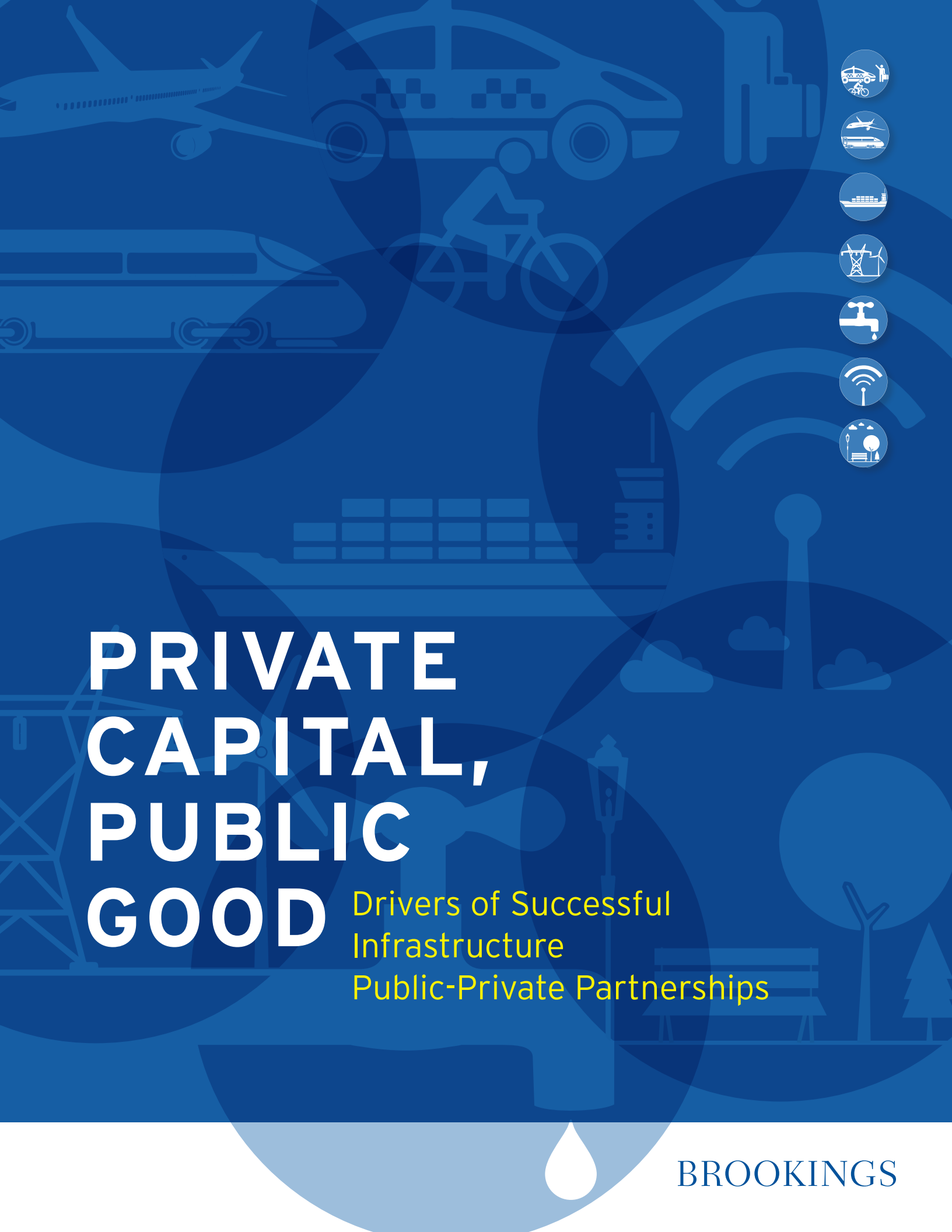

PRIVATE CAPITAL, PUBLIC GOOD

Drivers of Successful Infrastructure Public-Private Partnerships

BROOKINGS

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DRIVERS OF SUCCESSFUL INFRASTRUCTURE PUBLIC-PRIVATE PARTNERSHIPS

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Executive Summary

Despite its fundamental and multifaceted role in maintaining national growth and economic health, infrastructure in the United States has not received an adequate level of investment for years.[1] Political dysfunction, a challenging fiscal environment, greater project complexity, and the sheer size of the need across different sectors are forcing leaders across the country to explore new ways to finance the investments and operations that will grow their economies over the next decade.

Part of this exploration means new kinds of agreements between governments at all levels and the private sector to deliver, finance, and maintain a range of projects. Beyond simplistic notions of privatization, the interest is in true partnerships between agencies, private firms, financiers, and the general public. Many nations already successfully develop infrastructure in this manner today.

These public-private partnerships (PPPs) are alternately framed as a panacea to all of America's infrastructure challenges or a corporate takeover of critical public assets. In reality, they are neither. A well-executed PPP is simply another tool for procuring or managing public infrastructure—albeit a new and increasingly popular one.[2] The growing interest can be attributed to a number of factors, including tightening budgets, increased project complexity, better value for money, the desire to leverage private sector expertise, and shifting public sector priorities.

However, this surge of interest is not matched by broad public sector understanding of the PPP landscape.

This paper is designed to fill that gap by providing an overview of basic PPP structure, how to consider proper risk and reward sharing, and the purpose and the rationale behind these arrangements. It is based on extensive background research and directly informed by interviews with leading practitioners from the public and private sector. Primarily, this paper presents nine recommendations for public leaders as they consider PPPs and is intended to serve as a guide to executing them in the public interest.

1. **Create a strong legal framework at the state level.** PPPs require a sound legal basis to ensure that the public sector has the authority to pursue a deal and allows the private sector to mitigate unnecessary political risk.

2. **Prioritize projects based on quantifiable public goals.** Not every infrastructure project is suitable for a PPP, so it is essential for policymakers to base their procurement decisions on economic and financial analysis that captures the social, environmental, and fiscal impacts of the deal.

3. **Pick politically smart projects.** A successful PPP requires a pragmatic understanding of what is feasible in a constantly evolving political environment.

4. **Understand what the private sector needs.** Strong partnerships are based on finding the right alignment of interests, which is why it is essential to understand what makes a project appealing to private sector investors.

5. **Find the right revenue stream.** PPPs are not free money; they require localities to find durable and resilient revenue sources that will pay for the investment over the long-term.

6. **Create a clear and transparent process.** Routinization and standardization will create a market for PPPs that provides the public and private sector with a clear roadmap for success.

7. **Build an empowered team.** Assembling an empowered public sector team that is capable of making and executing informed procurement decisions is an essential part of any successful PPP.

8. **Actively engage with stakeholders.** PPPs are inherently complex deals that require significant public engagement to ensure that the deal is in the interest of the community and executed at the highest standards possible.

9. **Monitor and learn from the partnership.** PPPs involve decades of dedicated attention that requires thoughtful monitoring, flexibility in the face of a changing world, and a willingness to learn from mistakes.

I. What is an Infrastructure Public-Private Partnership?

A precise definition of a PPP for infrastructure is elusive, as it refers to a broad range of deal structures and asset types. However, the easiest way to understand a PPP is as a legally binding contract between a public sector entity and a private company—typically referred to as a concessionaire—where the partners agree to share some portion of the risks and rewards inherent in an infrastructure project.[3]

In the most advanced PPP markets, such as the United Kingdom, this risk and reward sharing structure more narrowly refers to agreements where the private sector designs, builds, finances, operates, and maintains (also known as DBFOM) an infrastructure asset for a pre-determined period of time.[4] In exchange, the public sector provides a recurring payment based on the condition of the asset (known as an availability payment) or allows the private sector to collect tolls or fees generated from the project.

Figure 1. Different Levels of Private Sector Engagement in PPP Contracts

	Identify Infrastructure Need	Propose Solution	Project Design	Project Financing	Construction	Operation/ Maintenance	Ownership
Bid/Build	Public Sector				Private Sector	Public Sector	
Design/Build	Public Sector		Private Sector	Public Sector	Private Sector	Public Sector	
Design/Build/Finance	Public Sector		Private Sector			Public Sector	
Design/Build/Finance/ Operate/Maintain	Public Sector		Private Sector				Public Sector

Source: Brookings analysis and expert interviews

Despite federal efforts to create a uniform American definition, domestically the term remains amorphous and highly variable depending on the audience.[5] In the United States, PPPs can include everything from the highly integrated DBFOM model to simple arrangements where the private sector only takes an active role in design, engineering, and construction of the project (also known as "design-build").

Public sector agencies procuring infrastructure PPPs may opt to engage with the private sector on either end of this spectrum, and will often choose something in between. Depending on the particulars of the infrastructure asset, local political restraints, existing contractual obligations, financing costs, or other limitations, a public sector agency may choose to engage with the private sector on only a subset of issues. For example, they may choose to form a PPP to design, build, and finance a school, but not maintain it due to an existing contract with a custodial union.

Figure 1 shows the range of PPP types and the elements for which the public or private sector is typically responsible. It shows that, for example, the public sector is always responsible for identifying an infrastructure need. Likewise, the private sector is nearly always contracted out to construct projects.[6]

Financial arrangements and oversight abilities also depend on the specific needs of the public and private sector partners. However, PPPs usually take on a variation of the same basic structure. The public sector maintains ownership of the infrastructure asset, but engages in a formal agreement with a private partner for the financing, construction, operation, and maintenance responsibilities.

The concessionaire is typically comprised of a financing group and an engineering or development firm, which receives revenue from the tolls, fees, or ratepayers using the infrastructure asset. Additionally, some PPPs now involve "availability payments," in which the public sector makes regular payments to the private sector for keeping an infrastructure asset in good working order and open and available to the public.[7] The entire system is overseen by the public sector partner, which ensures that the concessionaire abides by all the terms of the PPP contract.

The wide range of terms and structures possible in a PPP make generalizations difficult—if not impossible. Therefore, the best practices and case studies in this paper relate specifically to DBFOM procurements. While many of these lessons are applicable to more limited partnerships, the intent is to inform policymakers of the critical issues in the most comprehensive form of a PPP.

"The public sector is always responsible for identifying an infrastructure need. Likewise, the private sector is nearly always contracted out to construct projects."

II. How Does Reward and Risk Sharing Work?

Thoughtful allocation of project rewards and risks are the basis of a successful PPP. While the exact terms are project dependent and tied to the specific needs of both partners, there are some general best practices in the field.[8] Of these, **reward sharing** is generally more straightforward. At the most fundamental level, the public sector passes the costs of building and/or maintaining certain elements of an infrastructure asset to the private sector, usually without directly assuming any financial risk. The public sector may also receive a one-time payment from the concessionaire for the right to operate the asset, and, in some cases, a recurring payment or profit sharing. The private sector is rewarded with a long-term recurring revenue source, either through tolls, fees, or through an availability payment.

Risk sharing, on the other hand, is much more complicated. These agreements can take a wide variety of forms, often specifically tailored to an individual project. But they always involve one or more different—but related—types or risk described below and in Figure 2.

Figure 2. Typical Risk Sharing Responsibilities in a PPP

Type of Risk	Public Sector	Private Sector	Shared
Regulatory/Legislative	X		
Government Default	X		
Planning and Design		X	
Permits and Approvals		X	
Construction		X	
Occupational/Workforce		X	
Operation/Maintenance		X	
Financial/Market		X	
Private Sector Default		X	
Political			X
Acts of God			X
Demand	Project dependent		

Source: Modified and adapted from the U.K. Treasury

Generally, the public partner that owns the asset fully assumes the **regulatory or legislative** risk for potential changes that might affect the project. For example, if legislation were passed that demands all bridges need 24-hour video monitoring, then the public sector would be responsible for the additional costs of installing the new equipment on the existing asset. The public partner also usually assumes the **risk of government default** and is subject to fees or penalties if it fails to make payments or other contractually agreed on provisions.

The private sector often assumes a large amount, or all, of the **planning and design** risks associated with the project. In the early stages, this means that the concessionaire must put up their own capital to develop the engineering, technical, and aesthetic aspects of the asset. These key elements will influence the performance and cost of the entire endeavor, as well as serving as a basis for the public sector to evaluate competing project bids. Once these plans are finalized, the risk for acquiring the requisite **permits and approvals** also falls to the private sector. This is often an intensive process that requires negotiations with the local, state, and federal government.

Once the design and permits are in order, the concessionaire assumes the risk of constructing or upgrading the asset to meet the demands of the PPP agreement. **Construction** risk includes price fluctuations in labor or materials costs, problems in implementing the design, and general project delays. Furthermore, providing insurance for **occupational and workforce** risks, like workplace injuries, also falls to the concessionaire.[9]

Risk transfer does not stop once the project is physically completed. The responsibility and costs associated with **operating and maintaining** the asset are also passed on to the concessionaire. These day-to-day concerns may involve making routine repairs, managing staff, providing customer service, or anything else that keeps the infrastructure asset functional.

Direct exposure to **financial** risk is also borne by the private sector, which includes the possibility of unexpected interest rate fluctuations in the capital markets that may undermine the debt structure of the project. This financial risk extends to the concessionaire's own balance sheet, as their revenue is contingent on keeping the infrastructure asset available and in a state of good repair. If the **private sector defaults** on any aspect of the contract, the public sector maintains the right to fine the concessionaire, or in some cases, even terminate the PPP agreement.

Other risks are shared between the public and private sectors. For example, each take on a degree of **political** risk, as each partner will devote resources to a project that might not come to fruition.[10] The risk of large unforeseeable events, often called "**acts of God**" or "*force majeure*," is also usually shared.[11] These can include everything from terrorist attacks to unforeseen weather or geological events.

Demand risk is an area that is often highly project dependent. Functionally, demand risk refers to the possibility that fewer users than projected will support the project through revenue from tolls, fees, rates or fares. In a standard PPP agreement, the public sector passes on the risk of lower than expected revenue to the concessionaire and that possibility is priced into the contract. A recent example is the Indiana Toll Road. In 2010, the private partner estimated that the road needed nearly 11 million toll-paying trucks each year just to break even, but only half as many traveled the highway.[12]

However, the public sector may also retain some portion of demand risk for a number of reasons, primarily when issues around social equity or the environment are involved. For example, a profit-maximizing toll road concessionaire may prefer that commuters using their facility did not carpool, as it would cut into their revenues. The public sector, for equity or environmental reasons, may favor carpooling. To bring both these interests in line, the public sector can choose to subsidize the concessionaire for the lost toll revenue. This collaborative approach was implemented for the 495 Express Lanes project in Virginia to balance each sectors' goals.[13]

III. Why Pursue a Public/ Private Partnership?

PPPs for infrastructure are complicated. They require robust economic analysis, complex negotiations, intense public scrutiny, long-term commitments, political leadership, and force public sector employees and policymakers to hone a relatively new skill set. The $3.6 trillion municipal bond market that makes public sector borrowing for infrastructure projects affordable and the risk adverse nature of public procurement offices brings added complexity.[14] Despite these challenges, PPPs can make sense in a number of different situations:

- **Debt Constraints** – Cities and states across the country have approximately $3.6 trillion in outstanding debt.[15] This weighs heavily on many standalone infrastructure systems, including public water utilities, transit agencies, and departments of transportation. This legacy debt increases borrowing costs, makes new issuances unappealing to policymakers and the public, and, in some cases, precludes the issuance of new bonds because of statutory debt limits.[16]

  PPPs can be structured to allow the public sector to avoid adding to their long-term debt obligations by using private sector capital to finance a project. This does not mean that the users of the system may not bear higher costs, or that the public sector avoids additional budgetary outlays. However, it does mean that the financing, building, and maintenance costs are no longer the direct responsibility of the government.

> "PPPs are rarely the lowest-cost way to procure infrastructure. [However] a well-structured PPP can deliver better *value* for the public dollar."

RIALTO UTILITY AUTHORITY

In 2010, Rialto, California's beleaguered water utility struggled with a number of environmental, operational, and financial challenges. Contamination from a shuttered munitions plant complicated water processing, required expensive purchases from neighboring water systems, and posed a major public health concern.[17] Years of deferred maintenance and lack of improvements to the system's aging facilities lead to a number of water main breaks and substandard service that hurt the utility's 48,000 customers.[18] The historically underfunded system also struggled to meet pension liabilities, which were starting to weigh on the utility's ability to affordably raise capital in the tax-exempt market.[19]

The city itself was poorly equipped to tackle all of these issues on its own. The Great Recession hit the city's finances hard, which were still in a delicate position from a near default in the early 2000s.[20] After a thorough evaluation of city-led refinancing options provided few viable options, Rialto opted to explore a PPP for the struggling utility. The city placed a special emphasis on building consensus around key control and quality issues with the community at large, organized labor, and existing utility staff.[21] Critically, Rialto did not rush into a deal and instead spent nearly two years building out selection criteria and a process that would best suit their needs.[22]

Rialto's careful efforts resulted in a 30 year concession with Veolia Water, a large water operator, and Table Rock Capital, a boutique equity firm specializing in infrastructure PPPs.[23] Reinforcing the important role of organized labor, Ullico (a major labor-owned insurance and investment company) came alongside Table Rock as one of the largest equity partners in the deal.[24] This engagement with unions resulted in a comprehensive labor agreement, which ensured that that all existing employees would maintain their positions for at least 36 months and receive additional training.[25]

The reorganized water authority, rechristened Rialto Water Services (RWS), took over the operations, maintenance, financing, and modernization of the utility in exchange for the right to collect revenue from ratepayers with formula based rate adjustments.[26] RWS compensated the city with an upfront payment of $30 million, defeased (or extinguished) the city's $27.4 million in utility debt, and agreed to invest in a $42 million capital improvement plan for the water system.[27] The deal effectively shifted all the operational and financial risks inherent in running the utility to RWS, while easing the city's budgetary challenges.

In exchange, the public sector pledges to share revenues or to simply pay the private sector a fixed cost based on the availability and condition of the facility. This is by no means "free money" for the procuring agency, but does allow the public sector to mitigate the upfront borrowing costs and sometimes even receive a onetime cash payment for rights to operate the asset. However, it is important to note that these transactions can preclude future budgetary flexibility and may end up costing users or taxpayers more over the long term, depending on the structure of the deal. Availability payments, for example, could be considered to be a form of "debt" since they require an ongoing public expenditure and a binding budgetary obligation.

VIRGINIA 495 EXPRESS LANES

The Washington Beltway is infamously congested. INRIX, a traffic data provider, recently ranked metropolitan Washington as the 10th most congested metro in the United States, mostly along the key corridors connecting the city with commuter suburbs.[30] The problem is particularly acute in Virginia along a 14 mile stretch of the Capital Beltway between the I-95 interchange and the Dulles Access/Toll road.

Alleviating traffic along this corridor in the traditional manner by building new lanes would be expensive, politically toxic, and require the state to relocate at least 350 private residences.[31] After nearly 20 years of intermittent planning work, the Virginia Department of Transportation (VDOT) received an unsolicited proposal to create special dynamically tolled lanes along the highway from Fluor Daniel, a large private sector construction firm.

The proposed High Occupancy/Toll (HOT) lanes would incorporate both new monitoring technologies and advanced price-setting algorithms that maximize traffic flow and revenue, while reducing congestion. Tolls would vary depending on real-time congestion conditions (i.e., drivers would pay higher tolls when congestion is high, and vice versa.) Furthermore, they would not require the expansion of the existing highway, as the lanes would be added in the center median.

While most states are not equipped to handle unsolicited proposals, VDOT maintains a dedicated internal PPP unit, the Office of Transportation Public-Private Partnerships (OTP3) that specifically works to pursue these types of partnerships. Under the guidance of OTP3, Virginia was able to develop a PPP with Fluor to launch the managed lane project in November 2012.[32]

In this case, VDOT used its robust PPP process to shift the planning and design risk of developing a complex and creative traffic project to the private sector, while gaining the ability to use a traffic management model that was beyond their internal expertise and technical capacity. Currently, revenue from the HOT lanes is not meeting projections, but due to the PPP structure the state gained a technologically advanced system that delivered a 50 percent increase in capacity along the corridor, without bearing the demand risk for revenue shortfalls.[33]

- **Private Sector Expertise** – While the public sector brings significant expertise to projects; many private sector firms have access to technologies, materials, and management techniques that exceed the capabilities of an individual governmental agency or department. PPPs are one way to harness the ideas and breadth of experience the private sector brings to projects by fully incorporating them into the procurement process.[28]

  Public and private sector collaboration from the outset of an infrastructure project, whether greenfield or brownfield, can lead to a number of innovations. These may come in the form of new materials, faster project delivery, increased use of technology, operational efficiencies, or enhanced building techniques.[29] An open PPP procurement process, at minimum, provides the possibility for new ideas that the public sector may have never considered.

LONG BEACH, CALIFORNIA COURTHOUSE

Built in 1959, the Long Beach Courthouse had long been an unpleasant and unprofessional place to conduct legal proceedings. Ceiling collapses, a termite infestation, and overcrowding seriously compromised the building's operations.[37]

In 2007 when the Judicial Council of California's Administrative Office of the Courts (AOC) began looking into options for replacing the aging building, they chose to pursue a procurement model that delivered the best value for the money, not just the lowest cost. After a feasibility study and a legal review, the AOC launched a request for qualifications and then a formal request for proposals to evaluate what was achievable using a PPP.

Using a value for money (VFM) analysis, the AOC compared the PPP proposals against traditional bid-build procurement models. The AOC determined that the best value over the lifetime of the project came from a consortium led by AECOM, Clark Construction, Johnson Controls, and Meridiam Infrastructure. The AOC would continue to own the facility, but would pay the consortium a monthly fee based on the condition and availability of the courthouse over 35 years.[38]

Through a combination of construction and operational risk transfer as well as state of the art materials and energy efficiency measures, the project came in at 15 percent under the AOC's initial cost estimates. The project was also delivered eleven days early.[39]

- **Value for Money** - PPPs are rarely the lowest-cost way to procure infrastructure for several reasons.[34] For one, the transaction costs for PPPs are usually higher than traditional bid-build contracts, which average around 10 percent of the entire value of the project.[35] Plus, private sector borrowing costs are generally higher than those available to the public sector, as governments are able to access the tax-exempt municipal bond market.[36] Despite these limitations, a well-structured PPP can deliver better *value* for the public dollar. This value can be derived in a number of ways.

  Driven by the need to deliver profit to investors and shareholders, the private sector is less tolerant of cost overruns and project delays than the public sector. Therefore, transferring construction, operational, and/or demand risk to the private sector can result in quantifiable savings for the public sector, as taxpayers or ratepayers do not bear the costs if the project takes longer than expected to complete, goes over budget, or underperforms. The company or consortium that assumes responsibility for the infrastructure asset may also opt to invest in more durable materials or efficient technologies that drive down lifecycle costs. These might not be the cheapest options in the *short term*, but have the potential to drive savings over the *long term* through decreased energy usage, lower maintenance costs, or enhanced resiliency.

PORT OF BALTIMORE, SEAGIRT TERMINAL

The expansion of the Panama Canal is forcing ports across the United States to re-evaluate their role in the global supply chain. Once the expansion is complete, the canal will be capable of handling cargo ships that are nearly three times as large as current standards, requiring American ports to either make large investments in upgrading their facilities or else restrict their operations to accommodate only smaller, conventional boats.[40]

Making the investment to host these so-called Panamax ships is not a trivial matter. Dredging costs alone can range from $345 million at a port like Charleston, South Carolina to $1.7 billion at the Port of New York and New Jersey.[41] These estimates do not include the price of new logistics facilities or larger gantry cranes to unload the supersized ships.

For the Port of Baltimore, which is owned and operated by the state, the cost of improving the Seagirt Terminal to handle the new demands of Panamax ships was in excess of $700 million.[42] Balancing this significant investment against other projects—such as improvements to I-95 and the Chesapeake Bay Bridge—led the state to consider a PPP. After an open bid process, Maryland formalized a partnership with Ports America, an experienced private operator, and Highstar Capital, a large private equity firm that focuses on infrastructure, to improve and manage the port for 50 years.

While the state lost access to the full future revenues from the port for the term of the deal, they received a one-time $140 million payment, all the necessary infrastructure to handle the new Panamax ships, an annual payment, and a profit sharing mechanism with the concessionaire.[43] These payments and revenues were used to improve transportation assets, including highways and bridges throughout the state.[44] Furthermore, the concessionaire assumed not only the construction risk inherent in the project, but also the demand risk that the expanded Panama Canal would not deliver the expected increase in shipping volumes.

The Seagirt terminal is a strong example of a state using a PPP to develop economically critical infrastructure that did not necessarily fulfill a fully public sector function.

- **Non-Inherently Governmental Assets** – State and local governments own and operate a number of infrastructure assets that, for a variety of reasons, may no longer be central to their organizational mission or even have a clearly defined governmental function. These assets might include parking garages, port facilities, water and electric utilities, buildings, idled property, or even the right to develop real estate above an existing road or transit facility.

  PPPs are one way for the public sector to monetize or improve these untapped or non-inherently governmental assets, without ceding public ownership. This gives the public sector both the oversight it needs to ensure the proper use of the asset and gives the government the opportunity to reevaluate their role at the end of the PPP concession. Furthermore, the agreements also drive new revenue since private sector concessionaires often pay upfront lump sums for long-term operational rights. Additionally, the development of the asset itself can increase local economic activity or enhance property values which, in turn, raise tax revenue.

IV. What Do Policymakers Need to Do?

PPPs are not appropriate in all instances. However, public sector agencies interested in using this tool need to implement a number of rules, tools, and institutions to ensure that the process is carried out in a responsible manner. Through interviews with leading stakeholder groups and extensive background research, we identified a set of success factors for PPPs.

1. Create a Strong Legal Framework at the State Level

Markets thrive on certainty and PPPs are no exception. While many aspects of PPPs can be executed without the involvement of state legislatures, a strong legal basis is a necessary precondition for a successful partnership.[45] The public sector can only enter into contracts that are authorized in their jurisdictions. For their part, the private sector needs assurances that a project will not be derailed by political fiat or in a way that may be considered arbitrary or capricious. To do so, PPP authorizing legislation must address several key issues:

First, it should authorize state and local agencies to enter into concession and partnership contracts with private entities without a second review by the legislature. Strong oversight and evaluation processes should be implemented early in project selection, often orchestrated by a dedicated public sector unit and guided by an appointed board.[46] However, giving elected officials multiple veto points, especially late in the procurement process, can be prohibitively expensive for private sector bidders and public sector agencies.[47] Furthermore, the political uncertainty created by the lack of authorizing legislation discourages bidders and that additional risk will be priced into future contractual agreements.

Second, authorizing legislation should introduce flexibility for state and local agencies to engage in PPPs for a broad range of project types, not just a single subset of assets. Narrowly focused language that targets a single sector, like transportation, may prevent the public sector from experimenting with different types of assets and precludes the ability to join up sectors such as energy and water. Innovative localities or agencies looking to procure broadband, social, and other types of infrastructure should not be left without legal standing or guidance. The same flexibility should also be applied to both new greenfield projects and the redevelopment of existing brownfield assets.

Third, the legislation must address fundamental PPP contractual issues. Legal requirements to accept lowest cost bids—which undermine the value for money (VFM) concept—must be modified to allow procuring public sector agencies to take issues beyond price into account. Legislation should also allow public and private funds to be mixed.

Finally, PPP legislation must take into account existing legal structures that may undermine the intent of the authorization. State and local laws may impact PPP procurements in a number of unexpected ways, including rate setting requirements, insurance, tolling authority, federal loan eligibility, fraud statutes, collective bargaining agreements, and environmental review processes. Performing a detailed scan of the existing legal environment and rectifying these issues through the legislative process will ensure that PPPs are not applied in inappropriate situations or unnecessarily delayed due to inconsistencies in the authorizing language.

While 33 states have some form of PPP authorizing legislation in place, most are focused exclusively on transportation and even fewer states actually pursue deals with any frequency.[48] While a relative latecomer to the field, Maryland passed some of the most thorough PPP legislation in 2013.[49] Their legislation addresses all the issues identified above and serves as a strong model for other states interested in starting a PPP program or looking to update existing statutes.

2. Prioritize Projects Based on Quantifiable Public Goals

The success of a PPP is driven by a wide variety of factors, but the most important are the underlying policy goals, economics, and financial drivers of a project. Quantifying these is a mix of art and science; however there are several distinct ways to guide smart project prioritization.

A key driver of a successful PPP procurement and for procuring infrastructure in general is prioritizing projects based on a strong economic, and not political, rationale. This rationale can derive from a number of different sources, including concerns around social equity and inclusion, the environment, business development, or other quantifiable and justifiable public sector goals. It is difficult to adhere to these principles in order to serve a poorly considered or politically motivated project.

Some of the most notable PPP failures in the United States are based on such misguided planning or overly optimistic projections. For example, the concession of the Pocahontas Parkway in Virginia was premised not on a need for increased passenger or freight transit in the Richmond area, but on a poorly considered real estate development strategy.[50] Overly optimistic traffic projections tied to unrealistic development expectations around the Parkway eventually led the project to the brink of default in 2013 and forced one of the concessionaires to write off nearly $140 million in equity.[51]

Successful projects must demonstrate real value as a partnership between the public and private sector. With the relatively low cost of capital from the tax-exempt municipal bond market, the financial case for a PPP requires a thoughtful approach.[52] The U.S. Department of Transportation, as well as international leaders like Her Majesty's Treasury in the United Kingdom, recommends using a VFM (also referred to as a public sector comparator) analysis to econometrically evaluate the true costs and benefits of a PPP project.[53]

Private consultants or financially savvy internal review teams are capable of running these types of models, which can incorporate a number of different scenarios. Importantly, VFM analysis is predicated on quantifiable inputs and outputs in the project. These considerations often look at the cost of capital, demand projections, tax implications, social gains, risk transfer pricing, environmental externalities, and a range of other factors.[54] Using a VFM, policymakers can start making informed decisions about entering into a PPP by comparing the costs and risks associated with different proposals and procurement models.

As mentioned, PPPs are usually not the lowest cost procurement option, but very often will present greater value for the public through other cost savings. Faster delivery times, increased certainty and accountability for the operational condition of the asset, diminished downside financial risk for taxpayers, budgetary certainty over a long period of time, lower lifecycle costs, and the use of innovative materials or technologies are all achievable through a well-structured PPP.[55]

However, it is important to remember that these models will only capture things that can be measured in dollars and cents. Issues that are not easy to monetize, such as broad equity, environmental, or even aesthetic concerns, will not appear in a VFM. That does not mean that these factors do not merit serious attention. In any PPP analysis, these difficult to quantify concerns should be noted and expanded upon along with a rigorous financial model. When factoring in so many variables and the inherent limitations of VFM models, policymakers should always consider these studies as rough guides to the financial implications of a PPP and not an exact assessment of a deal.

"Some of the most notable PPP failures in the United States are based on such misguided planning or overly optimistic projections."

3. Pick Politically Smart Projects

Even with all the right financial and legal pieces in place, a poor understanding of the political environment can increase costs, delay the project, or even scuttle a well-structured PPP.

Despite the fact that PPPs are not privatizations, as the public sector retains ownership and some degree of control over the asset, a number of users and stakeholders may consider any type of partnership as a threat to the livelihoods of their constituents. This is particularly the case in highly unionized infrastructure sectors where toll collectors, maintenance workers, or other employees might feel that their jobs are threatened by any deal directly connected to the private sector.

For example, the Professional Engineers in California Government (PECG) took extensive legal action against a PPP deal to improve the Presidio Parkway outside of San Francisco.[56] The union feared that any type of partnership could result in job losses, reduced benefits, and increased costs to state taxpayers. Engineers also displayed concerns that the private contractors would supplant public engineers to conduct safety inspections of their own work.[57] Ultimately the legal efforts failed and the union's concerns proved largely unfounded. However, the misunderstanding delayed the road improvement significantly and damaged sensitive relationships with organized labor groups.

That is not to say that PECG did not have reason for concern. A study by the U.S. Government Accountability Office found that while contracting out services may provide short-term cost savings for some public transit agencies, those savings are almost always borne by reductions in wages and benefits.[58] However, these issues can potentially be addressed with early outreach to unions, benefit guarantees, and other employment assurances.[59] For example, the Service Employees International Union (SEIU) recommends a decision making board to oversee investments that have a wide range of community stakeholders, including representatives of labor, state and local governments and other organizations.[60] In 2006, an official at Goldman Sachs testified that "it is important to consider the future of the municipal employees as a result of a PPP concession. It is possible for concession contracts to be written so a concessionaire must use municipal employees for all or a portion of toll collection, maintenance, administration, etc."[61]

While there are examples of failed partnerships with unions, there are also success stories.[62] The Seagirt Terminal in Baltimore is a notable example of successfully concessionaire and union negotiation, in which the Longshoremen retained their jobs and received technical training as part of the agreement.[63] In this way, strong labor practices and early outreach added great value to the investment.

There are also strong political risks in raising rates or changing toll structures. Highly tax or toll adverse communities are increasingly pushing back against PPPs, as these revenues may be seen

as "crony-capitalism" or generally an inappropriate way to pay for infrastructure.[64] This shift is particularly pronounced in Texas, where the state Republican Party platform recently changed its longstanding endorsement of tolling for highway PPPs, to a strong stance against them.[65] Virginia, already a leader in PPPs, also faced significant and unexpected political and legal challenges to a toll based concession in their Elizabeth River Crossing project.[66]

Understanding and overcoming these types of challenges is difficult for any public agency, but doubly so for those engaging in their first PPP. Therefore, it is often politically easier and less time consuming to start simpler PPP projects and then graduate to more complicated deals, if appropriate. Parking facilities are potential early entry points for PPPs since they have straightforward revenue streams and the public is already accustomed to their fee structures. Provisions around job creation, continuity of service, and other well defined public goals can be codified into these contracts, to ensure that they appeal to a broad set of community interests. Once the public sector can demonstrate competence in executing smaller deals, they are more likely to receive support in larger endeavors.

4. Understand What the Private Sector Needs

Public entities also need to understand how to select projects that will drive private sector interest. Public officials looking to improve high risk, overleveraged, or outdated assets might view PPPs as an attractive model for stimulating much needed capital investment. Yet, while these troubled assets may draw some private sector interest, there must be a compelling revenue stream or underlying economic potential to draw serious bidders.

Outside of the state of the asset itself, the number of available or possible PPP projects in a given market is a key driver of private sector involvement in public infrastructure. Private sector builders and financiers interviewed for this paper cited due diligence costs for projects running into the millions of dollars and taking months or even years of dedicated staff time. One contractor interviewed for the paper cited a five year proposal development process for a project that never came to fruition.

Proper analysis requires detailed information on the specific engineering and demand characteristics of the individual project, as well as a thorough understanding of the legal, political, and regulatory environment in each market. Therefore, the private sector is less likely to engage in a place that only offers up a handful of PPP projects every couple of years. To make their investment in understanding that locality worthwhile, the private sector needs a defined pipeline of projects that justify their upfront costs.[67]

This type of market building is what makes Virginia's approach successful. Through a thoughtful PPP selection process, the state maintains a well-defined list of projects that the private sector can rely on for continued business over the long term.[68] On an even larger scale, the West Coast Infrastructure Exchange is building a pipeline of projects across infrastructure types for California, Oregon, Washington, and British Columbia by identifying and preparing assets for PPP procurement.[69] These are the types of markets where the private sector will devote its time and resources for the foreseeable future.

As a corollary to the volume of PPP deals in a given state, the projects need to be large enough in dollar terms to merit private sector attention. As a rule of thumb, the private sector is interested in projects in the $100 million range to make the investment of their time and resources worth the effort. For some straightforward projects, notably parking garages, this number can be as low as $50 million.

Given this high threshold, many states and localities need to bundle smaller projects together into a single deal. Bundling similar small scale projects into one deal generates the scale needed for the private sector to justify its due diligence costs, for both sides to keep transaction costs low, and to effectively diversify the risks across a number of individual projects. While this is an appealing idea, few have tried it, primarily due to the challenge of coordinating multiple jurisdictions. Pennsylvania

is one of the first to attempt this strategy domestically by including several hundred bridges in a single availability payment concession.[70] Examples of water project bundling can be found throughout Canada's First Nations communities.[71]

> "Provisions around job creation, continuity of service, and other well defined public goals can be codified into these contracts, to ensure that they appeal to a broad set of community interests."

5. Find the Right Revenue Stream

PPPs are not free money. Just like other public sector projects, they fail or succeed based on access to long-term revenue streams. While the details of PPP funding and financing packages are arranged far along in the procurement process, states and localities must lay the groundwork for a successful repayment mechanism in advance.

Taking projects directly to the voters remains a popular and time-tested approach. Ballot measures have traditionally played an important role in securing funds for infrastructure investment, particularly at the local level. These initiatives are popular among voters. According to the Center for Transportation Excellence, 73 percent of measures passed in 2013 as did 79 percent in 2012.[72] These ballot box initiatives can be used to increase revenues in a number of ways, including new toll authorizations or user fees, which can be used as a revenue stream for concessionaires. Alternately, voters can approve general sales or gas tax increases that can be applied to availability payment PPPs.

In many cases, direct voter approval may not be necessary. Legislatures, city councils, boards, or other authorizing agencies have the power to increase taxes, rates, or approve new tolling, which can generate revenue to support the capital needs of the PPP. While politically challenging, these measures are a straightforward way to generate the recurring revenue necessary for a successful PPP. Using predictable formula-based rate increases (an approach Rialto, CA used for their water PPP) can temper political resistance, keep the rate setting process transparent, and also protect consumers from rate shocks.[73]

Beyond direct appeals for money, new technologies allow infrastructure operators to squeeze new efficiency out of existing assets by more accurately pricing demand. Water and energy companies are utilizing smart metering technologies to dynamically adjust pricing to reflect factors like the time of day and system load.[74] Similarly, high occupancy tolling (HOT) lanes, like those installed along the 495 Express Lanes in Virginia, manage demand and increase revenues by charging for a dedicated, less congested lane on an existing roadway.[75] PPPs allow the private sector to use these efficiency gains to drive new revenue out of existing assets, which incentivizes them to both make improvements and to engage with the public sector.

Outside of creating new revenue streams, many states and localities are pursuing ways to capture value from existing assets. Value capture is based on the idea that infrastructure improvements will attract new businesses, customers, and investors to a community. For example, tax increment financing (TIF) districts capture the appreciation in real estate values surrounding the infrastructure project to pay back project bonds. In Denver the TIF model is being used in conjunction with the Eagle Commuter Rail PPP to back redevelopment along the new transportation corridor, which will move more housing closer to public transportation, potentially increase the local tax base, and reduce road congestion in the region.[76]

Exploring and establishing these revenue streams will ensure that a PPP has the fundamental financial underpinnings that will position the project to succeed. Furthermore, they are the basis for the financing packages that constitute the risk sharing component of any partnership.

6. Create a Clear and Transparent Process

Both the public and private sector need a well-defined process to guide a successful PPP procurement. This does not mean that some states and localities have not executed ad hoc PPP deals. However, routinization and standardization are what drives a healthy PPP environment.

In many cases, a state's PPP authorizing legislation outlines a generic process for agencies to procure a PPP. However, the actual procurement will require the development of a wide variety of internal rules and processes. See Figure 3.

Figure 3. A Typical DBFOM Procurement

Project Prioritization and Selection	*Build the economic, financial, and business case for the project*
Basic Political and Market Testing	*Evaluate private sector and political interest in the project internally and with partners*
Formally Present the Project	*Publically present the project at a forum and/or take the project out to investors*
Issue Request for Qualifications	*Issue a formal soliciation to narrow the field of eligible private sector candidates*
Select Qualified Bidders	*Engage in a consistent, transparent, and fair initial pre-screening process*
Issue Request for Proposals	*Request detailed and technical proposals from the pre-qualitfied bidders*
Short-List Proposals	*Rank proposals based on pre-defined and transparent criteria*
Negotiations and Final Selection	*Engage the top bidders and negotiate a final contractual agreement with the winning party*
Construction	*Monitor the building phase for compliance with all aspects of the contract*
Contract Management	*Actively manage the private sector partner over the life of the contract*
Asset Return	*Ensure the asset is fully returned to the public sector as negotiated and determine next steps*

Source: Brookings analysis and expert interviews

While establishing a PPP procurement process requires a number of steps, it is important to note that even traditional lowest cost bid/build contracts require similar measures.[77] The additional transaction costs incurred through this complicated process can be added to the VFM analysis, ensuring that they are captured in any comparison to other forms procurement or competing bids.[78]

Building an effective process also requires the public sector to establish a roadmap that charts out the variety of boards, permits, approvals, and regulations that apply to the PPP. These may range from hyper-local concerns like a zoning board, to nationally dictated policy such as environmental regulations. Both the public and private sector stakeholders working on a PPP may not be aware of the scope and breadth of these potential roadblocks, which is why it is so important to map out the full process before moving a project forward. This mapping process is often carried out by a dedicated PPP unit, the public sector procurement team, or with the help of an outside consultant.

Beyond identifying possible bottlenecks, a roadmap can inform administrative changes that smooth the process. Commonly applied practices include fast track permitting and standardization.

Fast tracking can be as simple as moving a project to the top of the regulatory review process, or as involved as granting specific waivers to accelerate project permitting and approval. While expediting the process may be appealing, these measures are best applied as part of a well-defined policy framework and codified in statute to avoid legal challenges and to prevent abuse of power. In other words, a project should not be fast tracked just because it is a PPP. Setting up clear benchmarks or qualifications for gaining fast track status is necessary to clarify the process for both the public and private sector. A strong example of fast tracking exists in Maryland, where qualifying projects receive expedited review from all the relevant state agencies, as well as a direct liaison to ease the permitting and approval process.[79]

Form standardization is significantly easier to implement and generally does not require legislative or political authorization. As PPPs are inherently complex financial and logistical undertakings, even basic steps like maintaining common application forms and consistent submission deadlines both horizontally across public agencies and vertically between levels of government can significantly speed up procurement. While not specific to PPPs, Governor Cuomo's NY Works Task Force is working to implement form standardization across multiple state agencies.[80]

Many of the public and private sector leaders interviewed for this paper noted persistent inefficiencies due to lag times between decisionmaking bodies and the need to submit nearly duplicate forms multiple times to multiple agencies. Considering the wide variety of stakeholders involved, even the small inconvenience of learning how to fill out a new form for each agency or a misaligned approval process can add significant time and cost to project development. California approached this problem by consolidating and aligning several existing financing programs under their new Green Bank, which is working to streamline all of its approval processes.[81]

"While expediting the process may be appealing, these measures are best applied as part of a well-defined policy framework and codified in statute to avoid legal challenges and to prevent abuse of power."

7. Build an Empowered Team

Creating a well-defined procurement process is useless without a team to execute it. Assembling a group with the right mix of finance, legal, policy, and communications experience is critical to the success of any PPP project. Public sector agencies looking to procure a limited number of PPP projects or engaging in their first, often use outside advisors for most of these services. This can be a successful strategy as long as public sector decisionmakers remain in control of the process.[82]

However, a dedicated PPP unit increases the public sector's in house capacity and expertise to execute these transactions. These teams can live inside a department, such as a transportation office, or may be generalists under a mayor or governor's office. Examples of these types of PPP units can be found at both the state level, notably in Virginia, and at the city level in places like Los Angeles and Chicago.[83] The Obama administration is also creating the Build America Transportation Investment Center, a coordination unit at the U.S. Department of Transportation that will help localities with innovative finance tools like PPPs.[84]

While the exact mission of each of these offices varies, PPP units have five distinct roles in the procurement process: policy formulation and coordination, quality control, technical assistance, standardization, and promotion (Figure 4).[85]

Figure 4. Core Functions of a PPP Unit

Policy Formulation and Coordination	Quality Control	Technical Assistance	Standardization and Dissemination	Promotion
• Develop program guidelines • Create application processes • Coordinate both between agencies and levels of government	• Perform project review • Monitor budgetary implications • Certify compliance with existing policy	• Provide guidance across the procurement process • Perform value for money analysis	• Create common contract language and forms • Provide best practices and sample documents • Push materials out to agency and local government partners	• Keep private sector informed of available PPP projects • Provide guidance for interested private sector stakeholders • Consolidate and maintain project list

Source: Istrate and Puentes, 2011.

By bringing this expertise in-house, states and localities are able to develop both the formal and informal processes that underpin smooth transactions. Finance expertise in these units is especially important, as it decreases transaction costs over time by cutting down on need to hire outside consultants and builds greater market certainty for leading private sector partners.[86]

Once the process and team are in place, the final considerations must be placed on maintaining a well-defined schedule and establishing clear lines of authority. Simply put, the private sector needs their partners in the public sector to come up with clear yes or no decisions. PPPs do not rely on the private sector to only line up material and labor costs, as is common in typical low-bid build contracts. The private sector must invest large amounts of resources into multiple aspects of the design, finance, and operational aspects of the project. Long delays or unclear decisions drive up both the realized and opportunity costs for the bidders, which will result in lower quality and weaker proposals and decreased market interest.

8. Actively Engage with Stakeholders

PPPs are inherently technically and financially complex projects. Unfortunately, this complexity presents ample opportunities for miscommunication, weak management, and poor planning. While it is essential to have both a strong financial case and an initial market assessment in place before fully pursuing a PPP, an engagement strategy is a necessary component of any transaction. Key stakeholders and the public at large need to have meaningful opportunities to understand, vet, and shape the deal. Creating these opportunities requires three major steps: ensuring transparency, creating a targeted engagement strategy, and finding a project champion.

Any relationship between the public and private sector presents an opportunity for corruption or inside dealing. However, creating and actively maintaining a transparent procurement process will not only help allay public suspicion of any backroom decisions, but also put pressure on public officials to avoid taking shortcuts or moving forward without complete documentation. While it is often too early to engage in this type of public dialogue and scrutiny in the initial project selection process, providing thorough documentation and a coherent narrative for the PPP procurement should be done as soon as possible.

Achieving transparency is straightforward. All the relevant documents should be made publicly available online through an easily accessible database. These should include the financial analysis, business case, environmental review documents, and any other supplemental materials related to the procurement. Many states and localities have so-called "sunshine laws" that require this, but a pre-emptive and active approach to disclosure will not only help the public sector further vet the proposal, but also provide opportunities to change course or even abandon the project if necessary. Here again, Virginia's OTP3 is a leader in the field with a robust and fully documented website that tracks each of its projects.

Beyond making these materials available online, it is important to get out in front of the communities that will use or be affected by the project. Key stakeholder groups must be identified and approached early and often to ensure a broad understanding of the project and to gain feedback that can improve or even veto the deal. This requires targeted communication with both the committees that are likely to have oversight duties related to any given infrastructure type and with community members on the ground.

It is critical to meet stakeholders where they live and work and not expect them to only engage through publically announced meetings. Going into the community and presenting the project at churches, union halls, schools, chambers of commerce, and other local forums will help ensure that a broad variety of voices are heard and that they are approached on their own terms. For example, Charlotte, NC held a two-day summit to explore using a PPP to finance the expansion of their light rail system and invited a broad set of both local and national stakeholders to discuss the pros and cons of the approach.[87] The goal of such outreach should not be only to "sell" the transaction but to engage with stakeholders to design a better project.

Failure to take these steps around transparency and engagement has real consequences. Chicago's parking meter PPP is a prime example of what happens when stakeholders and the public are excluded from the process. The 75-year PPP to manage the city's 36,000 parking meters was negotiated out of public view with an opaque selection and oversight process.[88] Combined with a large and poorly communicated spike in the parking fee structure, Chicago faced a broad backlash against the deal and the overall mishandling of the project soured public opinion on the entire PPP model.[89]

Finally, PPP projects need a champion. A mayor, governor, legislator, or other prominent citizen who can speak compellingly about the project is an essential component of any engagement strategy. They build project credibility and give cover to the more technical staff working on the particulars of the deal. However, a strong spokesman is not a substitute for strong legal or financial fundamentals, as was demonstrated by Governor Ed Rendell's failed PPP bid for the Pennsylvania Turnpike. Despite

the governor's strong support for the project, conflict with the state legislature, lack of PPP authorizing legislation, and insufficient economic analysis ultimately made the $12.8 billion project infeasible. An analysis of the transaction revealed that despite a generally optimistic assesment of the projects economic impact, the state's residents and labor interests were unclear about the long-term effects of the deal.[90]

9. Monitor and Learn from the Partnership

Much of the attention given to a PPP occurs during the procurement process and when the construction is completed. However, these contractual agreements often last decades and require open and sustained engagement from the public and private sector, as well as the community at large. To ensure a successful PPP over the long term, the public sector should create a staffed monitoring mechanism, design an ongoing engagement strategy with the public, be willing to adapt to project changes, and actively learn from mistakes made throughout the process.

Most monitoring procedures involved in a PPP are codified into the contract. These formalized processes around condition reporting, definitions for state of good repair, and formal steps to remedy any problems are often one of the most intensive parts of the negotiation process. While these steps are contractually defined, it is up to the public sector to dedicate sufficient staff time and resources to ensure that the private sector is fulfilling its contractual obligations. For example, the Long Beach Courthouse commissioned an independent expert to monitor the condition of the building and provide onsite opportunities for community feedback, which can translate into fines for compliance failure or suggestions for improving the facility.[91]

Outside of these contractual duties, the public sector should maintain open and honest communication channels with the concessionaire. These less formal interactions can take the form of regular meetings or check-in calls where the partners can identify potential issues or challenges, before they become a source of discord or even a legal dispute.

Open lines of communication are not limited to dealings with the concessionaire. Public awareness of the value that the asset provides to the community or the challenges the project faces are essential to maintaining a healthy PPP. Open communication ensures that the public knows how its scarce resources are being spent. Ongoing community meetings, widely available financial reports, and sometimes even a direct helpline can be used to keep the public informed. Virginia's OTP3 regularly updates its website, provides ongoing opportunities for community feedback, schedules regular calls with their concessionaires, and maintains a dedicated communications staff.[92]

While PPPs appear to be unyielding contractual agreements, the reality is that these are ongoing partnerships which can and should adapt to changes on the ground. Over the course of a 20, 30, or even 99 year contract massive changes can occur. Demographic shifts, new technologies, emerging economic trends, climate change, and a wide variety of other factors may alter the assumptions underlying an infrastructure PPP. While these issues can be identified through continued dialogue with the concessionaire and the broader community, the public and private sectors have to be able to find ways to adapt their PPP strategy to serve new realities. Working around the margins of the contract to tweak services and periodically defined opportunities to re-evaluate the agreement are two ways to ensure that the public and private sector can remain responsive to changes on the ground.

V. Conclusion

Infrastructure PPPs are technically, economically, politically, and contractually difficult arrangements. Despite these challenges, they are increasingly a topic of conversation in congressional hearings, state forums, local meetings, and are featured at conferences and symposiums around the world. This enthusiasm for a complex procurement model reflects growing demand for infrastructure investment, the search for new tools, and also a great deal of over-optimism. In a tax averse and politically gridlocked environment, PPPs are appealing as abstract solutions to very tangible infrastructure problems.

Yet PPPs are not a substitute for direct public sector investment in infrastructure and in fact are highly dependent on public revenue and expertise to operate effectively. The real opportunity for public benefit in a PPP lies in the innovation, risk sharing, and value to the taxpayer that these agreements are capable of providing. Better commutes, access to economic opportunity, more efficient energy distribution, world class public buildings, more resilient water systems, and a wide range of other benefits are imminently achievable through carefully arranged PPPs.

These benefits can be difficult to achieve and only a subset of projects will ever have the scale, revenue, and political support to become a PPP. Creating an accountable, effective, and lasting PPP environment requires both the work of highly competent public officials and the strategic use of precious public resources. However, taking the time to develop these processes will guide private capital towards the greater public good.

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ACKNOWLEDGMENTS

This project benefited from the generous contributions and expertise of many stakeholders in the public and private sectors. We especially wish to thank:

Sandy Apgar, Apgar and Company
James Ballingall, UK Treasury
Phineas Baxandall, U.S. Public Interest Research Group
Sam Beydoun, Virginia Office of Transportation Public Private Partnerships
David Bloomgarden, Inter-American Development Bank
Mary Jane Breinholt, Eno Center for Transportation
Dan Carol, Oregon Office of the Governor
Michael Cheroutes, Colorado High Performance Transportation Enterprise
Donald Cohen, In the Public Interest
Peter Denton, Mayer Brown
Matt Diserio, Water Asset Management
Jane Garvey, Meridiam Infrastructure
Travers Garvin, Kohlberg Kravis Roberts & Co.
Jonathan Gifford, George Mason University
DJ Gribbin, Macquarie Capital Advisors
Chris Guthkelch, Skanska Infrastructure
Chris Hamel, Royal Bank of Canada Capital Markets
David Hatem, Donovan Hatem
Janet Kavinoky, U.S. Chamber of Commerce
Tony Kinn, Booz Allen Hamilton
Deborah Nisson, Ullico Investment Advisors Inc.
Jeffrey Pavlak, AFL-CIO Transportation Trades Department
Joe Pavona, Michigan Office for Public-Private Partnerships
Simon Reuterswaerd, Skanska Infrastructure
Chris Taylor, West Coast Infrastructure Exchange
Chris Thomas, CH2M HILL
Margaret Tobin, New York Works Task Force

Neither the individuals listed above nor their organizations necessarily endorse the report's findings or recommendations, which are solely those of the authors. Both Kohlberg Kravis Roberts & Co. and the Royal Bank of Canada provide financial support for the Metropolitan Policy Program's Infrastructure Initiative.

The Metropolitan Policy Program at Brookings is grateful to all of the funders of the Metropolitan Infrastructure Initiative, which also include the Surdna Foundation, the Ford Foundation, American International Group, Inc., the GE Foundation and Hitachi.

We especially wish to thank our Brookings colleagues Adie Tomer, Joseph Kane, and Jeff Gutman as well as Aaminah Qadir, Ali Abbas, and Priyanka Sunder for their research and writing assistance, David Jackson for editorial assistance, and Sese-Paul Design for design and layout.

Finally, the program would like to thank the Metropolitan Leadership Council, a network of individual, corporate, and philanthropic investors that provides us financial support but, more importantly, a true intellectual and strategic partnership.

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