

**PUBLIC-PRIVATE PARTNERSHIPS: LEVERAGING PRIVATE  
RESOURCES FOR THE PUBLIC GOOD**

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 **CENTER FOR PUBLIC POLICY  
AND PRIVATE ENTERPRISE**  
**SCHOOL OF PUBLIC POLICY**

February 2016



The Center for Public Policy and Private Enterprise at the University of Maryland's School of Public Policy provides the strategic linkage between the public and private sector to develop and improve solutions to increasingly complex problems associated with the delivery of public services—a responsibility increasingly shared by both sectors. Operating at the nexus of public and private interests, the Center researches, develops, and promotes best practices; develops policy recommendations; and strives to influence senior decision-makers toward improved government and industry results.

## Preface

The authors of this report are the **Honorable Dr. Jacques S. Gansler and William Lucyshyn**. During a distinguished career, now spanning over 50 years, Dr. Gansler has held many top positions in government, the private-sector, and academia. He served as the Under Secretary of Defense for Acquisition, Technology, and Logistics (the Department of Defense's third-ranking civilian-appointed position), Deputy Assistant Secretary of Defense (Material Acquisition), a member of the Defense Science Board, senior vice president at TASC, and vice president of ITT. As of September 2015, Dr. Gansler is a professor emeritus at the University of Maryland. He previously held the Roger C. Lipitz Chair in Public Policy and served as Director of the Center for Public Policy and Private Enterprise (CPPPE) beginning in 2001.

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In performing its research and developing this paper, the Center was supported by a grant from KPMG LLP through the KPMG Government Institute. The Government Institute was established by KPMG *to serve as a strategic resource for government at all levels, and also for higher education and nonprofit entities seeking to achieve high standards of accountability, transparency, and performance. The Institute is a forum for ideas, a place to share leading practices, and a source of thought leadership to help government address difficult challenges, such as effective performance management, regulatory compliance, and fully leveraging technology.* The Managing Director of the Government Institute, Jeffrey C. Steinhoff, is the former Assistant Comptroller General of the United States for Accounting and Information Management and Managing Director for Financial Management and Assurance at the Government Accountability Office. He served in the federal government for over 40 years before joining KPMG in 2008.

For this project, the Center also had the insights of three KPMG Government Institute Executive Fellows:

- Michael C. Vitale, a Director in KPMG's Federal Advisory Practice and a retired Vice Admiral, who served as Commander of the Navy Installations Command during a distinguished 34-year U.S. Navy career.

- Nicholas J. Greenwood, a Managing Director in KPMG’s Infrastructure Advisory Practice, who has worked closely with governments in the United States and globally, including in the United Kingdom, on a range of defense and infrastructure PPPs.
- Miles R. McNamee, Principal-in-Charge of KPMG’s Defense Advisory Practice, who has 37 years of highly specialized systems engineering, software development, and program management experience and is a retired Army officer with more than 20 years of active duty service.



### **Message from the KPMG Government Institute**

It has been a privilege for the KPMG Government Institute to work with the Center and the authors of this paper, who bring decades of distinguished service and expertise to government procurement and the role of PPPs. In providing a grant to support this project, the Government Institute challenged the Center to develop practical applications for a concept dating back to 1785 in the United States with the founding of the Potomac Canal Company. Established by President George Washington, the company worked to improve the link between transportation and commerce. KPMG has seen first-hand the benefits of PPPs, having worked with countries around the world on PPP solutions, including the United Kingdom, Canada, Australia, and the United States. We see broader opportunities to successfully use this procurement vehicle to achieve better, more effective results in times of fiscal sustainability challenges at all levels of government. At the same time, we have seen the problems that can result when PPPs are not properly conceptualized, structured, and implemented.

Though the benefits of PPPs may have first come to light 230 years ago in the United States, their true promise has yet to be fully realized. This paper attempts to clarify the following issues in order to enhance understanding of the PPP concept, the benefits, and the potential pitfalls:

- What PPPs represent and when and how to best use this procurement vehicle as a means of providing private-sector financing, expertise, and innovation to help address public needs and as a means of reducing costs, accelerating project completion, and adding greater value;
- The range of potential applications of this concept to address government mission requirements; and

- The importance of following disciplined program management processes and making fact-based decisions to gain greater value for both government and the private-sector and to avoid the pitfalls of entering into a PPP without a clear public interest and a solid business case.

Transformative change, which wider use of PPPs would largely represent, is never easy and would require a leadership commitment from policy makers. There is a natural tendency to hold on to the status quo, even when there may be other viable alternatives. The adoption of PPPs is further complicated by laws and budget scoring rules that effectively bar the use of PPPs at the federal level. Yet, in instances where the Congress has legislated PPP authority, there have been successes that otherwise might not have been possible, including, most notably, the Department of Defense's Military Housing Privatization Initiative, which is highlighted in this paper. Given legal restrictions and other barriers to PPP implementation in the United States, the full potential of this procurement vehicle has yet to be realized

Which form of procurement offers the greatest value? This is the question that decision-makers must ask in deciding between a PPP and a traditional procurement. ***We hope that this paper will encourage policy makers to consider the wider use of PPPs—especially in instances where successful outcomes may not otherwise be reasonably achievable.*** In stimulating such discussions, it is neither KPMG's purpose nor intent to advocate for a particular public policy outcome.



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## Executive Summary

The federal government faces daunting long-term fiscal challenges that jeopardize delivery of essential programs and services. In its December 2012 report, *The Moment of Truth*, the bi-partisan National Commission on Fiscal Responsibility and Reform (Simpson-Bowles) concluded that “The problem is real. The solution will be painful. There is no easy way out. Everything must be on the table” (p. 6). State and local governments also face significant fiscal pressure. Absent major policy changes, expenditures will continue to outpace revenues, resulting in growing negative balances that threaten many jurisdictions’ ability to provide services, and invest in much-needed infrastructure.

Against this backdrop, governments have adopted and continue to explore creative cost-cutting and financing initiatives. At the local and state levels in particular, there has been renewed interest in public-private partnerships (PPPs). A PPP is a contractual arrangement between a public agency and a private-sector entity in which the skills and assets of each sector are shared in delivering a service or facility for the public good. Though by no means a panacea, with regard to long-term fiscal sustainability challenges, properly-structured and managed PPPs can help finance and deliver large-scale projects that might otherwise not be feasible for governments to fund and execute. PPPs have enabled governments to expedite project completion, reduce costs, and more rapidly introduce innovation. But they must be properly conceptualized, structured, and implemented to ensure that the benefits outweigh the costs—over both the short and long term.

PPPs share a common attribute: the provision by the private-sector of two or more functions related to an asset, facility, or service. Typically, these functions include financing, design, construction, operations, maintenance, management, logistics, and/or ownership. By “bundling” these functions, the provider can derive efficiencies across the entire scope of work—from design, to materials, to long-term maintenance strategies. These efficiencies can translate to cost savings, higher quality, and faster project completion. Generally, as more functions are bundled, more project risk and responsibility is transferred to the private-sector, spawning greater innovation. Given the magnitude of some projects, and the domains of expertise required, a PPP contract may be awarded to a consortium of companies with experience in different fields.

If reliance on PPPs globally is any indication, there is significant potential for their increased use in the United States. For transportation infrastructure alone, the United

Kingdom financed \$50 billion through PPPs between 1990 and 2006. In the United States, with an economy six times larger and a much more extensive infrastructure footprint, the sum was \$10 billion. Our more limited use of PPPs is against a backdrop of massive, growing unfunded infrastructure needs to address a decaying infrastructure. According to the American Society of Civil Engineers (ASCE), cumulative infrastructure investment needs will total \$2.7 trillion by 2020, rising to \$10 trillion by 2040. Anticipated funding will cover only 60 percent of these needs through 2020, dropping to 53 percent by 2040. The corresponding investment gaps are estimated to total \$1.1 trillion by 2020, growing to \$4.7 trillion by 2040.

PPPs can help bridge this gap; but this will not happen without policy changes, and a will to seriously consider PPPs as a viable alternative. At the federal level, existing laws and budget scoring rules impede wider use of this procurement option. Because PPPs represent transformational and cultural change, they can be difficult to embrace within organizations where the status quo is deeply entrenched. States have expanded the use of PPPs, largely to help finance highways and bridges, relying on subsequent tolling to provide needed revenue. However, there remain 17 states without the legislative authority to use PPPs to deliver transportation projects. Beyond transportation, PPP use has been even more limited; yet, they are applicable to sectors ranging from social services and energy to utilities, technology, and defense.

This report discusses key criteria, derived through an examination of four case studies, which should be used to determine whether a PPP is the appropriate procurement vehicle for a given project. Policy makers need to ask the following questions:

- Is the PPP project conceived to provide a measurable, direct public benefit?
- Will private-sector efficiencies in design, management, construction, and other domains offset higher costs associated with private-sector financing and risk transfer?
- Are project requirements amenable to a diverse array of solutions?
- Can a PPP also facilitate other objectives, such as modernizing while streamlining through consolidation?

This report also provides practical perspectives on establishing a PPP. PPPs can be conceptualized along a continuum that ranges from traditional Design-Bid-Build agreements in which the public sector retains the risk and responsibility to full concession agreements in which risk and responsibility is transferred to the private-sector. The continuum includes consideration of the delivery model, risk allocation, contract structure, payment mechanism, and financial structure. Structuring the PPP using the following framework, which is based on leading practices, can help to ensure success.

1. ***Build a business case:*** Highlight both the quantitative and qualitative rationales and defining the public benefit, both short- and long-term; thereby, avoiding the trap of focusing solely on the short-term impact, whether it be private-sector capital to help finance an urgent project or an infusion of revenue to fill a current budget gap, without ensuring it is in the long-term public interest.
2. ***Select a private-sector partner(s):*** Bundle functions into a single agreement to the extent practical; relying on competition to determine the private-sector provider offering the best value; and developing an education and communications strategy to establish an effective teaming environment.
3. ***Structure the agreement:*** Hold the private-sector partner accountable for outcomes, as opposed to detailed specifications; incentivizing private-sector partner investment by developing longer-term agreements; and establishing dedicated PPP units in agencies and government-wide.

Ultimately, greater use of PPPs will require:

- ***Policy changes and different budget scoring rules, with policy makers coalescing around how to remove obstacles that get in the way of smartly moving forward.***
- ***Broad acceptance of PPPs as a way of doing business when justified by a solid business case.***
- ***Appropriate application of concepts that may not yet be fully understood to help ensure demonstrable public value when PPPs are used.***
- ***A strong willingness by policy makers to move beyond the status quo to find new ways to meet public needs, and for government agencies to prepare for transformative and cultural change.***

The Center hopes that the insights contained in this paper will stimulate legislators and decision-makers across government to ask when and how the wider use of PPPs might help to attain results in the public interest that may not otherwise be reasonably achievable.



## Introduction

At all levels of government, long-term fiscal sustainability will prove challenging. The federal government faces significant, long-term fiscal challenges that jeopardize delivery of essential programs and services. The Congressional Budget Office's (CBO) 2015 long-term budget outlook concluded that "the long-term outlook for the federal budget has worsened dramatically over the past several years, in the wake of the 2007–2009 recession and slow recovery" (p. 1). Today, federal debt held by the public is equivalent to about 74 percent of annual gross domestic product (GDP), which represents a higher percentage than at any point in U.S. history, with the exception of a seven-year period following World War II (CBO, 2015). This ratio of debt to GDP is a measure of an economy's financial leverage with implications for its ability to borrow money to finance expenditures. Economists have long warned that debt levels approaching 100 percent of GDP may trigger economic recession, as tax rates increase and economic output stagnates. In its November 2012 report *The Moment of Truth*, the bi-partisan National Commission on Fiscal Responsibility and Reform (Simpson-Bowles) concluded that "The problem is real. The solution will be painful. There is no easy way out. Everything must be on the table" (p. 6).

State and local governments also face significant fiscal pressure that is unlikely to abate in the near-term. Absent any major policy changes, expenditures will continue to outpace revenues, resulting in a growing negative balance that threatens jurisdictions' ability to provide services and invest in much-needed infrastructure. Using data from the Bureau of Economic Analysis and CBO projections and assumptions, the Government Accountability Office (GAO; 2014, p.1) constructed a combined state and local "simulated operating balance measure." Calculated at near negative 2 percent of GDP in 2014, the balance is projected to decrease steadily, approaching negative 4 percent of GDP by 2060. Revenues at the local and state levels have been in decline for some time, in many cases predating the 2008 recession by a decade or more. However, by and large, these government sectors avoided operating deficits by implementing cost-cutting measures and some selected tax increases, while financing capital purchases by issuing debt and/or relying on federal grants. Today, the availability of federal grants is declining; at the same time, many jurisdictions are reluctant to issue more debt following a number of forecasts commissioned by major U.S. cities that show the negative long-term financial implications.

If there is any silver-lining, it is that all government levels have implemented and continue to explore a range of creative cost-saving initiatives to help address fiscal

challenges. Included is renewed interest in expanding partnerships with the private-sector through PPPs to support major investments and provide critical services, particularly at the state and local level.

Properly-structured PPPs can be used to help finance and deliver large-scale projects and provide services that otherwise might be difficult for government to acquire on its own. Even when the government has the means to acquire projects through traditional means, a PPP may be able to deliver a product or provide a service more efficiently and effectively, offering faster completion, greater quality, increased innovation, and reduced cost and/or reduced investment needs. Typically, PPPs are structured to shift significant risk to the private-sector provider by, for instance, tying payment to the completion of project milestones, the delivery of specified outcomes, asset availability or “readiness” rates, or future revenue flow from toll roads or bridges.

Yet even in the face of the aforementioned fiscal challenges, the U.S. has not seen significant growth in the use of PPPs. Contracts between federal government and the private-sector to support all facets of government operations and program delivery exceeded \$500 billion in 2013 while combined capital outlays at the local and state levels totaled \$323 billion (U.S. Census Bureau, 2013). Given that the vast majority of PPPs in the U.S. are for infrastructure projects—and that the U.S. relied on PPPs to support a mere \$68 billion (nominal dollars) of infrastructure spending between 1985 and 2011 (Brookings-Rockefeller, 2011)—it is safe to say that overall PPP expenditures represent but a tiny fraction of overall annual government spending.

### ***Applicability of PPPs***

Indeed, if reliance on PPPs abroad is any indication, there is significant potential for their increased use in the United States. With regard to transportation infrastructure alone, the United Kingdom financed \$50 billion through PPPs between 1990 and 2006. In the United States, which has an economy six times larger, not to mention a much more extensive infrastructure footprint, the sum was \$10 billion. Over a period of six years, between 2007 and 2013, this figure more than doubled to \$22.7 billion (Fierce, 2014). However, this amount represents only 2 percent of capital investment in America’s highways.

The more limited use of PPPs in the United States is against a backdrop of huge and growing unfunded infrastructure needs. According to the American Society of Civil Engineers (ASCE), cumulative infrastructure investment needs will total about \$2.7 trillion by 2020, rising to \$10 trillion by 2040 (ASCE, 2015). However, anticipated

funding will be available to cover only 60 percent of these needs through 2020, dropping to 53 percent by 2040. Accordingly, the corresponding investment gaps are expected to total \$1.1 trillion by 2020 and grow to \$4.7 trillion by 2040 (ASCE, 2015).

On a similar note, CBO reported that at current and anticipated funding levels, the Highway Trust Fund is unsustainable. The CBO wrote that “Starting in fiscal year 2015, the trust fund will have insufficient resources to meet all of its obligations, resulting in steadily accumulating shortfalls” (CBO, 2013). As infrastructure needs continue to grow, spending is declining. In fact, infrastructure spending in the United States in 2013 fell to 16 percent of GDP, which is the lowest rate in the last 20 years (Glasgall, 2014).

PPPs often are associated with transportation projects, including toll roads and bridges; however, when properly structured, they can be used across many different sectors in order to provide public goods more efficiently (see Figure 1).

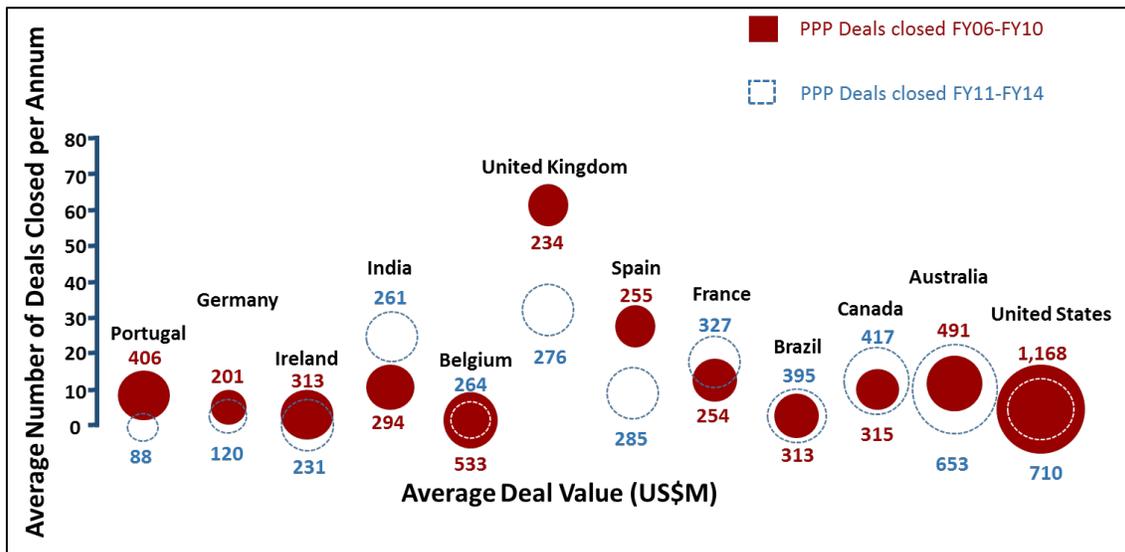
**Figure 1. PPPs Have Been Used in Many Sectors**



In addition to the U.K., several industrialized nations facing financing challenges, including Canada, France, and Australia, have moved aggressively toward greater

reliance on PPPs (see Figure 2). Figure 2 indicates that although the United States spends more per PPP project, other countries engage in a greater number of PPPs. The U.K. engaged in 10 times the number of PPPs as the U.S. between 2006 and 2014, despite the economic recession which, as the figure indicates, led to a sharp decrease in PPPs in the U.K.

**Figure 2. Change in Average Number and Size of PPPs from FY06-FY10 to FY11-FY14 (KPMG, 2015)**



The question is, given budget realities at all levels of government, will the United States follow suit and more extensively embrace PPPs as a procurement option? This report examines recent examples of PPPs in the United States and abroad, in a variety of contexts and at various levels of government, to explore the benefits associated with the proper use of PPPs and pitfalls of implementation mistakes.

### ***Report Roadmap***

In the next section of this report, we discuss the PPP concept. We examine the different types of PPPs and the contexts in which they might be used effectively.

We then present four case studies representing different applications of the PPP concept.

- The Ohio River Bridges construction contrasts both a PPP and a traditional infrastructure procurement, which are separate components of this project.

- The United Kingdom’s refueling tanker private financing initiative applies a leasing model used successfully by the airline industry.
- The Military Housing Privatization Initiative, which required enactment of legislation by the Congress to authorize the program, focuses on a highly-successful project to fill an urgent need that might have not been feasible without a PPP.
- The Fleet Readiness Center East Naval Aviation Depot agreement involves a PPP structured around outcome-based metrics for logistics maintenance functions, demonstrating the potential for broad application of PPPs.

In the final sections, we provide a framework for developing a PPP and discuss overcoming some of the barriers to implementation and leading practices.

## **Types of Public-Private Partnerships**

PPPs can range widely in size, requirements, and duration (Barnes, 2001). The goal of a PPP is to improve cost effectiveness and increase access to resources, while encouraging creativity and efficiency, leading to faster delivery of capital projects and improved service delivery (Partnerships British Columbia, 2003).

PPPs share a common attribute: the provision by the private-sector of two or more functions related to the asset, facility, or service, such as financing, design, construction, operations, maintenance, management, logistics, and/or ownership. By “bundling” these functions, the provider can derive efficiencies across the entire scope of work – ranging from design to materials to long-term maintenance strategies; thereby reducing costs and speeding delivery. Also, transaction costs traditionally borne by the government, such as coming to an acceptable agreement with and oversee multiple parties, are reduced.

The allocation of risk and responsibility will vary depending on the specific elements of the agreement. Generally, however, as more functions are bundled, more project risk and responsibility is transferred to the private-sector. Given the magnitude of some projects, and the domains of expertise required, a PPP contract may be awarded to a consortium of companies with experience in different fields (Poole, 2014).

PPP types are denoted by various acronyms. For instance, a DBOM (design-build-operate-maintain) bundles the design and construction responsibilities of design-build procurements with (typically long-term) operations and maintenance. Other forms include Build-Own-Operate (BOO) and Buy-Build-Operate (BBO). Under these agreements, the private-sector owns the facility or asset, operating it in a profitable manner in order to provide a public service (National Council for Public Private Partnerships; NCPPP, 2015).

Today, PPPs increasingly are used in the United States, and especially abroad, to secure private financing in order to initiate projects that might otherwise be impossible given current and longer-term government budgetary constraints. In such instances, the private-sector is often responsible for raising the necessary financing, designing and building the asset, and then operating a service that uses the asset. This type of agreement typically takes the form of a Design-Build-Finance-Maintain (DBFM) PPP.

In terms of risk and responsibility, DBFM agreements fall in the middle of the continuum that ranges from design-build agreements to complete privatization. DBFM agreements entail significant public and private-sector involvement and are thus emblematic of the

PPP concept. Under these agreements, the private-sector is responsible for raising the necessary finance, designing and building the asset, and then operating a service that uses the asset. Note that the PPPs discussed thus far are general representations that do not fully account for the myriad ways in which a PPP may be implemented. For instance, often a DBFM agreement may rely on only partial private-sector financing.

In the next section of this report, we examine the Ohio River Bridges Project, a joint project launched by the states of Indiana and Kentucky to construct two bridges across the Ohio River. This project provides a “natural experiment” in that conventional state debt financing was used to acquire one bridge, while a DBFM agreement was used to acquire the other. With the PPP, the private entity (a consortium of firms) designed and built the bridge with the knowledge that it would be responsible for maintenance over a period of 35 years, which had an impact on the design and materials used.

Next, we go to the United Kingdom to examine another DBFM agreement, the Ministry of Defence’s (MoD) long-term lease of refueling aircraft from Air Tanker. This agreement, referred to as a private finance initiative in the U.K., will provide the MoD with access to aircraft, crew, and ground services for a period of up to 27 years.

In other types of PPP agreements, it is the private-sector that leases the asset from the public sector. Under concession agreements, the private provider leases an existing asset or facility from a public agency; invests its own capital to renovate, modernize, and/or expand the facility; and then operates it under a contract with the public agency (NCPMP, 2015). Such agreements transfer more risk to the private provider, but typically require the public agency to relinquish a significant amount of control over the asset and revenue. Examples of concession agreements include parking and food services, whereby the private-sector makes lump sum and/or periodic payments and is responsible for operations and maintenance of the asset or facility in accordance with prescribed performance standards.

With another type of agreement, a Lease-Purchase, the private-sector finances and builds a new facility, which it then leases to a public agency. The public agency makes scheduled lease payments to the private party, thereby accruing equity in the facility over time. At the end of the lease term, the public agency owns the facility or purchases it by paying the remaining unpaid balance in the lease (NCPMP, 2015). In this report, we examine the Military Housing Privatization Initiative, where leasing plays a prominent role. Under this agreement, the military services lease land and/or real property to private providers. These providers finance and construct/renovate the housing, and, in turn, lease

it to the military services or to military families directly. There are also elements of a DBFM agreement since the private-sector also maintains the housing.

In other instances, the government may lease its non-excess real property to a private-sector entity (for example, to be used as a site for a data center) in exchange for rent payments and/or in-kind services at the market rate. This approach has come to be known as an Enhanced Use Lease.

Large government agencies rely more heavily on some forms of PPP than others. For instance, the Department of Defense (DoD) often enters into a subset of Operations-Maintenance-Management (OMM) PPPs, which are often structured as performance-based logistics agreements, or PBL. A PBL shifts the focus of logistics from purchasing products through numerous separate transactions to purchasing outcomes. Whereas traditional sustainment contracts incentivize the provider to sell parts, PBL's "pay for performance" approach motivates the provider to reduce failures and resource consumption. The DoD officially adopted PBL in 2001, in a deliberate attempt to overcome the problems and inefficiencies of the then-existing logistics system.

Under most OMM agreements, including PBL, the public partner retains ownership of the public facility or system, but the private party invests its own capital in the facility or system. Any private investment is carefully calculated in relation to its contributions to operational efficiencies and savings over the term of the contract. In order to incentivize investment to optimize processes and improve outputs, these agreements tend to be long-term (for example, five years plus option years). We examine the Fleet Readiness Center East, a naval aviation depot that uses a PPP in conjunction with a PBL strategy.

## **The Ohio River Bridges Project**

In the late 1960s, the states of Indiana and Kentucky began to consider construction of a new crossing over the Ohio River to link Clark County, in southern Indiana, to Louisville, Kentucky. At the time, there were several benefits associated with the project, including improved regional mobility, better access to markets, and the creation of new jobs. Only recently have the state governments of Kentucky and Indiana been able to mobilize the political will, or secure the necessary financing, to turn the much-needed infrastructure project into reality.

Today, the project is only a few years from completion and will finally provide the citizens of the two states with the benefits initially cited over 40 years ago. A joint venture between the two states as set out in the bi-state agreement, the Ohio River Bridges Project (ORBP) is a large-scale, collaborative effort to solve a long-standing regional problem, culminating in the construction of two new bridges across the Ohio River. Recent estimates put the total cost of completion at \$2.32 billion (Kentucky Transportation Cabinet / Indiana Dept. of Transportation; KTC/IDT, 2014). ORBP construction began in 2014, with the bridges scheduled to open to traffic by 2018.<sup>1</sup> Many observers have noted with interest that Indiana pursued a PPP to finance, design, build, and maintain one of the bridges; whereas Kentucky, which does not permit PPPs for bridge and road projects, relied on conventional debt financing for the second bridge to cover design and build. Subsequent operations and maintenance would be separately contracted for by the state.

### ***The Project***

Early in the planning phase, the project established eight major development objectives to guide the planning, completion, and maintenance of the bridge sections and surrounding area. These objectives included the following:

1. Ensure that cost sharing arrangements are equitable and the states' financial obligations to the project are manageable;
2. Ensure that the project delivers value to the states' taxpayers, project partners, and end users through appropriate toll rates and the lowest feasible project cost;
3. Seek private-sector innovation and efficiencies;
4. Encourage design solutions that respond to environmental concerns, permits, and commitments in the Record of Decision between the two states;

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<sup>1</sup> Substantial completion of the East End Crossing is expected by October 31, 2016.

5. Develop the project in a safe manner that supports congestion management and economic growth for the region;
6. Ensure the project is constructed within a time period that meets or improves upon final completion target dates;
7. Engage the public and minimize disruptions to existing traffic, local businesses, and local communities; and
8. Deliver a project that is a self-sustaining, integrated, cross-river mobility solution for future generations (KTC/IDT, 2014).

The Ohio River Bridges Project is divided into two major efforts, across six different “sections” (see Figure 3). The Downtown Crossing (sections 1, 2, and 3) is funded primarily by Kentucky, whereas East End Crossing (sections 4, 5, and 6) is funded primarily by Indiana.

**Figure 3. The Ohio River Bridges Project: Kentucky Crossing (Sections 1, 2, and 3) and East End Crossing (Sections 4, 5, and 6; KTC/IDT, 2013)**



Section 1, the Kennedy Interchange, located in downtown Louisville entails major reconstruction at the interchange convergence of I-64 and I-74. Section 2 – the Downtown Bridge – is a new bridge that will connect Louisville and Jeffersonville, Indiana. The bridge is planned as a three tower-cable style bridge with six Northbound I-65 lanes. Section 3, the Indiana Downtown Approach, is a one mile reconfiguration of I-

65 that includes all associated ramps and a new access road to Jeffersonville’s downtown streets.

East End Crossing is funded primarily by Indiana. Section 4, the East End Kentucky Approach consists of four miles of reconstructed diamond interchanges and the new construction of twin two lane tunnels and a four lane approach to the East End Bridge. Section 5, the East End Bridge, is a new four lane bridge connecting the Kentucky and Indiana approach, which will also include a pedestrian walkway and bikeway. Section 6, the East End Indiana Approach, is a new roadway connecting SR 265/SR 62 Port Road Interchange to the new East End Bridge. The Chicago-based Walsh Construction is leading the design and construction of both Kentucky Crossing and East End Crossing.

### ***Financing***

Indiana used a PPP to finance the East End Crossing, while Kentucky pursued a more conventional approach to fund the Downtown Crossing.

### **East End Crossing**

Indiana entered into a Design-Build-Finance-Maintain “availability payment” PPP with a Walsh Construction-led consortium, Walsh-Vinci-Bilfinger East End Partners (WVB), to construct the East End Crossing (sections 4, 5, and 6) of the ORBP. WVB earned the highest total proposal score, which was based on the combined weighted technical and financial scores (Indiana Finance Authority; IFA, 2012).



Under this type of PPP agreement, the private-sector builds the infrastructure, attracts debt financing, and maintains the infrastructure (Mayer-Brown, 2011); the public entity, for its part, makes predetermined service payments (or availability payments) to the private provider during a certain period of time. Such agreements shift significant risk to the private-sector partner, as the payments are only made if the asset is properly maintained and “available” for use. In this case, Indiana will rely on toll revenue to make the predetermined service payments to WVB. In the event that toll revenues fall short, supplemental state and federal funds will be used.

Provided that the bridge and associated infrastructure are maintained in accordance with contract specifications, WVB will receive annual payments of no more than \$32.9 million<sup>2</sup> for 35 years (IFA, 2012), for a total of nearly \$1.15 billion over the life of the agreement. These availability payments will commence once the project reaches “substantial completion.”

As of December 2014, the cost of East End Crossing is expected to approach \$1.32 billion<sup>3</sup> through construction. WVB leveraged private equity through the issuance of \$677 million worth of private activity bonds (PABs). The bonds were issued as either Milestone PABs or long-term PABs. Milestone PABs have a shorter maturity dates. These bonds will be repaid once major construction milestones are completed. The long-term PABs mature in 2034, 2044, 2048, or 2051 (the final year of the 35-year concession). WVB also provided \$78 million upfront in the form of “developer risk capital.”

Indiana will disburse \$392 million to WVB during the construction period upon successful completion of project phases, or milestones. In turn, WVB will use the payments received by Indiana to repay Milestone PABs. In total, Indiana will pay WVB close to \$1.54 billion (in 2014 dollars) over 35 years for the design, construction, finance operation, and maintenance of the bridge (\$392 million in milestone payments plus \$1.15 billion in availability payments).

### **Downtown Crossing**

Kentucky pursued a more traditional approach to finance Downtown Crossing. Following a determination of best value, Walsh Construction, the lead for the Indiana project, was awarded the contract. Construction is financed through a Design-Build contracting approach, with operations and maintenance contracted for separately.



<sup>2</sup> Payments are shown in 2012 dollars and exclude inflation.

<sup>3</sup> Includes Authority retained costs, such as right of way – See Figure 4.

Kentucky committed funding to the project in the amount of \$1.44 billion. The state of Indiana is contributing \$34 million for a total project cost of \$1.47 billion through the construction period. Kentucky is relying on a variety of traditional sources to finance the project. Transportation and infrastructure bond anticipation notes, repaid through Kentucky's anticipated share of toll revenues, will support approximately 34 percent of the costs. Other sources include Grant Anticipation Revenue Vehicle bonds (23 percent), backed by future federal funding; alternative state and federal funding (23 percent), such as the Kentucky Transportation Committee Highway Plan; Kentucky toll revenue bonds (18 percent); and the state of Indiana (2 percent).

### ***Discussion***

The following statement appeared in 2014 ORBP Financial Report.

*The Commonwealth of Kentucky and the State of Indiana are collectively the Project Sponsors for the Ohio River Bridges Project. In furtherance of this partnership, each state has taken the lead in financing and overseeing construction of one half of the Project, with Kentucky responsible for financing and constructing the Downtown Crossing, and Indiana responsible for financing and constructing the East End Crossing.*

As many observers have noted (e.g. Goldsmith, 2013), the two states have, in effect, created a natural experiment that will put the two different procurement methods – traditional contracting vs. PPP agreement – to the test.

When it comes to large infrastructure projects, the federal government and jurisdictions throughout the United States have been slow to make the necessary investments, at least compared to industrialized nations in Europe and Asia. The slow pace of infrastructure improvement stems, in part, from a reluctance to dedicate the necessary (and typically substantial) funding required with traditional contracting. Often, this reluctance can be traced to political pressure to fund more immediate concerns and/or provide tangible benefits (such as teachers, firefighters, police, and jobs programs versus the overhaul of a city sewer system). In countries like the United Kingdom and France, which rely significantly on PPPs to finance large projects (often bundling finance with construction, operation, and maintenance of the asset), infrastructure is generally newer, safer, more durable, and more cost-efficient.

Although it is perhaps too early to fully evaluate these elements as they pertain to the East End PPP, it is clear that the agreement is enabling rapid delivery of the project. A 2013 *Governing* article entitled “Infrastructure at the speed of light,” notes that when

Indiana began looking for private partners to design, build, finance, operate, and maintain East End Crossing in March 2012, “the market responded immediately [with] dozens of interested firms quickly coalescing into six teams.” By November 2012, the provider had been selected and the terms of agreement had been decided. Financial close was achieved in March 2013.

It is also clear that Indiana’s long-term PPP agreement incentivized the contractor to reduce construction costs. According to the 2014 ORBP financial plan, WVB’s offer provided a construction budget that showed savings to the government of \$240 million compared with the estimate provided by the Federal Highway Administration (FHA). The Downtown Crossing project with the same lead firm and similar scope of work saw savings of \$157 million.

Moreover, Indiana’s PPP structure enabled WVB to improve efficiency across the entire scope of work – from design, to materials, to long-term maintenance strategies. Given the scope of the project and the length of the concession agreement, WVB had the flexibility to reduce costs in order to optimize its bid, as well as incentives to improve design and quality in order to minimize future maintenance and operations costs. According to WVB, these incentives have translated into a number of strategic investments including longer-lasting LED lights, more robust pavement, and “weathering steel” that does not need to be repainted.

Although there are differences between the two bridges with regard to design and materials, and other components of the projects unrelated to the construction of the bridges, (e.g. right of way, utilities, and tolling), it is fair to say that Indiana and Kentucky are estimated to pay similar amounts over a 35-year period for bridges that are functionally quite similar (See Figure 4); although the risk transfer to the private-sector is materially different. This is especially true if one grants that the two bridges are even closer in value than the construction costs suggest, given WVB’s incentive to optimize its upfront bid. Overall costs could be impacted by any changes to the design and/or service during construction.

Despite the similar cost of the two projects, the spending profiles over time are very different. Indiana’s expenditures through construction are significantly lower. WVB financed more than half of the project through debt and equity contributions, providing

\$755<sup>4</sup> million, reducing Indiana’s financing burden and allowing it to invest in other priorities. Kentucky committed twice as much as Indiana (1.44 billion; see Figure 4).

**Figure 4. ORBP Costs and Expenditures (millions of dollars)**

	<b>East End Crossing</b>	<b>Downtown Crossing</b>
<b>Total Project Cost through Construction</b>	<b>\$1319</b>	<b>\$1471</b>
<i>Construction Costs</i>	\$662	\$736
<i>Financing and Interest</i>	\$261	\$206
<i>Oversight and Design</i>	\$199	\$282
<i>Right of Way</i>	\$65	\$59
<i>Utilities</i>	\$30	\$13
<i>Mitigation/Other</i>	\$2	\$4
<i>Tolling/Other</i>	\$100	\$173
<b>A. Public Sector Expenditure through Construction</b>	<b>\$733</b>	<b>\$1471</b>
<b>B. Public Sector Expenditure 2016-2051</b>	<b>\$1152*</b>	<b>\$416**</b>
<b>Total Public Sector Expenditure (A+B)</b>	<b>\$1885</b>	<b>\$1887</b>

\*Sum of maximum annual availability payments

\*\*Kentucky estimate for O&M and lifecycle costs through 2051

All figures based on estimates contained in the ORBP Financial Update, Dec. 2014

Determining the “better buy” will depend largely on the condition of the two bridges following the 35-year period and the amount each state spends to maintain them from that time forward. In theory, WVB’s strategic investments in the East End Crossing project, including the design and materials, should translate to a bridge that, at the expiration of the 35-year agreement, is in relatively better condition and costs less to maintain.

The transfer of risk to the private-sector is another benefit that should be taken into account in assessing that value provided by the PPP. For instance, the terms of the agreement, specifically the use of milestone and availability payments, that are contingent upon performance, shifted much of the risk associated with the delivery and maintenance of a large-scale infrastructure project to WVB who must absorb any unforeseen costs incurred over a 35 year period. Kentucky, on the other hand, is responsible for maintaining the Downtown Crossing. Kentucky estimates that it will spend \$416 million through 2051 (the final year of the Indiana PPP; see Figure 4), and must accept the risk that these costs may increase.

Finally, unlike many concession-based transportation PPPs, the contractor does not receive the user fees (tolls in this case) collected. Instead, it earns a maximum annual

<sup>4</sup> This is made up of \$677 million of PABs, plus \$78 million in equity.

availability payment (funded through state toll collection) that is contingent upon contract performance. Structuring the PPP in this way ensures that the state does not forfeit potential revenue.

## **MoD Air Tanker Lease**

In the airline business, as in other industries, the mix of owned and leased equipment is a business decision. Outright purchase is generally only preferred if equipment will be used beyond the point in time when cumulative leasing costs exceed the purchase costs. Rather than purchase aircraft that will sit idle for much of the time, airlines rely on operating leases to acquire additional aircraft on a temporary or seasonal as-needed basis. Firms such as GE Capital Aviation Services (GECAS), the largest aircraft lessor (with over 1,800 aircraft used by 245 airlines), purchase aircraft from manufacturers such as Airbus and Boeing, then lease the aircraft to airlines across the globe (e.g., Solaseed, Air Japan, and Aegean Airlines).

The United Kingdom's Ministry of Defence (MoD) faced significant budgetary constraints. Moreover, the MoD demand for air refueling tanker/transport aircraft to meet its requirements was somewhat variable over the long-term. Seeking to replicate the airline industry leasing model, the MoD entered into a variation of a Design-Build-Finance-Maintain PPP, referred to as a private finance initiative (PFI), to acquire tanker aircraft, the associated infrastructure, crew, ground services, defensive aid suites, and maintenance on a flexible (permanent and as-needed) basis.

### ***Types of Leases***

An operating lease is a contract that allows for the use of an asset, but (unlike a capital lease) does not convey rights of ownership of the asset. In the airline industry, there are three types of operating leases used by airlines and aircraft operators: a dry lease, a wet lease, and a damp lease. With a dry lease, the aircraft financing entity (e.g. GECAS) provides the airline lessee (e.g., Air Japan) with aircraft only (hence the term "dry"); the lessee provides its own commercial air operator's certificate and aircraft registration as well as fuel, crews, maintenance, and operations (or contracts with a regional provider to obtain them).

With a wet lease, the lessor provides aircraft, crew, maintenance, and insurance to the airline. The lessee pays for fuel, airport fees, duties, and taxes. These are typically shorter-term leases ranging from one month to two years. A wet lease allows airlines to increase capacity quickly for short periods to meet market demand without having to maintain surplus aircraft, crew, operational support, and infrastructure.

A damp lease can increase efficiency and decrease costs by reducing some of the training, personnel, and operations costs. With a damp lease, the airline leases the aircraft from a company fleet and provides some or all of the crew. In the United States and

Canada, FedEx operates FedEx Feeder on a damp lease program; the contractor leases the aircraft from FedEx fleet and provides a crew to operate the aircraft. Sometimes, the contract carrier will operate the aircraft for multiple companies simultaneously. For instance, Air Contractors (Ireland) Limited (ACL) is a contract carrier that operates scheduled freight services on behalf of both FedEx Feeder and DHL Express in Europe. In this case, ACL is permitted to carry more than one company's cargo in its aircraft (DHL and FedEx packages), increasing efficiency.

Aircraft leasing also occurs between private airlines. Southwest leased 88 Boeing 717 aircraft to Delta after acquiring the 717s when it bought AirTran Airlines in 2011. Southwest's fleet consists of 737s. Southwest recognized that maintaining and operating two different aircraft increased its costs and recognized that complexity and cost of maintaining the engines in the 717s. For Delta, leasing used aircraft helped to replace aging planes (DC9s) without incurring the much larger upfront costs of new aircraft.

### ***The MoD Lease***

By the early 2000s, The United Kingdom was seeking to replace its aging refueling fleet of 1970s Vickers VC-10 and 1960s Lockheed L-1011 TriStar modified commercial aircraft. In 2004, the Ministry of Defense (MoD) authorized the long-term lease of aerial refueling tankers through the use of a Private Finance Initiative (PFI) with Air Tanker, the owner of the aircraft. The PFI allowed the MoD to avoid the large upfront capital costs of replacing the TriStar and VC-10 tankers.

In December 1998, the MoD pre-qualified six consortia to compete for the contract. Between 1999 and 2001, the consortia consolidated into two teams: Air Tanker and Tanker and Transport Services Company (TTSC). The two initial proposals were assessed by the MoD as being weak. The MoD allowed more time for the proposals to be improved, and even offered to pay the losing bidder up to £10 million (\$16.6 million USD) to ensure competitive pressure between the consortia was maintained. In the end, the Air Tanker proposal was selected (NAO, 2010).



With the PFI, a modified Airbus A330 aircraft, named the Voyager, was designed and produced by the Air Tanker Ltd. consortium of United Kingdom and French firms, including Babcock, Cobham, EADS, Rolls-Royce, and Thales. The aircraft has dual roles – air-to-air refueling and passenger and equipment transport. According to Air Tanker, Voyager can refuel two receiver aircraft from its wing pods simultaneously, providing the Royal Air Force (RAF) a large capacity, two-point tanking capability for the first time.

On March 27, 2008, the United Kingdom entered into the Future Strategic Tanker Aircraft (FSTA) PPP agreement. This 27-year PFI includes access to a maximum of 14 refueling aircraft for a total whole life estimated cost of over £10 billion (over \$16.6 billion USD; Lynam 2012; Military Factory 2013). The contract provides the MoD with regular day-to-day access to nine aircraft (and up to 14 during times of crisis), as well as the maintenance, ground services, and training through the year 2035. The agreement also includes provision of significant infrastructure, including a two-bay hangar and operations building at the RAF's airlift hub in addition to a full-motion flight simulator and classrooms for computer-based training. Observers have referred to the arrangement as a “full transport and refueling service solution” to distinguish it from a traditional equipment lease.

The agreement also provides 14 sponsored reserve pilots (i.e., reserve members of the armed forces that are subject to deployment under military (as opposed to civilian) status), in addition to 48 cabin crew (the balance of pilots and crew are RAF personnel). Moreover, the PFI includes a provision whereby Air Tanker can wet lease the five reserve aircraft to mutually-approved airlines and nations. This provision served to reduce the cost of the lease to the MoD (Osborne, 2013).

Air Tanker summarizes the benefits of the agreement as follows: “the Defense Ministry has the benefit of these aircraft without having to pay for them to sit on the tarmac. They can be brought in to support operations at any time, if additional capacity beyond that of the core fleet is required, so it is capability without the fixed cost.” According to Air Tanker, the downtime required to remove or reinstall military fittings is less than one month (Pocock, 2013).

The agreement also allows the MoD to manage its demand and provide any spare capacity to European partners or commercial parties, allowing it to recoup some of its costs. Air Tanker affirmed that “the U.K. and the RAF have the capability through Voyager to deliver a significant part of the solution to Europe's air-to-air refueling and transport requirements and to promote U.K. defense capability and expertise, should they wish to take it” (Osborne, 2013, p. 3).

As of September 2015, Air Tanker has delivered 10 aircraft under the contract. The delivery of the 11th aircraft is expected in mid-2015 with an additional three aircraft delivered by the end of 2016 (Air Tanker, 2015). The first flight took place on April 8, 2012 out of RAF's Brize Norton Base (Global Gateway, 2012). Today, the Voyager has clearance to refuel Tornado and Typhoon fighters. In March 2014, the RAF retired its L-1011 TriStar medium-to-long-range tanker/transports fleet, marking the official takeover of the Voyager as the United Kingdom's air-to-air refueling service (Air Force Technology, 2014).

### ***Discussion***

Some media observers have taken the position that this PFI represents a poor value to taxpayers, stating that the outright purchase of the Voyager fleet would have cost significantly less. The lowest estimate (provided by BBC News) was £50 million per plane, or £700 million to purchase 14 aircraft (Lynam, 2012).

In 2010, the United Kingdom's National Audit Office (NAO) reported that the MoD "never gained visibility of the sub-contractor costs for designing and modifying the aircraft, so was unable to determine whether it was paying an appropriate margin for the aircraft given the level of risk to which the sub-contractors were exposed." The NAO also concluded that competition was limited, the requirements never stabilized, and that there was no sound evaluation of other procurement approaches. The NAO report did not question the PFI procurement mechanism, as much as the process by which the procurement decision was reached and how the project was managed. Specifically, the NAO reported that the MoD appeared to lack the skills to negotiate a PFI contract and the project team suffered from frequent changes in team leadership and had insufficient staff with PFI experience.

Air Tanker countered that the purchase price would have been closer to £152 million per aircraft and that the £10 billion agreement represents savings of up to £28 million to the government for the 14 aircraft. In 2014, the list price for the Voyager aircraft was £140 million, *excluding* the conversion cost for air-to-air refueling. Also, the PFI agreement includes the whole life-cycle cost of the additional services for 27 years; all of which come at significant cost and include aircraft maintenance, crews, training, and infrastructure. So the aircraft purchase price to the PFI agreement price becomes an apples to oranges comparison.

In addition, the United Kingdom is permitted to manage its demand for the service through the contract and provide any excess capacity to other governments or commercial airlines; the revenue from which would reduce the cost to the government. Finally, as

with PPPs generally, the PFI served to alleviate the burden of upfront capital costs by the United Kingdom, while transferring the risk of ownership from the public sector to the private supplier. The fact that aircraft leasing occurs in the private-sector demonstrates that it can be a cost-effective strategy when supported by a solid business case and proper planning and execution essential to any PPP.

## Military Housing Privatization Initiative

On February 10, 1996, Congress enacted the Military Housing Privatization Initiative (MHPI) through the annual National Defense Authorization Act. MHPI is a PPP in which the private-sector owns, operates, maintains, improves, and assumes responsibility for military family housing. Though the project participants (military service branch and private-sector provider) differ by location, the agreement typically entails lease of land to a developer for a term of 50 years, with the military service branch generally conveying existing homes that are located on the leased land to the developer for the duration of the lease. Once the newly-constructed or renovated housing project is completed, the service branch then leases the properties from the developer, either directly or through individual service members' base housing allowance. In either case, the continuous income stream from these lease payments supports access to private capital, allowing the developer to expand, maintain, and recapitalize the initial investment.

### *PPP Structure*

The individual military services are responsible for executing the projects on their respective installations. Pursuant to the MHPI, they have been granted 12 separate authorities by the Office of Management and Budget (OMB), providing flexibility needed to take advantage of local real estate market conditions (CBO, 2003).



The Budget Enforcement Act of 1990 (BEA) requires upfront scoring of leases. Similarly, OMB Circular No. A-11, *Preparation, Submission, and Execution of the Budget*, requires that government entities designate funds up-front to pay for capital leases and lease purchases; that is, the budget authority must be granted in the first year of the project to cover all years of the project.

At the same time, OMB scores projects such as MHPI, which has its own legislation authorizing the public-private partnership, on a case-by-case basis that takes into account the potential long-term liability. For example, in determining the budgetary implications of the housing project at Elmendorf Air Force Base, OMB Circular A-11 budget scoring rules were applied such that the rentals of housing units to service members were viewed as “transactions among private parties, with minimal budgetary impact (CBO, 2003). DoD and OMB have taken the position that this treatment complies with the BEA.

CBO has taken a different position stating: “the end result was that the Air Force obtained a \$100 million construction project for an up-front budgetary cost of \$23 million” (p. 42). In CBO’s view (2003), OMB authorizations “do not consider the possibility that interactions among the different agreements between DoD and a housing venture might create a commitment that is more than the sum of its parts” (p. 39). In other words, CBO questioned the application of budget scoring rules under MHPI allowing DoD “to record each provision in its contracts with a venture as if it was a separate transaction between the government and a purely private entity” (CBO, 2003, p. 39).

**MHPI Authorizations granted by OMB**

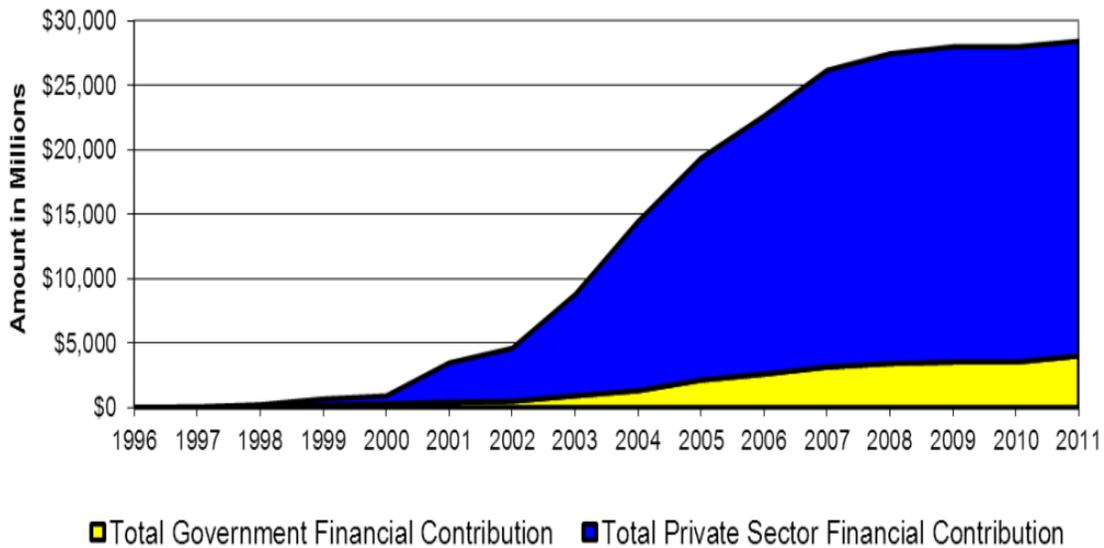
1. Conveyance of real property: The Government may transfer title of Federal property to private ownership.
2. Relaxation of Federal specifications for housing construction: Builders are allowed to construct housing in accordance with local building codes.
3. Inclusion of ancillary support facilities: Bids for contracts may incorporate additional amenities, such as child care centers and dining facilities, to enhance the attractiveness of the basic housing.
4. Payment of rent by allotment: Landlords may receive payment of rents through automatic electronic fund transfer from the appropriate Federal disbursing facility, guaranteeing cash flow.
5. Loan guarantee: The Government may guarantee up to 80% of the private-sector loans arranged by the property developer.
6. Direct loan: The Government may make a loan directly to a contractor.
7. Differential Lease Payment (DLP): The Government may agree to pay a differential between the base housing allowance paid to Service members and local market rents.
8. Investment (Joint Venture): The Government may take an equity stake in a housing construction enterprise.
9. Interim leases: The Government may lease private housing units while awaiting the completion of a project.
10. Assignment of Service members: Service personnel may be assigned to housing in a particular project that they may otherwise not choose to occupy (tenant guarantee).
11. Build to lease: The Government may contract for the private construction of a housing project, and then lease its units.
12. Rental guarantee: The Government may guarantee a minimal occupancy rate or rental income for a housing project.

The OMB and DoD interpretation relies, in part, on the need for the military to house service members for the foreseeable future, that base housing allowances and other means of payment will continue to be made available through congressional appropriation, and that the sum of these payments will remain more or less constant. CBO concluded that in some instances, the projects “achieved the practical effect of government ownership of the properties,” and that “they should be recorded in the budget as lease-purchases with substantial risk for the government” (House Report to Congress, 2000). This would have required that the housing PPPs be scored in the amount of the net present value of the government’s total estimated legal obligations over the life of the contracts; thereby, rendering the MHPI unaffordable and in essence killing the program.

***Discussion***

The OMB made an exception to the rules, allowing the DoD to acquire military housing without recording large upfront budgetary obligations in order to meet an urgent need impacting the morale of the volunteer armed forces and their families (See Figure 5). The important question, however, is whether similar guidelines or exemptions should be extended in the future for similar projects. It may even be fair to ask if the requirement to score upfront capital leases and lease-purchases should be relaxed or modified in general. As you can see in Figure 4, the amount of investment need by DoD over the short term is considerably smaller than the private-sector investment, not to mention the faster time to market to build new housing or renovate existing sub-standard housing.

**Figure 5. Government and private-sector contributions to MHPI**



The DoD considers family housing privatization its most important and cost-effective effort to improve service members’ quality of life. Approximately 260,000 housing units have been privatized across the DoD through MHPI (for sake of comparison, there were 53,000 government-owned units in 2012 [Cino, 2014]). The program has been universally lauded as both a success and a critical quality-of-life program for military families (Hayes & Scribner, 2013). According to Cino (2014), the program is “a sterling example of a successful public-private partnership” (p. 1).

This PPP enabled the government to provide affordable, quality housing to military families, resolving two longstanding problems. First, military housing owned by the DoD was in poor condition, and over 50 percent of units needed to be renovated or replaced following more than 30 years of insufficient maintenance (GAO, 2006). Second, quality, affordable private housing was in short supply. Military families housing allowances were often insufficient to rent or buy privately-owned housing, despite the DoD having spent over \$20 billion on housing allowances in 2012 alone (Cino, 2014). Needless to say, both of these problems had negatively impacted military recruitment and retention.

The DoD estimated that it would have cost over \$20 billion and 40 years for military construction to resolve the military housing crisis (Office of the Deputy Under Secretary of Defense, Installations and Environment, 2002). By leveraging private market competition, the MHPI quickly provided market-grade housing, at market prices. A 2006 GAO study that examined lifecycle costs of 12 specific MHPI projects estimated that privatization would lead to savings of at least 10.9 percent (see Figure 6). Moreover, opening the military housing construction market to the private-sector has stimulated the economy, while providing investors a long-term return on investment, and accelerating availability of adequate housing (GAO, 2006).

**Figure 6. Estimated savings (GAO, 2006)**

Dollars in millions		<b>Estimated savings</b>		
	<b>Military construction option</b>	<b>Privatization option</b>	<b>Dollars</b>	<b>Percentage</b>
<b>Services’ estimate</b>				
Total cost	\$3,128	\$2,755	\$373	11.9
Average project cost	\$261	\$230	\$31	11.9
<b>Our estimate</b>				
Total cost	\$3,297	\$2,937	\$360	10.9
Average project cost	\$275	\$245	\$30	10.9

Note: Includes the awarded projects at Fort Carson and Lackland and the 10 remaining projects approved for solicitation that had a life-cycle cost analysis prepared by the services.



## **Fleet Readiness Center-East PBL**

DoD product managers are directed to implement sustainment strategies that include the best use of public and private-sector capabilities through government/industry partnering initiatives. Accordingly, the DoD often relies on a subset of Operations-Management-Maintenance agreements with the private-sector. These PPPs often take the form of performance-based logistics (PBL) agreements and incorporate outcome-based metrics (e.g., readiness rates and parts availability) to track contractor performance. When used appropriately, PBL agreements decrease costs by increasing systems' reliability, maintainability, and related spare parts availability by shifting responsibility from the government to the private-sector; thereby reducing the staff, infrastructure, facilities, tooling, and inventory the government must maintain to support the systems.

The Naval Fleet Readiness Center East (FRC-East) maintains one of the longest running DoD PBL contracts in the nation. Located 90 miles southwest of Cape Hatterass, NC, FRC-East provides maintenance, engineering, and logistics support for numerous systems. Cited as a model of PPP success, the FRC-East-Honeywell-Caterpillar PBL has been expanded to include other maintenance components and an additional location (FRC-Southeast in Jacksonville).

### ***Partnership***

Naval aviation depots are responsible for the maintenance, repair, and overhaul of major aircraft weapons systems. These depots seek to maximize aircraft operational availability, reduce the length of maintenance operations, reduce costs, and increase reliability for aircraft and inventory within established budget parameters.

In 2000, the U.S. Navy entered into a PPP with Honeywell International Inc. and Caterpillar Logistics Services Inc. for maintenance of the F/A-18 Fighter Auxiliary Power Unit (APU). An APU is a self-contained generator used to start



aircraft engines and provide power to aircraft while on the ground. During the late 1990s, Naval Aviation Depot at Cherry Point, today the Fleet Readiness Center-East, reported significant readiness problems with the APU common to the FA-18/S-3/P-3/C-2 aircraft (Landreth *et al.*, 2005). Depot overhaul turnaround time averaged more than 60 days, and parts shortages were common. As a result, aircraft availability hovered at around 65 percent, with on-time deliveries to the field at 25 percent (Landreth *et al.*, 2005).

### ***PBL Structure***

The PPP agreement for the PBL requires that the Honeywell-led team of private-sector and government workers provide total lifecycle support for the APU, to include overall program execution, customer and engineering support, total asset visibility, configuration and obsolescence management, quality assurance, repair and overhaul, and continuous improvement with guaranteed increases in availability and reliability (Landreth *et al.*, 2005). Honeywell is the long-time manufacturer of the APUs used by the FRC-East. Prior to the launch of the PPP, APU maintenance was performed exclusively by Navy personnel.

As the prime contractor, Honeywell procures and manages all consumable items used by the FRC-East to repair the APUs, subcontracting with Caterpillar Logistics to provide data management, inventory management, parts delivery to the Naval Air Station Supply, and warehouse management. These team responsibilities reflect the stated goals of the partnership between Honeywell and Caterpillar Logistics, which include: (1) optimizing customer service to increase availability, (2) minimizing inventory investment, (3) calculating safety stock at the individual stock keeping unit (SKU) level, (4) improving personnel productivity with technology and management, and (5) reducing and controlling inventory assets (Honeywell, 2009).

The specific parameters of the agreement include the following (Honeywell, 2009).

- Maintaining 90 percent availability of repairable items. Failure to achieve 90 percent availability would trigger incremental government contract payment reductions;
- Delivering CONUS (continental United States) routine requisitions within 48 hours;
- Delivering OCONUS (outside the continental United States) requisitions within 96 hours;
- Shipping to all CONUS/OCONUS locations 24 hours per day, 365 days per year;
  
- Increasing mean flight hours between unscheduled APU removals (MFHBUR) by the following percentages per aircraft:
  - F/A 18: 45 percent

- C-2: 15 percent
- S-3: 25 percent
- P-3: 390 percent
- Participating in a gain sharing formula if reliability surpasses guarantees by more than 25 percent;
- Providing surge capability of 120 percent of annual flight hours; and
- Incorporating repaired items from any other military service, thereby reducing price per flight hour by spreading fixed costs over a larger business base.

### ***PBL Outcomes***

Prior to embarking on the partnership, the Navy conducted a business case analysis (BCA) to estimate the economic viability of implementing a multiple-year direct vendor delivery/total logistics support (DVD/TLS) contract with Honeywell. The BCA concluded that the Navy would save \$13.98 million over 10 years by awarding the DVD/TLS contract to Honeywell—which was later revised to \$34.8 million in savings. In 2007, the Navy identified that the cost savings were greater than \$50 million.

GAO found that within the first two years, from July 2000 to October 2002, the backlog of AUPs waiting for repair at the depot dropped from 118 to zero, and the average delivery time for parts and AUPs decreased from 35 to 5.4 days (GAO, 2003). In addition, over 98 percent of requisitions were filled within the contractual requirements, and supply material availability increased from 65 percent to approximately 95 percent. In all, GAO reported that over 30 different reliability improvement indicators increased during this time (GAO, 2003).

By 2004, less than 5 years into the contract, all back orders were filled and supply material availability increased to 97 percent for major aircraft. Progress continued throughout the next few years as the PBL contract was extended. By 2009, fleet availability had jumped to 99 percent—compared to 10 percent prior to the PPP. In other words, the right parts were delivered to the right place on time and in working condition 99 percent of the time.

Not only had the inventory and materials supply base been streamlined, but Caterpillar was also able to develop a disassembly operation in which usable parts were captured and remanufactured to be placed back into available inventory. The recycled parts and components further reduced the need to purchase new inventory. In addition to this type of process improvement, the PPP has encouraged technical innovation to solve longstanding problems. For instance, Caterpillar launched state-of-the-art demand

forecasting, critical to anticipating repair parts and labor needs at the FRC-East, a capability that the depot did not have prior to the PPP.

### ***Discussion***

The public-private partnership at FRC-East offers a clear example of what can be accomplished with an appropriately structured PPP that leverages the strengths of both the private-sector (project management, scheduling, supply chain management, and inventory control), and the government employees (experienced workforce, highly knowledgeable of the Navy's programs and mission needs and dedicated to the DoD mission). The following list summarizes the PPP's accomplishments.

- The depot repair production lines operate far more efficiently due to synchronized availability of parts.
- Backorders are non-existent.
- Inventory availability is 99 percent.
- On-time delivery is at 99 percent.
- Fleet availability across all platforms is between 95 and 100 percent.
- Reliability improvement ranges from 25 to 300 percent (depending on aircraft).
- Inventory costs have been slashed dramatically—from \$9 million to \$450,000 a year (DoD, 2003; GAO, 2003).

The partnership was extended to include a five-year full extension support program beginning in 2012. With regard to the expansion, Honeywell stated that it “will continue to provide the Navy with the same experience it has enjoyed over the previous decade and continue to help lower the overall cost of sustainment of these aircraft fleets.”

Yet despite their proven success, PBL has yet to be widely adopted, largely because of concerns over human capital (occupations within the military evolve from the “doers” to the “managers of doers”), ownership of technical data rights, and loss of competitive pressure given the typical length (five or more years) of the agreement. The success of the FRC-East PBL suggests that with the right workforce training, incentives, and partnership structure, these concerns can be mitigated.

## **Developing a Public-Private Partnership**

Given substantial long-term fiscal sustainability challenges at all levels of government, legislators and government agency decision-makers should give greater consideration to non-traditional procurement and financing strategies. Though by no means a panacea, the previous examples indicate that when properly structured and implemented, PPPs provide a proven mechanism for effectively and efficiently executing public sector programs and, when appropriate, financing needed investments.

PPPs can be used to help address urgent needs that cannot be financed in the foreseeable future under current and long-term budget projections. We are missing opportunities to introduce innovation and reduce costs across a spectrum of programs and operations by not investing, and when we do invest, by not fully considering the entire range of procurement models to include PPPs. In the case of our nation's decaying infrastructure, the problem is magnified, and there is greater movement to PPPs as the procurement option for roads and bridges in cash-strapped states. Such infrastructure investments not only address vital public needs and expectations, but also offer the added benefit of providing well-paying jobs that would otherwise not exist.

Further, as shown in Figure 1, PPPs can be used to address operating needs where there are cost savings or government has been challenged in successfully carrying out the function. An example would be using a PPP in moving to a cloud computing environment, while reducing costs through data center consolidation. DoD has certain authority to enter into extended use leases (EUL) with the private-sector to construct and host a data center on a military installation. The private-sector entity would make lease payments for the use of government-owned land and the cost of services provided by the government, such as utilities and security. In turn, the government would pay for cloud computing services provided to various military installations. In this form of PPP, there is no government investment in infrastructure, new technology solutions can be obtained, and data centers can be consolidated. The private-sector entity receives a flow of revenue at market rates and at some guaranteed usage level, makes lease payments with no upfront investment for land, and can sell excess capacity services outside of DoD to help cover costs.

### ***Impediments to Using PPPs***

There are impediments to the broader use of PPPs, which will first have to be addressed. At all levels of government, there can be an inherent reluctance to introduce "new ways of doing business." There are both challenges associated with implementing cultural

change within organizations and the comfort that comes from traditional operational structures that are viewed as providing greater control and predictability.

For instance, while 33 states have enacted laws enabling the use of private-sector project financing and delivery for transportation infrastructure through PPPs, 17 have not (Gilroy, 2013). Also, shown in Figure 1, PPPs can be used in many sectors. However, in sectors other than transportation, PPPs are rare at the state level. Only a handful of states have enacted laws that extend the use of PPPs beyond transportation to include government buildings, schools, wastewater plants, and other infrastructure.

One such state is Virginia, which broadly uses PPPs for infrastructure, ranging from toll roads, bridges, and tunnels to schools to senior living facilities and geriatric treatment centers to correctional centers. With the support of then Governor Mark Warner, Virginia enacted the Public-Private Education Facilities and Infrastructure Act of 2002, which allows the state and localities to contract with the private-sector to develop needed education and infrastructure projects. This law has been used by other states as a model. An example of a project made possible through this legislation is the innovative Stafford County Learning Village, which resulted in the construction on 150 acres of county-owned land of an elementary school, a high school, recreational facilities, a senior living facility, and a YMCA facility, with land set aside for a higher-education center. The county, one of the fastest growing in the country, was able to sell portions of its land to fund the senior living facility, and through a PPP, the cost of school construction saved between 6 and 10 percent from traditional procurements. Co-location of the facilities also encouraged collaboration and provided for multi-use, such as the high school having use of the YMCA pool, volunteers from the senior living facility working in the elementary school, and high school vocational students learning certain nursing skills by working at the adjacent senior living facility. (National Council for Public Private Partnerships; NCPPP, 2015)

At the federal level, expanding the use of PPPs presents a significant challenge under the current budget scoring rules. In 1991, OMB modified Circular No. A-11 by requiring that government agencies fully fund long-term (over 5 years) capital leases and lease-purchases in the year of initiation. As highlighted earlier in the MHPI case study, without special legislation to authorize this program, for budget scoring, long-term leases are recorded identically to outright purchases. This requirement has effectively precluded the use of long-term capital leasing, a procurement vehicle that is common in the private-sector. When exemptions are made, as was the case with the highly-successful MHPI, CBO continued to view the project as being technically outside the bounds of what is permissible under the BEA.

This is not to say that the logic underlying current leasing restrictions is without merit. The current OMB budget scoring rationale is two-fold: (1) financing through a third party is always more expensive than a direct federal purchase of an asset, given the federal government's preferred borrowing rates, and (2) capital leases, lease-purchases, and infrastructure PPPs obscure long-term commitment of funds and lead to less robust decision-making and budget transparency.

Today, however, unrelenting budget pressure is further preventing government agencies from funding large capital purchases in a single year, which can be a challenge even in good economic times. Federal agencies simply do not have the funds available to pay for major renovations or new buildings in a single year, nor do they have the flexibility to spread the costs out over time. Also, it is always difficult to justify a budget that is inconsistent with those of years past; this is especially true when mounting federal deficits invite a high level of public scrutiny. Thus, the administration and lawmakers are understandably reluctant to increase agencies' single-year budgets in order to accommodate a needed capital expenditure. At the same time, postponing capital expenditures invariably leads to higher long-term costs, as dilapidated buildings and worn-out aircraft cost more to operate; and over the years, these costs accelerate, and the ability to introduce innovation and change the government footprint can be impacted.

### ***Approaches to Get Around Budget Rules Can Come at a Cost***

For a variety of reasons, GAO includes federal real property management on its "high risk" list (GAO, "HIGH-RISK SERIES – An Update, 2015, p. 135). One of GAO's continuing concerns has been the heavy reliance on leasing of properties where it would be more cost efficient to own the properties.

Former head of the Public Buildings Service at the General Services Administration (GSA) Dorothy Robyn (2013) writes that "a cottage industry has emerged in search of ways to get around the [OMB] A-11 rules" with government agencies pursuing long-term operating leases for infrastructure. For example, the Department of Transportation (DoT) plans to spend \$675 million in the coming years for a new headquarters through a 15-year operating lease (Robyn, 2013). While this may solve an immediate need for the DoT, the agency must forego the benefits of ownership that come with long-term lease-purchases. Once the lease expires, ownership will revert to the private-sector, with the DoT having no equity in the property. At that point, the federal government will have to either extend the operating lease or re-compete the requirement – neither of which is a great strategy if this is an enduring requirement. With a different lease arrangement, the government

could have taken ownership of the building after a negotiated period, or bought it at a reduced price – options not allowed with an operating lease.

In another example, a highly-visible Department of Defense attempt to use an operating lease for equipment was tarnished by corruption (see the box); but, it was also flawed, since it was using an operating lease approach that did not comply with current OMB budget-scoring policies in Circular A-11.

It is within this challenging environment that the federal government must consider non-traditional procurement strategies in order to strike a sustainable balance among short-term affordability, mission readiness, long-term strategy and cost savings, and financial stability. PPPs represent an innovative approach to leasing – one that allows the government to capture leasing’s traditional benefits, while improving value to the taxpayer.

In fact, traditional notions associated with leasing like “right-to-use” and “rent-to-own” need to be reconsidered within the context of PPPs, which offer additional advantages to the lessee, including the use of private-sector technology, financing, and infrastructure. As discussed earlier, often one entity (a single firm or consortium) is responsible for design, financing, construction, and operation. The result can be efficiencies that translate to cost savings not possible with traditional “design-bid-build” methods. These efficiencies allow the government to partially or fully offset the additional expenses that leasing entails (i.e., higher borrowing costs and profit allowance), all while gaining the benefit of faster delivery with less risk.

At the very least, the government must fully recognize that the relative importance of short-term affordability and long-term cost effectiveness may vary from program to program and that procurement strategies should rely on high-quality, fact-based business cases. We conclude that a PPP should be an option that is considered given its global success, including in the United States. Again, it is not a panacea for what will be daunting fiscal choices, nor might it be the best procurement option in a given situation. But neither should it be precluded or the process of considering a PPP so onerous that it is for all practical considerations, essentially off the table.

## **U.S. Air Force attempts tanker lease**

In 2002, the Air Force developed a plan to begin to replace approximately 25 percent of its ageing fleet of KC-135E aerial refueling tanker aircraft by leasing 100 new Boeing KC-767 tankers using an operating lease. In addition to several members of Congress, the CBO director at the time was reluctant to endorse the Air Force's plan, writing that "[operating] leases have a greater potential to be cost-effective if the government does not have a long-term requirement for the asset" (Crippen, 2002, p. 2).

According to an Air Force report to Congress, net present value analysis suggested that leasing the aircraft would cost only \$150 million more than purchasing them (Hrivnak, 2006), which the Air Force viewed as a negligible amount given the scope of the program. However, analysts were quick to note that the analysis used a number of variables and assumptions favoring the Air Force's position. For instance, if the DoD were to pursue a congressionally-approved multi-year procurement of the aircraft, the cost to purchase would be reduced considerably. Air Force officials used single-year procurement estimates in their buy-vs.-lease analysis, based on Congress's reluctance, historically, to authorize the use of multi-year procurements. However, it is difficult to argue that Congress is any less reluctant to authorize the use of operating leases for tankers.

After much debate among the CBO, Air Force and DoD officials, and Congress, a compromise was reached whereby the Air Force would purchase 80 of the KC-737 aircraft and lease the remaining 20, allowing the Air Force to rapidly acquire the 20 leased tankers (Hrivnak, 2006). However, this agreement was nullified amidst allegations of improper dealings between Boeing and Air Force officials. The rejection of the original, operating lease plan, nullification of the Boeing contract, and subsequent cancellation of a contract with EADS for tankers, all proved fortuitous cost-wise. Each setback effectively spurred a new round of competitive bidding, saving the Air Force over \$16 billion.

At the same time, the corruption among industry and Air Force officials, combined with the Air Force's (judged unwise) pursuit of an operating lease in the first place, has further tarnished the prospect of leasing major systems in the future. Note, however, that the Air Force pursued an operating lease because federal budget regulations (in Office of Management and Budget Circular A-11) effectively bar the use of capital leases, or lease purchases, by requiring that they be scored upfront in the budget. It is clear that competition is the key to reducing costs. Ideally, the capital lease of assets could be competed in order to achieve savings while eliminating the upfront funding burden—in effect, capturing the best of both worlds. This would necessitate a change in federal regulations.

## ***Considerations in Using PPPs***

Based on our research of PPPs in the United States and globally, we have identified a series of considerations to guide policy makers in their decisions regarding the appropriate use and structure of PPPs. We then present a basic framework that describes in more detail a process for developing the appropriate PPP.

The first series of questions may be used to determine if conditions exist that may limit applicability of a PPP as the procurement solution in a given circumstance.

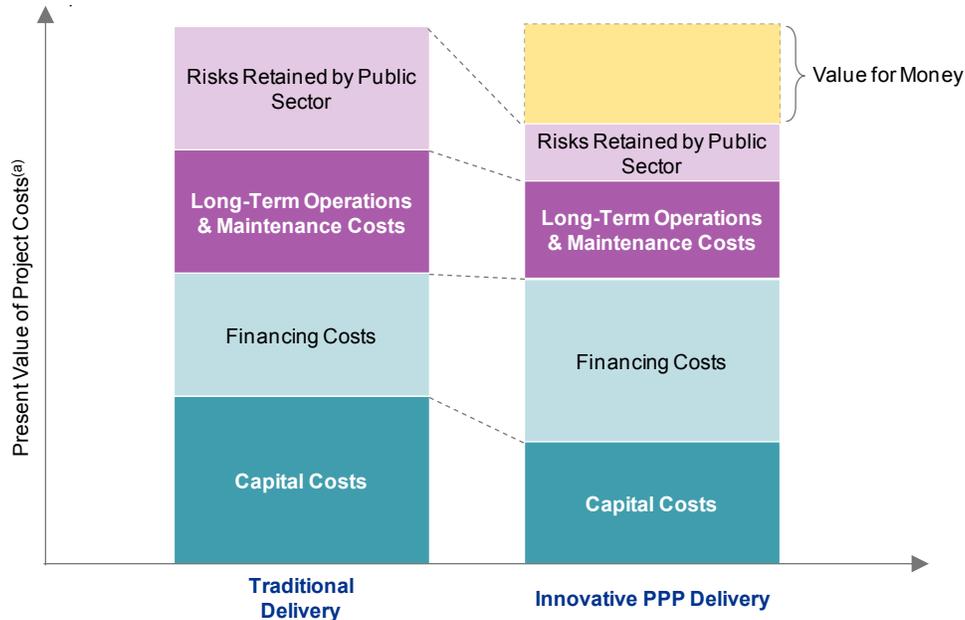
- **Is the project conceived to provide a direct benefit to the public?**  
Government should rely on PPPs to efficiently and effectively improve service delivery to the public. Fundamental to a PPP is whether the government can do it better or even has the capacity to effectively and efficiently perform through people, systems, and other resources. A consideration is whether the private-sector can be an accelerator as was the case for the DoD MFHI PPP. Also, for infrastructure, are there additional costs for waiting until the overall government financial picture improves, such as further degradation of a highway or bridge to the point that repairs are overwhelming and public safety impaired. Other rationales, such as revenue generation and eliminating transaction costs, are subordinated to these purposes.
- **Can the public sector provide the necessary oversight?**  
Although in most cases the private-sector will provide the day-to-day management for the partnership, the government entity must have sufficient technical expertise to provide oversight, to ensure the (1) contractor does not assume any inherently-governmental functions, (2) partnership does not pose conflicts of interest for the private-sector participants, and (3) project is effectively and efficiently managed.
- **Are project requirements amenable to a diverse array of solutions?**  
To maximize benefits to government, the private-sector needs the flexibility to meet project requirements in creative, innovative ways. In the event that detailed specifications must be met, the value a PPP can provide may be more limited. Government needs to be adaptable and embrace innovative solutions, even those that may break the mold, when concrete benefits can be demonstrated.
- **Can outcome-based metrics be used to measure performance?**  
In order to reduce costs and increase value to public, the private-sector is provided the flexibility to determine project inputs, over which government may have more limited

visibility. Accordingly, the PPP is better evaluated when objective outputs – such as asset availability as in the PBL case study – are established and measured.

- **Will private-sector efficiencies in design, management, construction, and other domains offset higher costs associated with private-sector financing and risk transfer?**

Transferring the risk and financing burden to the private-sector comes at a cost to government. Lower borrowing costs by government are one of the primary reasons for the requirement to fully fund long-term leases upfront in the budget. The government must be convinced that private-sector efficiencies in project delivery sufficiently offset these costs. In addition, overestimating the level of risk that is transferred may result in overpaying for private-sector delivery. The quality of the data underlying these considerations becomes paramount. Figure 7 illustrates the potential value for money that a properly-designed PPP, supported by reliable cost and performance information, can offer.

**Figure 7. Potential Value for Money**



Note: (a) Not to scale – illustrative only

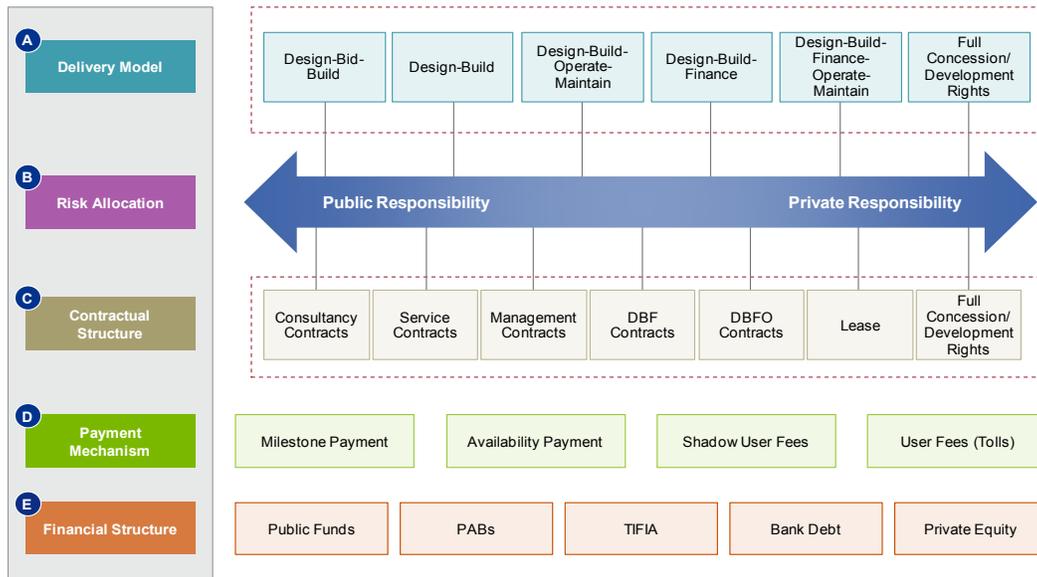
The second series of questions provides the motivation for the project. Affirmative responses suggest consideration of a public-private partnership, with numerous affirmative responses suggesting greater consideration.

- **Does the project entail multiple domains of expertise?**  
The private-sector partner is often in a better position to leverage expertise from numerous sources. PPPs often take the form of a consortium of firms with expertise in the domains of construction, finance, and management.
- **Is the project subject to significant design risk?**  
While this can vary significantly between government levels and organizations, the government may not be in the financial position to take on additional expenses in the event of unforeseen circumstances, whereas a private-sector firm with a portfolio of higher-risk projects could be in a better position to sustain losses. Vice versa, if a private-sector firm is not in a position to sustain losses where there is significant design risk, the government should consider that eventuality before making a contract award.
- **Is government funding/financing limited?**  
If government cannot afford to fund an essential project given other priorities, it may choose to turn to a PPP to reduce the upfront investment.
- **Are asset usage requirements unknown, sporadic, or variable?**  
Government can rely on lease-based PPPs to avoid significant outlays for assets of indeterminate use.
- **Does the project need to be delivered quickly?**  
As a result of market forces, the private-sector is often in a better position to deliver projects quickly.
- **Can a PPP facilitate other objectives as well?**  
The government agency wants to modernize, while streamlining or consolidating operations, such as moving data centers into a single or fewer locations in a cloud environment, through a EUL.

## Structuring a PPP

Once the decision to pursue a PPP is made, government must decide how to best structure the agreement so as to align government and private-sector interests through the allocation of risks and rewards. As the examples in Part III suggest, PPPs can be conceptualized along a continuum that ranges between traditional Design-Bid-Build agreements in which the public sector retains the risk and responsibility, and full concession in which risk and responsibility is transferred to the private-sector. Figure 8 depicts this continuum in relation to other project elements, including contractual structure, payment mechanism, and finance structure.

**Figure 8. PPP Structure Continuum**



The following outlines a basic process for developing a PPP. The three primary components – build business case, select a source, and structure the agreement – are described in light of the lessons derived from our examination of PPPs at various levels of government.

## **Build a Business Case**

- *Highlight both the quantitative and the qualitative rationale*

PPPs tend to engender some controversy because some of the benefits are difficult to quantify. The project that relies on a PPP may cost more on paper at the outset than the project that is acquired through traditional means. However, such a comparison does not take into consideration the transfer of risk to the private-sector or the management expertise that the private-sector provides. Though difficult to quantify, these benefits to government come at a cost. Also, initial cost estimates for traditional projects, all too often may bear little resemblance to the final project costs. So they look good on paper, but the reality is something much different. Under a PPP, the private-sector is impelled to better estimate project costs and time to completion.

The experience in the United Kingdom and Australia provide valuable perspective regarding this matter. In analyzing the results of its country's movement to PPPs, the National Audit Office (equivalent to GAO in the United States) of the United Kingdom (NAO) found that 70 percent of traditional design, bid, and build construction contracts were delivered late and 73 percent were over budget, which fell to 24 percent and 22 percent for PPPs. The NAO concluded that PPPs were delivering price certainty. The NAO also pointed out that construction cost increases were being borne mainly by the private-sector with no increase to government spending, which the NAO viewed as evidence that risk transfer was working ("PFI: Construction Performance," 2003, p. 2 and 3).

Another United Kingdom study showed that the average delivery delay was 17 percent, with a 47 percent cost escalation for traditional construction contracts, whereas PPPs were delivered on average 1 percent ahead of scheduled delivery, with an average 1 percent cost escalation (Mott MacDonald, "Review of Large Procurements in the UK, 2002, p. 14).

In benchmarking outcomes for 21 PPP projects against 33 traditional procurements, Australia, which aggressively moved to PPPs beginning in the 1990s, reported significant cost efficiency from PPPs, ranging from 30.8 percent when measured from project inception to 11.4 percent when measured from contractual commitment to final outcome (Allen Consulting Group, 2007.).

Also, important is the private-sector's willingness to finance some or all of the required investment. This is especially true if the government does not have the

ability to finance the project, or does not wish to divert spending from other priorities. With regard to lease-based PPPs, for instance, often the government does not face a “lease vs. buy” decision so much as a “lease vs. do without” decision or must use a less advantageous short-term lease to finance a long-term need. The aforementioned 2015 GAO High-Risk Series report addresses the issue of leasing office space when the more advantageous option is to own the property, such as through lease-to-buy procurement, which could be accommodated under a PPP (p. 135).

Accordingly, while business cases for PPPs should rely on quantitative measures, including a whole-life costing approach that allows for accurate comparison between the PPP and other procurement options, they should also highlight qualitative data. This would include recognizing the importance of private-sector financing and risk transfer relative to the total estimated cost of the project. Also, faster delivery times and less risk of expensive cost overruns are often important considerations.

- ***Define the public benefit***

PPPs should not be used solely as a mechanism for monetizing government assets in order to bridge funding gaps. Rather, policy makers should evaluate alternative solutions to ensure that the PPP is cost-effective, both short and long term, and includes performance metrics. Moreover, the project should represent a means of providing a direct benefit to the public, such as gaining private-sector efficiency or improving service delivery.

For example, long-term lease agreements should not be used primarily to mask current operating budget shortfalls. Concession agreements, in particular, can encourage poor planning and overspending or underpricing by government officials who might look to PPPs to provide one-time cash infusions to address short-term concerns, eliminating long-term control of valuable public assets and future revenue streams. The risk is magnified when all of the revenue to the government from such a concession agreement, which may span half a century or more, is received up front and then essentially spent on current year operations; thereby mortgaging the future and limiting options.

## Select a Source

- ***To the extent practicable, bundle functions into a single agreement***

By bundling the functions of finance, design, construction, operations, maintenance, management, logistics, and/or ownership into the agreement, government enables the private-sector provider to derive efficiencies across the entire scope of work, which results in cost and schedule savings to the government. There is general agreement that the best time to reduce an asset's life-cycle costs is early in the procurement process (e.g., Land, 1997). In fact, the commercial development literature reveals that between 50 and 70 percent of the avoidable costs of a product are "in-built within the concept design stage" (Newnes *et al.*, 2008, p. 100).

Within the context of PPPs, longer-term Design-Build-Finance-Maintain contracts can incentivize the contractor to make significant investments in the asset at multiple stages throughout the project, which can result in savings to the government. Such contracts lead to "forward thinking" designs that minimize maintenance and operations costs over the life of the asset. For instance, The East End Crossing of the Ohio River Bridges project demonstrated that PPPs can incentivize upfront investment and improved project design, while reducing initial government funding.

- ***Rely on competition to determine the private-sector provider offering the best value***

The essential role of competition is not limited to traditional contracting. The examples in this report, in particular the Ohio River Bridges project, underscore its importance. In a competitive environment, the WVB consortium made an aggressive bid to construct East End Crossing, relying on its ability to reduce costs over the duration of the 35-year PPP agreement.

- ***Develop an education and communications strategy***

Since the initial reaction to significant change in organizations can all too often range from skeptical to negative, the rationale and expected outcomes of PPP's should be communicated to all stakeholders. This includes the public. It is important to help set the expectation for the PPP and address questions and concerns at the outset, with continued communications throughout the initiative. For example, the affected residents in Indiana and Kentucky were made aware of the East End Crossing PPP structure early on. Each year, the state published an update that reflected changes in cost and schedule.

On the other hand, in the case of the United Kingdom’s MoD tanker PPP, the agreement could have benefited from greater deliberation and solicitation of stakeholder feedback. Not educating and communicating can lend credence to a perception that PPPs solely benefit the private-sector at the expense of the public. If improperly conceived and structured that could happen; but, if properly conceived and structured, both sides should benefit. The goal is for it to be a win-win and for there to be public transparency to the extent practical.

### **Structure the agreement**

- ***Hold the provider accountable for outcomes—as opposed to detailed specifications***

To facilitate cost-effective innovation, government agencies should write asset and service requirements in terms of required performance capability, as opposed to a detailed set of specifications. The private-sector is often in the best position to determine how to achieve critical performance requirements. By limiting detailed specifications, the government affords contractors more flexibility with regard to design, materials, and sourcing, while incentivizing creativity, innovation, and the potential cost savings associated with a “bottom-up” approach. To ensure that requirements are achieved, government must structure PPPs to shift some of the risk to the private-sector provider by tying payment to the completion of project milestones, the delivery of specified outcomes, or asset availability or “readiness” rates. More generally, government and private-sector interests must be aligned through the proper allocation of risks and rewards. This is not to say the government steps out altogether. It has an important monitoring and oversight role to hold the private-sector accountable for results and to fully protect the public interest.

- ***Incentivize provider investment by developing longer-term agreements***

The Fleet Readiness Center East PPP suggests that the OMM/PBL contract structure has the benefit of incentivizing the contractor to improve the reliability of systems and reduce inventory of spare parts. A PBL agreement is often seen as a “win-win” in that the contractor stands to make a profit over the long term and the government enjoys the benefit of high availability of systems. Furthermore, this arrangement cultivates long-term partnerships with commercial industries, while at the same time leveraging the commercial industry’s supply chain solutions. The long-term commitments of the PBL contract allowed the private-sector to balance risk and investment by improving parts readiness; decreasing turnaround time, waiting time, and work-in-process inventory; and improving the mean time between system

failures. Accordingly, government agencies should take care to ensure that OMM/PBL contracts are of adequate duration to incentivize private-sector investment.

- ***Establish a PPP unit in the agency and government-wide focus.***

Dedicated PPP units in federal agencies and strong support from OMB can facilitate an effective and efficient PPP process, while protecting the public interest. As emphasized throughout this paper, PPPs only work if properly structured and managed. PPPs are not just a financing mechanism, but a tool to manage risk and expand innovation, with a goal of cost control and enhanced mission achievement. However, it is important to have the capability to fully protect the public interest when using this tool.

PPPs can be complicated, as their applications vary widely. Dedicated PPP units can help ensure a more transparent and outcome-based contract selection process, results-oriented oversight, and broader transformational change and procurement oversight. They can serve as a technical resource and sounding board for PPPs from the time the private-sector first arrives on site through contract completion – a process that may span several decades in some cases.

## **Final Thoughts**

The fiscal challenges faced by government at the local, state, and federal levels will need to be addressed through comprehensive reform that will entail difficult decisions. Increased reliance on PPPs are not a means of addressing or even of delaying such reform. At the same time, as a procurement vehicle, they have been proven to provide value for money, when properly structured and implemented and used in the proper situation and for the right reasons.

Today, in most government organizations, PPPs largely represent transformational change that can be difficult to embrace. This is especially challenging where the status quo is deeply entrenched and the organization is culturally resistant to change. But in light of prevailing economic conditions, future uncertainty, and identified unmet public needs, government must increasingly break out of the box and agencies need to be challenged to consider the full range of procurement options.

To more broadly use PPPs as a viable procurement option, legislators and policy makers will need to coalesce around how to make this happen and remove obstacles that get in the way of smartly moving forward. As KPMG challenged the Center to do when it provided a grant to support this project, we are hopeful the insights and research in this paper will stimulate legislators at all of government and government agency decision-makers to ask whether and how wider use of PPPs can help attain results in the public interest that today may not otherwise be reasonably achievable and foster a concept introduced by George Washington 230 years ago.



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## **Acknowledgements**

This research was supported by a grant from KPMG and the KPMG Government Institute. We are especially grateful for the support and encouragement provided by the entire KPMG team mentioned earlier in the Preface to this report – Jeff Steinhoff, Mike Vitale, Nick Greenwood, and Miles McNamee – who were integral to planning and coordinating the study.

We would also like to acknowledge Corrie Heesen and Darya Safai, graduate students at the University of Maryland’s School of Public Policy, whose research contributed to this report; and our colleague John Rigilano for reviewing our draft report. Finally, we would like to thank our co-worker Caroline Dawn Pulliam for her assistance with the planning and coordination of this study.



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