget would be helpful, in that it would, at least as a start, start beginning together all of the investment projects and efforts that we have under way and identifying them clearly in the budget to assist in making those decisions.

Mr. SIMPSON. Well, as we mentioned earlier, this is something that—I have been interested in the trust funds and how the trust funds are used. And Mr. Blumenauer and I are going to introduce a resolution dealing with the trust funds and studying the trust funds and how they are used. Because sometimes I think they are used improperly or not used as they should be. Some of them are actually growing in amount when we have a need out there.

And I will be talking to you, I am sure, in the near future, as we do that, to see how we can work on that so that we are using the resources appropriately.

And then look at, as I said earlier, how are we going to pay for this? We have got to find some innovative ways to pay for it, some that we probably don't employ right now that are totally different.

So I appreciate it.

And, thank you, Mr. Chairman.

Chairman SPRATT. The Chair recognizes Mr. Smith.

Mr. SMITH. Thank you, Mr. Chairman.

And to our witnesses, I appreciate your time.

In rural Nebraska, we have seen an obvious pattern of economic growth along four-lane interstates or expressways, and certainly our State trust fund is suffering, just like the Federal. And I would say that simply adding the gas tax on a per-gallon basis doesn't really address things long-term, kind of piggybacking off of Mr. Simpson's comments.

But as we do look to the future and some population differences just within Nebraska, we see congestion being addressed using trust fund dollars in the urban areas. I would challenge whether or not that is enough forward-thinking, by merely adding lanes, actual lane miles. Whereas in rural Nebraska we can leverage more economic growth, I think, looking to the future, just as the interstate system did many years ago.

Do you have some suggestions of how dollars should be spent in terms of adding lane miles versus other types of transportation infrastructure?

Ms. Dalton, if you would?

Ms. DALTON. Yes, I think there are some things that can be looked at, because, in some ways, in some areas, you really can't build your way out of the congestion. You have to look at how can we use what we have better.

And there are a number of tools. Congestion pricing is just one of them. There is also technology that can be used. We have seen that here in this area, with some of the lighting systems to get on the interstates and trying to regulate the flow of traffic.

Congestion pricing helps to spread the demand out over time, so that if you are going to travel from 4 o'clock to 6 o'clock in the evenings, it may cost you more than if you are traveling at 6:30 or 3:30. And that just helps move the flow of traffic.

And those are certainly tools that should be used in conjunction with overall infrastructure, construction and development, and trying to look at what are the least expensive but also the most effective alternatives in terms of performance, and what are we trying—it basically gets down to what are we trying to accomplish. If we are trying to reduce congestion, are there ways to spread that out? Do we really need to, as I said, build another lane? Are there alternative transportation systems available, such as bus transit?

Mr. SMITH. I guess also, you know, proactively developing things, rather than just waiting for the auto count to get up to the point where we can react.

Ms. DALTON. Exactly. Right. And you mentioned economic development. You know, where is that development going to occur? Can you anticipate that? And, certainly, if you can anticipate it and build ahead of time and accommodate it, you are in a much stronger position.

That is why oftentimes local governments will, as there is a housing development going in, they work with the developer to build in the infrastructure as part of that development, as one example of trying to anticipate what is going to happen.

Mr. SMITH. I see. Very good.

Dr. Orszag, if you would address, perhaps, any information you might have that speaks to the effectiveness of transportation dollars being spent in more rural areas in a more proactive fashion. Do you guys quantify any of those expenditures and how that is leveraged?

Mr. ORSZAG. No, we haven't.

And I would say most of my written testimony, not surprisingly, given my background and our outlook, is based on cost-benefit analysis and similar things. There obviously are other considerations that policymakers want and do take into account. But it is the case under most cost-benefit analyses that rural projects often don't look as good as projects in more concentrated areas.

Mr. SMITH. And how far into the future would that gauge?

Mr. ORSZAG. It depends on the outlook of the underlying study. Sir, I can't give you a generic answer to that question.

Mr. SMITH. Then, as well, do you ever look at perhaps a multi-State effort?

I mean, the Heartland Expressway is an example in mid-America where it is several States. Actually, Ports-to-Plains Corridor is a multi-State effort, rather than just one State at a time.

Does that get much credit in the big picture?

Mr. ORSZAG. Well, let me sort of broaden the question. It is clear that, as we tried to lay out, infrastructure investments generate additional economic activity. And, obviously, the more that the different components of the system fit together so that you don't have inconsistencies across the Nation's infrastructure, the better, in terms of generating economic activity.

Mr. SMITH. All right.

Thank you, Mr. Chairman.

Chairman SPRATT. Thank you.

Mr. Blumenauer?

Mr. BLUMENAUER. Thank you, Mr. Chairman.

I deeply appreciate having this hearing, and I hope that there will be an opportunity for us to explore in greater detail in the future, because I am concerned.

I heard my friend from Nebraska raise some concerns that he has, in terms of making sure that the infrastructure needs are appropriately met. And I think, from where I sit, the deficiency we have now is not having an overall vision or plan about how the pieces fit together. Because there are some areas, frankly, that may not pencil out in the short term, but they are part of a network. And if we don't have a network, rural America and small-town America is shortchanged.

Too often, we see investments in some rural areas that are just like darts thrown at a map. They have political cache, but they aren't part of meeting the overall needs of agriculture, of electrical infrastructure. And I am hopeful, I know I have been in consultation with my friend from Idaho, about a way to look at the big picture, maybe actually have an infrastructure plan for this century.

Mr. Orszag, something that is not on your plan in terms broken out, but you have "utilities and other," in terms of water infrastructure that is going to probably be the greatest stressor with climate change, with depletion of water supplies, with an aging infrastructure.

These are things that I am hopeful that we, as a Congress, can be able to zero in, flesh out, help have a big picture, and then think about what is economically justifiable and how the pieces fit together.

You have passenger rail, an economically justifiable investment; we don't have an element there. But we have aviation, that with one-third of the trips in this country now 350 miles or less by airplane, that doesn't pencil with $120-a-barrel oil. They economically don't work.

We have the potential, if we could look at it comprehensively, with some modest investment in rail passenger service, to eliminate some of the pressures for aviation, for instance, for airport expansion. We would actually get capacity, and we would be able to have something that would be more pleasurable for the riding public.

Mr. Orszag, we have talked in the past about present-value accounting that currently in a capital budget may help move us in this direction. But there are so many elements here in the transportation system that don't take into account the dollars we know we are going to spend or the cost that we are going to avoid.

Have you had any further thought about what we could do with the Budget Committee to look at this long-term picture of infrastructure investment and ways that we will be able to coax more value out of the system to deal with rail, to deal with water, to deal with surface transportation, motorway, that would reflect avoided costs, that would reflect investments that will make money over time, that would have a fairer application of our budget rules?

Mr. ORSZAG. Well, let me answer that in two ways.

First, we did come out this morning with a report on capital budgeting, in particular. And I can talk more about that.

But, secondly, and part of your question is, what is the long-term benefit or return to these various different investments? And we did try in this document, in the testimony that we prepared, the written testimony, which is longer than normal for us, to go through the evidence on the returns to infrastructure spending. And while they are positive on average, they vary a lot by specific project. And they are also lower than some early estimates from the early 1980s suggested.

So, there is a long-term benefit to additional infrastructure investment. It obviously depends very sensitively on the specific projects, on the specific types of infrastructure.

I would also just note quickly, you had mentioned wastewater and drinking water. We do have estimates in the testimony that is based on previous work by CBO, suggesting that the Nation is spending about $26 billion a year currently on those, and that investments would need to average between $30 billion and $47 billion a year to basically maintain current services and do a little more.

Mr. BLUMENAUER. Thank you. I will look to further examination. I am sorry we were chopped up a little bit.

Mr. Chairman, I appreciate your indulgence and having this hearing.

The point of inquiry, I will warn you, next, Dr. Orszag, when I am sure our paths will cross, is the notion that, if we are able to

actually have a comprehensive infrastructure plan and a vision, whether that wouldn't help us actually coax more value, avoid some of the problems Ms. Dalton is talking about, and be able to put us ahead overall.

Mr. ORSZAG. I just hope our paths don't cross while we are both on bicycles. That could get a little messy.

Mr. BLUMENAUER. Thank you.

Chairman SPRATT. Mr. Baird?

Mr. BAIRD. I thank the Chair.

I thank our distinguished witnesses.

This may have been addressed already. Forgive me. I was at another meeting.

I certainly felt that the most recent stimulus package amounted basically to dropping money out of helicopters and was not our best investment. There are some business provisions of the stimulus package that make sense, but the rebates I did not think did.

We did some surveys in my own State and district about projects which were ready to go, in the sense that they were permitted, designed, could be actually putting people to work in the same time frame it has taken us to get the stimulus package out, and that would produce jobs with paychecks and lasting infrastructure to the good of people for many years to come.

It has been quite frustrating, because there seems to be this sense that—it is a shibboleth but I don't think a fact—that infrastructure investment doesn't stimulate the economy. I wonder if you could talk a little about that, what seems to be received wisdom by the economists' side, but in direct conflict to the evidence I get on the ground when I talk to school boards or local communities, et cetera. Frankly, you walk around these Capitol grounds and you see needed infrastructure repairs right there.

Educate us on this, if you would.

Mr. ORSZAG. I think that one might be for me. Let me say two things.

First, as I tried to indicate earlier, there is a long-term return or a long-term benefit to infrastructure spending. We are now just talking about the degree to which money can flow out the door quickly in a period of economic weakness, which is a different question.

There I have pushed my folks hard. And I would just again say, outside of road resurfacing, where it looks like money can flow more rapidly, that I have been eager to receive the list of specific projects that people believe can move fast. Because it is often the case that, when you start to actually go down those lists—and I don't want to just take it on faith; I want to be looking at the specifics involved—that you get responses like, "Oh, no, we meant we could get it permitted rapidly, not actually have money out the door." The question is, how quickly can money actually go out the door?

Mr. BAIRD. But permitting isn't free. You don't magically get a permit. I mean, someone has to be employed to do the paperwork for the permitting.

And so my belief is there is a continuum of projects in the pipeline, some of which are at the permitting stage, some of which are

at the design stage. People actually get paid money and then pay taxes on that money.

Mr. ORSZAG. Yes. The question is just, what share of the cost of the project is occurring rapidly? And the cost of the permitting process is often only a very small share of the overall cost of the project itself.

So the question is really, what is the spend-out rate? If you are going to spend $100 on this project, what share of that $100 do you get out the door rapidly?

Mr. BAIRD. Let me ask this: If I pump $20 billion into the economy and it is going to transportation infrastructure, whether the money is going to employ a geologist or a hydrologist to work on permitting, even a lawyer, heaven forbid, or whether some of those projects—which I am convinced they are, because my school districts have shown me the plans—actually get some people nailing boards and pulling wire, that is money that is going to a domestic workforce in all of those cases.

And whether or not that permit is done now or 5 years from now is a bit chronologically fungible. But doing it now sets up later projects. So you have to invest in it at some point. So the point is, there are many stages on infrastructure projects that we could invest money in right now.

And the second point is this: Relative to a flat-screen plasma TV made in Korea, that, except for the exchange, the import and export by shipping and the guy that works at Best Buy and gets a 2 percent commission, the stimulus to me and the long-term benefit for our society is vastly superior.

The cost-benefit ratio to the feds and the public of building a water treatment plant or fixing your school, I would wager, pencils out a good bit better than buying that plasma TV.

Mr. ORSZAG. Well, a couple things.

First, it is true that the larger the share of imported value-added or imported goods and whatever is purchased with the stimulus money, the less impact there is on domestic production. I would note that a lot of the rebate checks will probably go for things like food at restaurants and what have you and not just for plasma televisions, and that some component of infrastructure spending also involves imported inputs or imported goods.

Again, I think the real question is, out of that $20 billion, and assuming it is a well-chosen project, there will be long-term economic benefits. If your objective, as most of the policy debate earlier this year was framed, was to get the economy a jumpstart now, within the next 3 or 4 or 5 months, what share of that $20 billion can go out the door within that 3 or 4 months. And that is a separate question from whether we should be spending the $20 over time or not or the returns to it.

Again, I would just come back to, I want to see the specific projects that can get a big share of their $20 billion or their $100 or whatever it is out the door really fast, and by that I mean months.

Mr. BAIRD. One last comment on that. I don't think it is necessary that the checks arrive and the building starts in order to get $20 billion of economic stimulus. If you promised me that 4 months from now there would be money made available to me to do some-

thing on my home, I could start working on that home today and put the people to work on the promise of the money. So I don't have to write the check today to have the stimulus effect today.

I yield back.

Ms. DALTON. The one thing I would add is, on the spend-out rates, when you are going to do a project, you have committed the money, you may start spending. Oftentimes with infrastructure, that spend-out rate goes over time, often over years, so you in all likelihood won't have that immediate impact on the economy, which is one of the issues with an economic stimulus package.

There are ways, if you can identify projects that are ready to go and the spend-out plans are immediate, yes, they could influence the economy.

Mr. BAIRD. My problem was I saw no effort to do that in this stimulus package. And I think it was a terrible lost opportunity.

Chairman SPRATT. Mr. Simpson?

Mr. SIMPSON. I just want to say that I agree with my friend from Washington, that we could have spent this a lot more wisely, and I think it would have had a better stimulus effect. I will guarantee you that I can show you communities, cities, that have wastewater treatment facilities, they are waiting for their match from the Federal Government. And within 4 weeks, they could be spending money, literally, because they have things ready to go, highways that are ready to be built and so forth that we just don't have the money for.

I think we could have had a much more effective stimulus plan, and, quite frankly, that is why I voted against it.

So, anyway, it is an interesting discussion we are going to have, but it is one that is vital to the future of this country that we have, because if we are going to have the infrastructure for the next generation and if we are going to keep America on the leading edge of the economies of this world, we had better start investing in our infrastructure. And it is one we are going to have to sell the American public, and we are going to have to take some political courage to do it.

So I appreciate it. I am sure that we will be calling you and talking to you substantially in the near future about this. As Congressman Blumenauer and I were just talking about, we plan on making this one of our highest priorities in the next Congress.

So I appreciate it. Thank you.

Chairman SPRATT. A couple of final questions. I thought Doris Matsui was here, but she has left.

Back in January 2008, the National Surface Transportation Policy and Revenue Commission recommended an annual investment of $225 billion for surface transportation. Has GAO or CBO undertaken an examination of that?

Ms. DALTON. We currently, Mr. Chairman, are taking a look at that, the recommendations of the policy commission. That work isn't completed yet.

I will say, on the $225 billion, what we have seen so far is that it is based on their highest needs scenario, and we are really trying to work to get beneath those numbers at this point. We are not——

Chairman SPRATT. Does CBO—excuse me. Go ahead.

Ms. DALTON. I was going to say, what we are looking for is, what is the support for that $225 billion?

Mr. ORSZAG. And the reason the figures that I presented to you this morning differ from those include that it is not clear whether the investments proposed were economically justifiable or were, sort of, held to that standard. And also it is not clear if the opportunity cost of capital—that is, when you put $1 into this project, it means that you either have to pay interest, if you want to think about it that way, or are you are foregoing opportunity to invest in something else—was actual fully taken into account.

Chairman SPRATT. Have you produced any sort of written analysis of the $225 billion?

Mr. ORSZAG. I don't think we have produced a written analysis of it, no.

Chairman SPRATT. Okay. As you know, the Budget Committee's principal annual output is something called a budget resolution. Do you have any recommendations for whether or not we should target or somehow identify or classify how much of the budget is going for capital purposes and improve the budget system for allocating to capital needs?

Mr. ORSZAG. Again, as was earlier discussed, I do think there are things that can be done without moving to a full capital budget to better identify and classify capital investments and to give some structure and rigor to the process of deciding both on the aggregate amount and on the specific projects.

With regard to the aggregate amount, as I have already said, there does appear to be additional capital spending that would be required to maintain current services and that would be economically beneficial in the sense of generating larger benefits than costs.

And I would also say that I think there are significant things we can do to offset those costs through both some of the pricing mechanisms that we discussed and also through better management of the infrastructure that we already own, including Federal buildings and property and other capital assets that we already currently own and, I think, arguably, we are not doing a terrific job managing.

Ms. DALTON. I would add that another benefit would be that it would bring together all of the various investment expenses and hopefully agreement on what we consider to be investments.

We have talked a lot about transportation. Dr. Orszag just mentioned Federal buildings. We have talked about human capital. Are those part of the investment component or not?

And I think it would be helpful, as part of the budget resolution and budget structure, to make some of those distinctions and determinations.

Chairman SPRATT. Any further observations from either of you before we close the hearing?

Mr. ORSZAG. I would just note on this last question that, as part of the study on capital budgeting that we put out this morning, we do have a section on, for example, creating a separate enforcement cap under a possible new statutory pay-as-you-go rule for capital spending and other things you can do along the lines that you seem to have been suggesting.

Chairman SPRATT. Ms. Dalton?

Ms. DALTON. I would just conclude with that I think this is a good opening discussion of what we want in terms of our goals, what the Federal role should be, what are we trying to achieve. A lot of our programs were developed in the mid-1900s or earlier; do they fit with the 21st century?

And I think, as we start looking at investment in total, it will help us in those decisions as to, do these programs still work, what do we need in the future? We definitely need more investment, but how do we want to go about that and get the greatest return from that investment.

Chairman SPRATT. We will definitely continue this inquiry, but the next time we hold a hearing, we will look for a better day.

Thank you very much for your patience, your forbearance and not least your excellent presentations and testimony. It has been extremely useful to us. And while we didn't have as many members as we would have liked here, rest assured your work product will redound to the benefit of the whole institution, particularly our two committees.

Thank you very much, indeed, for coming and testifying.

Ms. DALTON. Thank you, Mr. Chairman.

Chairman SPRATT. The hearing is now adjourned.

[The statement of Mr. Carnahan follows:]

OPENING STATEMENT OF
THE HONORABLE RUSS CARNAHAN (MO-3)
HOUSE TRANSPORTATION AND INFRASRUCTURE COMMITTEE

Hearing On
Financing Infrastructure Investments

Thursday, May 8, 2008

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Chairman Oberstar, Chairman Spratt, Ranking Member Mica, and Ranking Member Ryan, thank you for holding this important hearing to look at methods for financing investment in our nation's infrastructure.

The collapse of the 35-W bridge in Minneapolis last summer was a much needed wake up call that infrastructure across the county is on the brink of collapse. The rapid growth in the use of both our nation's surface transportation and aviation systems can be seen in our aging infrastructure. This growth has surpassed our investment resulting in decreased performance and reliability.

A significant way Americans feel the impact of inadequate infrastructure across the country is the increasing amount of time we spend in traffic. In 2005, traffic congestion cost urban motorists $78.2 billion in terms of wasted time and fuel. This is more than a $5 billion increase from the year before. Instead of Americans spending billions of dollars to sit in traffic we should be investing that money to make needed repairs to our surface transportation system.

Unfortunately, this is not unique to our surface transportation and aviation systems, but rather includes water infrastructure deteriorating across the country. This is especially urgent for cities like my hometown of St. Louis that are trying to remedy the problem of combined sewer overflows. Fixing the St. Louis combined sewer overflow has been and continues to be the city's top priority for too many years. I find it deeply troubling that over the next twenty years drinking water infrastructure needs are estimated to be nearly $500 billion, but our current government investment is half that amount.

With infrastructure on the brink of collapse across the country and many of the funding mechanisms we have relied on in the past drying up it is time for Congress to reexamine our infrastructure programs and policies to see where critically needed improvements can be made.

In closing, I want to thank our witnesses for joining us today to share their prospective on what can be done to increase our investment in our aging infrastructure.

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[The statement of Mr. Costello follows:]

PREPARED STATEMENT OF HON. JERRY F. COSTELLO, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ILLINOIS

Thank you, Mr. Chairman. I am pleased to be here today as we examine financing our infrastructure investment. I would like to welcome today's witnesses.

The United States has an extensive system of highways, ports, locks and dams, and airports. Yet, we have neglected our infrastructure over the years and as a result, it needs major improvements and modernization.

For example, our Interstate System is almost 50 years old. Thirty-two percent of our major roads are in poor or mediocre condition; one of every eight bridges is structurally deficient; and 36 percent of the nation's urban rail vehicles and maintenance facilities are in substandard or poor condition.

I strongly believe we have an obligation to maintain it and modernize our infrastructure it as it becomes antiquated. According to the Transportation for Tomorrow report, a significant surface transportation investment gap exists that can only be filled by an annual investment level of between $225 billion and $340 billion by all levels of government and the private sector. If we look at our current capital investment from all sources in all modes of transportation, it is $85 billion, well below the recommended level.

I am Chairman of the Aviation Subcommittee and according to the FAA's Operational Evolution Plan (OEP), new runways and runway extensions provide the most significant capacity increases. The FAA's 2007-2011 National Plan of Integrated Airport Systems (NPIAS) states that during the next five years, there will be $41.2 billion of AIP-eligible infrastructure development, an annual average of $8.2 billion. However, the FAA states that the current NPIAS report may understate the true cost of needed capital investment. The 2007—2011 Airports Council International—North America (ACI-NA) Capital Needs Survey estimates total airport capital needs—including the cost of non-AIP-eligible projects—to be about $87.4 billion or $17.5 billion per year from 2007 through 2011.

The FAA's "Capacity Needs in the National Airspace System, An Analysis of Airport and Metropolitan Area Demand and Operational Capacity in the Future" report found that 18 airports around the country are identified as needing additional capacity by 2015, and 27 by 2025. As you can see, aviation infrastructure is muchneeded and that is why in HR 2881, we increased the PFC and also increased the authorization for AIP by $4 billion over the Administration's proposal.

Continued congestion and delays in our skies, on our roads, in our ports and on our waterways is costing us excessive amounts of money. We must and can do better. We must find a way to make the necessary improvements to our entire transportation system to make sure the highest level of safety is maintained and that the US economy remains strong. I am interested in hearing more from our witnesses on their recommendations as Congress looks for ways of financing the much needed infrastructure investment.

With that, I look forward to today's hearing as we discuss financing infrastructure investment.

[Questions submitted by Ms. DeLauro follow:]

MS. DELAURO'S QUESTIONS SUBMITTED TO DR. ORSZAG

The Government Accountability Office released a report in February 2006 entitled "Excess and Underutilized Property Is an Ongoing Problem." In short, the report makes clear that the problem of unused federal property "puts the government at significant risk for wasting taxpayers' money and missing opportunities to benefit taxpayers." Such properties are costly to maintain and could be put to more cost-beneficial uses, including being sold to generate revenue. I believe a reasonable action for the federal government to take would be to sell these unused federal properties, which in a sense is unused and idle infrastructure, and use that revenue to benefit the taxpayers by putting it toward renovating our public infrastructure. We could, for example, use that to offset the $18 billion cost for funding the "ready to go" infrastructure projects identified by state transportation departments across the country in a recent American Association of State Highway and Transportation Officials (AASHTO) survey.

When we are talking about infrastructure, we are talking about the heart of our economy, jobs, GDP growth and fiscal responsibility. Government does not always create jobs, but it can set forth creative policies that do in fact bring about opportunity. Funding these "ready-to-go" projects would create approximately 850,000 jobs and create over $110 billion in economic activity. Offsetting the cost by mandating the sale of these unused federal properties would allow us to do that in a fiscally responsible and paid for way. I would appreciate, from a budgetary perspective, your observations and thoughts on such a policy?

MS. DELAURO'S QUESTIONS SUBMITTED TO MS. DALTON

I introduced a bill, the National Infrastructure Development Act (HR 3896). The bill would establish a tax exempt National Infrastructure Development Corporation that would make loans, purchase securities, issue "public benefit" bonds and offer other insured financing packages, in order to maximize private investment to fund our most critical infrastructure projects. Within five years the Corporation would prepare a plan to transition to a government-sponsored enterprise, including broad distribution to long-term investors with all voting securities ultimately transferred to non-federal government investors. The Corporation would at that point become self-financed through user fees or other dedicated sources of revenue, as well as the sale of public stock.

In your prepared testimony you refer to proposals intended to increase investment through new financing mechanisms in the nation's infrastructure. You touch on bonds as a source of up-front capital, yet an expensive investment for the federal government. You also talk about a national infrastructure bank and the associated pros and cons, including defaults on loans and inflation. In short, you suggest there is no silver bullet to address the multi-faceted infrastructure challenges we face. I understand that my proposal surely also has pros and cons and is by no means a silver bullet, yet I believe it is well worth considering as a key component of any bold infrastructure plan to rebuild America. In my mind, the Federal Government simply cannot do this on its own. We must build effective private-partnerships and we must leverage significance private sector investment if we are going develop a 21st Century state-of-the art infrastructure.

Accordingly, I would like to get your expert opinion on the concept of a GSE, a Fannie Mae type entity, in the realm of infrastructure. What do you see as the pros and cons in relation to the other financing proposals out there? Do you think there are certain infrastructure sectors, water treatment for example, where it might work better than others? Are there perhaps geographic areas where it might work best, perhaps funding big city infrastructure projects?

[The statement of Mr. Mitchell follows:]

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Statement of Rep. Harry Mitchell
House Transportation and Infrastructure Committee
"Financing Infrastructure Investments"
5/8/2008

Thank you, Mr. Chairman.

As you know, Arizona is now the fastest growing state in the nation. Since 1970, our population has more than tripled.

The Phoenix metropolitan area, long the largest in our state, is now one of the largest in the nation. According to the U.S. census, our metropolitan area is now the 13th largest in the nation, just behind San Francisco and Boston.

Not surprisingly, all this growth has created an urgent need for new transportation infrastructure.

According to a recent Federal Highway Administration traffic congestion report, the portion of I-10 that runs through the Phoenix metropolitan area has some of the worst bottlenecks in the country.

Furthermore, Phoenix Sky Harbor Airport is now the eighth busiest airport in the country. At the rate demand in our area is growing, we are facing a serious risk of becoming the next national bottleneck.

The FAA has already warned Phoenix that it is one of 8 metropolitan areas that will need significantly more capacity by 2025.

This isn't just a problem for Phoenix, it's a problem for the national aviation system, which is already struggling to reduce delays.

As we examine the methods for financing investment our nation's infrastructure, it is critical that we address the significant increase in congestions as well as importance of a cost-effective intermodal system that can support the dynamic and changing needs of transportation of goods and people.

I look forward to hearing more from our witnesses.

I yield back.

[The statement of Ms. Tsongas follows:]

PREPARED STATEMENT OF HON. NIKI TSONGAS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MASSACHUSETTS

I thank the Committee on Budget and the Committee on Transportation and Infrastructure for holding this important hearing to explore alternative mechanisms for investing in our nation's infrastructure. This hearing could not be more timely or more relevant. In recent years, federal appropriations have failed to fully meet the demands of our nation's aging infrastructure while current alternative funding mechanisms, such as the Highway Trust Fund, are poised to run multi-billion dollar deficits.

These shortfalls come at a particularly critical time for Massachusetts, which must maintain some of the oldest infrastructure in the country in a climate that is often punishing to the state's roads, bridges, ports, airports, and railroads. Even though Massachusetts' share of the nation's population has decreased, its total number of inhabitants continues to grow, further adding to the strain on its infrastructure.

According to data from the American Society of Civil Engineers, more than half of the bridges in Massachusetts have been deemed "structurally deficient" or "functionally obsolete," 40 dams have been deemed deficient, and 71 percent of major roads are in "poor or mediocre condition." Nationwide, 33 percent of the nation's major roads are in "poor or mediocre condition" and 36 percent of major urban highways are congested.

Failure to adequately invest in our nation's infrastructure has had a direct impact on our safety, our energy dependence, and our economic health. In my district, examples abound of the effect that infrastructural improvements can have on the economy. For instance, construction of an interchange on Interstate-93 near Tewksbury and Andover would alleviate existing traffic congestion, providing a major economic stimulus. The area is home to such global industry leaders as Wyeth, Proctor and Gamble/Gillette, Charles River Laboratories and others, each of which is currently unable to expand its operations as long as transportation resources remain so restricted. Similarly, at the national level, investments in infrastructure have been shown to stimulate both short term job growth and long-term economic health. According to the U.S. Department of Transportation, every $1 billion of federal highway investment supports 34,779 jobs. These jobs have a subsequent magnifying effect throughout the economy.

By making critical, coordinated investments in our transportation systems, we can spur economic development, create jobs, restore confidence in the safety of our system, and maintain our global competitiveness.

[Questions submitted by Mr. Walz follow:]

MR. WALZ'S QUESTIONS SUBMITTED TO THE WITNESSES

To all witnesses:

- How would you say the level of coordination and cooperation between units of government at the federal, state, and local level is working now, and what would you suggest to improvement this coordination?
- We have been hearing a great deal lately about a temporary gasoline tax break. What do you think the impact of such a proposal would be in helping develop our national infrastructure?
- What incentives for the private sector could intensify their participation in public-private partnerships to develop our transportation infrastructure?
- Which experiences from foreign countries do you take into consideration when determining what strategies we should use?

PREPARED STATEMENT OF HON. JASON ALTMIRE, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF PENNSYLVANIA

Thank you, Chairman Oberstar, for holding today's joint hearing with the Committee on the Budget to examine methods that can be taken to finance investments in our nation's infrastructure. I would like to also thank Chairman Spratt for agreeing to join us today. His Committee's expertise will be of great benefit to us today as we discuss investment opportunities and how these investments will fit into our nation's budget.

Like many of my colleagues on this committee, I have serious concerns about the future of our nation's infrastructure. Increased congestion on our roads and rail lines is resulting in significant costs to American taxpayers. In 2005, congestion on our nation's roadways cost motorists over $78 billion, which equates to an average cost of $710 per traveler. It is apparent that steps must be taken to improve and expand our infrastructure.

Furthermore, the tragic collapse of the Interstate 35W bridge in Minnesota last year brought to America's attention what many members of this Committee have known for years—the infrastructure in this nation is in desperate need of repair. In the six counties that I represent, there are currently more than 1,000 bridges considered structurally deficient. These repairs and improvements will not be cheap. It will truly take the combined efforts of the Transportation and Budget Committees to develop a comprehensive plan for future investments that can finally begin to address this growing problem and I look forward to being a part of this process.

Chairman Oberstar, I would like to thank you again for holding this hearing.

[Responses to questions for the record from CBO follow:]

RESPONSES FROM THE CONGRESSIONAL BUDGET OFFICE TO QUESTIONS FOR THE RECORD

Question: The Government Accountability Office released a report in February 2006 entitled "Excess and Underutilized Property Is an Ongoing Problem." In short, the report makes clear that the problem of unused federal property "puts the government at significant risk for wasting taxpayers' money and missing opportunities to benefit taxpayers." Such properties are costly to maintain and could be put to more cost-beneficial uses, including being sold to generate revenue. I believe a reasonable action for the federal government to take would be to sell these unused fed-

eral properties, which in a sense is unused and idle infrastructure, and use that revenue to benefit the taxpayers by putting it toward renovating our public infrastructure. We could, for example, use that to offset the $18 billion cost for funding the "ready to go" infrastructure projects identified by state transportation departments across the country in a recent American Association of State Highway and Transportation Officials (AASHTO) survey.

When we are talking about infrastructure, we are talking about the heart of our economy, jobs, GDP growth and fiscal responsibility. Government does not always create jobs, but it can set forth creative policies that do in fact bring about opportunity. Funding these "ready-to-go" projects would create approximately 850,000 jobs and create over $110 billion in economic activity. Offsetting the cost by mandating the sale of these unused federal properties would allow us to do that in a fiscally responsible and paid for way. I would appreciate, from a budgetary perspective, your observations and thoughts on such a policy?

Response: As noted in CBO's testimony, the General Services Administration reports that about 10 percent of all federal government facilities are either underused or empty. Remarkably, no information is readily available about the market value of those facilities, and federal agencies destroy thousands of facilities each year that have little or no market value. Some of the facilities do not meet current building and safety standards and some pose environmental hazards.

Selling unused federal properties could be desirable for a number of different reasons. More detailed analyses of the inventory of federal facilities and the state of the local markets for such facilities appear to be warranted.

RESPONSES FROM THE CONGRESSIONAL BUDGET OFFICE TO QUESTIONS FOR THE RECORD FOR CONGRESSMAN WALZ

Question 1. How would you say the level of coordination and cooperation between units of government at the federal, state, and local level is working now, and what would you suggest to improvement this coordination?

Response: As noted in CBO's testimony, the Government Accountability Office and other researchers have found that federal highway grants generally do not increase total spending dollar for dollar, because state and local governments reduce spending from their own funds. Greater clarity about the appropriate roles of each of the three levels of government (and the private sector) in supporting the development of additional infrastructure could facilitate a clearer division of responsibility, which in turn could reduce uncertainty and allow for better planning.

Question 2: We have been hearing a great deal lately about a temporary gasoline tax break. What do you think the impact of such a proposal would be in helping develop our national infrastructure?

Response: CBO has not analyzed such proposals.

Question 3: What incentives for the private sector could intensify their participation in public-private partnerships to develop our transportation infrastructure?

Response: Private firms will be motivated to participate in partnerships with the public sector to the extent that they anticipate a level of profits that is sufficiently attractive given the risks involved. Partnerships are not sources of "free money": Although private firms may, in some cases, reduce total costs through management efficiencies, all infrastructure is ultimately paid for by some combination of users and taxpayers. Accordingly, private firms will evaluate the revenues expected from those sources (through contract fees and/or rights to charge fees to the users of infrastructure services) and any forms of cost-sharing by the public sector (such as tax-preferred financing and loan guarantees).

Question 4: Which experiences from foreign countries do you take into consideration when determining what strategies we should use?

Response: CBO does not make policy recommendations (except on issues relating to the budget process) but does examine other countries' experiences where relevant to our analyses. In the case of investment in infrastructure, foreign experiences with user fees, asset management, and capital budgeting can provide useful perspectives on questions facing policymakers in the United States. For example, CBO's May 2008 "Capital Budgeting" paper discusses the use of accrual budgeting in Australia and New Zealand—where it is applied not only to depreciation of government assets, but also to employees' pension benefits and the future cost of environmental cleanup associated with government services—and the rejection of separate capital budgets by five countries in northern Europe.

[Responses to questions for the record from GAO follow:]

RESPONSES FROM THE GOVERNMENT ACCOUNTABILITY OFFICE TO QUESTIONS FOR THE RECORD

QUESTION FROM CONGRESSWOMAN DELAURO

Question: I introduced a bill, the National Infrastructure Development Act (HR 3896). The bill would establish a tax exempt National Infrastructure Development Corporation that would make loans, purchase securities, issue "public benefit" bonds and offer other insured financing packages, in order to maximize private investment to fund our most critical infrastructure projects. Within five years the Corporation would prepare a plan to transition to a government-sponsored enterprise, including broad distribution to long-term investors with all voting securities ultimately transferred to non-federal government investors. The Corporation would at that point become self-financed through user fees or other dedicated sources of revenue, as well as the sale of public stock.

In your prepared testimony you refer to proposals intended to increase investment through new financing mechanisms in the nation's infrastructure. You touch on bonds as a source of up-front capital, yet an expensive investment for the federal government. You also talk about a national infrastructure bank and the associated pros and cons, including defaults on loans and inflation. In short, you suggest there is no silver bullet to address the multi-faceted infrastructure challenges we face. I understand that my proposal surely also has pros and cons and is by no means a silver bullet, yet I believe it is well worth considering as a key component of any bold infrastructure plan to rebuild America. In my mind, the Federal Government simply cannot do this on its own. We must build effective private-partnerships and we must leverage significance private sector investment if we are going develop a 21st Century state-of-the art infrastructure.

Accordingly, I would like to get your expert opinion on the concept of a GSE, a Fannie Mae type entity, in the realm of infrastructure. What do you see as the pros and cons in relation to the other financing proposals out there? Do you think there are certain infrastructure sectors, water treatment for example, where it might work better than others? Are there perhaps geographic areas where it might work best, perhaps funding big city infrastructure projects?

GAO response: We agree that we will need to consider all options, and as you mentioned, we will likely need to use a variety of options as there is no silver bullet. We also agree that the federal government cannot do it all—it will take the collective efforts of all levels of government and the private sector to address our infrastructure challenges. In considering the different options, one of the first steps is determining the federal role—because the suitability of any of the options depends heavily on the level of federal involvement desired.

In terms of the advantages, government-sponsored enterprises (GSE) can be designed to sustain their operations from business income. In addition, GSEs are distinguished from other chartered private entities by investors' perception of an implicit federal guarantee of GSEs' debt obligations. Therefore, a GSE potentially could borrow funds at a lower interest rate since the risk is perceived to be lower. The perceived federal guarantee, however, is also a disadvantage—that is, there is an assumption that the federal government would step in and bail the GSE out if needed.

One area where GSEs could be particularly useful is in the funding of infrastructure projects of regional or national significance—that is, projects that benefit regions or the nation as a whole. These projects can be large and costly, requiring the cooperation and financial support from multi-jurisdictions. However, as we have previously reported, it can be difficult for state and local governments to secure funding for these kinds of multi-jurisdictional projects because transportation projects that provide benefits that are more readily discernable to immediate localities are favored. The GSE could provide an alternative financing source for these types of projects.

QUESTIONS FROM CONGRESSMAN WALZ

Question: How would you say the level of coordination and cooperation between units of government at the federal, state, and local level is working now, and what would you suggest to improve this coordination?

GAO response: We did not examine the level of coordination and cooperation between the different levels of government for our testimony. However, last year we issued a report on intermodal transportation, which enables freight and passengers to cross between different modes of transportation efficiently and can improve mobility, reduce congestion, and cut costs. We identified several barriers that inhibit intermodal transportation, including limited collaboration among the many entities

and jurisdictions involved. For example, the Department of Transportation (DOT) operating administrations and state and local transportation agencies are organized by mode—reflecting the structure of funding programs—resulting in an organizational structure that DOT's own assessments acknowledge can impede coordination between modes. In addition, collaboration between the public and private sector can also be challenging; for example, some transportation officials told us that private-sector interests in airport, rail, and freight have historically not participated in the regional planning process. These barriers impede state and local agencies' ability to carry out intermodal projects and limit DOT's ability to implement Congress' goal of a national intermodal transportation system. To help address these barriers, we recommended that the Secretary of Transportation direct one office or administration to lead and coordinate intermodal efforts at the federal level by improving collaboration and the availability of intermodal guidance and resources.

Question: We have been hearing a great deal lately about a temporary gasoline tax break. What do you think the impact of such a proposal would be in helping develop our national infrastructure?

GAO response: We have not examined the gasoline tax break proposals in detail. We would note, however, that fuel taxes are the primary revenue source for the Highway Trust Fund, which is the major source of federal highway and transit funding. Therefore, unless an alternative revenue source was identified, the suspension of the gasoline tax would negatively impact the balance of the Highway Trust Fund. Furthermore, the most recent Highway Trust Fund projections, which do not factor in the proposed tax break, predict that the balance of the fund will be exhausted by 2012.

Question: What incentives for the private sector could intensify their participation in public-private partnerships to develop our transportation infrastructure?

GAO response: As we reported in February 2008, the private sector has traditionally been involved as contractors in the design and construction of highways. In recent years, however, the private sector has become increasingly involved in assuming other responsibilities including planning, designing, and financing. The private sector, and in particular, private investment groups, including equity funds and pension fund managers, have recently demonstrated an increasing interest in investing in public infrastructure. They see the sector as representing long-term assets with stable, potentially high-yield returns. As a result, the private sector has also entered into a wide variety of highway public-private partnership arrangements with public agencies.

In addition to the expected return on investment, there are several other incentives that can encourage the private sector to participate in highway public-private partnerships. For example, the private sector can also receive potential tax deductions from depreciation on assets involving private sector investment and the availability of these deductions were important incentives to the private sector to enter some of the highway public-private partnerships we reviewed. Obtaining these deductions, however, may require lengthy concession periods. In the United States, federal tax law allows private concessionaires to claim income tax deductions for depreciation on a facility (whether new highways or existing highways obtained through a concession) if the concessionaire has effective ownership of the property. Effective ownership requires, among other things, that the length of a concession be greater than or equal to the useful economic life of the asset. Financial and legal experts, including those who were involved in the Chicago and Indiana transactions, told us that since the concession lengths of the Chicago Skyway and the Indiana Toll Road agreements each exceed their useful life, the private investors can claim full tax deductions for asset depreciation within the first 15 years of the lease agreement. The requirement to demonstrate effective asset ownership contributed to the 99-year and 75-year concession terms for the Chicago Skyway and Indiana Toll Road, respectively. One tax expert told us that, in general, infrastructure assets (such as highways) obtained by the private sector in a highway public-private partnership may be depreciated on an accelerated basis over a 15-year period.

Private investors can also potentially benefit from being able to use tax-exempt financing authorized by the Safe, Accountable, Flexible, Efficient Transportation Equity Act for the 21st Century—A Legacy of Users (SAFETEA-LU) in 2005. Private activity bonds have been provided for private sector use to generate proceeds that are then used to construct new highway facilities under highway public-private partnerships. This exemption lowers private sector costs in financing highway public-private partnership projects. As of January 2008, the Department of Transportation (DOT) had approved private activity bonds for 5 projects totaling $3.2 billion and had applications pending for 3 projects totaling $2.2 billion. DOT said it expects

applications for private activity bond allocations from an additional 12 projects totaling more than $10 billion in 2008.

Finally, the private sector can potentially benefit through gains achieved in refinancing their investments. Both public and private sector officials with whom we spoke agreed that refinancing is common in highway public-private partnerships. Refinancing may occur early in a concession period as the initial investors either attempt to "cash out" their investment—that is, sell their investment to others and use the proceeds for other investment opportunities—or obtain new, lower cost financing for the existing investment. Refinancing may also be used to reduce the initial equity investment in highway public-private partnerships. Refinancing gains can occur throughout a concession period; as project risks typically decrease after construction, the project may outperform expectations, or there may be a general decrease in interest rates.

Question: Which experiences from foreign countries do you take into consideration when determining what strategies we should use?

GAO response: In previous reports, we have examined how foreign countries approach various transportation challenges and solutions. For example, based on experiences from foreign countries we recently concluded that consideration of highway public-private partnerships in the United States could benefit from more consistent, rigorous, systematic, up-front analysis. By weighing the potential benefits of highway public-private partnerships against potential costs and trade-offs through careful, comprehensive analysis, decision makers can better determine whether public-private partnerships are appropriate in specific circumstances and, if so, how best to implement them. We found that governments in other countries, such as Australia, have developed such systematic approaches to identifying and evaluating public interest and require their use when considering private investments in public infrastructure. While similar tools have been used to some extent in the United States, their use has been more limited. Using up-front public interest evaluation tools can assist in determining expected benefits and costs of projects; not using such tools may lead to aspects of protecting the public interest being overlooked. For example, projects in Australia require consideration of local and regional interests. Concerns by local governments in Texas that their interests were being overlooked resulted in state legislation requiring their involvement. To balance the potential benefits of highway public-private partnerships with protecting public and national interests, we recommended that Congress consider directing the Secretary of Transportation to consult with them and other stakeholders and develop and submit to Congress objective criteria for identifying national public interests in highway public-private partnerships. We also believe that, the Secretary should, when developing these criteria, identify what guidance and assessment tools are appropriate and needed to protect national public interests in future highway public-private partnerships.

In 2006, we issued a report that examined how other countries—specifically, Canada, Germany, Japan, France, and the United Kingdom—approached efforts to reform intercity passenger rail systems. We found that intercity passenger rail reform efforts in other countries illustrate that, to be more cost effective and offer increased benefits in relation to expenditures, there are a variety of approaches—and several key reform elements—that need to be addressed when implementing any approach. Over the past 20 years, several countries have employed a variety of approaches in reforming their intercity passenger rail systems to meet national intercity passenger rail objectives—that is, primarily achieving more cost effective, value-added passenger service for the level of subsidies spent. These approaches, alone or in combination with each other, have been used to support other national objectives as well, such as increasing transparency in the use of public funds and providing transportation benefits and public benefits. For example, France and Germany changed their public funding structure by devolving decision making to local and regional governments in order to support the purchase of intercity passenger rail service, allowing local and regional governments to be more flexible and purchase service that best fits the preferences of the users. Prior to, or during, implementation of these various approaches, several elements key to comprehensive reform were addressed. The national governments of most countries we visited focused their efforts on the following elements: (1) clearly defining national policy goals; (2) clearly defining the various roles and responsibilities of all government entities involved; and (3) establishing stable, sustainable funding for intercity passenger rail. These elements were important to determining how passenger rail fit into the national transportation system and to increase the value of both federal and nonfederal expenditures on such systems.

[Whereupon, at 1:25 p.m., the committees were adjourned.]

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