



Testimony

Public-Private Partnerships for Highway Projects

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Chairman Duncan, Congressman Capuano, and Members of the panel, thank you for the invitation to testify on issues related to public-private partnerships. My testimony draws on an earlier report by the Congressional Budget Office (CBO) on this topic.¹

Summary

The United States has a network of over 4 million miles of public roads. That system has faced increasing demands over time: The number of vehicle miles traveled (both passenger and commercial) rose from approximately 700 billion in 1960 to just under 3 trillion in 2012 (see Figure 1). In 2012, the federal government and state and local governments spent about \$155 billion (in 2013 dollars) to build, operate, and maintain roads. (This testimony adopts the practice of the Federal Highway Administration in using the words “highway” and “road” synonymously.) Almost all of those infrastructure projects were undertaken using a traditional approach in which a state or local government assumes most of the responsibility for carrying out a project and bears most of its risks, such as the possibility of cost overruns, delays in the construction schedule, and, in the case of toll roads, shortfalls in the road’s revenues.

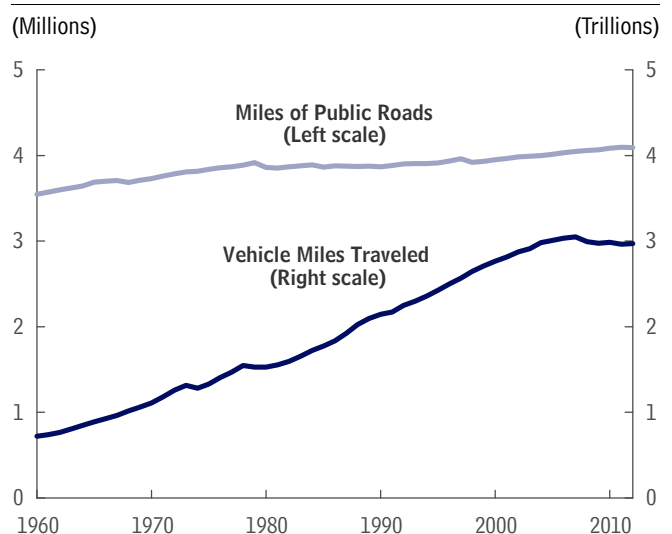
Some observers assert that an alternative approach, using a public-private partnership, could increase the money available for highway projects and complete the work more quickly or at a lower cost than is possible through the traditional method. Specifically, such a partnership could secure financing for a project through private sources that might require more accountability and could assign greater responsibility to private firms for carrying out the work. For example, a private business might take on the responsibility for specific tasks, such as operations and maintenance, and their accompanying risks.

This testimony addresses the potential role of the private sector in two aspects of carrying out highway projects: the financing of projects and the provision (that is, the design, construction, operation, and maintenance) of highways. In particular, CBO concludes the following:

- Private financing will increase the availability of funds for highway construction only in cases in which states or localities have chosen to restrict their spending by imposing legal constraints or budgetary limits on themselves. The reason is that revenues from the users of roads and from taxpayers are the ultimate source of money for highways, regardless of the financing mechanism chosen.
- The cost of financing a highway project privately is roughly equal to the cost of financing it publicly after factoring in the costs associated with the risk of losses from the project, which taxpayers ultimately bear, and the financial transfers made by the federal government to states and localities. Any remaining difference between the cost of public versus private financing for a project will stem from the effects of incentives and conditions established in the contracts that govern public-private partnerships.
- On the basis of evidence from a small number of studies, it appears that such partnerships have built highways slightly less expensively and slightly more quickly, compared with the traditional public-sector approach. The relative scarcity of data on public-private partnerships for highway projects, however, and the uncertainty surrounding the results from the available studies make it difficult to apply their conclusions definitively to other such projects.

Figure 1.

Miles of Public Roads in the United States and Vehicle Miles Traveled, 1960 to 2012



Source: Congressional Budget Office based on data from the Federal Highway Administration.

1. Congressional Budget Office, *Using Public-Private Partnerships to Carry Out Highway Projects* (January 2012), www.cbo.gov/publication/42685.

Table 1.**Stages and Types of Activities Involved in Providing Highways**

Stage	Activities
Design	Completing plans for the project, which includes producing architectural drawings and selecting construction materials and the construction site.
Build	Constructing the road, which includes reviewing conditions at the building site, providing construction staff and materials, selecting equipment, and, when necessary, amending the design to address problems discovered during the construction phase.
Finance	Providing capital for the project, which may include issuing debt or equity and verifying the feasibility of plans for repaying debt or providing returns on investment.
Operate	Ensuring the continuing performance and availability of the highway, which includes removing debris and snow and collecting tolls and data on traffic.
Maintain	Keeping the project in a state of good repair, which includes filling potholes, repaving or rebuilding roadways, and ensuring the integrity of bridges and highways.

Source: Congressional Budget Office.

Approaches to Carrying Out Highway Projects

Highway projects comprise five major stages of activity—typically referred to as design, build, finance, operate, and maintain—that either the public or the private sector can carry out (see Table 1).

The Traditional Approach

The traditional approach to providing roads, known as the design-bid-build approach, is used nearly uniformly across the United States. It is mainly a public-sector endeavor, in which state or local governments pay for projects with some combination of their own funds, funds provided by the federal government, and borrowed funds that are ultimately repaid by revenues from taxes or tolls. Once funds are secured, a public manager—generally a state department of transportation or other public authority—either designs the highway project itself or contracts with a private firm to design it. A different private entity, which is usually selected on the basis of the lowest-cost bid, then carries out the project. A public agency manages the longer-term operations and maintenance of the highway, although that public entity may, again, contract with a private firm to perform some of those tasks.

Under the traditional approach to highway projects, private firms that have signed contracts to construct a road or perform other project-related tasks take on only a limited amount of risk. For example, they retain the ability to pass on to the public agency any increase in their costs as a result of unforeseen changes in the scope or details of the project, a feature of the traditional approach that increases the chances that the private firm's costs will exceed its bid price. For its part, the public agency retains a high degree of control over the highway during its useful life.

Public-Private Partnerships

The term “public-private partnership” refers to a variety of alternative arrangements for highway projects that transfer more of the risk associated with and control of a project to a private partner. That transfer is achieved in part by bundling some of the elements of providing a highway. Some observers apply the term “public-private partnerships” only to projects that include capital from private sources. For this testimony, however, CBO has adopted a broader definition of the term to include any contractual arrangement that transfers more risk from the public sector to the private sector than is the case under the traditional (design-bid-build) approach. That definition allows consideration of potential increases in

Table 2.
Number and Value of Public-Private Partnerships for U.S. Highway Projects, 1989 to 2013

(Billions of 2013 dollars)

	Value of Contract
	Design-Build Projects ^a (Number: 69)
All Projects	36.6
Average	0.5
Largest Projects	
Tappan Zee Bridge (New York)	3.1
I-15 Reconstruction (Utah)	1.9
State Highway 130, Segments 1 to 4 (Texas)	1.7
	Design-Build-Finance Projects (Number: 13)
All Projects	4.3
Average	0.3
Largest Projects	
Northwest Corridor (Georgia)	0.6
I-75 Collier/Lee County (Florida)	0.5
Route 3 North (Massachusetts)	0.5
	Design-Build-Finance- Operate-Maintain Projects (Number: 16)
All Projects	19.6
Average	1.2
Largest Projects	
I-635 LBJ Freeway (Texas)	2.9
North Tarrant Express (Texas)	2.2
I-495 HOT Lanes (Virginia)	2.1
	Total Public-Private Projects (Number: 98)
All Projects	60.5
Average	0.6

Source: Congressional Budget Office based on "U.S. and Canadian Transportation Projects Scorecard," *Public Works Financing*, vol. 285 (September 2013), pp. 30–33, <http://pwfinance.net/>.

Notes: Only projects with a value greater than \$50 million are included in the table.

HOT = high occupancy/toll.

- a. Covers projects with and without a warranty in which the contractor guarantees the integrity and quality of the finished product and covers projects that may also include operations or maintenance responsibilities but not financing.

efficiency from the private sector's involvement in ways that do not include private financing.

The use of such partnerships for providing highway infrastructure is limited in the United States. Between 1989 and 2013, the value of contracts for all such projects whose costs exceeded \$50 million was only about \$61 billion, representing about 1.5 percent of the approximately \$4 trillion (in 2013 dollars) that was spent on highways during that period by all levels of government. The use of public-private partnerships is increasing, however; about half of that \$61 billion was committed in the past five years.

Three main types of public-private partnerships have been used in the United States:

- **Design-build projects**, the most common type of public-private partnership, are set up as fixed-price contracts between one private entity and a public agency to jointly manage the design and construction of a new road. Under such an arrangement, the private party accepts most or all of the risk of increases in costs associated with the project.² The ultimate source of capital for a project comes from tax revenues or tolls, and the public partner retains ownership of the highway and control of the revenues dedicated to the project and its operations and maintenance. According to *Public Works Financing*, a monthly newsletter that has reported on public-private partnerships for roughly 25 years, private firms and government agencies jointly undertook 69 design-build projects with a value of \$50 million or more between July 1989 and September 2013 (see Table 2), with about one-half coming within the past five years.

- The same type of contract that is used for a design-build effort can be used in a **design-build-finance** arrangement except that in this case, the private partner provides the necessary up-front capital and is generally repaid through tolls or by a state or local government in a series of installments. Between July 1989 and September 2013, public-private partnerships undertook 13 design-build-finance projects with a value of \$50 million or more, with about one-third coming within the past five years.

2. In some projects, the private partner also provides a warranty guaranteeing the integrity and quality of the finished product.

■ The broadest private role encompasses the elements of the design-build-finance structure but also includes operations and maintenance performed by private firms. Those types of partnerships, known as **design-build-finance-operate-maintain** arrangements, use the same kind of contract as that used for design-build-finance projects except that in this case, the private partner agrees to perform operations (such as the removal of snow and debris and the collection of tolls) and carry out maintenance on the highway for a specific period. The contract spells out how the private partner is to be repaid for up-front and ongoing expenses through future tolls or other fees imposed on users of the road or through “availability payments” from state or local governments, which are financed by receipts from income or other taxes that are not linked to the use of the road. (Such projects may also be called **build-own-operate-transfer** partnerships because the private partner initially builds and owns the road but then transfers ownership to the public partner.) Between July 1989 and September 2013, public-private partnerships undertook 16 privately financed projects with a value of \$50 million or more involving private responsibility for operations and maintenance, with about three-quarters coming within the past five years.

The type of organization that serves as the private partner in a public-private partnership varies widely depending on the size of the project and the scope of the private sector’s role. For design-build public-private partnerships, the private partner in many cases is a joint venture between a design firm and one or more construction firms; occasionally, one firm provides both services. In many partnerships that include private financing, those joint-venture entities contract with banks or other private lenders to provide capital. For highway projects that include operations and maintenance, the private partner is generally a consortium of firms, led by a project development and management company that in many instances is a large multinational corporation. That company delegates such tasks as construction, operations, and maintenance to subsidiary firms or other parties and bears most of the risks associated with the project.

In a partnership, the contractor assumes greater risks than it would under the traditional approach because the

terms of the partnership’s contract generally limit the private firm’s ability to renegotiate the contract in the event of higher costs. Nevertheless, that advantage to the public sector of transferring the risk and control of a project to a private firm may have a downside: It may limit the government’s ability to respond to changing conditions or to achieve other objectives that might improve the welfare of the state’s or locality’s citizens but reduce the private partner’s profits.

Private Financing of Highways

Most highway projects are paid for with current state or federal revenues and are not financed through borrowing. But sometimes a project is large enough that the state or local government, or other public authority, must borrow money to move the project forward. When that is the case, the public entity can provide financing either through traditional public borrowing—by issuing government bonds, on which investors are generally willing to accept a relatively low rate of return because the bonds are backed by the taxing authority of the public entity—or by joining with a private partner to obtain private financing.

The total cost of the capital for a highway project, whether that capital is obtained through a government or through a public-private partnership, tends to be similar once all relevant costs are taken into account. Assessments of the experience with private financing of highways in the United States suggest that turning to a private partner does not typically yield additional financing, although it may speed its provision. Private financing can provide the capital necessary to build a new road, but it comes with the expectation of a future return, the ultimate source of which is either taxes or tolls.

Cost of Financing

A fundamental question about public-private partnerships that use private financing is whether the private approach can reduce the cost of a project’s financing, and thus its total costs, when compared with traditional financing. Answering that question requires a comprehensive measure of the cost of financing, which should encompass the following:

- The cost of the risk borne by taxpayers, including the required returns on the investments of all claimants to the revenues from the project, whether they be debt holders or equity holders (the taxpayers, in the case of publicly financed projects);³
- The cost of interest subsidies provided when interest rates are lower than they would otherwise be, either because the federal government provides financing at lower-than-market rates or because the interest paid on municipal debt is tax-exempt;
- The forgone revenues from depreciation allowances that allow the private partner to reduce its federal income tax liability; and
- Transaction costs, such as the cost to issue bonds, the cost of monitoring and enforcing the terms of contracts, and any legal costs associated with obtaining the financing.

Broadly speaking, the comprehensive cost of financing a highway project privately is usually about equal to the cost of financing it through the traditional public approach if the cost of providing taxpayers with a fair return on their equity investment is taken into account. How a project is financed, though, may affect who bears its costs. Financing a project with bonds whose interest is exempt from federal taxation or with funds that reflect other subsidies from the federal government shifts the project's costs from state taxpayers to federal taxpayers. It does not, however, reduce the total cost of the project's financing.

Incentives

Although the comprehensive costs of financing a highway project with private capital or with public borrowing are largely the same, the incentives associated with private financing may encourage the partners in the project to reduce its costs and shorten its schedule. In particular, giving a private partner an equity stake in a project as well as control over the project's execution generally encourages more efficient management than the traditional

approach affords. Under the traditional approach, a contractor may have only a limited incentive to control costs because cost increases in many cases can be passed on to the government. In contrast, holders of equity claims usually have more of an incentive to control a project's costs because they are the last to be paid on a project and will receive a payment only if the cash flows—from the state or local government directly or from toll revenues—are sufficient to cover costs.

However, equity financing is not the only way to provide incentives to contractors to manage projects efficiently. Governments can use the traditional approach in conjunction with other mechanisms to achieve the same ends. Alternatives include incentive payments or penalties that are contingent on the private contractor's meeting specific milestones regarding costs or the project's completion.

Experience With Private Financing

Only a small number of highway projects in the United States have involved public-private partnerships that included private financing. Assessments of those projects indicate that such partnerships may accelerate the provision of financing—for example, by circumventing states' self-imposed limits on borrowing—but they do not generally result in additional financing. Of the projects that have been completed, some of those that were financed through tolls have failed financially because the private partners overestimated the revenues that the project would generate and were thus unable to fully repay the project's debt. Perhaps in response to that history, projects that are still under construction rely less on tolls for revenues; more commonly now, private partners are compensated through a state's general revenues, thus limiting their risk of not being repaid. Public-private partnerships have also increasingly replaced the funds obtained through private means (at market rates) with tax-exempt bonds or bonds that provide a credit against taxes owed. That change has brought the projects more in line with the traditional approach, lowering the private partners' costs at the expense of federal taxpayers and increasing the amount of the government's implicit equity and risk. In doing so, newer projects may have diminished the incentives associated with private financing to control costs and to be completed quickly.

3. For example, revenues from a project might fall short of promised payments on the debt, and in the case of publicly financed projects, the government would have to raise taxes or reduce spending to make up for the shortfall.

In addition, more-recent agreements have reduced private partners' debt-service payments—that is, interest payments on any money borrowed to finance the projects—by increasing the share of financing provided by the state or locality or by the federal government. Accordingly, financing provided by the federal TIFIA (Transportation Infrastructure Finance and Innovation Act) program and tax-exempt private activity bonds issued by municipalities (to finance projects of private users) have become increasingly prominent sources of funds for highway projects involving public-private partnerships.

The history of privately financed roads in the United States encompasses 29 projects that are either under way or have been completed during the past 25 years. The value of the contracts for those projects totals \$24 billion, a little more than one-half of 1 percent of the approximately \$4 trillion that all levels of government spent on highways over the period. (Both of those amounts are in 2013 dollars.) In the past several years, the number of partnerships for road projects that have private financing has increased; two-thirds of the \$24 billion in contracts has been committed in the past five years.

The amount of risk that was transferred to the private partner varied from project to project. In some instances, the financial risk was still borne primarily by taxpayers, who were responsible for repaying debt incurred by the private partner. For example, under a design-build-finance program in Florida, private firms finance each project entirely with private debt, which is to be repaid over a predetermined time—usually five years—with future grants from the federal government, state funds, and revenues from tolls paid by users of the completed road. The state's guarantee of repayments eliminates much of the transfer of risk that takes place with other projects that use private financing. Thus, the financing for those projects is essentially public, and the public-private partnership structure of those projects is similar to that of the design-build approach.

In other instances, the private partner bore more of the risk of the investment—specifically, that its money might be lost if the project did not produce the revenues that were expected. Over the past 25 years, 10 such projects, which varied in size but which all involved contracts of

more than \$50 million, have been completed (see Table 3). A review of those projects offers little evidence that public-private partnerships provide additional resources for roads except in cases in which states or localities have chosen to restrict their spending by imposing legal constraints or budgetary limits on themselves. To varying degrees, the projects that made use of private financing took place in states in which the government could have issued bonds to finance the work through traditional means. In some cases, however, the use of a public-private partnership accelerated the project's access to financing by circumventing restrictions that some states have imposed on themselves and that limit their ability to issue additional debt. (Earlier financing of a road project adds value when it allows the public to enjoy the benefits of the new road sooner than would otherwise be possible.)

Several such projects are still under construction (see Table 4). New public-private partnerships have sought to reduce their borrowing costs by relying on publicly subsidized borrowing through the TIFIA program and through private activity bonds (PABs) issued by local municipalities; the PABs have tax advantages that lower the private partner's debt-service payments.⁴ All but one of those ongoing projects have made use of federal subsidies through TIFIA. That choice of financing constitutes a return to some features of the traditional approach in which the public sector retains greater risks, especially the risk of default, as occurred in the South Bay Expressway bankruptcy. Those projects also typically secure loans or grants from states or localities as part of their financing.

In the other cases, though, project managers responsible for a project's financing have had to take out bank loans. That source of private capital had become more attractive than usual for project managers because during the recent economic downturn, the yields for bonds in municipal bond markets (including those of PABs) greatly increased relative to those on alternative investments, making it

4. A private activity bond is a bond issued by or on behalf of a state or local government to finance the project of a private business. By giving some PABs tax-preferred status—generally by making the bonds' interest tax-exempt—the federal government provides a form of credit assistance.

Table 3.
Completed Highway Projects That Used Public-Private Partnerships With Private Financing

	Dulles Greenway	SR-91 Express Lanes	Camino Colombia Bypass	Atlantic City- Brigantine Tunnel	Southern Connector	Pocahontas Parkway	Route 3 North	South Bay Expressway (S. Section)	SH-130 (Segments 5 and 6)	I-495 HOT Lanes
	Description of the Project									
Date of Opening	1995	1995	2000	2001	2001	2002	2005	2007	2012	2012
Location	Va.	Calif.	Tex.	N.J.	S.C.	Va.	Mass.	Calif.	Tex.	Va.
Sources of Revenues	Tolls	Tolls	Tolls	Tolls/Taxes	Tolls	Tolls	Taxes	Tolls	Tolls	Tolls
Type of Public-Private Partnership	DBFO	DBFO	DBFO	DBF	DBF	DBFO	DBF	DBFO	DBFO	DBFO
Length of the Road (Miles)	14	10	22	2	16	9	21	10	40	14
	Financial Structure and History									
Bankruptcy Declared	No	No	Yes	No	Yes	No	No	Yes	No	No
Public Buyout of Private Partners	No	Yes	No	No	No	No	No	No	No	No
	Sources of Financing (Millions of 2013 dollars)									
Private										
Debt	462	161	96	155	260	690	506	421	737	0
Equity	59	33	19	0	0	0	0	220	227	376
Public										
TIFIA program	0	0	0	0	0	0	0	174	462	633
Other	0	0	0	300 ^a	0	0	0	0	0	1,072 ^b
Total Project Cost	521	194	115	455	260	690	506	815	1,427	2,081

Source: Congressional Budget Office based on data from the Federal Highway Administration.

Note: HOT = high occupancy/toll; DBFO = design-build-finance-operate; DBF = design-build-finance; TIFIA = Transportation Infrastructure Finance and Innovation Act.

- a. The project relied on a casino’s future contribution to the Casino Reinvestment Development Authority as well as on funds from the South Jersey Transportation Authority and the New Jersey Transportation Trust Fund Authority.
- b. The project included private activity bonds and loans or grants from states or localities.

more costly to finance projects by using bonds. At the peak of the financial market’s troubles in late 2008, the difference between the interest rate on municipal bonds and that on TIFIA loans, which are perceived to be a safer alternative, had increased by nearly 4 percentage points. That rise in rates reflected people’s concerns about the ability of state and local governments to pay off the bonds they were issuing.

Private Provision of Highways

If a public-private partnership arrangement is chosen for a highway project, the government involved must design, implement, and monitor contracts that allocate risk and control between the public and private partners. Although contracts of that kind are difficult to create because the parties involved cannot anticipate all contin-

gencies, they are essential to establishing the right incentives to perform the work efficiently and manage the project’s associated risks. In particular, contracts that bundle two or more elements of the work may facilitate quicker or cheaper completion if the greater control afforded the private partner through such arrangements gives it stronger incentives to constrain costs and meet established schedules than the traditional approach offers. A few studies have looked at the use of public-private partnerships as an approach to designing, building, operating, and maintaining highways. The research has found that, compared with the traditional approach, public-private partnerships have slightly reduced the time required to complete the design and construction phases of road projects and lowered construction costs by a small amount, on average.

Table 4.**Ongoing Highway Projects That Use Public-Private Partnerships With Private Financing**

	I-595 Managed Lanes	North Tarrant Express Segments 1&2	Port of Miami Tunnel	I-635 LBJ Freeway	I-95 HOV/HOT Lanes	Midtown Tunnels	Presidio Parkway	Ohio River Bridges East End Crossing	North Tarrant Express Segement 3A
	Description of the Project								
Start of Construction	2009	2010	2010	2011	2012	2012	2013	2013	2014
Expected Completion Date	2014	2015	2014	2016	2015	2017	2015	2016	2018
Location	Fla.	Tex.	Fla.	Tex.	Va.	Va.	Ca.	Ind.	Tex.
Sources of Revenues	Tolls/Taxes	Tolls	Taxes	Tolls	Tolls	Tolls	Taxes	Tolls/Taxes	Tolls
Type of Public-Private Partnership	DBFOM	DBFOM	DBFOM	DBFOM	DBFOM	DBFOM	DBFOM	DBFOM	DBFOM
Length of the Road (Miles)	11	13	1	13	29	1	2	8	6
	Sources of Financing (Millions of 2013 dollars)								
Private Financing									
Debt	829	0	362	0	0	0	167	0	0
Equity	231	452	85	713	280	272	46	78	413
Public Financing									
TIFIA program	640	690	362	902	300	422	150	0	524
Private activity bonds ^a	0	422	0	643	253	675	0	677	271
Other ^b	246	609	329	520	90	719	0	395	169
Total Project Cost	1,946	2,173	1,138	2,779	923	2,089	365	1,150	1,377

Source: Congressional Budget Office based on data from the Federal Highway Administration.

Note: HOV = high-occupancy vehicle; HOT = high occupancy/toll; DBFOM = design-build-finance-operate-maintain; TIFIA = Transportation Infrastructure Finance and Innovation Act.

a. A private activity bond is a bond issued by or on behalf of a state or local government to finance the project of a private business.

b. Mostly loans or grants from states or localities.

Information and Incentives

A common problem with the traditional method of providing highways is that it does a relatively poor job of addressing the risks that arise from privately held or incomplete information. One way to address the problem of privately held information is to consolidate design, construction, operations, and maintenance under the control of one project manager. In that case, nothing would be gained by strategically withholding or misrepresenting information because all the potential benefits from the project would accrue to one party. Consolidating multiple tasks would also help in the coordination of a project whenever full and reliable information was necessary for a smooth transition from one task to another (such as the transition from the design to the construction stage). The managing party could be held responsi-

ble for any problems that arose during a transition and then work to eliminate them.

The drawbacks of a lack of consolidation and coordination are laid out in a study by the National Cooperative Highway Research Program published in 2006.⁵ That research suggests that using two separate contracts (one for design and the other for construction of a road) imposes “constructability risk” on the project’s owner (the public-sector partner). In other words, the owner

5. See Sidney Scott III and others, *Best-Value Procurement Methods for Highway Construction Projects*, National Cooperative Highway Research Program Report 561 (Washington, D.C.: Transportation Research Board of the National Academies, National Cooperative Highway Research Program, 2006), www.trb.org/Main/Blurbs/158046.aspx.

shoulders the risk that the design produced for the builders is not the most efficient option or may not match the builder's abilities. If such a mismatch occurs, the owner of the project must first pay the builder to fix the resulting problem and then attempt to collect any added costs from the designer—which may be difficult because the owner must first prove that the designer has legal liability stemming from a design that became more difficult and costly to complete than had been expected.

A contract that consolidates responsibility for a project's design, construction, operations, and maintenance in the hands of one contractor may also better align that contractor's incentives with the project's goals over the long term. Separate contracts for construction and maintenance may encourage the private builder to construct the road at the lowest possible cost but offer no incentive to consider and potentially improve the highway's long-term performance (for example, by initially using more expensive but longer-lasting materials). A more transparent exchange of information about the project—specifically, the disclosure of expected long- and short-term project costs—between the private firm and the public partner might reduce the cost of operating and maintaining the road in the future. One study found that for every dollar spent on preventive maintenance, between \$4 and \$10 was saved (depending on how soon the maintenance was undertaken) when the road eventually had to be rehabilitated.⁶ Thus, assigning the risk of higher long-term costs for maintenance to the builder through a public-private partnership contract would provide the incentive to use whatever materials or methods that minimized such costs over the entire life of the highway and not just during the construction phase. Indeed, using a public-private partnership to complete a highway project may be most cost-effective in instances in which potentially large savings can be gained by managing the risk of higher-than-expected costs over the life of the road.

6. "Gilbert Y. Baladi and others, "Cost-Effective Preventive Maintenance: Case Studies," *Transportation Research Record: Journal of the Transportation Research Board*, vol. 1795 (2002), pp. 17-26, <http://dx.doi.org/10.3141/1795-02>.

Control

A drawback of a partnership arrangement for the public sector, however, can be its loss of control of a project. Contracts for public-private partnerships may in some cases turn over some toll-setting authority to the private sector. Higher tolls are likely to result, an outcome that may conflict with other public-sector goals. A loss of control may also lead to conflicts about and renegotiations of the terms of the contract, which may be costly for the public sector. More generally, less control of a project by the public partner over the long run may make attainment of the government's future objectives more costly; it may also complicate efforts to adhere to a contract written many years—or even decades—earlier and still protect the public's interests.

Experience With Private Provision

Assessments of whether public-private partnerships can provide highway infrastructure more efficiently than traditional methods are challenging, in large part because of limited data and research.⁷ Only a few studies have focused on the private provision of a highway project—that is, on design and construction as well as on operations and maintenance. That research found that the use of the design-build type of public-private partnership slightly reduced the cost of building highways relative to the cost under the traditional approach and slightly reduced the amount of time required to complete the projects. The studies typically estimated that the cost of building roads through design-build partnerships was a few percentage points lower than it would have been for comparable roads provided in the traditional way. (However, estimates of such savings are quite uncertain, and the effect on costs of using design-build arrangements in the future could differ significantly from what the estimates in those studies imply.) Studies also found that for projects with contracts valued at more than \$100 million, the total time required to design and build the road declined by as much as a year on some projects—in part because the public-private partnership bundled the design and construction contracts and so eliminated a second, separate bidding process for the additional tasks.

7. For additional details, see Congressional Budget Office, *Using Public-Private Partnerships to Carry Out Highway Projects* (January 2012), pp. 22–25, www.cbo.gov/publication/42685.

Information about using public-private partnerships to operate and maintain roads is limited. In recent years, two older highways built in the traditional way, the Chicago Skyway and the Indiana Toll Road, have been converted to private management, making them subject to control by the private sector. Comparing the cost of operations and maintenance for those highways under public and private management indicates that both roads experienced reductions in costs after a private firm assumed control. A variety of factors in addition to the transfer of control, such as the recent recession and the associated reduction in traffic, probably contributed to that result.

This testimony updates *Using Public-Private Partnerships to Carry Out Highway Projects*, a report that the Congressional Budget Office (CBO) released in January 2012, written by Alan van der Hilst (formerly of CBO). Joseph Kile and David Moore (formerly of CBO) supervised that work. Chad Shirley updated the work in collaboration with Sarah Puro. In keeping with CBO's mandate to provide objective, impartial analysis, this testimony contains no recommendations. This testimony and the earlier report are available on CBO's website (at www.cbo.gov/publication/45157 and www.cbo.gov/publication/42685, respectively).