

Moving to Public-Private Partnerships: Learning from Experience around the World



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IBM Endowment for
**The Business
of Government**

NEW WAYS TO MANAGE SERIES

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Partnerships:** Learning from
Experience around the World

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February 2003

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F O R E W O R D

February 2003

On behalf of the IBM Endowment for The Business of Government, we are pleased to present this report, "Moving to Public-Private Partnerships: Learning from Experience around the World," by Trefor P. Williams.

This important report presents a new perspective on the challenges now faced by government to more effectively, efficiently, and creatively partner with the private sector to develop and implement new models of contracting. Professor Williams, an associate professor of civil engineering at Rutgers University, uses his experience in analyzing the competitive bidding process for large construction projects, such as the building of highways, to contrast the Build-Operate-Transfer (BOT) model of contracting with the traditional model of government procurement. The report is written in laymen's terms for government executives to better understand new forms of public-private contracting partnerships and their potential for a wide variety of government activities.

The message of the Williams report is that the public-private partnerships should no longer be limited to highway and other large infrastructure projects. New models are now being used throughout the world in a wide variety of areas, including education and health projects. The report also discusses the Private Finance Initiative (PFI) now under way in the United Kingdom to increase "the flow of capital projects against a background of restraint on public expenditures." There are clearly lessons that the United States can learn from the experience of the United Kingdom.

We trust that this report will be informative to government executives in both the United States and across the world as the public sector enters a new era of public-private contracting partnerships. There is much to learn about how the BOT model can be applied to many areas of government operations.

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EXECUTIVE SUMMARY

The traditional competitive bidding has been found to have many problems. The competitively bid project is often characterized by adversarial relationships between the government owner, the designer, and the constructor. Responsibilities are fragmented and shared, and the owner is placed in the position of being the arbiter of disputes. There is now an increasing demand for better quality and more innovative services and products than the traditional competitively bid project can often provide. There is now a continuum of public-private partnerships (PPPs) that can be used to improve upon the traditional competitive bid process.

PPPs can be defined as “an arrangement of roles and relationships in which two or more public and private entities coordinate in a complementary way to achieve their separate objectives through the joint pursuit of one or more common objectives” (Lawther, 2002). With PPPs, the private sector aids government in identifying new private-sector-financed profit-making facilities, and seeks out new projects that would otherwise have to wait until government funds become available. Traditional competitive bidding may not be as efficient for government owners as PPP alternatives such as design-build.

Various types of PPPs are in use around the world. A common type is Build-Operate-Transfer (BOT). Under this type of agreement, a concession is granted to a contractor to design, finance, operate, and maintain a facility usually for a period of between 10 and 30 years. The contractor charges tolls for the use of the facility to recoup the cost

of the project. There are many other variations of the basic BOT model.

Another type of public-private partnership is design-build. With design-build, a single contractor is selected to provide both design and building services. Design-build type contracts have several benefits including a single point of contact for the government owner, reduced project delivery time, and a lower number of change orders. Recent federal legislation has legalized the application of a two-phase selection method for federal procurement whenever it is deemed appropriate. In some states, laws exist that prohibit the application of design-build. Design-build can be applied to both building and highway construction. Examples are given in the report. Warranty contracts are a form of performance-based contract where the contractor assumes post-construction performance risk. A contractor warrants the work and then returns to fix any deficiencies for a specified number of years.

In Great Britain, Design-Build-Finance-Operate (DBFO) contracts are frequently used. These differ from a BOT project in that no tolls are charged and the builder is still paid by the government. For highway projects, payment is often based on the level of traffic on the road. A DBFO contractor is responsible for the design, maintenance, and operation of a facility.

PPPs, with their use of the private sector, include greater efficiency in the use of public resources. PPPs are also a means of increasing investment in infrastructure. On large projects, they require a

consortium of designers, builders, financiers, and other disciplines to form a concession company. A concession agreement that establishes the concession rules and contractual rights of the main parties is necessary.

BOT projects have several advantages. Primarily, BOT allows infrastructure projects to be obtained at little or no cost to taxpayers. The private sector can usually perform construction more rapidly than the public sector. Risks to BOT concessionaires mainly involve international concerns of political instability by the host government and currency devaluations. This report describes several case studies of BOT projects from around the world.

PPPs have been adapted to schools. Various models include the Build-Lease-Transfer-Maintain format, where a building is designed, financed, and constructed by the private sector and is then leased back to the government. PPPs have been used for hospital projects in Great Britain and Australia. In Great Britain, hospitals are designed, financed, and built by the private sector. The private sector then maintains the building while it is being used by the National Health Trust as a hospital.

Private Finance Initiative (PFI) is the name given to PPPs in Great Britain. It is a program of the British government. There are three types of PFI projects: financially freestanding, joint ventures, and DBFO projects. PFI projects have been found to offer greater value for the money than projects that adhere to traditional public procurement methods. The advantage of the DBFO method is found principally in the freedom of design left to the concession, the transfer of risks to the concession company, and the enhanced efficiency resulting from private management.

This report has studied various forms of PPP arrangements for acquiring government facilities. It is recommended that the use of PPPs on government projects be increased. The major conclusions are:

- The traditional contractual arrangement of a separate contractor and designer has many problems and does not allow for the application of PPPs.

- The use of PPPs and privatization allows for greater efficiency and cost savings by bringing private sector discipline to new areas of project construction, operation, and financing.
- PPPs attract new private investment in the infrastructure. Projects where no government funding may have been available are allowed to move forward due to private sector investment.
- PPPs are already in use worldwide.

Understanding Public-Private Partnerships

Introduction

This report explores the concept of public-private partnerships and presents examples of how such partnerships have been created and implemented throughout the world. In the past, the predominant use of public-private partnerships has been related to highway and infrastructure projects. This, however, is beginning to change. The report presents examples of how public-private partnerships are now being used in the fields of health care and education.

In the decade ahead, a major challenge for government at all levels—federal, state, and local—will be to find and develop new ways to finance and implement large-scale projects. In the future, large-scale projects will not be limited to just highways and infrastructure as they will increasingly include large-scale technology projects. The use of public-private partnerships will offer an increasingly attractive alternative to traditional approaches to the financing and procurement of large projects. While many of the projects described in this report come from the world of highways, the challenge for all government managers in the future will be to find creative ways to extend the concept of public-private partnerships to sectors other than transportation.

This report is premised on the belief that government managers in the United States can learn much from the experience of others across the world. The report highlights the Private Finance Initiative in the United Kingdom, which is now applying the concept of public-private partnerships to many sectors. In addition to the United

Kingdom, the report also presents examples of public-private partnerships from Europe, Argentina, Hong Kong, and the Philippines. Public-private partnerships are truly a worldwide phenomenon. Public sector executives in the United States have much to learn from their colleagues throughout the world.

Public-private partnerships (PPPs) are defined by the National Highway Institute as “an arrangement of roles and relationships in which two or more public and private entities coordinate/combine complementary resources to achieve their separate objectives through joint pursuit of one or more common objectives” (Lawther, 2002).

PPPs typically involve the use of private capital to design, finance, construct, maintain, and operate a project for public use for a specific time period during which a private consortium collects revenues from the users of the facility. When the consortium’s term expires, title to the project reverts to the government. By then, the consortium should have collected enough revenue to recapture its investment and make a profit (Levy, 1996).

Reasons for Interest in Public-Private Partnerships

There are several reasons for the current interest in PPPs. One of them is greater efficiency in the use of public resources. Experience has shown that many public sector activities can be undertaken more cost effectively with the application of private sector management disciplines. It has been estimat-

ed that state and local governments experience cost savings of 10 to 40 percent through the use of PPP privatization schemes (NCPPP, 2002). Additionally, PPPs are a means of increasing investment in infrastructure. Economic growth is highly dependent on the enhancement and development of infrastructure, particularly in utilities and transport systems. There is an urgent need for new social infrastructure such as hospitals, prisons, educational facilities, and housing. Many governments see these as the most pressing areas for private involvement (Middleton, 2001).

As noted above, partnerships between government and the private sector address government needs in several ways:

- "... The private sector helps government to identify new user financed profit-making facilities or existing facilities in need of renovation or expansion. Private, profit-oriented businesses have a direct financial incentive to seek out new projects that would otherwise wait until government funds became available."
- Involvement of private sponsors and experienced commercial lenders assures in-depth review of the technical and financial feasibility of a project. Projects are subjected to more screening because of the private sector's need to assure profitability.
- "The private sector can access private capital markets to supplement or substitute for hard-to-get government resources."
- "The private sector builds more quickly and more cost effectively than government usually can. Construction is generally more rapid because private developers are more flexible and do not have to observe government procurement rules and bureaucratic constraints that delay planning and construction schedules." Government projects typically have more layers of bureaucracy that are required to approve construction activities than private-sector construction has.
- "The private sector usually operates facilities more efficiently than government can." The profit motive allows private developers to operate facilities more efficiently than government can. The need to reduce costs to increase profits spurs greater efficiency.
- "Private firms involved in a PPP provide a new source of tax revenue."
- "The private sector accepts risks that would otherwise be borne by the public sector."
- "The private sector transfers technology and provides training to government personnel during the course of a project" (Savas, 2000).

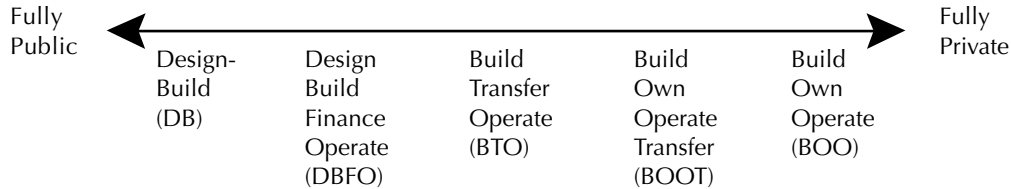
Government's role in PPPs is to identify and plan to satisfy the fundamental need for particular government facilities; investigate project feasibility; execute the many tasks involved in contract letting; assign monopoly rights by choosing a private partner; regulate prices; establish and monitor performance standards; and contribute to the financing (Savas, 2000).

Types of Public-Private Partnerships

Various types of PPPs are in use around the world. In general, in PPPs the constructor is not paid by the government agency to construct the project but instead obtains its own financing for construction. In some countries, Build-Operate-Transfer projects are often used. Under these agreements, a concession is granted to a contractor to design, finance, operate, and maintain a facility for a period, usually between 10 and 30 years. This is usually applied to large infrastructure projects such as highways. The contractor recoups the cost of the project by collecting tolls during the life of the concession period. Typically, at the end of the operating period, all operating rights and maintenance responsibilities revert to the government.

There are several contractual methods related to BOT. These include Build-Transfer-Operate (BTO), Build-Own-Operate-Transfer (BOOT), and Build-Own-Operate (BOO). With a BTO contract, a "private developer finances and builds a facility and, upon completion, transfers legal ownership to the sponsoring government agency. The agency then leases the facility back to the developer under a long-term lease. During the lease, the developer operates the facility and has the opportunity to earn a reasonable return from user charges" (Savas, 2000).

With BOOT, ownership of the facility rests with the constructor until the end of the concession period, at which point ownership and operating rights are

Figure 1: Range of Privatization

transferred free of charge to the host government. BOO projects resemble outright privatization of a facility. BOO projects are sometimes let with no provision of transfer of ownership to the host government. At the end of a BOO concession agreement, the original agreement can be renegotiated for a further concession period (Smith, 1999). Figure 1 shows the spectrum of privatization that is possible using PPPs. Design-build is the most public because it still requires government funds to finance the project. BOO is the most private because it involves the privatization of the facility.

The wraparound addition is another form of PPP. Using a wraparound addition, “a private developer constructs an addition to an existing public facility and then operates the combined facility for a fixed period or until the developer recovers costs plus a reasonable return on invested capital. The objective of this arrangement is to expand the facility despite the government’s lack of resources or expertise to do so entirely with its own funds” (Savas, 2000).

There are a myriad of possible contractual relationships that can be employed using PPPs. Design-Build-Finance-Operate (DBFO) contracts are frequently used in Great Britain for highway projects constructed using the Private Finance Initiative (PFI). The PFI will be discussed in greater detail in a later section. A DBFO partner is responsible for the design, construction, maintenance, and operation of a facility. The DBFO partner also finances the project and is granted a long-term right of access, usually 30 years. The DBFO partner is compensated through specified service payments during the life of the project. For highways, this is expected to include traffic-related payments based

on “shadow tolls.” “Shadow tolls” are payments made by the host government to the contractor on the basis of traffic flows at predetermined points along the roadway.

A main difference between DBFO and a BOT arrangement is that no actual tolls are collected from road users. In a BOT arrangement, the private sector recovers its costs through toll or fee collection, and there is no cost to the government for the construction of the project. With DBFO, the cost of the project, in the form of annual payments, is still ultimately paid by the host government. This means that there is still a cost to the taxpayer with a DBFO arrangement. However, the cost of a DBFO project is less than the traditional method because efficiencies from private operation and construction reduce the overall cost of the project. A DBFO contract typically offers some protection to the private sector operator in the event that the public sector partner changes the conditions under which the road operates. This provides protection if other competing roads are upgraded during the contract period, thus reducing traffic flows.

Lease-Renovate-Operate-Transfer (LROT) is a partnership method that is used when a government already owns a facility that needs to be modernized. The private sector partner pays a rental to government and agrees to renovate the facility. In exchange, the private sector partner is granted a concession to operate the facility for a fixed period of time and to charge a fee for the service.

Table 1: Models of Public-Private Partnerships

DB	Design-Build	When one entity makes a contract with the owner to provide both architectural/engineering design services and construction services.
BOT	Build-Operate-Transfer	A concession is granted to a constructor to design, finance, maintain, and operate a facility for a period of time. The constructor recoups the cost of the project by collecting tolls during the life of the concession period.
BTO	Build-Transfer-Operate	A private developer finances and builds a facility and, upon completion, transfers legal ownership to the sponsoring government agency. The agency then leases the facility back to the developer under a long-term lease. During the lease, the developer operates the facility and earns a reasonable return from user charges.
BOOT	Build-Own-Operate-Transfer	Ownership of the facility rests with the constructor until the end of the concession period, at which point ownership and operating rights are transferred to the host government.
BOO	Build-Own-Operate	Resembles outright privatization. Projects of this type are often let with no provision for the return of ownership to government.
DBFO	Design-Build-Finance-Operate	A constructor is responsible for the design, construction, maintenance, and financing. The constructor is compensated by specific service payments from government during the life of the project.
BLTM	Build-Lease-Transfer-Maintain	In this type of arrangement, a facility is typically designed, financed, and constructed by the private sector and is then leased back to government for some predetermined period of time at a pre-agreed rental.
LROT	Lease-Renovate-Operate-Transfer	This model is for facilities that need to be modernized. The private sector constructor pays a rental to government and agrees to renovate the facility. In exchange, the constructor is granted a concession to operate the facility for a fixed period of time and to charge a fee for the service.

Understanding Models of Public-Private Partnerships

Traditional Model

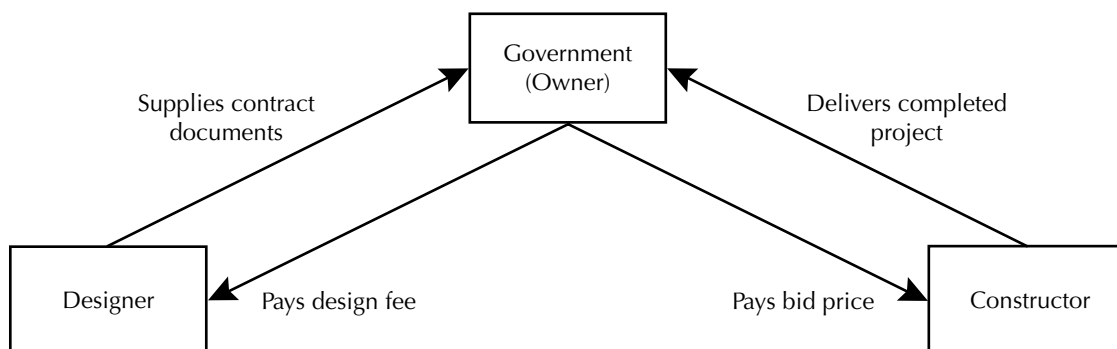
Before examining models of public-private partnerships, it is important to first understand the traditional model. In this model, the infrastructure is controlled by government agencies including many different types of facilities, such as roads, bridges, airports, hospitals, and prisons. The traditional manner of constructing government infrastructure includes a separate contract for design services, on a negotiated fee basis, followed by a separate contract for construction services, usually awarded on a competitive bid basis.

In traditional competitive bidding, the constructor with the lowest bid is selected to perform the project. The constructor is then obligated to perform the construction for the low bid amount unless design changes require change orders for additional work. Figure 2 shows the contractual arrangement-

ments found using the traditional format. Recently, many government agencies have sought out new project delivery methods due to the many inherent drawbacks of the traditional construction process.

Chief among the problems encountered with the traditional method is the potential to select a constructor that has made an unrealistically low bid. This may result in low-quality workmanship on the project because the constructor does not have the funds to properly complete the project. Additionally, the competitively bid project is often characterized by adversarial relationships between the government owner, the designer, and the constructor. Responsibilities are fragmented and shared, and the owner is placed in the position of being the arbiter of disputes. The traditional model also has the significant drawback that construction cannot commence until after the design is completely finished.

Figure 2: Traditional Contractual Relationship



Various factors, as discussed in the previous section, are driving government owners and the construction industry toward various non-traditional project delivery systems including public-private partnerships (PPPs). Government agencies are seeking alternative contracting procedures in response to quality and productivity concerns. These factors include:

- Demand for better quality and continuous improvement in project delivery
- Demand for more innovative services and products
- Desire to avoid the legal entanglements of adversarial relationships
- Desire for better handling of risk on projects
- Desire to have fewer delays and faster project delivery schedules (ASCE, 1992)

There are a number of methods available that can address the problems of competitive bidding. This paper discusses a continuum of methods from design-build through privatized procurement methods. The methods vary in the amount of risk they transfer from the government agency to the contractor. Under traditional methods, most risk is accepted by the government agency. With increasing privatization, the risk is more equally spread between the government and the contractor.

We are in an atmosphere where government agencies are considering the option to privatize government services in order to reduce cost and streamline government. The confluence of rising infrastructure needs and social demands, combined with governmental budget constraints and public resistance to tax increases, has made it essential for public authorities to consider turning to the innovative qualities and access to operating capital possessed by the private sector (NCPPT, 2002).

In the past, the focus has been on a government agency buying a project and then assuming full control for operations and maintenance. Now, new methods of procuring infrastructure projects allow the private sector to construct new facilities and then also maintain and operate them. PPPs are increasingly being employed as a technique of constructing projects. The new methods available tend to “privatize”

Flexibility in Selecting Project Delivery Methods

Proper selection of a project delivery method is a major step toward achieving a successful project. Many owners find themselves faced with the dilemma of choosing a contracting method without being certain of the consequences resulting from the choice (BFC, 1995). In selecting the most efficient contracting method, government owners should consider the following major project elements:

- Ability to define the scope of work
- Concealed or unforeseen conditions
- Labor disputes
- Significant changes in the work
- Suitability of funding
- Project risk

An owner must select the most appropriate contract arrangement to prevent these factors from becoming a detriment to the project. Alternative methods of contract delivery provide the flexibility to handle many of the problems that arise. A barrier to the implementation of alternative techniques has been the slowness of public sector owners to adapt these techniques for infrastructure procurement. Federal agencies now have greater freedom to choose alternative methods of project delivery. The FY 1996 Defense Authorization Bill had provisions that established the procedures for the procurement of design-build projects. This allows federal contracting officers to use design-build whenever the situation merits its use (DSIA, 2000). However, many states are still tied to the traditional method of low-bid construction. The trend toward public-private partnership appears to be increasing the need to have alternative project delivery methods available for use in the public sector.

The Committee on Management and Contracting Alternatives of the Building Futures Council has concluded that the traditional project delivery process in which finance/design/construction and operation are treated separately may not be as efficient for owners in certain projects as alternatives like design-build or Build-Operate-Transfer (BOT) projects. The traditional method of procurement is not sufficiently flexible to accommodate the trend toward PPPs. The disadvantages of the use of the rigid traditional method, particularly by state governments, now outweigh the perceived benefits. Given the huge task of renewing the public infrastructure in the United States—and the limited resources available to do so—public agencies should be encouraged to develop and utilize alternative project delivery methodologies where they increase efficiency and decrease cost (BFC, 1995).

more and more aspects of projects. These projects can be seen as partnerships between government agencies and the private sector. Thus the term PPP is often used when describing these projects.

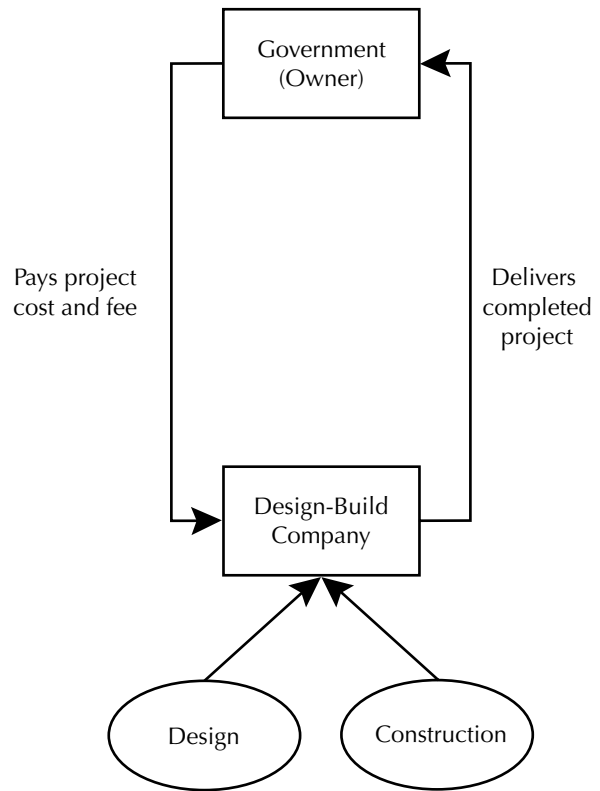
Design-Build Model

With design-build, a single contractor is selected to provide both design and build services. This has several advantages over traditional methods of selecting a separate designer and contractor. The major advantage is that disputes between the design team and construction forces can be handled internally to one company. It is believed that this results in significant time savings on large, complex projects. Additionally, the coordination between the design and construction phases is enhanced by having one company responsible for both design and construction. Figure 3 illustrates the design-build contractual relationship, in which a single company is responsible for both design and construction. The owner pays the project cost and, in return, receives the completed project from the design-build contractor.

With design-build, the owner retains a single entity that provides both design and construction services for a project. The entity may be a consortium of a contractor and a designer, or a single organization, depending on the type of construction. U.S. federal agencies acknowledge two major differences between design-build and “traditional” project delivery. Most importantly, with design-build, project control is in the hands of a single entity from concept through design and construction. A second difference between design-build and traditional methods is that the project price is agreed upon at an early design level. With design-build, the price is often set at concept or early schematic design (10 percent to 30 percent design completion level). The traditional method of construction requires 100 percent completed design documents, and the contract price is not known until complete bids are submitted (ASCE, 1992).

For the design-build process to be used successfully, the owner must clearly define the needs and requirements of the project so that they are understood by the design-build contractors submitting proposals on the project. This may include some or all of the fol-

Figure 3: Design-Build Contractual Arrangement



lowing: detailed space and equipment requirements, site surveys, soil borings, outline specifications, budget parameters, and scheduling requirements.

Benefits of Design-Build

There are several possible benefits that can be found in the use of design-build projects for government agencies. They include:

- Design-build projects establish a single point of contact for the government owner, which reduces disagreements over project responsibility.
- Design-build can potentially reduce project delivery time. Due to direct collaboration between the designer and constructor, construction on some phases of the work can begin while other phases are still in design. This can allow for fast tracking of projects.

- Design-build lowers the number of change orders versus traditional competitively bid construction. Because the same consortium performs design and construction, it eliminates the need for formal change orders that would occur using the traditional format.
- Design-build may lower project costs by reducing the time for construction and therefore reducing construction overhead costs.
- Design-build can foster innovative solutions because the design and construction teams are pursuing common goals (ASCE, 1992).

Data from the Department of the Navy shows that design-build can save 15 percent in dollars and 12 percent in time over conventional procurement. For projects using non-appropriated funds, the Department of Defense has saved 18 percent in costs and 14 percent in time over a three-year period (DBIA, 1996).

A study by the University of Florida of a Florida Department of Transportation design-build project showed that design-build under a single contractor actually reduced the duration of the project. Design time was 54 percent faster and construction time was 18 percent faster than traditional projects (Henk, 1998).

Possible Design-Build Drawbacks

One of the primary criticisms of design-build contracting is the possibility that inferior materials could be substituted. This is possible on projects where the government owner lacks the technical sophistication to assemble and coordinate a thorough project description (e.g., performance specifications in a scope of work package). The scope of work package is included as part of the Request for Proposals (RFP) for design-build projects. A contractor-dominated design team could encourage the owner to accept low first cost materials without regard to their life-cycle performance, particularly if the design-build selection has been based solely on price.

Loss of the independent professional designer can be a drawback for some owners. The owner may not receive the same type of advice from a designer who is part of a design-build entity and has a direct financial interest in the construction of a project (ASCE, 1992).

Federal Legislation and Design-Build

Recent federal legislation has legalized the application of a two-phase design-build process for federal procurement wherever it is deemed appropriate. The two-phase selection procedure enables federal contracting officers to use the design-build method of project delivery whenever the situation merits. Two-phase selection consists of proposers submitting qualifications in response to an RFP without including any cost or detailed design data. Then, three to five of the bidders chosen as most qualified by the agency are selected to bid in the second stage. The second stage evaluation includes price, technical approach, design solutions, management plans, and other criteria (DBIA, 2000).

Barriers to Design-Build Use

Some government agencies do not allow the use of design-build contracts. A 1996 Design-Build Institute of America study found that only 27 states permitted the use of design-build contracts (DBIA, 1996). Few if any laws expressly prohibit design-build. Generally, there are no statutes that prohibit state and local governments from engaging a single firm to provide both design and construction services. However, many states do indirectly preclude the use of design-build by requiring separation of design and construction, and by requiring that construction contracts be awarded to the lowest possible bidder only after a project is fully designed. The preference for separate design and construction contracts, as well as cost-based selection, is decades old and based on concerns over waste and abuse that now might be outweighed by requirements of efficiency, in addition to cost and time savings (BFC, 1995). Many organizations such as the Design-Build Institute of America continue to assert pressure on state governments to allow the use of design-build contracts.

Design-Build Examples

Design-build has mainly been employed for building projects. However, we have seen the recent application of design-build to some high-profile civil engineering projects. A primary example is the I-15 highway project in Salt Lake City, Utah. The \$1.6 billion expansion project was completed under budget and ahead of schedule. A special permit was required from the Utah legislature to allow

a design-build project. The project involved the reconstruction of the 17-mile interstate into a 12-lane superhighway for the Olympic games. A primary lesson learned by the government agency, the Utah Department of Transportation (UDOT), was to entrust the contractor with more flexibility. For example, UDOT had specified that a state road could not be closed at any time, but the contractor suggested it could complete rehabilitation a year early if allowed to close the road for four months. UDOT agreed and the strategy worked (Cho & Sawyer, 2001).

An example of a government building constructed using design-build is the U.S. Courthouse in Shreveport, Louisiana. Design-build was chosen because of the need to meet a strict budget and to expedite delivery within 24 months of notice to proceed to coordinate with the expiration of existing leases for the courts' space. The General Services Administration (GSA) utilized the services of an architect/engineer to develop an RFP. The RFP included schematic plans, a room-by-room statement of requirements for finishes, and technical performance specifications. The level of detail in the RFP reduced the number of unknowns during design, resulting in few changes to the budget and schedule as proposed.

The proposers were required to submit floor plans and narratives from the various disciplines, and exterior and interior renderings. An evaluation panel included representatives from every discipline. This was a one-phase selection process, with 14 teams submitting proposals. Selection was based on best value, not price. The winning proposal submitted more than the required drawings and renderings. The project was completed on a fast track schedule. The success of the project was due to the excellent working relationship between all project participants (DBIA, 2000).

Warranty Contracts

Warranty contracts are a form of performance-based contract where the contractor assumes post-construction performance risk. That is, for a project involving highway repaving, the contractor would warrant the paving work done, and return and fix any potholes or pavement distress for a specified number of years. Annual inspection of

the end product replaces the typical quality control/quality assurance specification found in these maintenance projects. The purpose of warranty contracts is to improve quality, augment government agency expertise, redistribute performance risk, and reduce agency design and inspection personnel (Queiroz, 1999).

The state of Virginia has used warranty-based contracts in combination with design-build to form design-build-maintain contracts. The builder designs and builds the project and also includes long-term warranties for the maintenance of the project (Angelo, 2002). Combined with design-build projects, warranties offer a way of forming a PPP for the maintenance of a highway. The owner pays for the initial project and saves on maintenance costs, which are borne by the private sector.

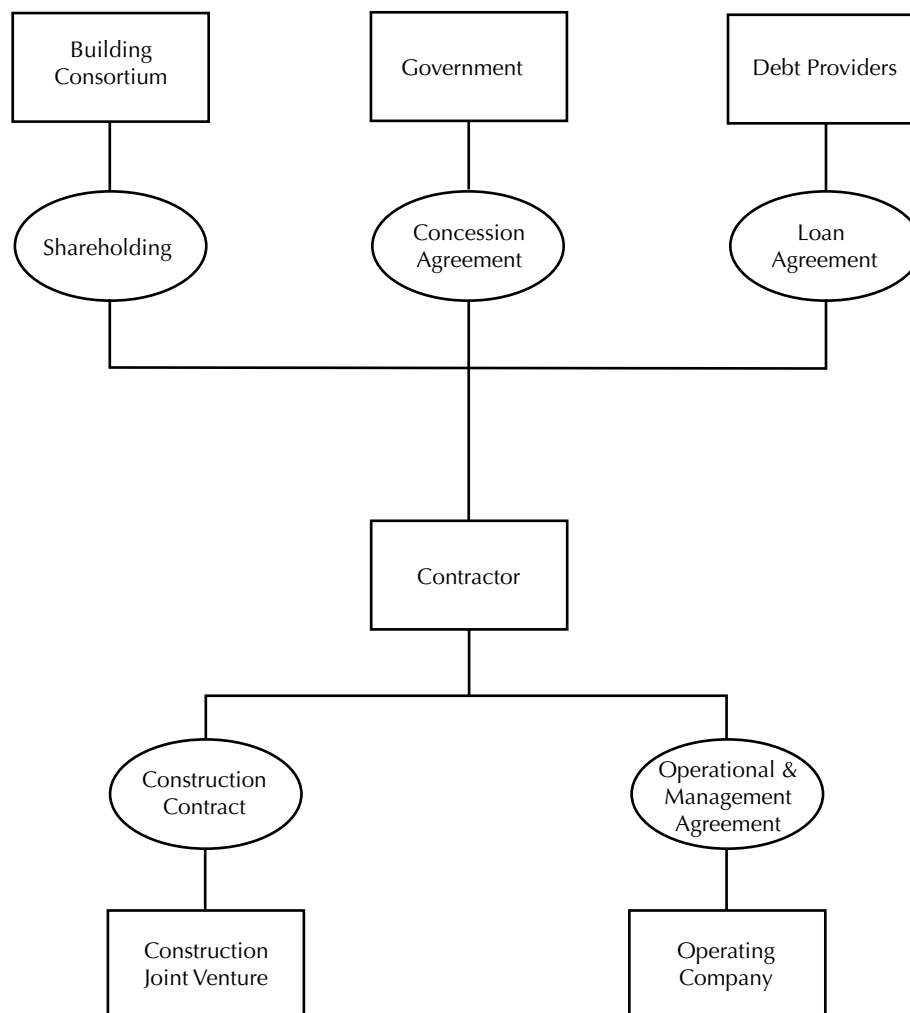
Build-Operate-Transfer Model

Structure of Build-Operate-Transfer Arrangements

PPPs on large projects require consortiums of designers, builders, financiers, and other disciplines to form a concession company. The arrangements can be complex, and there is no fixed structure for concession companies or the form of contractual obligations between parties. Figure 4 shows the structure of a BOT project in which a contractor has several agreements with different parties. A bidding consortium of companies owns the contractor. The contractor also has a concession agreement with the host government that allows the contractor to take control of the facility for a given period of time. Loan agreements are obtained from various debt providers to finance the project. In the construction phase of the project, the contractor has a contract with joint venture construction companies to construct the project. Finally, the contractor has a contract with an operating company to operate and manage the facility during the concession period.

Understanding Concession

A concession is a right, privilege, or property granted by the government.

Figure 4: Relationships in a BOT Concession Arrangement

Typically, the contractor enters into four contractual agreements:

- A concession agreement with the host government.
- A construction contract, usually of the design-build type. The construction company may be a member of the bidding consortium.
- An operations and maintenance agreement with the firm that will be responsible for operating the facility. The operating company may be a member of the bidding consortium.
- Loan agreements. All loan agreements are entered into directly by the concession company. All funds from the banks flow through the concession company, not directly to the construction or operating companies (Hamilton, 1996).

Smith (1999) has identified five high-level factors that appear to be necessary for each major participant in a BOT project to have the maximum chance of achieving their goals. First of all, there must be a genuine desire for a win-win solution with common agreement among the parties as

to their mutual and individual objectives. A BOT approach requires more teamwork than conventional contract types. Secondly, a complex BOT requires a strong, persistent, and persuasive project leader to fight for the project. Thirdly, there should be adequate and accurate data and risk assessment of both the procurement and operational phases, with responsibility for managing the risks placed with the party best able to control them. Fourthly, an accurate calculation of the project's economics is necessary, including length of concession, and assessments of the influence on income and expenditure of project risks. Finally, choice of the correct procurement methodology is important for the construction phase. Consortium contractors often perform the construction in a design-build format.

In BOT projects, the document that defines the relationship between the host government and the consortium building the project is the concession agreement. It establishes the concession rules and the contractual rights of the main parties. The principal issues that are dealt with in a concession agreement include:

- The nature and length of the concession, scope of the work, and operation of the completed facility
- A specification of what is to be provided
- The extent of permitted variations to the specification
- The performance standards to be achieved
- The tolls, prices, or payments to be charged, together with any arrangements for adjustments
- Provisions to ensure the concessionaire's rights in the event of changes to any enabling legislation and any payments that might accrue therefrom
- Provisions for the termination of the contract
- The circumstances in which the grantor of the concession will be permitted to take over the concession, and the rights of the parties should this occur before the end of the concession period (Smith, 1999)

The decision to create a concession requires a firm government policy. A successful concession requires a feeling of partnership between the government

and the concession company. Government support of concession arrangements can be given in several different ways:

- Creating the appropriate legislative structure within which the concession can operate effectively.
- Providing an equitable regulatory environment in which tolls can be set in an objective manner, so that a reasonable return reflecting the balance between risk and reward can be earned by the concession company.
- Protecting the concession companies from competition, at least during the early years of operation.
- Helping the concession company to overcome bureaucratic opposition to the project.
- Developing a clear and effective program to allow public participation in the planning process and to deal with environmental issues.

Advantages of BOT Projects

BOT projects are typically applied to projects for the construction of utilities and transportation infrastructure. They have several advantages for the host government agency and its citizens:

- "BOT allows infrastructure projects to be obtained at little or no cost to taxpayers."
- "The government will incur little risk because there are generally sufficient bonds in place and sufficient letters of credit on hand to ensure completion of the project" in the event of default by the private sponsor before project completion.
- "The private sector can usually move preconstruction and construction along more rapidly than the public sector, and the construction cycle is more rapid."
- "The sponsors must operate and maintain the facility for a period of time exceeding 20 years," therefore the initial construction quality of the facility will be high.
- "General taxes will not have to be increased, nor will revenue bonds need to be sold to finance the project."

- “Only the users of BOT facilities pay the required tolls. The cost to society is borne by those who benefit from the project, not by the taxpayers. Citizens can elect alternate routes if toll rates are unreasonable, which exerts pressure on the BOT consortium” to maintain the facility (Levy, 1996).

Risks to BOT Concessionaires

Some members of a BOT consortium could make substantial profits from their participation in an infrastructure project. However, there are several risks that can occur, particularly for international projects in developing countries. Political instability in the host country is a concern at all stages of a BOT project. Because most concessions are from 20 to 40 years, long-term political stability is important. There is also the risk of significant cost overruns on a BOT project that may change a project's pro forma. If additional financing is not available, the project can come to a halt or end in default. There is also the risk of unfavorable currency devaluations that can cause a BOT consortium to pay back loans with devalued revenue.

Another risk is the level of the usage fee set for a facility. Toll rates for concession-type highways set by the Mexican government were about eight times higher than comparable tolls in the United States. This resulted in increased toll jumping. Finally, drastic changes in demographics over the concessionary period may substantially affect revenue. A BOT consortium's source of revenue is based upon projections of the number of consumers who will use a facility. If the number of consumers is less than projected, it can have disastrous effects on the profitability of the BOT venture (Levy, 1996).

Examples of Public-Private Partnerships around the World

Public-Private Partnerships for Highways in the United States

Most of the noteworthy BOT projects constructed in the United States have been toll highways. The environment in the United States is becoming more favorable for the development of toll road public-private partnerships due to the need to find innovative methods of providing funds for new highway construction. One of the primary impetuses for toll road development was the Intermodal Surface Transportation Efficiency Act (ISTEA) passed in 1991. The act expanded toll facility eligibility for federal aid to include construction of new toll facilities, reconstruction, resurfacing, rehabilitation, and conversion of some facilities to toll roads. ISTEA allowed the commingling of federal, state, and private funds and the sharing of responsibility between the public and private sectors. The act also allows both the public and private sectors to design, finance, construct, and operate new highway facilities and to participate in the repair and expansion of existing facilities (Levy, 1996).

The newer TEA-21 transportation legislation continues the encouragement of PPPs found in ISTEA. TEA-21 provides opportunities to utilize private funds through innovative financing methods. These innovative financing methods are intended to encourage PPPs for large highway and bridge projects by reducing costs and sharing risks between the public and private sectors (Ruane, 1998).

The construction of new toll highways by the private sector has several benefits. PPPs allow the construction of highways that could not be funded

by the government. They transfer risks of delays and construction cost overruns from the government and the taxpayer to the private developer. They also assure the highest quality construction because the private developer is responsible for maintenance for 30 to 40 years (Levy, 1996).

The Dulles Greenway Project

A primary example of a BOT project in the United States is the Dulles Greenway, which was opened in 1995. The Dulles Greenway is a toll road that was built in Virginia using the BOT concept. The road extends 14 miles from Dulles International Airport to Leesburg, Virginia. The roadway connects to the existing Dulles Toll Road. The road is a four-lane limited-access highway within a 250-foot right of way. It is financed, built, and operated by a private consortium.

The road required enabling legislation in the Virginia Assembly to establish the prerequisites for construction and operation of a toll road by a private company. A commission was set up to regulate applicants for toll roads, to supervise and control toll road operators, and to have responsibility for approving or revising toll rates charged by operators.

Autostrade International S.p.A. is a constructor, concessionaire, and operator of extensive networks in its home country, Italy. It is a general partner in the Greenway corporate entity and serves as the operator of the Greenway. Automated toll collection techniques are employed along with traditional manned toll collection booths.

The total cost of the project was estimated at \$326 million. Of the initial \$68 million investment by the consortium partners, \$22 million was for equity financing and the remaining \$46 million provided access to various lines of credit that would serve as guarantees against project risks. A consortium of 10 lending institutions provided long-term financing in the amount of \$202 million.

The Greenway's primary benefit is that it allowed the roadway to be constructed in a period when no government funds were available for the project. Without the use of private sector funding, the project would not have been constructed. In addition, the project is freestanding and requires no government support. Fees for the use of the facility are only collected from actual road users (Levy, 1996).

BOT Highway Projects in California

California has constructed several toll roads using the BOT concept. One project, the Riverside Freeway, involved the conversion of the median strip to an all-electronic-toll four-lane express highway with two lanes in each direction. Commuters can choose to take the stop and go lanes or pay up to \$3.50 on the median "express" lanes. The median road is the world's first fully electronic toll road, with tolls that vary with demand (Poole, 2000).

Opened in 1995 with a 35-year franchise, the 10-mile lanes were developed for \$126 million by a team led by a subsidiary of the general contractor Peter Kiewit Sons, Inc. In 1998, the team made plans to sell the lanes to a nonprofit corporation it helped create. The developer team was attempting to withdraw from the project after only a few years, even though it had a 30-year commitment. Public opposition ended the proposed \$244 million deal, which would have refinanced the project with tax-exempt bonds, thereby reducing interest rates on the \$100 million debt and allowing carpools to resume using the toll lane at no charge. Critics charged that the deal was not at arm's length so the price might have been high, resulting in excessive debt service and toll rates higher than necessary. The developer would have made double-digit returns on investment, even though the project had been only marginally profitable.

This example illustrates some of the dangers of BOT to governments. Although the road project is

a success, the developer does not want to stay for the agreed-upon concession term. The government is left with a less-than-willing partner. The enabling legislation enacted by the state of California did not include provisions for the exit of a developer. Clear public safeguards are needed before infrastructure projects of this type can be sold.

Some states have more flexible laws than California for the establishment of these BOT ventures. In particular, some states permit a mix of public and private funds to leverage limited state funds with private capital. Also, such measures would permit the use of nonprofit corporations and tax-exempt debt (until Congress permits private infrastructure developer/operators to issue tax-exempt bonds).

Public-Private Partnerships for Infrastructure in Other Countries

Toll Systems in Europe

Toll systems are in widespread use in eight European countries for roads and/or bridges and tunnels: Austria, Denmark, Spain, France, Greece, Italy, Norway, and Portugal. It has been found in the European countries that a BOT approach and toll systems are increasingly recognized as the most efficient means of replacing taxpayer money with user money. The State budget contribution to funding of the French national road system dropped from 56 percent to 22 percent, while toll revenue increased from 32 percent to 57 percent over the period 1973 to 1995. Toll roads allow the application of the user-payer principle. The European Commission as a matter of policy indicates that fees for infrastructure use should be linked directly to the costs that users impose on infrastructure and other citizens.

Europe has both public sector and private toll road concession companies. There are currently 63 state-owned concession companies managed by the public sector and 28 privately owned concessions. Out of a total of 17,009 kilometers operated under concessions, 4,548 kilometers are run by private companies (Bousquet, n.d.).

BOT Highway Projects in Argentina

Argentina has used BOT contracts to rehabilitate major sections of its road network. The goal of the program was reconstruction and maintenance of

existing roads and a reduction of the public support required for highways. Bidding for the projects was competitive. In return for the right to collect tolls, the concessionaires were required to undertake a program of rehabilitation, maintenance, and capital improvements. There was some controversy with these projects because tolls were allowed to be collected before rehabilitation work was completed. The proper oversight mechanisms were not in place from the central government agency. This illustrates the importance of developing the proper relationships between the government and private sector to ensure project performance (Queiroz, 1999).

Hong Kong BOT Infrastructure

Several BOT projects have been constructed in Hong Kong. Four tunnels and a 10-kilometer toll road have been completed in Hong Kong since 1972. The government has identified a number of possible future schemes, and it would appear that the BOT method will be used for some time to come (Smith, 1999).

An example of a successful BOT project in Hong Kong is the Tate's Cairn Tunnel. In February 1988, the Hong Kong government passed a special ordinance to grant a 30-year franchise to a private sector consortium led by the Japanese construction company Nishimatsu. The project is the longest road in Hong Kong, a 4-kilometer twin tube tunnel with four lanes and approach roads. The project was completed two months ahead of schedule in June 1991. Total project cost was HK\$2.15 billion (U.S.\$276.5 million) (Pyle, 1996).

The tunnel was financed completely by the private sector. Shareholders contributed equity of HK\$600 million. This translated to a relatively conservative debt-to-equity ratio of 2.6:1. The project's financing structure adequately addressed the major project risks. Precompletion risks ran for the relatively short 18-month construction period. The construction risk was low because the tunneling method used was well known. The contractor risk was mitigated by the good reputation of the contractor and by a delay penalty of HK\$400,000 per day. The cost overrun risk was overcome by several guarantees from the shareholders. To ensure project quality, a 10-year performance bond put up by the contractor addressed performance risk.

The post-completion risks ran for the rest of the 12-year loan period. Interest rate risk was addressed by the purchase of an interest rate cap by the shareholders. Cash flow risk was mitigated by pre-approvals from the Hong Kong government to increase tolls over time.

This example indicates the many areas of risk transfer that must be considered with a BOT contract. It also shows that expertise and cooperation are required from experts in construction, finance, and design to successfully complete a large project of this type.

BOT Projects in Developing Countries

BOT projects are frequently used in developing countries as a means to obtain funds for much needed infrastructure projects. The types of projects funded are diverse. For example, the Philippines has undertaken BOT projects for shipping terminals, telecommunications, power generation, and industrial parks. With increased urbanization, developing areas require significant inputs of infrastructure investment. It is anticipated that much of this investment can be in the form of PPPs using a BOT form of contract.

Public-Private Partnerships for Health Care

Globally, health expenditures have risen from an average of 3 percent GDP in 1950 to 8 percent in 1999. Hospitals account for 30 to 50 percent of health expenditures. Public funding has not kept pace with the growth in spending. Constraints on public funding, combined with rising costs, have forced public hospitals to cut costs wherever possible while still trying to provide universal access to public patients. Some governments have turned to public-private partnerships to bring private sector efficiency into public hospitals (Taylor & Blair, 2002).

Hospital Partnerships in Australia

In Australia, federal and state governments have completed 15 BOO transactions in which a private firm builds, owns, and operates a public hospital. With a BOO transaction, the facility is constructed and operated by the contractor with no provision to return the facility to the government agency. It resembles complete privatization. One example

from Australia is the Mildura Base Hospital. The government selected a private operator to design, build, own, and operate a new 153-bed hospital for a 15-year period. The operator provides clinical services to all patients who come to the hospital at no charge. In return, the provider receives from the government annual payments based on the forecast mix of clinical patients. For quality control purposes, the operator is required to maintain the hospital's accreditation, provide monthly reports on clinical indicators, and have high-volume treatments reviewed by external peers. The contract includes penalties for noncompliance. The ultimate sanction allows the government to step in and run the hospital. The results of the hospital's operations have been impressive. Capital costs for the new hospital came in at 20 percent below equivalent public sector comparators. All performance targets have been met, and patient volumes have been increased by 30 percent in the first year (Taylor & Blair, 2002).

Public-Private Partnerships in British Hospitals

The British government has used public-private partnerships in financing, construction, and management for many public hospitals over the past decade. Under the program, a regional health district requests bids for a private firm to finance and construct a new hospital, maintain the facility, and provide nonclinical services such as laundry, security, parking, and catering. The operator receives annual payments for 15 to 25 years for its capital costs and the costs of maintenance and services. In this model of PPP, the public sector remains responsible for all medical services.

The first hospital project constructed in Great Britain using a PPP approach was the New Dartford and Gravesham Hospital. The private consortium was required to design, construct, and finance a new 400 in-patient bed hospital and then to maintain the hospital and provide support services for a period of up to 60 years. The National Health Service Trust estimated the discounted cost of the contract would be £177 million over the first 25 years that the hospital is in use, after which the National Health Service Trust could terminate the contract without penalty if it decides to close the hospital. It is expected that cost savings of 3 percent, or around £5 million, will be obtained, compared with an equivalent project under conventionally funded procurement. Some hospital

projects have higher levels of cost savings, but savings on this project were reduced by some errors made during procurement—in particular, only one final bid was received on the project (COPA, 2000).

Public-Private Partnerships for Schools

In the United States and abroad, PPPs have been adopted as an innovative means to allow communities to upgrade their public school facilities at substantially lower costs and in less time than purely governmental efforts require. School construction can be more timely using PPPs. PPPs are unencumbered by the multitude of regulations that govern public-sector bond offerings, voter approval, and review of competitive bids. One partnership school in Florida, Ryder Elementary Charter School, was designed and built in less than nine months compared to an average of five years for traditional elementary schools built in the state. The school is housed in a facility adjacent to the Ryder System corporate headquarters building. Introducing competition and the profit incentive into the process of school construction rewards expertise and efficiency. This can result in construction costs that generally will be much lower than the public sector construction process (Utt, 2001).

In recent years, public school systems in Nova Scotia, Great Britain, and some U.S. jurisdictions have implemented programs or pilot projects to encourage private investors to construct (and own) school buildings to the school system's specifications. In turn, the private partner leases the facility to the school system at rent levels below what the public school system would have incurred had it built and operated the school.

Nova Scotia offers an example of the use of PPPs for school construction. By the end of 1998, as many as 41 new schools had been completed or approved for construction under the Nova Scotia PPP program. The Nova Scotia projects are constructed using a Build-Lease-Transfer-Maintain (BLTM) format. In a BLTM arrangement, a facility is typically designed, financed, and constructed by the private sector and is then leased back to the government for some predetermined period of time at a pre-agreed rental.

The schools are completely operational when the lease begins, complete with all classroom furnishings and required computer equipment. The school system provides the staff for the school and maintains full control over curriculum and all educational services. The major advantages for the Nova Scotia school system are the speed with which schools can be upgraded and the average 15 percent cost savings achieved through leasing arrangements with the developer/owner. The school system leases the facilities for 20 years at a predetermined rent that is lower than the capitalized cost of construction and furnishing. The developer/owner covers the additional costs and earns a profit in the use of the facility during times when it is not used by the school system. In effect, the developer/owner leases the school to the school system during the daytime as negotiated. The developer/owner is then free to lease the school for other approved uses at other times of the day as well as on weekends and summer holidays. The purposes that the school may be used for are carefully spelled out in the lease with the school system and typically include education-oriented activities such as for-profit trade schools, and meeting space for civic or political groups (Utt, 1999).

The Pembroke Pines Public Charter School in Florida illustrates the significant construction efficiencies that can be achieved by a private developer. Pembroke Pines teamed up with Haskell Educational Services (HES) of Miami, a firm that specializes in designing and constructing assisted-living facilities, to build and operate its new facility. The cost of building the school was between 22 and 34 percent below other recent elementary schools built in Pembroke Pines. While HES designed and built the school, the community financed it (with tax-exempt borrowing), owns it, and leases it to HES to operate as a charter school. This differs from the Nova Scotia model, where the developer owns the school and leases it to the school system.

HES receives a state reimbursement of \$3,750 per pupil per year, which is not sufficient to pay both school operating costs and the facility lease. HES generates the additional revenue to cover the remaining costs and earn a profit by offering fee-based after-hours programs at the school. At present, such programs include services like day

care, enrichment, and other education programs for students. HES achieved construction cost savings through design efficiencies including reconfiguring special-purpose rooms that otherwise would stand idle during the school day into multipurpose rooms that are used more intensively (Utt, 1999).

Private Finance Initiative in the United Kingdom

Of special interest to those seeking examples of public-private partnerships is the Private Finance Initiative (PFI), now under way in Great Britain. The program was first announced by the British government in 1992 under a Conservative government and has continued by the current Labour government. The intention of the PFI is to bring the private sector into the provision of services and infrastructure that formerly has been regarded as "public." The PFI encourages joint ventures between the public and private sectors.

The purpose of the PFI is to increase the flow of capital projects against a background of restraint on public expenditure. It is aimed at bringing the private sector more centrally into the operation of capital assets, harnessing private sector management skills, and transferring risk away from the public sector to the private sector.

PFI is based upon the premise that rather than government committing capital investment to owning, operating, and managing the means of providing the necessary services, substantially greater economic efficiencies and lower costs might be attained by contracting out the services themselves to the private sector. Rather than owning a school or a prison, the government would simply buy the service it required from the private sector, such as education for a given number of children or custodial service for a given number of prisoners. The PFI would then leave it to the private sector to develop whatever mechanisms and facilities were necessary for the required level of service to be provided.

In a PFI arrangement, the public body becomes the project purchaser. The project is known to provide substantial capital investment, but what the government purchaser seeks to buy is not the facility (road or building) but the service conducted from it. The prime interest of a PFI purchaser is therefore

to find an efficient and reliable operator of the facility. The operator is expected to procure the necessary facilities and to charge the public sector customer for the service. The cost of the service will include an element for amortization of the capital expenditure as well as elements covering profit and risk (RICS, 1995).

Three main types of PFI projects have been identified:

- **Financially freestanding projects**—where the private consortium recoups the full investment through user fees and charges. These arrangements are the same as the BOT format.
- **Joint venture projects**—funded through a combination of public and private sector funds with the private partner retaining a controlling interest.
- **DBFO projects**—where assets that provide public services are designed, built, financed, and operated by a private sector organization and paid for through service charges met by a public body (SP, 1999). DBFO differs from BOT in that the project is paid for by a public body. No user fees are collected in DBFO projects.

Most projects are constructed using some form of DBFO arrangements. This is typical for highways, hospitals, prisons, and schools. Some freestanding projects have been constructed, notably the Skye Bridge and the Birmingham North Relief Road. These freestanding projects collect actual user tolls.

The Construction Industry Council (CIC, 2000) has studied the perceived cost savings of design, build, and operate (DBO) in PFI projects. The median reported total DBO cost saving is in the range of 5 percent to 10 percent. Reported savings are highest (median in the range of 10 to 20 percent) in custodial and transport projects and lowest (median in the range of 5 percent savings to 5 percent increase) for education and health care projects. These are the subjective measurements of both private and public project managers.

PFI Theoretical Issues

There are several issues related to the application of PFI that are controversial. A major issue is the financial justification of PFI projects. It can be

argued that PFI projects offer better “value for money” than a comparable government project because of the theory that private money brings with it better management plus greater incentives to finish projects on time and within budget. Others argue that there is no savings because of cost escalations during construction and that the private sector is no more efficient than the public sector.

Another justification for PFI is that it brings in new money for investments in areas that may otherwise languish, such as schools. That is, PFI can be used for projects where no public money is available and where there is no realistic prospect that a scheme could go ahead within a similar timeframe (Scott, 2001).

One specific element of PFI relates to the cost of borrowing. As the lowest-risk borrower, the public sector is traditionally able to borrow funds at a cheaper rate than private firms. It is then argued that investment funded through the traditional procurement routes will be cheaper than for a private borrower on a PFI project (SP, 1999). For a PFI project to be successful, it must counteract the increased cost of borrowing, adviser’s fees, and private sector profit through innovation and appropriate risk transfer in order to save cost per unit value in the functions of design, construction, and operation. This can be done by reducing the costs of providing similar services, providing an improved service at the same cost, or a combination of both. The reduction of cost per unit value requires the transfer of risk and reward to the private sector, from either private sector efficiencies in production, requiring less input per unit of output, or the purchase or procurement of cheaper units (CIC, 2000). The required cost savings are produced by leaving choice in the project specifications for the private consortium to innovate on the construction and operation of the new facility.

Shadow Toll Concessions

A shadow toll contract enables the public authority to delegate the construction, funding, and operation to a concession company. In this case, the concession company does not collect a toll from the user. The public authority remunerates the concession company, with payment usually made on the basis of utilization of the facility.

The main advantages of a conventional toll concession contract—namely, optimization of the infrastructure with the risks and interim funding carried by the concession company—are maintained with a shadow toll system. Nevertheless, a shadow toll system does not solve the funding problem, as the government authority must pay shadow toll remuneration to the concession company in due course. Shadow toll contracts do not generate new sources of funding. Such an arrangement makes it possible to shift responsibility for the financial package to the concession company (so that the debt is non-public), but the final cost must be borne by the taxpayer (“delayed” budgetary funding) (Bousquet, n.d.).

DBFO on British Highway Projects

Several highway projects in Great Britain have been developed using the DBFO approach. The goals of the British Highway Agency have been to develop a private sector road operating industry and to transfer significant risk from the public sector to the private sector. Additional goals are also to minimize project cost and the risks to the public sector. Contractors on these trunk road projects are paid through a scheme of shadow tolling. The British National Audit Office (NAO, 1998) has produced a report analyzing the first four projects let using DBFO. Projects studied in the report ranged from the widening of 30 kilometers of expressway to the maintenance of 52 kilometers of highway. The report raises some interesting points concerning the DBFO procedures:

- The National Audit Office found that two of the four projects would provide better financial terms than traditionally procured and conventionally financed alternatives. These two projects involved a substantial construction component, whereas the other two principally involve maintenance work.
- The private sector takes significant financial risks on these projects including the entire risk relating to design building and roadway operation.
- The core technical requirements of the project specified by the government owner should not be so detailed as to stifle innovation and cost savings during construction by the builder.
- The bidding process was in three stages. There was a prequalification and then four consortia were selected to bid on each highway project. Bidders were then short-listed. Negotiations were conducted between the government and the bidders. Each bidder submitted a schedule of shadow tolls as a basis of negotiation. The bidder that minimized net present value of the shadow tolls was selected. This format of bidding requires the public sector bidder to estimate traffic flows over a 30-year period.
- A banded system was used to determine shadow tolls. The shadow toll per vehicle is higher for low traffic volumes and lower for high traffic volumes. There is a cap on the volumes for which tolls are collected. This removes the risk to government of traffic volumes being much greater than forecast, requiring a huge shadow toll payment.
- The cost of bidding is very high due to the complex nature of the bidding process.

The advantage of the DBFO method is found principally in the freedom of design left to the concession company, the transfer of risks to the concession company, and the enhanced efficiency resulting from private management. Otherwise, the DBFO method would have no advantage over budgetary funding and would cost more due to more substantial financial expenses, stemming in particular from the required return on invested capital (Bousquet, n.d.).

The Netherlands and Finland have also implemented shadow toll projects that are similar to the British DBFO technique. The Netherlands has adopted the scheme for the construction of tunnels in the western part of the country. The objective is to construct a larger number of tunnels than would be possible using budget sources alone. The “Noord” tunnel was the first for which private funding was adopted. The Dutch State Public Works Department allocated a lump sum of Fl 3.1 million for maintenance and operation over 30 years. This means that any increase in construction, maintenance, and operating costs is borne by the state. The concession company provided the funds for construction and will continue as owner of the tunnel for 30 years, receiving remuneration for the investment according to the number of vehicles using the tunnel and

the agreed tunnel fee. The “Noord” tunnel has been in service since 1992. This form of concession system is under review in the Netherlands following construction of this tunnel, which has been criticized mainly because of excessive transaction costs (Bousquet, n.d.).

London Underground Controversy

The privatization of maintenance for the London Underground has caused significant controversy. One of the prime reasons for the partnership is the desire to provide sustained investment in the underground, which had not been possible using tax revenues. The proposed PPPs will drive private investment of £13 billion over 15 years, with £8.7 billion spent on enhancements and £4.3 billion spent on maintenance (NAO 2000). PPPs are being formed that will designate three consortia to maintain the London Underground. These infrastructure companies are planned to provide long-term investment planning, professional project management, and effective delivery of day-to-day maintenance for an annual payment. The trains and stations will still be run by the public sector. Payment is based on complex performance criteria. A primary fear of opponents of the scheme is that a divided management structure will ensue for the underground that will adversely affect operations and safety. It can be argued that the system will be parceled out to three private companies with little incentive to operate in a unified manner. It is feared that the government agency will lose control over the selection and management of major rehabilitation construction projects. Recent court challenges to the London Underground PPPs have been unsuccessful, and the projects are scheduled to move forward.

This is an example of a complex joint venture PFI project that will require skillful coordination between the public underground and the private contractors performing the maintenance work. It will be interesting to see how the various parties function in actual practice.

Conclusions

This report shows that there are various forms of PPP arrangements for acquiring government projects. Some of the conclusions that can be made include the following:

Conclusion One:

The traditional contractual arrangements of a separate contractor and designer have many drawbacks and do not allow for the application of the various forms of PPP. First among the problems encountered with the traditional method is the potential to select a constructor that has made an unrealistically low bid. This typically results in low-quality workmanship on the project because the constructor does not have the funds to properly complete the project. Additionally, the competitively bid project is often characterized by adversarial relationships between the government owner, the designer, and the constructor. Responsibilities are fragmented and shared, and the government owner is placed in the position of being the arbiter of disputes. Competitive bidding also has the significant drawback that construction cannot commence until after the design is completely finished.

Conclusion Two:

Design-build has been used successfully on many government projects. Its main benefit is that a single organization both designs and builds a construction project. For those projects where government funding is available and a PPP is not desirable, design-build is an acceptable project delivery method. Some legal barriers have existed to the use of design-build by some states and municipalities. These should be removed.

Conclusion Three:

There is a range of levels of privatization of construction projects, starting with little privatization with a design-build project to more complete privatization using a BOT arrangement. Privatization may provide greater efficiency and cost savings by bringing private sector discipline to new areas of project construction, operation, and financing.

Conclusion Four:

BOT contracts are already widely used in the United States and internationally. They are mainly employed for major infrastructure projects such as roads and power generation. There appears to be an increasing interest in toll highway facilities. One of the unique features of BOT projects is that they attract new private investment in the infrastructure. Where projects are privately financed, this attracts new investment funds for projects for which no government funding may have been available. It is a way of building desirable projects without recourse to government funding. It frees up scarce government funds for other uses. Use of BOT avoids the need to increase taxes or effect budget cuts to build much needed infrastructure projects. BOT allows for more infrastructure projects to be constructed that act as an economic stimulus in the area in which they are constructed. BOT should avoid, or substantially reduce, the cost overruns experienced by government agencies when they build infrastructure via the traditional competitively bid method, because the contractual responsibility for design and construction rests with the contractor. Only the users of BOT facilities pay tolls. The cost to society is borne by those who use or benefit from the project, not by the taxpayers.

Conclusion Five:

Shadow tolls used on the British DBFO projects have the disadvantage of requiring the government to fund a project. With BOT projects, the private sector pays for the project. The shadow toll projects require a high level of private sector efficiency to be successful.

Conclusion Six:

Highways and large infrastructure projects are mostly performed using standard BOT and DBFO arrangements. Institutions like hospitals and schools tend to have different privatization arrangements such as BLMT, where the facility is leased back to the government agency. PPP can be used to acquire many different types of facilities. There are a variety of contractual arrangements possible. There are various lease and transfer options that can be used, if necessary, on a PPP.

Many projects are now using both design-build and PPP formats. It is clear that the many advantages of the PPP approach will see an expansion of its use on future projects. It is recommended that the use of PPPs to construct government facilities be increased due to the potential to save taxpayer dollars and increase the efficiency of project delivery.

Bibliography

- American Society of Civil Engineers (ASCE) (1992). *Design-Build in the Federal Sector*. Report of the Task Committee on Design-Build. Washington, D.C.: Author.
- Angelo, W. J. (2002). "VDOT Paves the Way," *Design-Build Magazine*. March 2002. <http://www.designbuildmag.com/June2002/outsidetheboxJune02.asp> (7/18/2002).
- Bousquet, F. (n.d.). *Analysis of Highway Concessions in Europe: French Study for the DERD/WERD*. Washington, D.C.: World Bank. http://www.worldbank.org/transport/roads/tr_docs/hway_conc.pdf (8/21/02).
- Building Futures Council (BFC) (1995). *Report on Design-Build as an Alternative Construction Delivery Method for Public Owners*. Georgetown, Md.: Author.
- Cho, A. and T. Sawyer (2001). "Bulk of Ambitious \$1.6-Billion I-15 Design-Build Job Complete." *ENR: Engineering News Record* 246 (19): 13.
- Committee of Public Accounts (COPA) (2000). *The PFI Contract for the New Dartford and Gravesham Hospital*. House of Commons, Session 1999-2000, Twelfth Report, London: The Stationary Office Ltd.
- Construction Industry Council (CIC) (2000). *The role of cost saving and innovation in PFI projects*. London: Thomas Telford Ltd.
- Design-Build Institute of America (DBIA) (1996). *Survey of State Procurement Laws Affecting Design-Build*. Washington, D.C.: Author.
- _____ (2000). *Guide to the Federal Design-Build Marketplace*. Washington, D.C.: Author.
- Hamilton, M. J. (1996). *Privately Financed Road Infrastructure: A Concession Company's Point of View*. Sub-Saharan Africa Transport Policy Program, SSATP Working Paper No. 26. Washington, D.C.: World Bank.
- Henk, G. (1998). "Privatization and the Public/Private Partnership." *Journal of Management in Engineering* 14 (4): 28-29.
- Lawther, W. C. (2002). *Contracting for the 21st Century: A Partnership Model*. Arlington, Va.: The PricewaterhouseCoopers Endowment for the Business of Government.
- Levy, S. (1996). *Build Operate Transfer*. New York: John Wiley and Sons.
- Middleton, N. (2001). *Public Private Partnerships—A Natural Successor to Privatizations*. London: PricewaterhouseCoopers. <http://www.pwcglobal.com/uk/eng/about/svcs/pfp/ppp.html>.
- National Audit Office (NAO) (1998). *The Private Finance Initiative: The First Four Design, Build, Finance and Operate Roads Contracts*. HC 476 Session 1997-98. London: The Stationary Office.

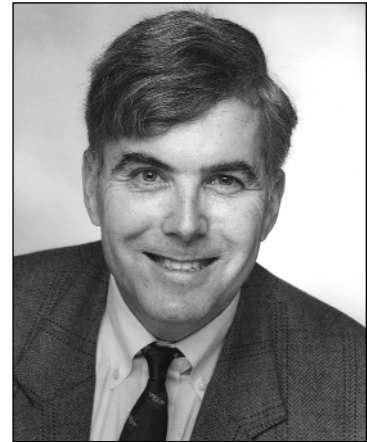
- _____. (2000). *The Financial Analysis for the London Underground Public Private Partnerships*. HC 54 Session 2000-2001. www.nao.gov.uk/publications/nao-reports/00-01/000154.pdf.
- National Council for Public-Private Partnerships (NCPPP) (2002). *For the Good of the People: Using Public-Private Partnerships to Meet America's Essential Needs*. <http://ncpp.org/presskit/ncppp-whitepaper.pdf>.
- Poole, R.W. (2000). "Don't Oversteer on Toll Roads." *ENR: Engineering News Record* 244 (11): 83.
- Pyle, T. (1996). "Project Finance in Practice: The Case Studies." In *Infrastructure Delivery*, edited by A. Mody. Washington, D.C.: The World Bank, 171-190.
- Queiroz, C. (1999). *Contractual Procedures to Involve the Private Sector in Road Maintenance and Rehabilitation*. Washington, D.C.: Transport Sector Familiarization Program, World Bank.
- The Royal Institution of Chartered Surveyors (RICS) (1995). *The Private Finance Initiative: The Essential Guide*. London: Author.
- Ruane, P. (1998). "What you need to know about TEA-21." *Better Roads*. <http://www.betterroads.com/articles/brnov98b.htm>.
- Savas, E. (2000). *Privatization and Public-Private Partnerships*. New York: Seven Bridges Press, LLC.
- Scott, J. (2001). "Is PFI a good deal." BBC News. http://news.bbc.co.uk/1/hi/in_depth/business/2001/ppp/1496562.stm.
- The Scottish Parliament (SP) (1999). *The Private Finance Initiative*. Research Note 99/1. http://www.scottish.parliament.uk/whats_happening/research/pdf_res_notes/rn99-01.pdf.
- Smith, A. J. (1999). *Privatized Infrastructure*. London: Thomas Telford Publishing.
- Taylor, R. and S. Blair (2002). *Public Hospitals: Options for Reform through Public-Private Partnerships*. Viewpoint, Note 241, Washington, D.C.: The World Bank Group, Private Sector and Infrastructure Network. <http://www.iedm.org/library/hospfinal.pdf>. (7/02/02).
- Utt, R. (1999). *How Public-Private Partnerships Can Facilitate Public School Construction*. The Heritage Foundation Backgrounder 1257. Washington, D.C.: The Heritage Foundation.
- _____. (2001). *New Tax Law Boosts School Construction with Public-Private Partnerships*. The Heritage Foundation Backgrounder 1463. Washington, D.C.: The Heritage Foundation.

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