



Minnesota
Department of
Transportation

RESEARCH SERVICES

Office of
Policy Analysis,
Research &
Innovation

Advancing Public Interest in Public-Private Partnership of State Highway Development

Zhirong (Jerry) Zhao, Principal Investigator
Humphrey Institute of Public Affairs
University of Minnesota

February 2011

Research Project
Final Report 2011-09

Your Destination... Our Priority



All agencies, departments, divisions and units that develop, use and/or purchase written materials for distribution to the public must ensure that each document contain a statement indicating that the information is available in alternative formats to individuals with disabilities upon request. Include the following statement on each document that is distributed:

To request this document in an alternative format, call Bruce Lattu at 651-366-4718 or 1-800-657-3774 (Greater Minnesota); 711 or 1-800-627-3529 (Minnesota Relay). You may also send an e-mail to bruce.lattu@state.mn.us. (Please request at least one week in advance).

Technical Report Documentation Page

1. Report No. MN/RC 2011-09	2.	3. Recipients Accession No.	
4. Title and Subtitle Advancing Public Interest in Public-Private Partnership of State Highway Development		5. Report Date February 2011	
		6.	
7. Author(s) Zhirong (Jerry) Zhao, Emily Saunoi-Sandgren, Avital Barnea		8. Performing Organization Report No.	
9. Performing Organization Name and Address Humphrey Institute of Public Affairs University of Minnesota 301 19 th Ave. S Minneapolis, MN 55455		10. Project/Task/Work Unit No. CTS Project # 2010001	
		11. Contract (C) or Grant (G) No. (c) 89261 (wo) 141	
12. Sponsoring Organization Name and Address Minnesota Department of Transportation Research Services Section 395 John Ireland Blvd., MS 330 St. Paul, MN 55155		13. Type of Report and Period Covered Final Report	
		14. Sponsoring Agency Code	
15. Supplementary Notes http://www.lrrb.org/pdf/201109.pdf			
16. Abstract (Limit: 250 words) Facing rapidly increasing demand for new or additional transportation capacity, many states are eagerly exploring public-private partnership (PPP) in state highway development, which may allow public agencies to access private project financing and specialized expertise, and thus save public investment, expedite project completion, or improve service quality and diversity. Nevertheless, the path of PPPs is not smooth. The confusion and controversy surrounding recent asset-monetization leasing concession cases in the US have led to widespread public concerns and legislative caution, in particular on the question of whether a PPP project is advancing the public interest. The purpose of this project is to study the public interest associated with PPPs, with the goal to maximize efficiency gains, mitigate potential risks, and address public concerns in launching and deploying PPPs in state highway development. In particular, we focus on three aspects of PPP consideration: (1) Understanding economic rationales of PPPs, (2) Legal and political aspects of PPP decision-making, and (3) Managerial issues in implementing PPP projects.			
17. Document Analysis/Descriptors Public private partnerships, Finance, Costs, Public interest, Public participation, Procurement, Contracts, Project delivery, Project management		18. Availability Statement No restrictions. Document available from: National Technical Information Services, Alexandria, Virginia 22312	
19. Security Class (this report) Unclassified	20. Security Class (this page) Unclassified	21. No. of Pages 66	22. Price

Advancing Public Interest in Public-Private Partnership of State Highway Development

Final Report

Prepared by:

Zhirong (Jerry) Zhao
Emily Saunoi-Sandgren
Avital Barnea

Humphrey Institute of Public Affairs
University of Minnesota

February 2011

Published by:

Minnesota Department of Transportation
Research Services Section
395 John Ireland Boulevard, MS 330
St. Paul, Minnesota 55155-1899

This report represents the results of research conducted by the authors and does not necessarily represent the views or policies of the Minnesota Department of Transportation or the University of Minnesota. This report does not contain a standard or specified technique.

The authors, the Minnesota Department of Transportation, and the University of Minnesota do not endorse products or manufacturers. Any trade or manufacturers' names that may appear herein do so solely because they are considered essential to this report.

Table of Contents

Chapter 1. A Research Framework on PPPs and Public Interest	1
1.1. Introduction	1
1.2. Literature Review	1
1.2.1. Cross-sector Collaboration.....	2
1.2.2. Contract Management.....	2
1.3. A Framework for Studying Public Interest in PPPs	4
1.3.1. The Foundation of PPP Framework.....	5
1.3.2. Interactions in Three Aspects of PPPs.....	6
Chapter 2. Understanding Public Interest in PPPs	7
2.1. What Are Public-Private Partnerships?	7
2.1.1. Common Confusion about Public-Private Partnerships	7
2.2. The Taxonomy of Public-Private Partnerships	8
2.2.1. Traditional Delivery Options	9
2.2.2. Public-Financing PPP Options.....	9
2.2.3. Private-Financing PPP Options	10
2.2.4. Value-Capture PPP Options.....	11
2.2.5. Full Privatization.....	11
2.3. Risk Transfers Associated with PPPs	12
2.3.1. Elemental Risks	13
2.3.2. Global Risks.....	14
2.4. Advantages of Public-Private Partnerships	15
2.4.1. PPP Advantages Associated with Specific PPP Options.....	15
2.4.2. General PPP Advantages	16
2.5. Conclusion	16
Chapter 3. Advancing Public Interest in the Launch of PPPs	18
3.1. Introduction	18
3.2. Setting PPPs in Context	18
3.3. Legal and Regulatory Constraints	20
3.3.1. Federal Legal Environment for PPPs.....	20
3.3.2. State Legislation.....	21
3.3.3. Additional Legal Constraints	22
3.4. Public Concerns over PPPs	23
3.5. Conclusion	26
Chapter 4. Protecting Public Interest in the Implementation of PPPs	28
4.1. Introduction	28
4.2. Project Selection and Delivery	28
4.2.1. Early Screen of PPP Candidate Projects.....	28
4.2.2. Evaluation Tools for Specific PPP Options.....	30
4.2.3. Project Selection in Practice: British Columbia.....	32
4.3. Procurement Types	32
4.3.1. Solicited vs. Unsolicited Proposals.....	32
4.3.2. Procurement Phasing Options.....	33

4.3.3.	Bidding, Negotiation, and Selection Criteria.....	34
4.3.4.	Procurement in Practice: Pocahontas Parkway, Virginia	35
4.4.	Contract Development.....	36
4.4.1.	PPP Payment Options	36
4.4.2.	Contract Length	37
4.4.3.	Tolling Rate Policies.....	38
4.4.4.	Rate of Return	38
4.4.5.	Non-Compete Clause	39
4.4.6.	Hand-back Provisions	40
4.4.7.	Contract Development in Practice: California SR-91.....	41
4.5.	Managing PPP Projects.....	42
4.5.1.	Oversight and Monitoring.....	42
4.5.2.	Transparency and Public Participation	43
4.5.3.	Use of Proceeds.....	44
4.5.4.	Contract Change Management.....	45
4.5.5.	Contract Management in Practice: The United Kingdom Example	46
4.6.	Conclusion	47
Chapter 5.	Summary and Recommendations.....	49
5.1.	The Research Framework.....	49
5.2.	Understanding Public Interest in PPPs.....	49
5.3.	Advancing Public Interest in the Launch of PPPs.....	50
5.4.	Protecting Public Interest in the Implementation of PPPs	50
5.5.	Recommendations	51
References		53

List of Figures

Figure 1.1: A Framework of Cross-Sector Collaborations (Source: Bryson, Crosby and Stone, 2006)	3
Figure 1.2: A Framework for Studying Public Interest in PPPs	5
Figure 2.1: A General Framework of Infrastructure Delivery Options	9
Figure 2.2: Risk Allocation in Public-Private Partnerships	12
Figure 2.3: Advantages of Public-Private Partnerships	15

Executive Summary

Facing rapidly increasing demand for new or additional transportation capacity, many states are eagerly exploring public-private partnership (PPP) in state highway development, which may allow public agencies to access private project financing and specialized expertise, and thus save public investment, expedite project completion, or improve service quality and diversity. Nevertheless, the path of PPPs is not smooth. The confusion and controversy surrounding recent asset-monetization leasing concession cases in the US have led to widespread public concerns and legislative caution, in particular on the question of whether a PPP project is advancing the public interest.

The purpose of this project is to study the public interest associated with PPPs, with the goal to maximize efficiency gains, mitigate potential risks, and address public concerns in launching and deploying PPPs in state highway development. In particular, we focus on three aspects of PPP consideration:

- **Understanding economic rationales of PPPs:** We provide a working definition of PPPs, and propose a taxonomy of PPP options.
- **Legal and political aspects of PPP decision-making:** Decision making about PPPs is often politically charged, even if there are sound technical reasons and sufficient institutional capacity to use a PPP.
- **Managerial issues in deploying PPP projects:** We need appropriate process and structure and sufficient managerial capacity to implement PPP projects.

1. Understanding Public Interest in PPPs

In this report, we define PPPs as formal contractual agreements that “allow more private sector participation [on risks and responsibilities] than is traditional (US DOT, 2004). PPP is distinguished from privatization or service contracts by the level of private involvement. PPP is much broader than concession or asset-monetization leasing. PPP is generally a financing tool but occasionally can provide a new source of revenue.

We propose a framework to categorize PPP options together with other modes of infrastructure development along two dimensions. First, development options vary depending on stages of facility development, including construction, operation and maintenance, and expansion or rehabilitation. Second, there is a spectrum of public-private involvement in infrastructure development. At one extreme is the traditional mode of project delivery. At the other extreme is full privatization. Between the two extremes are PPP options including public-financing PPPs, private-financing PPPs, and value-capture PPPs.

The risks of a PPP project may be broadly categorized as elemental or global risks. A general rule for effective risk allocation is that “each risk should be assigned to the partners who can best handle it” (Savas, 2000b). Some risks are typically retained with the public sector, as they may be more capable or suitable to handle them. For other risks, the allocation depends on private contractors’ capacity, their willingness in risk-taking, and specific contract agreements.

Different PPP options, with different ways of private involvement and risk taking, may have different advantages. In this report, we categorize PPP advantages by option-specific advantages and general PPP advantages. Option-specific advantages may include private expertise, life-cycle

consideration, additional capital to expedite development, or supplementary budget revenues. General advantages include innovation and diffusion of private expertise and state-of-the-art technologies, competition in delivery among alternative options, and the opportunity for a new business sector in infrastructure investment.

2. Advancing Public Interest in the Launch of PPPs

PPPs are not totally new to the U.S, but they are used to a less extent in the U.S. than in some other countries, in part because of our unique tax-exempt municipal bond market, which allows state and local governments to borrow at lower costs than to involve private financing. Due to the increasing gap between transportation demands and available public funding, many states are eagerly exploring the additional use of PPPs in state highway development.

Legal constraints, such as authorization and provisions, of PPPs vary across countries or states. In the U.S., while some PPP-specific legislation exists at the federal level to facilitate the use of PPPs for highway development, it is up to state government officials and legislators to decide whether and how to pursue PPP projects. PPP legislation varies widely from state to state. Although officials in many state governments are expressing interest in experimenting with new PPP legislation, first-hand experience with PPP projects in the United States, particularly privately financed projects, is still limited. Most practitioners and scholars agree that appropriate PPP legislation should be in place prior to private sector involvement in order to maximize project outcomes.

Political pressures and public concerns about PPPs fluctuate over time. From a public perspective, this often raises concerns—mostly driven by ideology. The major concerns surrounding PPPs can be organized into three main categories, all of which are driven by ideological terms: 1) Fear of losing control over a system that has historically been a public good; 2) Risk of increased costs to users and taxpayers rather than the speculated savings and efficiencies; and 3) An erosion of democratic values as profit motives become first priority. Broader institutional supports and public education and communication are critical to addressing public concerns as well as to determine whether a PPP is the best option for a particular project.

3. Protecting Public Interest in the Implementation of PPPs

After the use of PPPs is authorized under favorable legal and political environments, the government still needs to have appropriate processes, suitable structures, and sufficient managerial capacity for the successful implementation of PPP. We review technical or procedure issues that are internal to state departments of transportation (DOTs) or other stakeholders in managing PPP projects. These issues are organized along some key components of PPP implementation, all of which are crucial to the success of PPP in protecting public interest:

- **Project selection and delivery option:** The project selection and delivery may involve two separate decisions in sequence. First, the departments need to select suitable candidate projects for PPP consideration. Second, for specific candidate projects there are a variety of valuation tools that can be used to determine whether some specific PPP options are better than traditional project delivery.
- **Procurement options:** For projects to be delivered on a PPP basis there are many choices regarding how the procurement is conducted, for example, who can initiate a proposal, when to process a procurement, whether it should be negotiated or bid, and what decision rules should be used to choose a private contractor. We discuss the concerns over public

interest associated with these choices, and review related domestic or international experiences in PPP procurement.

- **Contract development:** The contract is one of the most important phases of the PPP management process as it “defines the salient points and contingencies” of the entire agreement (NCSL, 2010, p. 19). The success of a PPP contract is dependent on a reasonable balance among technical, commercial, and legal conditions (USDOT, 9). We review six key issues related to PPP contracts, including PPP payment options, contract length, tolling rate policies, rate of return, non-compete clause, and hand-back provisions.
- **Project management:** After a successful contract is negotiated, it still takes capacity and significant effort to manage the contract during all stages of the project development. We review discussions about contract oversight and monitoring, transparency and public participation, use of PPP proceeds, and contract change management.

4. Recommendations

The study shows that widespread public concerns and legislative caution over PPPs are in part caused by confusion, misconceptions, or unrealistic expectations about PPPs. Such concerns may be addressed by public education and communication, broader legal and institutional supports, and capacity building of PPP decision-making and implementation. We propose the following recommendations:

- To further examine legal and institutional environments for PPPs, and thus we can take full advantages of alternative project delivery options and at the same time protect public interest by balancing risks, responsibilities, and rewards;
- To hold public education and outreach activities on PPPs, and thus we further engage political leaders and the general public to make informed decisions about the use of PPPs in state highway development;
- To select candidate projects for PPP considerations and conduct further analysis on whether a PPP option may be used to advance value for money, and, if so, how the procurement should be structured, how the contract may be developed, and how these project should be implemented.

Chapter 1. A Research Framework on PPPs and Public Interest

1.1. *Introduction*

Facing rapidly increasing demand for new or additional capacity, many states are eagerly exploring public-private partnership (PPP) in state highway development. There are many types of PPPs, which may allow public agencies to access private project financing and specialized expertise, and thus save public investment, expedite project completion, or improve service quality and diversity. Nevertheless, the path of PPPs is not smooth. The confusion and controversy surrounding recent asset-monetization leasing cases (a type of PPP) in the US have led to widespread public concerns and legislative caution, in particular, on the question of whether a PPP project is advancing the public interest.

The purpose of this project is to study the public interest associated with PPPs, with the goal to maximize efficiency gains, mitigate potential risks, and address public concerns in launching and deploying PPPs in state highway development. In this project, we start from the premise that a PPP is a contractual relationship between public and private sectors, in which the public interest may be protected and advanced by aligning public values, institutions, and environmental conditions in different stages of PPP decision-making and implementation.

This chapter will briefly discuss two streams of literature that are helpful for the understanding of PPPs. Then, we will discuss the three key components of PPPs, which are public values, institutions, and service markets. Finally, we examine the interaction of these factors in three key stages of public-private partnership: (1) Identifying suitable PPP options; (2) decision-making on the launch of PPPs; and (3) managing PPP projects.

1.2. *Literature Review*

Much information already exists about public-private partnerships in infrastructure development, either in documented form or as undocumented experience and practice. However, the information remains fragmented, scattered, and unevaluated. Little systematic research is found in academic publications. As a result, although much has been written about PPPs, the accumulation of knowledge has been slow because of the lack of theoretical frameworks and systematic analyses.

In this project, we review two streams of literature, including cross-sector collaboration and contract management, and integrate them to develop a framework that can be used to study the public interest in PPPs. On one hand, public-private partnerships may be considered a kind of cross-sector collaboration, because PPPs involve both public and private sectors. However, most literature about cross-sector collaboration focuses on the voluntary involvement of multiple sectors toward a joint societal outcome, while PPPs involve collaboration of different sectors that have different goals, may be mutually benefitted, and are connected by formal contractual agreements. On the other hand, PPPs involve special kinds of contractual relations that go beyond direct economic exchanges of service contracts, which most literature about contract management tends to focus on. In this sense, the working knowledge of PPPs will in turn contribute to the two streams of literature. First, those PPPs are more formally structured than cross-sector collaborations that are loosely formed based on a shared-power and a joint interest. Second, the relationships across sectors in the PPP context are much subtler to be developed and

managed than those in service contracts.

1.2.1. Cross-sector Collaboration

Bryson et al (2006) define cross-sector collaboration as the linking or sharing of information, resources, activities, and capabilities by organizations in two or more sectors to achieve jointly an outcome that could not be achieved by organizations in one sector separately. They present a framework for understanding cross-sector collaborations, which is shown Figure 1.1. The framework includes five key components: initial conditions, process, structure and governance, contingencies and constraints, and outcomes and accountabilities. Based on an extensive review of the literature on collaboration, Bryson et al (2006) present a list of propositions organized around the five components.

- **Initial conditions:** Initial conditions for the forming of collaboration includes environmental factors, sector failure, and antecedents of collaboration. Cross-sector collaborations are more likely to form in turbulent environments, more often considered by public policy makers when the public sector alone have failed or more likely to fail to address a public problem, and more likely to succeed when there are prior linking mechanisms.
- **Process components:** Collaboration scholars emphasize several aspects of process within collaboration, such as forging initial agreements, building leadership, building legitimacy, building trust, managing conflict, and planning. The success of collaborations often relies upon the interaction of initial conditions and proper processes.
- **Structure and governance:** Collaboration structure and governance includes elements such as goals, division of labor, rules and standard operating procedures, designated authority relationships, and formal or informal governing mechanisms. These elements are influenced by environmental factors, likely to change over time, and important for collaboration effectiveness.
- **Contingencies and constraints:** Collaboration type, power imbalances among collaborating partners, and competing sector logics (such as market efficiency vs. democracy) will affect the collaboration's process, structure, and governance.
- **Outcomes and accountabilities:** The success of collaboration can be assessed by both outcomes and the existence of accountability mechanisms. Public value is more likely to be created when collaborations are built on individuals' and organizations' self-interests and each sector's characteristic strengths, and when there exists an accountability system to track inputs, processes, and outcomes.

1.2.2. Contract Management

Much like with PPPs, there have long been debates about government service contracting. Proponents champion contracting as a way to reduce service costs through competitive efficiencies and economies of scale. Critics counter that contracting tends to sacrifice key public interest values (e.g., equality of treatment) and reduces service delivery capacity. In the midst of this discussion, Brown et al (2006) provide a comprehensive strategic framework for practicing and studying contract management. Their framework emphasizes the interaction of three central factors: public values, institutions, and service markets.

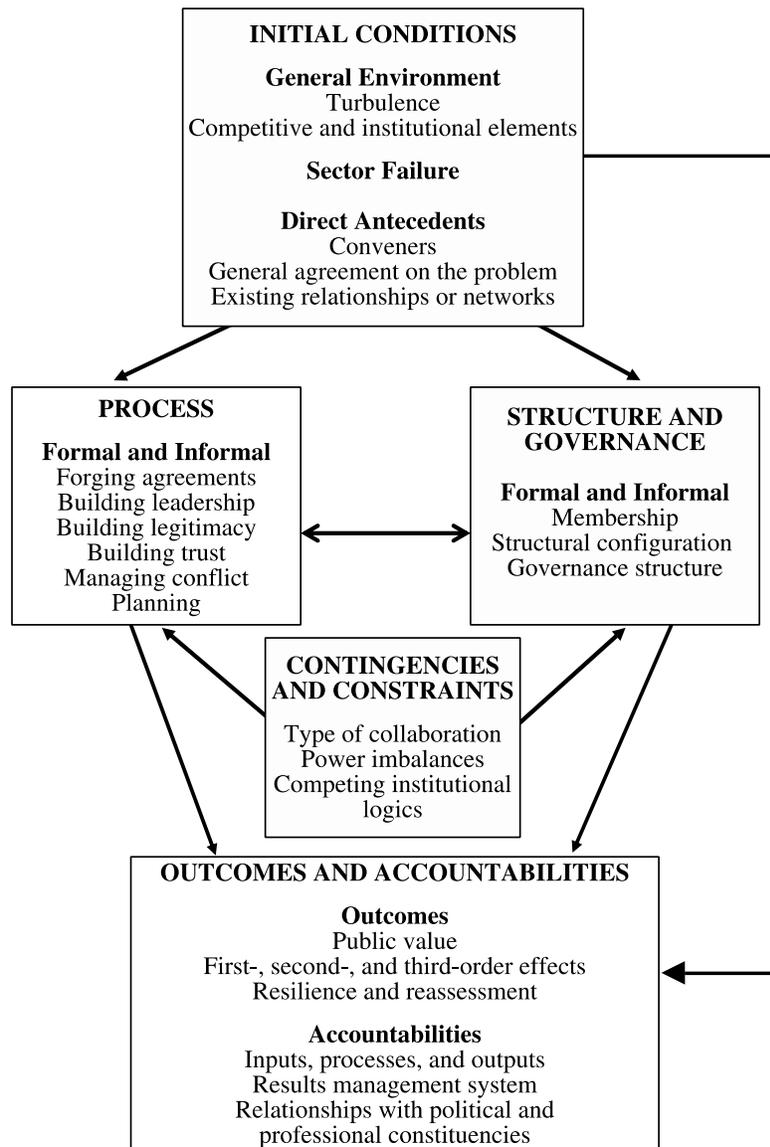


Figure 1.1: A Framework of Cross-Sector Collaborations (Source: Bryson, Crosby and Stone, 2006)

- **Public values:** Public values have many aspects, such as efficiency, effectiveness, equality of treatment, accountability, responsiveness, and service quality, etc. These values often conflict with each other, particularly in politically contentious arenas. To optimize service delivery, public managers are making trade-offs determined by both stakeholder preferences and democratic processes.
- **Institutions:** Public law sets the boundaries within which public managers must operate,

thereby permitting, authorizing, or requiring a range of actions. Organizational arrangements define the capacity, resources, and transaction costs for managing service delivery. Together, public law and organizational arrangements determine the contracting tools available for balancing competing values.

- **Service markets:** The characteristics of service markets influence which contracting tools and vendors are best suited to achieve stakeholder values.

Moreover, Brown et al (2006) examine the interaction of these factors in three key stages of contract management to illustrate how public managers and researchers can use the transaction cost lenses to understand key issues in deciding and managing contract toward improved service delivery.

- **Deciding whether to “make or buy” the services:** Comparing with direct service delivery, contracting is often considered more cost-efficient and better stimulating innovation, but may be less likely to promote political accountability, stability, and equality of treatment (Donahue 1989; Kettl, 1993). Nevertheless, the relative strengths of direct versus contract service delivery appear to vary across circumstances, depending on legal requirements, political pressures, or the level of market competitions.
- **Contract specification:** Assuming that a government elects to contract out a service, public managers often have certain discretion in the phase of contract specification, which involves deciding and implementing a bid process, selecting a vendor, and crafting contract terms, such as outcome measures, vendor qualifications, vendor compensation, contract duration, incentives and sanctions, reporting requirements, etc.
- **Managing service delivery under contract:** During the phase of contract implementation, public managers are charged to monitoring and evaluating the performance of vendors working under contract (Kettl, 1993). Effective monitoring requires a solid legal grounding, but also varies in their cost and efficacy depending on the nature of the service and existing service-market conditions.

1.3. A Framework for Studying Public Interest in PPPs

Public-private partnerships in transportation development have many different types, which vary in the level of private-sector involvement and risk-taking and hence require different mechanisms of coordination. In general, many PPPs are more formally structured than typical cross-sector collaborations described in Bryson et al (2006), and thus require more institutional capacity in market negotiation and contract management. On the other hand, comparing with service contracts, decision making and implementation of PPPs are often even more politically charged and contingent on circumstances (such as fiscal conditions, legal contrasts, political pressures, and market situations), and thus may involve further consideration into process, structure, or contingencies. Consequently, we develop a framework for studying public interests in PPPs that integrates the frameworks of cross-sector collaboration and contract management (see Figure 1.2).

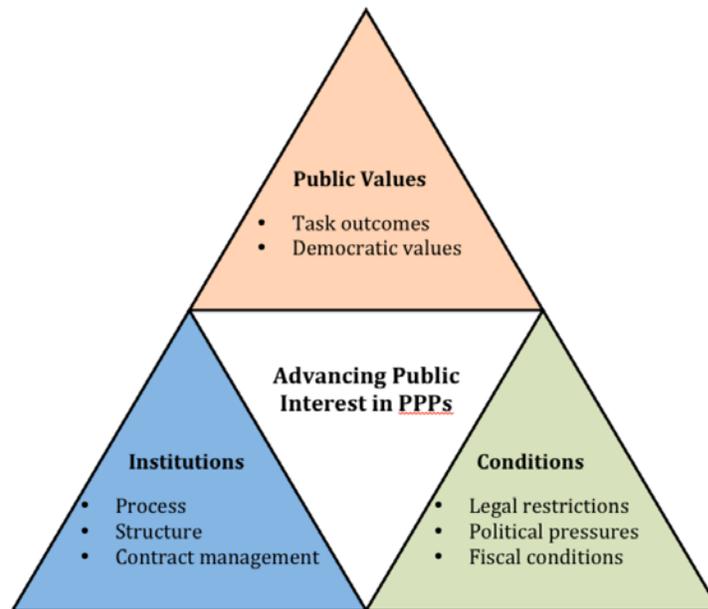


Figure 1.2: A Framework for Studying Public Interest in PPPs

1.3.1. The Foundation of PPP Framework

We hold the premise that the public interest may be protected and advanced by aligning public values, institutions, and environmental conditions in different stages of PPP decision-making and implementation. The foundation of the framework is the three key factors: public values, institutions, and environmental factors.

- **Public values:** Public values include task-oriented outcomes and democratic values. Task-oriented outcomes include direct performance goals of transportation investment such as cost saving, efficiency in construction or management, effectiveness, etc. Democratic values include general political indicators such as accountability, transparency, legitimacy, equality of treatment, and maintaining public control, etc. The appropriate use of PPPs in transportation development should enable governments to more effectively meet out transportation needs without sacrificing key democratic values.
- **Environmental factors:** Environmental factors include fiscal situation, service market conditions, legal constraints and political pressures. Renewed interests on PPPs in recent years are directly related to (1) the increasing gap between transportation demands and available public funding, and (2) the availability and interest of private funding to investment in public infrastructure to get a return. In addition, legal constraints, such as authorization and provisions, vary across countries or states; political pressures and public concerns fluctuate over time as the debate on PPP continues.
- **Institutions:** Institutional features include decision and managing processes, partnership structures and coordination mechanisms, as well as managerial capacity in technical and contract management. Given favorable environmental conditions to use PPPs, appropriate

processes and structures are important factors to ensure the maintenance of democratic values; managerial capacity is critical for making complicated trade-offs between public values, developing contracts, and enforcing effective monitoring and evaluation.

1.3.2. Interactions in Three Aspects of PPPs

In this project, we focus on three aspects of PPP decisions to ensure the protecting and advancing of public interest: (1) understanding economic rationales of PPPs; (2) legal and political aspects of PPPs; and (3) managerial issues in management PPP projects. The remaining sections of this report will follow these aspects of PPP decisions.

The three aspects may be corresponding to three typical stages of PPP processes, that is, considering PPP options, launching PPPs, and then deploying PPPs. But we should note that these aspects of decisions are not always sequential. Sometimes we better understand the trade-offs associated with a PPP option after heated discussions about whether it should be launched; sometimes legal and political issues present themselves only after a PPP is implemented and they may be solved or mitigated by managerial approaches. Moreover, public values, institutions, and environmental factors interact in these aspects of PPP decisions in different ways.

- **Understanding economic rationales of PPPs:** There has been much confusion about what PPPs are, what kinds of benefits they may have, and what kinds of risks are associated with them. In this section, we will provide a working definition of PPPs and create a taxonomy of PPP options. The taxonomy will address the following questions: How can we categorize PPP options, for example, in terms of project development stages, private-sector involvement, or revenue mechanisms? What are the typical ways to allocate risks between public and private sectors for different PPP options? How can we align PPP options with particular public objectives to maximize efficiency gains? In terms of the framework components, this section focuses on achieving task-oriented outcomes and presents trade-offs among them under specific fiscal and market conditions.
- **Legal and political aspects of PPP decision-making:** Decision making about PPPs is often politically charged, even if there are sound technical reasons and sufficient institutional capacity to use a PPP. This section will answer the following questions: What has been the legal and political environment about PPP in the US and Minnesota? What have been public concerns associated with past PPP experiments? What were the origins of these concerns? What strategies can be used to address these concerns? Regarding the framework components, this section focuses on legal constraints and political pressures associated with the use of PPPs that are intersected with public concerns especially about democratic values.
- **Managerial issues in deploying PPP projects:** Assuming that a suitable PPP option has been identified and launched under favorable legal and political environments, we need appropriate process and structure and sufficient managerial capacity to implement PPP projects. This section will examine managerial aspects of PPPs: What lessons can we learn from the implementation of PPP cases? What are suggestions to help further the development of administrative structures and procedures for managing PPPs? In terms of the framework, this section focuses on institution factors to ensure the appropriate trade-offs and safeguard of public values.

Chapter 2. Understanding Public Interest in PPPs

2.1. *What Are Public-Private Partnerships?*

The term “public-private partnership” (PPP) is ambiguous as it is often defined in many different ways (Savas, 2000a). It may be defined broadly as an arrangement in which a government and a private entity, for-profit or nonprofit, jointly perform or undertake a traditional public activity. Some dislike this definition as it is ubiquitous, since virtually all public programs have always involved some kind of partnership between public and other sectors (Baxandall, 2009). Narrowly speaking, PPP is more often used for a complex contractual relationship – typically involving at least one government unit and a consortium of private firms – to deliver capital-intensive public infrastructure such as highway, airport, public building, or water system, or to undertake a major civic redevelopment project (Savas, 2000a).

In this report, we focus on PPPs in transportation especially highway development. As related to such projects, PPPs are often defined even more narrowly with additional specific features. Sometimes PPP is defined to include only contracts that are “long-term” (Grimsey and Lewis, 2002; Partnership BC, 2009) or “performance-based” (Partnership BC, 2009). US Department of Transportation emphasizes that PPPs are “formal” contractual agreements that “allow more private sector participation [on risks and responsibilities] than is traditional” (US DOT, 2004, p. 193). This definition is widely adopted in the transportation area, and so we continue to use it in this report.

2.1.1. *Common Confusion about Public-Private Partnerships*

There is much confusion about PPPs due to inconsistent use of terminologies, public attention focused on specific types of projects, or misconceptions and unrealistic expectations.

- **Public-private partnership vs. privatization:** Sometimes people use a broad definition of “privatization” to include all types of private involvement in public service delivery and thus include PPP as one type of privatization (Savas, 2000a). More typically, however, PPP is distinguished from privatization or outsourcing by the level of private involvement. Outsourcing relates to direct service contract through which the public sector pay the private sector in exchange for specific services. At the other extreme, privatization refers to a complete private taking-over of the responsibility for certain public services. Public-private partnership however involves risk sharing among public and private participants, and thus encompasses a broad spectrum of public/private mixes between outsourcing and privatization (Grimsey and Lewis, 2005; Leavitt and Morris, 2007).

- **Public-private partnership vs. concession:** “Concession” is another confusing term that is often used as interchangeable with public-private partnerships. Legally speaking, a concession is “a contract granting the right to operate a subsidiary business” (WordNet online), for example, when a private company is granted the right to operate a toll road. In this sense, the concept of public-private partnership is broader than concession. In PPPs, the private sector may be involved in functions other than operation, such as planning, design, financing, construction, or maintenance, or it may be availability projects compensated by the availability payment rather than concession income (McGraw Hill, 2009).
- **Public-private partnership vs. asset-monetization leasing:** In recent years, because of high-profile and controversial PPP cases such as the Chicago Skyway and Indiana Toll Road, people only equalize PPP as long-term asset-monetization leasing through which the public sector gets a one-time payment by selling or leasing out public infrastructure facilities. Asset-monetization leasing is just one type of concession, through which the private sector pay to get a long-term right to operate a public infrastructure facility and be compensated by its profits. As noted above, there are many other PPP options that do not involve the sale or long-term lease of public infrastructure.
- **Public-private partnership: Financing tool or funding sources?** Recent attention on public-private partnerships in the US is largely prompted by the urgent need of additional financial resources for transportation. However, PPP options with private finance are more a financial tool than a funding one. Funding refers to actual revenue sources, in terms of cash available in hand; financing refers to the many mechanisms for turning the sources and timing of funding into actual programs. For example, municipal bonds are a financing mechanism since they need to be paid back by other sources. Some types of PPPs involve initial private investment or the access to private capital markets, but they are not a funding tool if the private sector is to be compensated by governmental revenues such as availability payments. PPP options do not provide additional revenues, unless they involve new tolling, donations of land or money, or contribution of private efforts (through joint development) with no expectation of repayment by the public partner.

2.2. *The Taxonomy of Public-Private Partnerships*

PPP options may be categorized in many ways, for example, by the level of private involvement (Savas, 2000b), by facility conditions (Savas, 2000b; McGraw Hill, 2009; TRB, 2009), by types of private risks and responsibilities (McGraw Hill, 2009; AECOM, 2004) or whether they are segmented or combined (Barchan Foundation, 2009), by ownership transfers (NCHRP, 2009), or by financial deals, such as initial private equity involvement (GAO, 2008; Barchan Foundation, 2009), financial techniques (TRB, 2009), or different ways to compensate the private sector (McGraw Hill, 2009).

In this report, we propose a framework to categorize PPP options together with other modes of infrastructure development along two dimensions: (1) facility development stages, and (2) the level and type of private involvement (See Figure 2.1).

- **By facility development stages:** Infrastructure development options vary depending on stages of facility development, which includes construction, operation and maintenance

(O&M), and expansion or rehabilitation. The rest of this section discusses each of these infrastructure development options. The development and construction of a new facility is often referred to as “greenfield” projects, while the operation and maintenance of an existing facility is typically referred to as a “brownfield” project. In this report, we categorize infrastructure delivery options by facility development stages rather than greenfield vs. brownfield-project, because some delivery options may be applied to both construction and O&M stages.

- By the level and type of private involvement:** There is a spectrum of public-private involvement in infrastructure development. At one extreme is the traditional mode of project delivery, in which the private sector has none or minimum involvement. At the other extreme is full privatization, in which the private sector takes over complete risks and responsibilities for certain infrastructure development. Between the two extremes are PPP options, which are further categorized in three groups, public-financing PPP, private-financing PPP, and value-capture PPP.

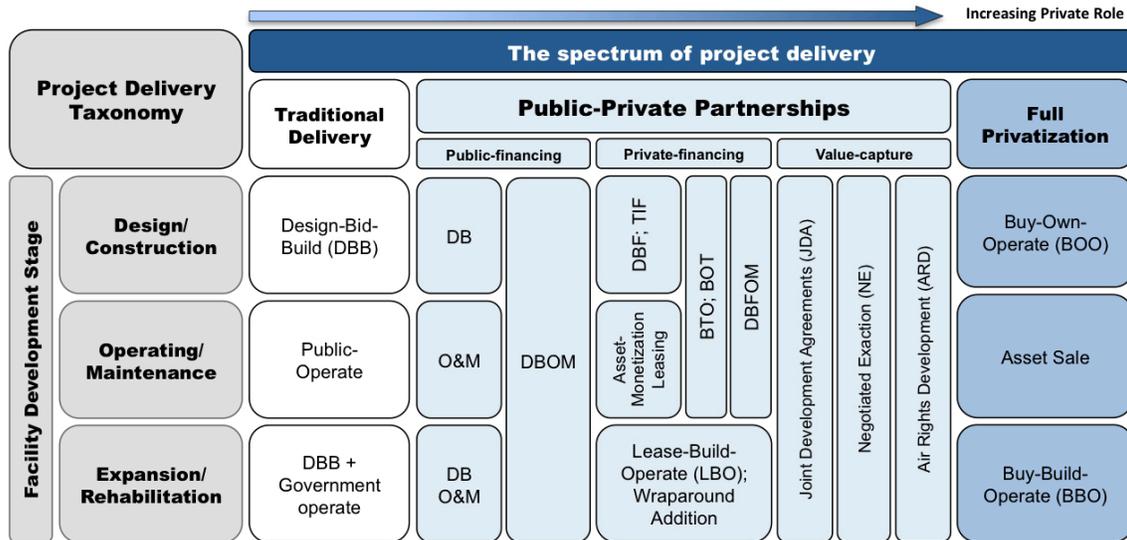


Figure 2.1: A General Framework of Infrastructure Delivery Options

2.2.1. Traditional Delivery Options

- Design-Bid-Build (DBB):** The traditional method of project construction, in which the design and construction are awarded separately and sequentially to a design firm and a construction contractor.
- Public-Operate:** This is the traditional method. Project operation and maintenance are conducted directly through government departments or by public authorities that are commercialized or corporatized (Savas, 2000b). Most departments of transportation in the U.S. perform operations and maintenance functions with in-house staff.

2.2.2. Public-Financing PPP Options

Public-financing PPP options are project delivery types that have two features. They meet our

definition of PPP, that is, allowing “more private sector participation [on risks and responsibilities] than is traditional” (US DOT, 2004, p. 193), but they do not involve private financial contribution.

- **Design-Build (DB):** DB combines the design and construction phases into a single contract. This is in contrast to the traditional DBB approach, in which the design and construction are awarded separately to different contractors. By combined the risk and responsibility of design and build, DB may save time and cost and improve project quality than DBB.
- **Operation & Maintenance (O&M) Contract:** A private partner operates and maintains a publicly owned facility under a management contract with a sponsoring government that owns the facility.
- **Design-Build-Operate-Management (DBOM):** DBOM is a combined delivery approach, in which a private contractor designs, constructs, operates, and maintains the facility for a specific period of time meeting specific performance requirement. The private contractor may be compensated in the form of availability payments, for example, depending on the number of days the facility is availability to the public at a given performance level. Because initial private finance is not required, the public sector retains financial risk.

2.2.3. *Private-Financing PPP Options*

In private-financing PPP options, the private sector takes additional risks and responsibilities by providing financial contributions, which may be debt or equity financing, upfront payment, or ongoing revenue streams to the public sector.

- **Design-Build-Finance (DBF):** DBF can be seen as an extension of Design-Build method when the private sector also assumes financial responsibilities. The private contractor agrees to provide all or some of the construction financing and to be paid back either through milestone or completion payments made from public funds. These arrangements are typically short-term in nature, repaid at construction completion or extending only a few years later. They are most often used when there is a full funding grant agreement in place with funds flowing into the project later than construction needs require, or in cases where the contractor will be repaid in one lump sum upon full completion, or in case of emergency on the part of the public sponsor.
- **Asset-monetization Leasing:** This is a common type of asset monetization, in which publicly financed existing facilities are leased to private sector concessionaires for specific time periods. The concessionaire typically pays an upfront fee to the public agency in return for revenue generated by the facility.
- **Design-Build-Finance-Operate-Maintenance (DBFOM):** DBFOM is an extension of DBOM in which the private sector provides some or all of the project financing. This delivery approach increases incentives for overall value-for-money consideration, because the private sector assumes a combined responsibility in finance, construction, operation, and maintenance. The sponsoring government agency retains ownership of the facility.
- **Build-Transfer-Operate (BTO):** A private developer finances and builds a facility and,

upon completion, transfers legal ownership to the sponsoring government agency. Then the private developer is authorized the right to operate the facility to recover his investment and earn a reasonable return from user charges or commercial activities.

- **Build (-Own)-Operate-Transfer (BOT or BOOT):** A private developer is awarded a franchise (concession) to finance, build, own, and operate a facility, and to collect user fees for a specific period, after which ownership of the facility is transferred to the public sector. This option is similar to DBFOM except for the temporary private ownership before the transfer.
- **Lease-Build-Operate (LBO):** A private contractor is given a long-term lease of a facility from the government, operates it under a concession, and expands or rehabilitates it with its own funding. The contractor recovers its investment by collecting fees. The infrastructure facility remains publicly owned.
- **Wraparound Addition (WAA):** A private developer finances and constructs an addition to an existing public facility, and then operates the combined facility either for a fixed period or until he recovers costs plus a reasonable return on his invested capital. Unlike LBO, in wraparound addition the private developer may own the expansion part of facility.

2.2.4. Value-Capture PPP Options

In value-capture PPP options, the private sector may participate in project delivery by contributing resources, either financially or in other ways, in exchange for enhanced development opportunities or increased property value as a result of transportation improvement (Iacono et al, 2009). In the chart we include three examples of value-capture PPP. Note that value-capture options are flexible upon negotiated agreement, and they may be combined with other types of PPP in a project.

- **Joint Development Agreement (JDA):** Sometimes a JDA is formed whereby both the public sector sponsor and the private contract team share responsibilities for developing, financing, operating, and preserving an infrastructure facility. The private sector may be compensated by the privilege to operate the facility as a franchise or to develop adjacent profitable projects (Zhao et al, 2009).
- **Negotiated Exactions (NE):** Private owners may be willing to donate public right-of-way, a portion of adjacent property, or even funding for transportation development, so they can expedite infrastructure development, which in turn bring them benefits such as increased property value or enhanced development opportunities (Iacono et al, 2009).
- **Air Rights Development (ARD):** There are many types of Air Rights Development, which makes use of the three dimensional space around public right-of-way (Iacono et al, 2009). Governments may lease air rights above existing transportation facilities for private development to generate public revenue, or they may use air rights development to exchange for private contributions in different stages of project development.

2.2.5. Full Privatization

- **Buy-Own-Operate (BOO):** A private developer finances, builds, owns, and operates a facility in perpetuity under a franchise, subject to regulatory constraints such as pricing

and operations. The contractor owns the facility and retains revenue risk and surplus revenues. BOO is similar to Build-Operate-Transfer (BOT), except that in BOT the infrastructure is transferred to the public agency after a specified time period.

- **Asset Sale:** Public entity fully transfers ownership of publicly financed facilities to the private sector. The private owner may operate the facility under a franchise, and collect user revenues subject to regulatory constraints.
- **Buy-Build-Operate (BBO):** An existing public facility is sold to a private partner who renovates or expands it and operates it in perpetuity under a franchise.

2.3. Risk Transfers Associated with PPPs

The risks of a PPP project may be broadly categorized as elemental or global risks (Grimsey and Lewis, 2002). Elemental risks are those associated with a specific stage of project development. Global risks are those risks associated with external environments such as political conditions and financial market. Global risks may affect the whole PPP project regardless of development stage.

Effective risk allocation is an important aspect of a PPP project. A general rule is that “each risk should be assigned to the partners who can best handle it” (Savas, 2000b, p. 252). Some risks are typically retained with the public sector, as they may be more capable or suitable to handle them. For other risks, the allocation depends on private contractors’ capacity, their willingness in risk-taking, and specific contract agreements. Along with the risks come responsibilities and rewards that are allocated correspondingly. Figure 2.2 illustrates the allocation of typical PPP risks between the public and private sector.

Risk Type			The Allocation of PPP Risk		
			Public Risk Retaining	Contract-Based Risk Sharing	Private Risk Taking
Elemental Risks	Planning/ authorization	Legislative risk	Most PPP options	Joint Development	
		Land acquisition risk			
		Environmental risk			
	Design/ Construction	Design risk	O&M contract	Joint Development	DB; DBF; DBOM, BOT; BTO; DBFOM
		Technology risk			
		Cost-overrun risk			
		Latent defect risk			
	Operating/ Maintenance	Operating risk	DB; DBF	Joint Development	O&M; DBOM; DBOFM
		Revenue risk	Availability payment	Shadow tolls	Long-term lease
		Maintenance risk	Traditional o&m	Maintenance warranty	
Global Risks	Financial Market	Debt-service risk	PPP without private finance	Most PPP with private finance	Long-term lease
		Exchange rate risk			
	Political uncertainty	Change in law	Most PPP	Most PPP	Insurance
		Dispute resolution			
	Others	Force Majeure		Insurance	

Figure 2.2: Risk Allocation in Public-Private Partnerships

2.3.1. *Elemental Risks*

In this report, the elemental risks are organized by three stages of project development, including planning and authorization, design and construction, operation and maintenance. In general, these risks are allocated depending on the private involvement in a specific stage of PPP project development, and how the private sector may be compensated for their responsibilities.

- **Risks associated with planning and authorization:** A PPP project may need to be authorized or specifically approved by the legislative process. This risk is normally retained by the public sector, because private contractors will not have the incentive to engage in costly activities of project preparation before the project is likely to happen, unless they see huge profit potentials. Likewise, for most PPP options the acquisition of public right-of-way is normally the sole responsibility of the government. In some joint development agreements, however, the private sector may share risk in getting the land for infrastructure or adjacent profitable development (Zhao et al, 2009). In addition, environment risk is the uncertainty in obtaining the required environmental approvals in order to advance new construction projects. The most common approach is to advance PPP procurements only for projects that have cleared all necessary environmental approvals. Thus the risk is pertained by the public sector. Alternatively, the public sector may use a “Pre-Development Agreement” or PDA to bring in private partners during the environmental process. Then the environmental risk is shared between public and private sectors (PB, 2010).
- **Risks associated with design and construction:** At the design and construction stage, there may be (1) risk associated with design problems, (2) risk associated with the possibility that some technologies may become obsolete, (3) risk about construction cost greater than expected, or (4) risk associated with latent defects. These risks are typically taken by private contractors for typical PPP options with the “build” component, for example, Design-Build, Design-Build-Finance, or more combined delivery options such as BOT or BTO. For operation & maintenance contracts used for existing projects only, these risks are retained by the public sector. In the case of joint development agreement, the risk allocation depends on the role the private sector will play according to the detailed contractual agreement.
- **Risks associated with operation and maintenance (O&M):** Four types of risks are usually associated with the O&M stage of a PPP project: operating risk, three revenue-related risks (market/demand risk, competition risk, and rate regulation risk), and maintenance risk.

Operating risk is the risk that the quality or capacity will fall short of desired or mandated level with certain level of operating costs. For PPP options with an O&M component (such as O&M contract, DBOM, or BOT), this risk is borne by the private sector. For other PPP options, such as DB or DBF, the risk is retained by the public sector. For Joint Development Agreements, it is depending on the contract.

Revenue-related risks are the risks that the facility will not generate enough revenue due to (1) insufficient market demand, (2) competing facilities in the future, or (3) toll rates are restricted too low due to regulation. For long-term leases, these risks are normally borne by the private sector. For PPP options with private finance and tolls or shadow tolls, these risks may be shared by the public and private sector based on the contract. For

example, the competition risk is retained to the public sector if a non-compete clause is included. In recent years, there are increasing numbers of PPP examples where private partners are compensated by availability payment instead of real toll revenues. In this case, the public sector retains both the market/demand risk and competition risk. Rate regulation risk does not affect PPP options with availability payment where there are no tolls.

Maintenance risk is associated with the uncertainty to provide necessary funds for maintenance. In the traditional approach, governmental agencies do not receive maintenance warranties, and thus must accept all the risk of providing the funding for the proper types of maintenance at the right times. If the private sector assumes this risk, it's like receiving a long-term maintenance warranty, and the risk that funding will be available for the right kinds of maintenance at the right times is mitigated.

2.3.2. *Global Risks*

- **Risks associated with the financial market:** Risks associated with the financial market may include (1) debt-service risk, and (2) exchange rate risk (Savas, 2000b). Debt-service rate is the risk that operating cash flows will not be enough to cover the required principal and interest payments for the debt used to finance the project. For long-term leases, this risk is normally borne by the private sector. For most other PPP options with private finance, this risk may be shared by the public and private sector based on the contract. For PPP options without private finance, this risk is retained by the public sector. Exchange rate risk is the risk that local currency earnings will not be convertible to a foreign agency at an expected rate of exchange. This risk pertains only to PPP projects with private finance from foreign companies, which bear this risk alone.
- **Risks associated with political conditions:** Risks associated with political uncertainty may include (1) change in law risk, and (2) dispute regulation risk. Change in law risk may incur at different stages of PPP project development. At the planning stage, a PPP project may be cancelled because it is not approved by the legislation. At the design/construction stage, new technical standards or additional technical requirements may be mandated. At the operating/maintenance stage, there may be changes in performance requirements. Change in law risk is typically retained by the public sector. Sometimes concessionaires may purchase political risk insurance, usually in big-ticket projects involving offshore entities (GLG, 2007).

Dispute regulation risk is the risk that there are contract disputes between the private developer and sponsoring government (Savas, 2000b). Private partners may require that contracts be enforceable in a third country or can insure themselves against breach of contract through investment insurers such as the U.S. Overseas Private Investment Corporation (OPIC) or international agencies such as Multilateral Investment Guarantee Agency (MIGA).

- **Other risks:** Other risks, such as the “force majeure” risk, are due to events beyond the control of public or private partners, such as flood, earthquake, or war, which would affect project construction, operation, or maintenance. This risk could be covered by private or government insurance, and it should be specified in the contract.

2.4. Advantages of Public-Private Partnerships

Advantages of PPP have been widely discussed (GAO, 2008; Harris, 2004; Savas, 2000b), for example, saving public funding by using private capital investment, saving time by expediting project delivery, or allocating certain risk to the private sector who may be more capable to handle such risks. It would be worthwhile to note that different PPP options, with different ways of private involvement and risk taking, may have different advantages. In this report, we categorize PPP advantages by option-specific advantages and general PPP advantages (see Figure 2.3).

Advantages		Types of PPP Options				
		Public-Financing PPP		Private-Financing PPP		Value-Capture PPP
Specific Advantages	Design/Construction	DB: Private expertise	DBOM: Private expertise; lifecycle-cost	DBF: Private expertise; private capital	DBFOM, BOT, BTO: Private expertise; private capital; lifecycle-cost	Joint Development, Negotiated Exaction, Air Rights: Private expertise; private capital; value capture
	O & M	O&M: Private expertise		Long-term Lease: Upfront or regular payment		
	Expansion/Rehabilitation	DBOM: Private expertise; lifecycle-cost		LBO/Wraparound Addition: Private capital		
General Advantages	Innovation & Diffusion	PPP encourages innovation in project design, construction, operation, and maintenance that provide additional benefits.				
	Competition in Delivery	PPP promotes competition among different approaches of infrastructure delivery and create benchmarks of best practice.				
	New Business Sector	PPP creates a new and promising business sector.				

Figure 2.3: Advantages of Public-Private Partnerships

2.4.1. PPP Advantages Associated with Specific PPP Options

- PPP with a single segment of responsibility - Private expertise:** PPP with a single segment of responsibility in project development typically has the advantage of some specific private expertise. Design-Build relies on private expertise in handling construction related risks, such as technology risk, cost-overrun risk, and latent defect risk.

Compared to the traditional approach of DBB, DB often leads to reduced costs, shorter delivery times, improvement in the functional design and construction processes (Harris, 2004) O & M Contract relies on private expertise to achieve better facility management and operational processes, and it may use private expertise in revenue collection if the private contractor is compensated by toll revenues.

- PPP with combined project delivery - Life-cycle consideration:** Most PPP options involve a certain level of combined project delivery, which encourages lifecycle-cost consideration. Design-Build combines design and construction, and thus provides higher cost control over the design process. It avoids the potential to “over-design” or reduces the risk of cost overruns. DBOM is a further combined approach that combines design, build, operation, and maintenance. It encourages lifecycle-cost consideration and often

leads to better-designed infrastructure that costs less in maintenance given certain standards agreed in the contract (Harris, 2004).

- **PPP with private financing - Additional Capital to Expedite Development:** PPP options with private financing, such as DBFOM, BOT, BTO, or LBO, have two major advantages. First, they provide additional capital investment that can expedite infrastructure development, or free up available public funding for other development needs. Second, such PPP options create a strong financial incentive on private contractors, because their financial return is hinged on construction quality, managerial performance, and revenue outlook of a facility.
- **PPP with payments - Budget revenues:** For existing infrastructure that has been developed with public investment, concessions such as asset-monetization leasing provide upfront payment or a continued revenue stream to the government. The additional revenues may be used by the government to address other budget needs. Nevertheless, such concessions should be carefully managed to maintain public control on the conditions of the facility and to ensure the revenues are used appropriately. These issues will be further discussed in subsequent sections of this report.

2.4.2. *General PPP Advantages*

- **Innovation and diffusion:** The use of PPP encourages innovation with private expertise and state-of-the-art technologies. Such innovations will not only result in better construction quality or operating management of a particular facility, but also provide examples of best practices that may be applied to other projects either developed by public sector, by private sector, or through PPP.
- **Competition in delivery:** The use of PPP promotes competition among alternative approaches of project delivery. Such competition leads to the best use of public and private resources, and creates performance benchmarks for future project delivery decision-making (Harris, 2004).
- **New business sector:** In some countries, PPP has created a new business sector with private expertise and/or private financial investment in building and operating infrastructure projects.

Experiences show that countries adopting PPP may use foreign advisors initially, but have soon developed their own skills, which can be used to compete on the international stage for business (Harris, 2004). Compared to some other countries, PPP has been used in a relatively smaller scale in the US, but there is a potential market.

2.5. *Conclusion*

There is much confusion about PPPs due to inconsistent use of terminologies, misconceptions, or unrealistic expectations. In this report, we define PPPs as formal contractual agreements that “allow more private sector participation [on risks and responsibilities] than is traditional (US DOT, 2004). PPP is distinguished from privatization or service contracts by the level of private involvement. PPP is much broader than concession or asset-monetization leasing. PPP is often a financing tool but it does not always provide additional revenues.

We propose a framework to categorize PPP options together with other modes of infrastructure development along two dimensions. First, development options vary depending on stages of facility development, including construction, operation and maintenance, and expansion or rehabilitation. Second, there is a spectrum of public-private involvement in infrastructure development. At one extreme is the traditional mode of project delivery. At the other extreme is full privatization. Between the two extremes are PPP options including public-financing PPPs, private-financing PPPs, and value-capture PPPs.

The risks of a PPP project may be broadly categorized as elemental or global risks. A general rule for effective risk allocation is that “each risk should be assigned to the partners who can best handle it” (Savas, 2000b). Some risks are typically retained with the public sector, as they may be more capable or suitable to handle them. For other risks, the allocation depends on private contractors’ capacity, their willingness in risk-taking, and specific contract agreements.

Different PPP options, with different ways of private involvement and risk taking, may have different advantages. In this report, we categorize PPP advantages by option-specific advantages and general PPP advantages. Option-specific advantages may include private expertise, life-cycle consideration, additional capital to expedite development, or supplementary budget revenues. General advantages include innovation and diffusion of private expertise and state-of-the-art technologies, competition in delivery among alternative options, and the opportunity for a new business sector in infrastructure investment.

Chapter 3. Advancing Public Interest in the Launch of PPPs

3.1. Introduction

This section places PPPs within an historical, global, legal, and political context. We begin by setting U.S. PPPs within an historical and global perspective, in order to address the question of why the U.S. has lagged behind in the development of PPPs. Next, we examine the legal factors affecting PPPs and the important role that legislation and policies can play in the successful development of PPP projects. Last, we will explore the political ramifications of PPPs by examining various public concerns over PPPs.

3.2. Setting PPPs in Context

Public-private partnerships are not new to the United States. There were private sector road development projects dating back to the 1790s in Pennsylvania (NCHRP, 2009). However, with the development of the interstate highway system and the establishment of the gas tax to fund infrastructure, the private sector's financial role in infrastructure development devolved into design and construction contractual relationships with architectural, engineering, or construction firms (NCRRP, 2009). In addition, the U.S. has a unique tax-exempt municipal bond market that does not incentivize private involvement in funding infrastructure assets, because state and local government can issue municipal bonds encouraging borrowing at low costs rather than going through the financial market or private investments (NCSL, 2009). The U.S. is a decentralized nation that has taken a state-by-state approach to funding and developing transportation infrastructure (NCSL, 2009). Therefore, there isn't centralized leadership or federal policies in support of PPPs. FHWA has developed, however, three experimental programs to allow for more private sector participation in federally funded highway projects (GAO, 2008). SEP-14, created in 1990, allow for alternative contracting techniques; TE-045, created in 1994, was a forum for states to propose and test new funding strategies; SEPT-15, allows for flexibility in FHWA policies and procedures to enhance states' use of PPPs (GAO, 2008).

The U.S. sits in contrast to the international tradition of concession companies financing and delivering infrastructure projects (NCSL, 2009). International use of PPPs can be organized into two groups. The first group includes mostly developed countries that use PPPs as a part of the "new public management." PPPs are used to generate competition and encourage efficiencies and value for money (NCSL, 2009). The second group includes mostly developing nations who lack money for development of capital investments. The first group has well-established boundaries around which the private and public sectors interact, whereas the second group often has more blurred boundaries (i.e. softer negotiations) in how PPPs operate.

In Europe, PPPs have been around since the 1980s as a means to address public sector deficits (NCSL, 2009). The United Kingdom developed the Private Finance Initiative (PFI) in the early 1990s in response to insufficient public funds for a deteriorating infrastructure and a desire to get better value for public money (USDOT, 2009). The U.K.'s PFI was a catalyst for increased use of PPPs throughout Europe and Australia (McGraw Hill, 2009). In Australia's state of Victoria, practically all major modes and means of travel are privately operated or owned (NCSL, 2009). Canada has recently taken a lead in PPP development. They have a federal-level PPP office that

identifies, oversees assessment of and executes PPPs under a \$1.25 billion national, merit-based PPP fund (NCSL, 2009).

In the past decade, PPPs have increased in popularity in the U.S., leading to confusion over what exactly PPPs are and their most effective use. Chase (2009) describes the latest development of PPPs in the U.S. as moving through three generations: 1) Large upfront concessions like the 2005 Chicago Skyway at \$1.83 billion and the 2006 Indiana Toll Road at \$3.85 billion created fear around losing public control given the long-term nature of these deals and failure to understand how private deals get financed and by whom; 2) A focus on operations and maintenance using managed lanes and availability payments like the I-595 express lanes in Florida and SH-130 in Texas, but these are happening on a project-by-project basis without much state- or national-level coordination; 3) A movement to go beyond ideological issues, and use a more objective and programmatic approach using models like ‘value-for-money’ to determine project feasibility. There is also the beginning recognition that government agencies will need to develop PPP units to address their associated policies, programs, and processes of in a more organized fashion. Michigan’s new PPP office is an example of this new type of organization.

PPPs are, in essence, collaboration across sectors. Research on cross-sector collaboration has observed that these occur most frequently in complex and dynamic environments. Collaborations decrease uncertainty and increase stability by promoting exchanges of needed resources. Effective cross-sector collaborations most often occur when the solution to a problem cannot happen without collaboration or previous attempts to go it alone have failed (Bryson, Crosby, Stone, 2006). The increased interest in and use of PPPs in the U.S. reflects these observations on cross-sector collaborations. For instance, U.S. transportation infrastructure is deteriorating at a rate faster than public budgets can fund. The American Society of Civil Engineers has graded U.S. infrastructure with a “D.” and predicts \$200B per year must be spent to maintain and improve roads and bridges (Baxandall et al, 2009). The traditional funding mechanism of the gas tax cannot keep pace with construction costs and raising the tax is an undesirable solution, especially given the current economic recession (NCSL, 2010). In addition, the current way of budgeting and planning for infrastructure development separates construction from maintenance, and encourages new construction over maintaining existing infrastructure (Baxandall et al, 2009). PPPs encourage a long-term approach to the creation and management of public infrastructure by bringing together all elements of a project from design and construction to operation and maintenance (Harris, 2004).

Compared to the prospect of raising taxes, PPPs tend to be politically palatable to policymakers by providing access to private funds to fill the gap in public financing. However, it should be noted that PPPs are not a revenue source, but a financing mechanism, because the projects are eventually paid back through public funding and/or tolling. This idea will be addressed in more detail in the later section on politics and public concerns. There is also a large amount of investment money, including pension funds, that is looking to PPPs as a safe area of investment. U.S. pension funds currently do not have the appropriate incentives to invest in public infrastructure through municipal bonds. For typical investors, the interest from municipal bonds can be tax exempt. Pension funds, however, are non-profits and already have tax-exempt status and thus they would prefer to invest on taxable bonds that offer higher interest rates. However, PPPs encourage investment because they are not tax-exempt debt (NCSL, 2009). As of this report publication, the only known pension fund investment in transportation infrastructure is the

Dallas Police and Fire Pension System that invested in the LBJ managed lanes project in Dallas, TX (Dallas Police & Fire Pension System, July 2010; Lovell, 2010).

3.3. Legal and Regulatory Constraints

While some PPP-specific legislation exists at the federal level, states interested in pursuing PPP transportation projects have found that, in general, enacting legislation at the state level allows them to address their needs more precisely. While certain PPP legislation is enabling, oftentimes state and federal laws reduce the benefits of PPPs (Fishman, 2009). For example, private bonds issued for transportation projects are not tax exempt under federal law, while public bonds are (Savas, 2000b). Most assessors of PPPs agree that appropriate PPP legislation should be in place prior to private sector involvement in order to maximize project outcomes.

3.3.1. Federal Legal Environment for PPPs

The United States government has taken a number of steps over the last 15 years to facilitate the use of PPPs in the highway sector.

- **Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA):** Signed into law by President George H.W. Bush in December 1991, ISTEA was the first U.S. federal legislation specifically concerned with transportation planning and policy. It presented new funding options for transportation projects and gave states unprecedented flexibility to use federal funds for new highways, mass transit, or bikeways. This legislation specifically stated that the private sector may be used to fund transportation improvements and relaxed restrictions on the funding of toll roads by private entities. The Act reads:

“For the first time private entities may own the toll facilities. However, the applicable public authority, regardless of ownership, must ensure that Title 23 requirements are being carried out. A State may loan the Federal share of a project's cost to another public or a private agency constructing the project. Repaid funds may be used for any of the purposes under the original category from which the loans were made.”

ISTEA expired in 1997 (National Transportation Library).

- **Transportation Equity Act for the 21st Century (TEA-21):** TEA-21 was enacted in June 1998 as a replacement for ISTEA. This legislation reauthorized federal surface transportation programs for highways, highway safety, and transit. The Transportation Infrastructure Finance and Innovation Act (TIFIA) was implemented as part of TEA-21 to offer credit assistance to help secure private funding for large highway, transit, and passenger rail projects of national or regional significance. TEA-21 expired in 2003 (USDOT, 2001).
- **Special Experimental Project No. 15 (SEP-15):** Established in October 2004 by the Federal Highway Administration (FHWA), SEP-15 encourages public-private partnerships (PPPs), private investment, and private activity bonds in the areas of contracting, finance, planning, environmental clearance, and right-of-way acquisition. These efforts are aimed at leveraging scarce public resources, including both funds and staff (FHWA, 2006).

- **Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU):** In August 2005, SAFETEA-LU was signed into law. SAFETEA-LU authorized \$286 billion in spending for the six-year period 2004-2009 for numerous surface transportation programs, such as highways, transit, freight, safety and research. As the largest surface transportation investment in our nation's history, SAFETEA-LU provided a significant increase in funding for many states over ISTEA and TEA-21, including a \$15 billion allowance of private activity bonds for highways and surface freight transfer facilities. This allowance was meant to alleviate risk taking in highway projects by the private sector and lower the cost of financing freight intermodal projects. SAFETEA-LU makes it easier and more attractive for the private sector to participate in highway infrastructure projects by encouraging new ideas and innovation with the use of additional private resources (Minnesota Department of Transportation).
- **Transportation Infrastructure Finance and Innovation Act (TIFIA):** “The TIFIA program provides federal credit assistance to nationally or regionally significant surface transportation projects, including highway, transit and rail. This program was established in TEA-21 to fill market gaps and leverage substantial private co-investment by providing projects with supplemental or subordinate debt” (FHWA, August 2005).

3.3.2. State Legislation

Federal legislation generally provides guidelines for PPP implementation, but it is up to state government officials and legislators to decide whether and how to pursue PPP projects. Consequently, PPP legislation varies widely from state to state. Although officials in many state governments are expressing interest in experimenting with new PPP legislation, first-hand experience with PPP projects in the United States, particularly privately financed projects, is still limited.

State departments of transportation (DOTs) can be considered the “primary battleground” for PPPs since they oversee three quarters of all highways in the US in addition to planning, building, operating and maintaining roads that receive federal aid. It is important for states to mandate specific PPP legislation because it lowers the risk of investment by stakeholders and creates a greater understanding of the local PPP market.

Twenty-eight states as well as Puerto Rico currently have PPP-specific legislation (NCSL, 2010).

States with PPP Legislation

Alabama	Florida	Minnesota	South Carolina
Alaska	Georgia	Mississippi	Tennessee
Arizona	Illinois	Missouri	Texas
Arkansas	Indiana	Nevada	Utah
California	Louisiana	North Carolina	Virginia
Colorado	Maryland	Oregon	Washington
Delaware	Massachusetts	Puerto Rico	West Virginia
			Wisconsin

PPP Legislation provides foundations for contracts between a public agency and a private firm. At the state level, such legislation generally addresses whether legislative approval is required to begin a PPP project, how many projects may be undertaken during a specified period of time, the

type of PPP allowed, the mode of transportation that may be funded, whether or not existing projects can be converted to PPPs, and the risks involved for both parties. The answers to these questions vary widely by state, and often not all questions are addressed (Iseki, Hiroyuki, Jeanette Eckert, Kansai Uchida, Ryan Dunn, and Brian D. Taylor, 2009).

In **Minnesota**, PPP legislation allows for (highway toll projects only):

- Unsolicited proposals
- HOT lanes
- Projects subject to municipal veto
- Prohibition on privatization
- No legislative approval required
- Tolls need not be removed after repayment of debt
- Unlimited number of projects in any location

As defined in previous research on the topic, several states with PPP legislation have been identified as having “aggressive” policies (Indiana, Texas and Virginia), “positive, but cautious” legislation (Minnesota), and “wary” PPP policies (Alabama, Missouri, and Tennessee) (Iseki, Hiroyuki, Jeanette Eckert, Kansai Uchida, Ryan Dunn, and Brian D. Taylor, 2009). These categorizations are due to the specificity and extent of enabling PPP legislation in each of these states.

State legislatures have taken many different paths in creating PPP programs. Some states, such as Virginia, have laid out explicit regulations and standards for PPP facilities. Other states, like Minnesota, have only minimal statutes or provide for only a few types of projects, leaving much discretion to the parties crafting the agreement between the public and private entities (Iseki, Hiroyuki, Jeanette Eckert, Kansai Uchida, Ryan Dunn, and Brian D. Taylor, 2009). In late May 2009, Michigan State Rep. Lee Gonzales and 10 cosponsors introduced House Bill 4961 to allow for comprehensive, enabling state legislation for transportation PPPs (Gilroy, 2009). Similar legislative actions are being undertaken in other states, as state legislators are learning that they must address specific PPP regulations at a centralized state level. In reference to the private funding situation in Minnesota, state representative Laura Brod (MN) said, “Minnesota has fallen behind other states and cities when it comes to these innovative public-private partnerships” (Minnesota State House of Representatives, 2008). In particular, Minnesota now has a provision (MS 160.98) that prohibits road and bridge privatization.

3.3.3. Additional Legal Constraints

While tolling and other similar pricing methods are common in PPP agreements, there remain considerable restrictions under federal and state laws on the ability to execute these types of direct user fees in certain circumstances. Potential legal issues arise from public and private financing methods, such as legal limitations set by states on the amount of indebtedness that may be incurred through the development, financing, or operation of a transportation PPP project (Fishman, 2009).

Environmental review requirements also pose a challenge to the implementation of PPPs, particularly if the project involves new construction rather than a concession for an existing facility. Obligatory environmental review processes set by the National Environmental Policy Act (NEPA) can be time-consuming and extensive, and fulfilling these requirements may be a

burden to a project's budget. This can also present opposition between the public and private entities based on who should bear the risk of obtaining environmental clearance for a project. From a risk management standpoint, it is most ideal to wait to enter into a PPP agreement until the environmental review process has been completed. However, this is rarely optimal since the public sector must often rely on the private sector for resources and expertise during this process. Therefore, it is most common for PPP arrangements to allocate this risk to the public sector because the public sector generally has had a longer and more committed relationship with participating agencies and is also thought to act more in the public interest (Fishman, 2009).

One of the principal impediments to the implementation of PPPs in the highway sector is the lack of sufficient authorizing legislation at the state level. Just under half of states still do not have any type of PPP legislation, and of those that do, many only provide project-specific regulations or else impose significant restrictions on the ability to engage in PPP arrangements in terms of geographic area, type of project, transportation mode, or number of projects allowed. For example, Missouri enacted legislation with respect to a proposed bridge project in St. Louis, but any other transportation project needed special legislation to be pursued as a PPP. This type of legislative approach may be a good way for a state without much PPP familiarity to experiment with this alternative financing method, but it shows a lack of long-term political and institutional commitment to completing projects as PPPs (Fishman, 2009).

Other state law restrictions that can impact the ability of state and local highway authorities to engage in PPPs include whether existing or partially constructed highways may be converted into toll roads. Such restrictions reduce the ability of state and local highway officials to implement innovative financing arrangements involving the private sector. Akin to this, PPP legislation in some states does not allow private money to fund existing projects. This contributes to the degradation of existing roads and bridges, most of which are already badly in need of maintenance, but have no public funding source. Minnesota statutes are less than clear on this issue.

Many state and local transportation agencies follow particular legal agendas that can limit the range of projects considered for PPP implementation. This often results in the agency having to award contracts based on the "lowest responsive price" rather than on the most creative or perhaps most effective plan. In addition, to promote transparency and fairness, these bidders must respond to a uniform bid package without allowing for proposals that may differ from the bid specifications, which hinders the private component of performance-based competition (Fishman, 2009).

In Minnesota, its PPP-enabling legislation gives authority to local government entities to veto state approved PPP projects if the project is located within their local jurisdiction. In some ways, this provision in the legislation could provide checks and balances on project development, but it may also hinder private sector involvement because projects could be rejected without recourse for the proposers.

3.4. *Public Concerns over PPPs*

By definition, public-private partnerships include working with the private sector. From a public perspective, this often raises concerns—mostly driven by ideology. For example, 'What is the proper role of government versus the private sector?' (Baxandall et al, 2009) and 'Can profit motives ever operate for the public good?' (NCPMP, 2003). In this section, we address general

public concerns about PPPs. Specific concerns over contract terms will be discussed in the managerial section.

From a historical perspective, it was FDR's New Deal that established the public sector as the primary deliverer of the U.S. transportation system as a method to stimulate the economy during the Great Depression (NCPPP, 2003). Since then, the U.S. transportation system has been seen as a free, public good. There also exists the general ideology that it is only the public sector that can preserve the public's best interest. But current budget shortfalls mean that the public sector can no longer fulfill the increasing needs and demands of a deteriorating transportation system.

PPPs are seen as a desirable solution to fill this budget gap and they are becoming increasingly common in the U.S. (Baxandall et al, 2009). Politically speaking, PPPs are particularly desirable. For instance, policymakers can avoid unpopular tax increases (e.g. gas tax) by funding needed transportation projects without public financing, and in the case of concessions, it creates budget slack and the ability to fund other needed projects (Baxandall et al, 2009; GAO, 2008; NCSL, 2010). PPPs offer an alternative to delaying much-needed actions to address critical public priorities (NCPPP, 2003).

An important caveat to its political palatability is the understanding that PPPs are not sources of revenue, but rather, a financing tool that come with costs, risks, and trade-offs (NCSL, 2010). The financial enticement may, therefore, create project incentives based on resources that do not align with long-term planning goals. Therefore, PPPs should not drive a state's transportation strategy, but serve as a complement to an integrated surface transportation program (NCSL, July 2009).

The rise in use of PPPs over the last two decades has prompted much discussion and debate. Although PPPs come in myriad arrangements, asset-monetization leasing agreements are what are commonly thought of when referring to PPPs. This has led to confusion and unrealistic expectations by the general public over what is a PPP (NCSL, 2010). The dominant literature on PPPs (see for example, Baxandall, 2009; GAO Report, 2008; Gilroy, 2009) also seems to only address public concerns that relate to long-term concession agreements on tolled highways, reinforcing the narrow definition and purpose of PPPs.

Protecting the 'public interest' is the central argument in the PPP debate and is considered the key component to analyzing the potential costs and benefits of a particular PPP project (NCSL, 2009; NCSL, 2010; GAO, 2008). However, the term 'public interest' is problematic. It is not a clearly defined concept and there is no leadership from the federal government in developing clearer protections (Baxandall et al, 2009). The term, public, is also problematic because it can include many different stakeholders involved in a PPP project (GAO, 2008). These stakeholders include those directly affected by a PPP project, such as drivers and passengers of vehicles, but it also includes members of the public who receive ancillary effects of a PPP project. They can include users of nearby roads, landowners, special interest groups, and taxpayers, in general.

The major concerns surrounding PPPs can be organized into three main categories, all of which are driven by ideological terms: 1) Fear of losing control over a system that has historically been a public good; 2) Risk of increased costs to users and taxpayers rather than the speculated savings and efficiencies; and 3) An erosion of democratic values as profit motives become first priority.

The first category—**fear of losing control**—is driven by the historical nature of our transportation system as a public good. There is already skepticism of privatization among the general public (Baxandall et al, 2009), and relinquishing its hold on a historically publicly controlled domain causes fear and anxiety. Beyond the general public, policy makers and public transportation agencies waiver at the possibility of losing control over long-term transportation planning and prioritization if the private sector becomes involved (Baxandall et al, 2009). The idea being that only the public sector can ensure coherent transportation planning and policy over long periods of time (Baxandall et al, 2009). For example, some concession agreements include what are called non-compete clauses that protect the private investors by explicitly limiting the improvement or expansion of nearby transportation facilities (Baxandall et al, 2009; NCSL, 2010). However, PPP contracts are evolving away from non-compete clauses.

The second category—**risks of increased costs**—contradicts the widely held belief that PPPs will save taxpayers money and improve the public budget. This category is mostly for long-term concessions or toll road facilities because the concerns cover long-term budget issues. For example, upfront payments by private firms to the public sector are enticing given current state budget shortfalls; however, research has shown that privatization deals do not supply the full value for the future tolls they are expected to collect (Baxandall et al, 2009). There is also an argument that project costs will ultimately be less for a publicly procured project than for one privately procured (GAO, 2008). However, this is still a debated argument (Gilroy, 2009). In addition, an argument has been made that the public will be subject to higher tolls (than with a publicly tolled road) because private firms are free to charge what the market will bear in order to maximize profits (Baxandall et al, 2009). Finally, there is also a fear that a private entity may renege on a contract, resulting in bad project outcomes and losses to the taxpayer (Baxandall et al, 2009; NCSL, 2009). However, the way PPP contracts are structured, it is often the private sector that suffers the monetary losses if it reneges. Examples have shown that the public sector generally experiences significant benefits in these scenarios.

The third category—**erosion of democratic values**—could mean many different things to different people. In this instance, the major concern is over the lack of transparency in the PPP proposal process, thereby limiting the democratic process of public input into a project (Baxandall et al, 2009). In the case of long-term concessions, there is great concern over the unpredictability of our future and the risk that we are strapping future voters down to present-day decisions (Baxandall et al, 2009; NCSL, 2010). There is also fear that private sector values will harm our most vulnerable citizens because there is a perceived inherent disconnect between a for-profit enterprise and pursuit of the public good (NCPPP, 2003).

It should be noted that what is defined as a public concern over PPPs depends on the author or publisher, and in some cases certain concerns are refuted or contradicted by different authors (see, for example, Baxandall, 2009 and Gilroy, 2009). However, despite these definitional differences, there seems to be consensus in the literature on two specific strategies through which to address the above described public concerns: 1) create clearer state legislation; and 2) better define project contracts. Both of these strategies will be addressed in other sections of this report.

In addition to these specific strategies, **broader institutional supports and public education and communication** are critical to addressing public concerns as well as to determining whether a PPP is the best option for a particular project.

Broader institutional supports could build a support system for those contemplating pursuing PPP projects. An example of broad institutional support could be a national entity that provides information, and possibly funding, to support PPP development. A current example of this is *PPP Canada*, an organization funded by the Canadian government that supports the development of PPPs across Canada (for more information visit <http://www.p3canada.ca/home.php>). This kind of institutional support could also address the concern over the appropriate role of the U.S. federal government to provide oversight and to set standards for PPPs. The concern is that without this, the U.S. will end up with an uncoordinated and inefficient transportation system (Baxandall et al, 2009). However, what is still unclear is whether an entity such as *PPP Canada* has the authority and power to provide uniform oversight and standards to an entire nation.

Public education and communication is really about helping the general public understand just what a PPP is and the appropriate expectations they should have of a PPP project. Exactly who is responsible for this education and communication is a key question. Perhaps it lies with the above-mentioned institutional support system, or with the federal government.

Institutional supports in other countries are providing evaluation techniques to ensure a PPP project has a net benefit. The United Kingdom, Canada and Australia do a quantitative test of “Value for Money” (VfM) using the Public Sector Comparator (PSC). The PSC examines life cycle project costs over the concession term and seeks to quantify the value of various types of risk transfer. Partnerships Victoria in Australia uses an evaluation model with a four-part process that looks at raw PSC, competitive neutrality, transferable risk and retained risk. As the U.S. continues to move toward a more performance-based approach to infrastructure, incorporating evaluation techniques allows for the examination of all the risks and costs of delivering a PPP project (NCSL, 2009).

For the U.S.—and globally, for that matter—PPPs are likely here to stay as a mechanism to fund and deliver much-needed transportation system improvements. It will therefore be critical to understand how to determining whether a PPP is the best strategy to use.

3.5. Conclusion

PPPs are not totally new to the U.S, but they are used to a less extent in the U.S. than in some other countries, in part because of our unique tax-exempt municipal bond market, which allows state and local governments to borrow at lower costs than to involve the involvement of private investments. Due to the increasing gap between transportation demands and available public funding, many states are eagerly exploring the additional use of PPPs in state highway development.

Legal constraints, such as authorization and provisions, of PPPs vary across countries or states. In the U.S., while some PPP-specific legislation exists at the federal level to facilitate the use of PPPs for highway development, it is up to state government officials and legislators to decide whether and how to pursue PPP projects. PPP legislation varies widely from state to state. Although officials in many state governments are expressing interest in experimenting with new PPP legislation, first-hand experience with PPP projects in the United States, particularly privately financed projects, is still limited. Most practitioners and scholars agree that appropriate

PPP legislation should be in place prior to private sector involvement in order to maximize project outcomes.

Political pressures and public concerns about PPPs fluctuate over time. From a public perspective, this often raises concerns—mostly driven by ideology. The major concerns surrounding PPPs can be organized into three main categories, all of which are driven by ideological terms: 1) Fear of losing control over a system that has historically been a public good; 2) Risk of increased costs to users and taxpayers rather than the speculated savings and efficiencies; and 3) An erosion of democratic values as profit motives become first priority. To address these concerns, broader institutional supports and public education and communication are critical to addressing public concerns as well as to determine whether a PPP is the best option for a particular project.

Chapter 4. Protecting Public Interest in the Implementation of PPPs

4.1. Introduction

Early chapters of this report discuss the concept of PPP in transportation development, explain the rationale of using PPPs to compliment the traditional approach of project delivery, and address legal and political issues associated with the launch of PPPs. After the use of PPPs is authorized under favorable legal and political environments, the government still needs to have appropriate processes, suitable structures, and sufficient managerial capacity for the successful implementation of PPP. Such implementation represents a paradigm shift for state transportation departments from traditional project delivery functions, in particular, from designing, constructing, and operating projects to setting value and performance standards, and developing and managing contracts (PB, 2010).

A growing number of U.S. and international PPP experiences provide insight to previously employed managerial options as well as best practices in the implementation of PPPs. “Failing to tap available knowledge may lead to costly and avoidable mistakes or inadequate protection of the public interest” (NCSL, 2010, p. 22). For this reason, in this section we review technical or procedure issues that are internal to state departments of transportation (DOTs) or other stakeholders in managing PPP projects. These issues are organized along some key components of PPP implementation, all of which are crucial to the success of PPP in protecting public interest:

- Project selection and delivery option;
- Procurement options;
- Contract development;
- Project management.

The information sources for this section include (1) the growing body of research reports about PPPs, both domestic and internationally, (2) discussions among state policy makers and scholars through multiple venues, in particular the National Conference of State Legislatures forums on PPP for transportation (NCSL, 2010), and (3) discussions with managers and experts at Minnesota Department of Transportation.

4.2. Project Selection and Delivery

Before pursuing a specific PPP strategy, the DOTs need a system to determine which projects are to be conducted on a PPP basis rather than through traditional project delivery. The project selection and delivery may involve two separate decisions in sequence. First, the departments need to select suitable candidate projects for PPP consideration. Second, for specific candidate projects there are a variety of valuation tools that can be used to determine whether some specific PPP options are better than traditional project delivery.

4.2.1. Early Screen of PPP Candidate Projects

Compared to many other countries, the US states are less experienced in using PPP for transportation, but they have shown increasing interest in this new type of project delivery, mostly due to the urge to involve private financial sources to accelerate their project

development. First and foremost, the DOTs may conduct a screening of planned transportation projects in the state to identify suitable short- and longer-term projects that may have potential schedule- and cost-efficiencies through the use of PPP delivery and financing methods. One example is the *Public-Private Partnership Project Screening and Assessment* (PB, 2010) conducted by Parsons Brinckerhoff (PB) for Minnesota Department of Transportation (Mn/DOT).

The PB project employed a two-step screening process to identify the most promising P3 candidate projects from among the State priority projects. The Level I screening is to identify a small number of projects that reflect simultaneously the general attributes of a good PPP projects and the specific goals of Mn/DOT. It applies the following criteria:

- Project size and complexity: Since the implementation of PPP projects include additional costs for both the public sector and the private sector with whom they are partnering, the candidate projects must be of a certain scale in order to be viable for development on a PPP basis. Moreover, smaller, simpler projects offer few opportunities for innovation and cost effectiveness.
- Criticality: Mn/DOT uses performance metrics to prioritize its capital investments to achieve performance targets including safety, bridge and pavement preservation, mobility, and statewide system connectivity. The criticality criterion in the Level I screening is applied to make sure that the potential PPP candidate projects are best aligned with the Department's priorities.
- Revenue potential: All short-term to medium-term projects that meet the previous two criteria were advanced to Level II screening. Non-critical projects must have the potential to generate revenue and pay for a portion of their capital cost to be advanced to Level II.
- Implementation timeframe: Non-critical projects suitable for Mn/DOT's PPP consideration must be ready to be advanced into procurement within short-term (one or two years) or medium-term (four to eight years) periods. Projects that do not meet these timeframes were withheld from Level II screening.
- Environmental clearance: A big uncertainty in implementing transportation improvements is the timeframe for gaining the required environmental approvals. PB reviewed the current environmental approval status of each candidate PPP project before it is advanced the Level II assessment.

Selected projects that conformed to those criteria were advanced into a Level II assessment where they were subjected to a more detailed evaluation of financial capacity as well as potential efficiencies and risks. The level II assessment has two components:

- The first analysis is an evaluation of debt capacity of revenue generating projects to determine what portion of their initial capital cost could be financed from revenue bonds and then repaid through user fees. The result of this analysis provides an indication as to the type of revenue that could be leveraged by the private sector and the level of direct subsidy that a project may require from the public sector, for example, through availability payments.
- The second analysis in the Level II screening is a qualitative assessment of the potential to achieve efficiencies in terms of cost reductions or schedule acceleration if the selected projects were implemented on a PPP basis. This assessment was accomplished by

comparing the projects to other similar PPP projects or programs that have been implemented elsewhere.

4.2.2. Evaluation Tools for Specific PPP Options

For a specific project, the decision to use a PPP strategy should be supported by analytical processes that show the PPP procurement as a better option than traditional procurement or public provision. The valuation process typically involves quantitative analysis that includes the careful selection of inputs/variables that properly characterize the chosen procurement method and risk allocation (NCHRP, 2009). The United Kingdom, Victoria (Australia), and British Columbia as well as several states in the United States, including Florida and Alaska, have widely used “Value for Money” as a tool to assess PPPs. Other quantitative methods have also been used in the United States, such as shadow bids and market valuation in Texas and asset evaluation in Indiana, to assess the value of proposed delivery (NCHRP, 2009). Some governments also incorporate a qualitative public interest test to evaluate the value of a PPP.

Value for Money (VfM) Analysis with Public Sector Comparator (PSC)

The Value for Money (VfM) analysis calculates the difference between the costs and benefits associated with both traditional and PPP procurements. Although there are still few examples of VfM in the United States, many other countries have made PPP/public procurement decisions for many projects using VfM analysis and have established set procedures for its calculation (NCHRP, 2009).

An estimate of VfM is achieved by comparing the costs of doing a proposed PPP project against the costs of doing that project through a public delivery model, namely a Public Sector Comparator (PSC). The PSC aims to replicate the likely financial outcome of a traditional procurement process with public provision of operation and maintenance services. It examines the hypothetical, risk-adjusted, life-cycle costs, including initial construction costs, maintenance and operation costs, and additional capital improvement costs that will be incurred over the course of the concession term, assuming that the project is to be funded, financed, built, operated, and maintained by the public sponsor. In addition, the probable outcome of a private bid for the project under a given PPP option needs to be estimated. These estimates are typically derived from the analyst’s knowledge of the private sector entity likely to propose and deliver such project, current market conditions, and preliminary risk allocation strategy. It should reflect schedule acceleration, life cycle cost decisions, and efficiencies generally allocable to private development and construction and, if appropriate, operations (PB, 2010).

According to Grimsey and Lewis (2005), a comprehensive PCS may include four components:

- Base costs of PSC: Discounted cash flows of benefits and costs attributable to the project assuming no private sector involvement. Costs include direct and indirect costs and are reduced by third-party revenues including user charges, increased demand for a facility or service, or payments received by third-party use of the facility.
- Competitive neutrality value: Inherent competitive advantages or disadvantages of a government agency compared with the private sector, for example, the public sector may enjoy exemptions from land taxes or other taxes and fees that would otherwise be levied

from a private sector. This value is added to the PSC to allow for comparison with the PPP option.

- Transferable risks: Those that are likely to be transferred from the procuring agency to the chosen private partner(s). The risk valuation includes cost of the risk and the probability of risk occurring.
- Public-retained risks: Those risks that the public partner will retain.

Alternatively, the comprehensive cost of a private bid includes the combined cost of service payments (revenue streams) for the private bid and the cost of the public-retained risks. A financially viable PPP option should have a comprehensive PPP cost that is lower than the comprehensive PSC cost.

VFM tests are useful because they not only examine the financial value of a project, but consider hard-to-quantify factors crucial to determining risk transfer (GAO, 2008). “Because VFM tests can allow the government to analyze the benefits and costs of doing a project as a public-private partnership, as opposed to other more traditional methods, not using such a test might mean that potential future toll revenues from public control of toll roads are not adequately considered” (GAO, 2008, p. 57). In general, the more risk transferred to the private sector, the better value the project will be for the public (GAO, 2008). However, risk transfers may also add significant costs to projects since the private sector partner must insure themselves against the risks that they assume.

In British Columbia, examining projects through such a VFM/PSC lens has led to many projects being delivered via traditional public procurements rather than by PPPs, because the private approach did not yield enough value for money (GAO, 2008). In the United States, both Oregon and Texas have used PSC-style comparators to evaluate potential PPP projects. Texas calls this process “shadow bidding,” and has used this method twice to calculate detailed estimates of design, construction, and operating costs to be compared against private sector proposals. In addition, the moratorium bill passed in 2007 (Texas Senate Bill 792), requires the Texas DOT to conduct a “market valuation” analysis for new toll roads to assess how much value a facility might attract from the private sector.

While the VFM/PSC approach is quite helpful in project selection and delivery, it is not without its critics and difficulties. For example, it often relies upon assumptions and inexact future projections that may not accurately model long-term events and costs. Therefore, it may be most effective at a point in time when the project is fully developed and all of its risks and costs identified (PB, 2010).

Qualitative Tools of Valuation

Besides quantitative analysis, qualitative factors could also be considered in the decision of project delivery. The public agency may identify the objectives and desired project outcomes, and translate these into decision criteria of project selection. The qualitative analysis considers whether the long-term contract can meet the objectives, as well as other important regulatory, public equity, efficiency, or accountability issues. Does the PPP provide innovation to improve on traditional delivery, financing, management, operations, or maintenance structures? Is the PPP procurement option feasible given current political environment, market conditions, the public agency’s available resources, and the attractiveness of the proposed project?

The states of Victoria and New South Wales, in Australia, have used qualitative aspects of public interest—such as public access, effectiveness in meeting government objectives, accountability and transparency, employee benefits—along with quantitative analysis to determine whether they would enter into PPPs. The United Kingdom also complements quantitative tests with qualitative tests and uses both at various stages of the PPP process (NCSL 2010).

4.2.3. Project Selection in Practice: British Columbia

All PPP proposals in British Columbia, Canada are conducted using a PSC that compares the full life-cycle costs of procuring the proposed project as a PPP compared with a traditional design-bid-build approach. The results of each PSC are used to help determine a project’s procurement method. The following best practices are used in the project selection and delivery process in British Columbia:

- PSCs not only compare the project costs, but also evaluate the values of various risks.
- An independent auditor reviews PCS test methodology and continually makes improvements to the methodology.
- When selecting a project, the better risk is balanced and allocated to the partner best able to mitigate and manage the risk, the better the value for the public.
- In traditional public cost estimates, the values of risks occurring are often not included, which is a reason that cost overruns are so common in public sector infrastructure projects. For this reason, many projects have been done through a traditional public procurement rather than privately because the PSC results indicated that there was not enough value for money in the private approach (GAO, 2008, p. 54).

4.3. Procurement Types

For projects to be delivered on a PPP basis there are many choices regarding how the procurement is conducted, for example, who can initiate a proposal, when to process a procurement, whether it should be negotiated or bided, and what decision rules should be used to choose a private contractor. This section discusses the concerns over public interest associated with these choices, and reviews related domestic or international experiences in PPP procurement.

4.3.1. Solicited vs. Unsolicited Proposals

PPP proposals may be either solicited or unsolicited by the public agency. Unsolicited bids, which allow private firms to propose projects outside of the traditional public-sector transportation planning process, have raised concerns that the private sector may “cherry-pick” the most profitable projects, leaving the public sector with other needed, but less profitable projects (Buxbaum & Ortiz, 2007). Therefore, some states, such as Florida, prohibit unsolicited bids during the procurement process to avoid the controversy that these proposals may serve special interest or favor individual companies.

However, a variety of stakeholders including state representatives, law firms, private companies, and trade associations recommend elimination of state prohibitions on accepting unsolicited proposals (USDOT, 2004). Some may argue that allowing unsolicited proposals can encourage innovation. Besides, the most profitable projects might be those with the highest project traffic and therefore the most needed; therefore, attracting private investment for these projects – even

through unsolicited proposals – provide public benefits, as it would leave public funds available for other needed projects and may not be good candidates for PPPs (NCHRP, 2009).

In fact, international experience has suggests three methods that can be used to increase competition and transparency to address the concerns associated with unsolicited proposals (Hodges and Dellacha, 2007):

- The “Bonus System”: Used by Chile and South Korea, this method invites additional competition but gives a small advantage to the unsolicited bidder. Thus, later bidders are incentivized to submit high-quality, low-cost projects, but may have slightly less incentive to submit at all.
- The “Swiss Challenge System”: Used by Guam, India, Italy, and Taiwan, this method invites additional competition and gives the unsolicited bidder the opportunity to beat or match the new bids.
- The “Best and Final Offer System”: Used by South Africa and Argentina, this method involves multiple rounds of tendering and the original bidder is automatically guaranteed participation in the final round.

As of 2009, PPP legislation in 18 states allows unsolicited proposals for PPP projects. Virginia, one of the first state to authorize the use of transportation PPP, allows private entities to submit both solicited and unsolicited project proposals, but the state has developed a quality control process to make sure that unsolicited proposals are in the interest of the public sector before it is pursued (NCHRP, 2009). The Virginia Department of Transportation (VDOT) posts all proposals and contracts on its website so that any unsolicited proposals are publicly available. It also opens up a period of competition so that other private agencies may challenge the initial unsolicited proposal. In particular, if the state decides to move forward with the proposed project, competing proposals may be submitted within a minimum of 90 days if the project does not involve federal funding, or a minimum of 120 days if using federal funding. Varying the length of period allowed for competition may have significant impact on contractors: short time periods for competing proposals lead to inadequate competition among bidders. On the other hand, a long period may discourage private investors in submitting unsolicited proposals (Buxbaum & Ortiz, 2007). In Delaware, Indiana, and Minnesota, unsolicited proposals can also be considered, and the public sector can monetarily compensate unsuccessful bidders for the right to use their ideas in the selected proposal (NCSL, 2010).

4.3.2. Procurement Phasing Options

In the US, obtaining the required environmental approvals is perhaps the most time- and labor-intensive requirement that DOTs must complete in order to advance new construction projects. In the Mn/DOT PPP Screening project, PB (2010) discusses the decision to start a transportation PPP project at different phases in the project development cycle. The most common approach is to advance PPP procurements only for projects that have cleared all necessary environmental approvals. However, PPP procurements can also be awarded earlier, with the private partner playing an active role in the definition of the alternatives assessed in the environmental approval process. Each of the two approaches has its advantages and disadvantages:

- PPP procurements for projects with environmental approvals

Since the timeframe for gaining the required environmental approvals is very uncertain in implementing transportation improvements, private partners are likely to avoid pursuing PPP projects that have not received environmental approvals. To obtain environmental approvals prior to PPP procurement requires that project sponsors be sure that the preferred alternatives emerging from the process include all the attributes and operational requirements needed for the suitable PPP option. The definition of the project should also include estimates of the costs for implementing and operating the facility. However, many of the opportunities to modify the design or scope of a project are limited, because a private partner is brought into a project too far into the development process.

- Pre-development agreement P3 procurements

Alternatively, a number of DOTs have used a delivery mechanism called “Pre-Development Agreement” or PDA to bring in private partners during the environmental process. With early involvement of the private sector in the definition of the project, this approach may bring technological innovation to arrive at a preferred alternative that is less costly to implement and operate. For example, in PDA the private partner participates in the preliminary design of the project during the environmental review process either at a reduced or deferred cost, in exchange for the right of first refusal to develop the project on a DBFOM basis. Although many of the fundamental risk transfer provisions are contracted in the PDA, the actual negotiation of the concession and construction agreements does not take place until after the preferred alternative is determined through the environmental review process.

4.3.3. Bidding, Negotiation, and Selection Criteria

Whether solicited or unsolicited, PPP contractors are typically selected with a competitive procurement process. The principal difference among the processes is the extent of negotiation that occurs during procurement. In a review of international PPP procurement experiences, USDOT (2009) arranges different processes of four countries on a continuum ranging from a pure bid to a pure negotiation for selection of the PPP contractor. Spain generally utilizes the pure bid processes, the United Kingdom tends to favor pure negotiations, while Portugal and Australia fall in the middle of this range, utilizing a mix of both techniques (USDOT, 2009). A pure bid process, such as Spain’s “open competition model” can be competitive and efficient, but it requires clearly delineating procurement expectations and terms for the project in its request for tenders. A potential downside of this approach is that it may attract too many bidders, which can drive up transaction costs as well as discourage some qualified bidders from participating because of the low probability. In the United Kingdom’s model, the PPP procurement negotiation may involve significant staff of internal and external personnel. For instance, projects may be selected based on the combination of three separate negotiation and evaluating process: (1) quality assessment, (2) price assessment of all tenders meeting the quality threshold, and (3) price-quality tradeoff process. However, such extensive negotiations during the procurement process increase both its time and cost.

Regardless of procurement style, the transparency of the procurement process is crucial because private bidders will be wary about risking their limited project proposal funds in processes that are poorly planned or unlikely to achieve closure (USDOT, 2009). To reduce these risks Portugal makes all received proposals openly available and Spain provides well-defined parameters to each bidder. The UK carefully scrutinizes the fairness of the procurement process by employing

outside monitoring officers, while Australia has created public agencies whose sole purpose is to oversee the procurement process. It should be noted, however, that procurements of public-private partnerships often require additional costs when compared to public procurements. Potential increased costs may stem from the hiring of financial and legal advisors as well as a higher price tag associated with private sector financing versus public sector financing (GAO, 2008).

In the traditional procurement method involving bidding, contracts are awarded based upon the lowest price. The weakness of this approach is that it does not allow an agency to consider factors significant to PPPs such as risk transfer, innovation, or public policy considerations that may be more important than price. NCSL (2010) argues that the procurement process for PPPs could be better determined by reviewing a project's best value, or other appropriate means, rather than lowest price. In Victoria's EastLink project, the Request for Proposals emphasized various evaluation criteria, such as conformance with overall project, technical, and safety objectives; deviations from the established risk allocation framework in the contract document, and the quality of urban design elements. The concession period was also a bid variable to be proposed by bidders (USDOT, 2009). Another form of procurement used by Florida, Maryland, Puerto Rico, and Washington State is the mandated use of cost-benefit analyses (NCSL 2010). This process is similar to the VfM test, in that it seeks to give value to the benefits received from a PPP and measures these benefits against the cost of a project. Successful PPPs will have quantifiable benefits that out-value the cost of the project; in this case, the aforementioned states and territory would proceed with the procurement process.

4.3.4. Procurement in Practice: Pocahontas Parkway, Virginia

“The Pocahontas Parkway was the first unsolicited proposal for a highway project developed under Virginia's Public Private Transportation Act (PPTA). In 2004, Transurban submitted an unsolicited proposal to acquire the rights to operate the Pocahontas Parkway. After 18 months of negotiation, Transurban executed an Asset Purchase Agreement with the Pocahontas Parkway Association (PPA) and entered into the Amended and Restated Comprehensive Agreement with the Virginia Department of Transportation (VDOT) on June 29, 2006. Under the terms of those agreements, Transurban has acquired the sole rights to enhance, manage, operate, maintain, and collect tolls on the Parkway for a period of 99 years” (Buxbaum & Ortiz, 2007, p. 25). Since embarking on this project, VDOT has employed the following six-phase procurement processes to review PPP submissions:

- **Quality Control** – In this initial phase, VDOT determines whether the proposal addresses the needs identified in local, regional, and state transportation plans, and specifies that those needs cannot be addressed under traditional procurement. This review also identifies if the proposal will result in the availability of the facility to the public in a more timely, more efficient, or less costly fashion and provide for cost and/or risk-sharing with private entities.
- **Independent Review Panel (IRP)** – This panel consists of members of the Commonwealth Transportation Board (CTB), VDOT representatives, transportation professionals, members of the academic community, and representatives of other entities affected by the proposal. In Phase 1, the IRP reviews and evaluates all proposals based on the evaluation and selection criteria in the PPTA guidelines. The IRP will then recommend to VDOT and the CTB whether none, one, or more proposals should be

advanced to the detailed review phase. Phase 2 involves public participation and receipt of comments from affected jurisdictions. Each affected jurisdiction should receive a copy of the proposal and have 60 days to submit comments to the IRP.

- **Oversight Board Approval** – Following review and recommendations by the IRP, the CTB reviews the conceptual proposals and any recommendations of the IRP and recommends whether to advance to a detailed proposal and further evaluation and action by VDOT under the PPTA guidelines.
- **Submission and Selection of Detailed Proposal** – VDOT creates a proposal review committee to review the recommendations of the IRP and CTB, and may request that none, one, or more proposer(s) submit detailed proposals. Detailed proposals should be consistent with the recommendations of the IRP, CTB, and the provisions and evaluation criteria as defined in the request for detailed proposals. Based upon a review of the detailed proposals, VDOT may select none, one, or more proposals for competitive negotiations.
- **Negotiations** – The negotiation phase is initiated if VDOT determines: 1) that the proposal meets the selection criteria established for evaluation; and 2) that initiation of the negotiation stage shall be in the public interest. Components of the negotiations include the rights and obligations of the parties, set a maximum return or rate of return to the private entity, determine liability, and establish length of PPP agreement.
- **Interim and/or Comprehensive Agreement** – Once VDOT and the selected proposer have finalized the draft language of the interim and/or comprehensive agreement, the draft version is forwarded to the Office of the Attorney General for review and approval. Written approval from the Secretary of Transportation is required before finalizing the PPP agreement. The PPTA proposal evaluation and selection criteria include, among several items, demonstration of public support for the project. As part of these criteria, the proposer should provide evidence of community benefits, the extent of support/opposition, and include strategies to involve public officials and the community (Buxbaum & Ortiz, 2007, p. 26-7).

4.4. Contract Development

The contract is one of the most important phases of the PPP management process as it “defines the salient points and contingencies” of the entire agreement (NCSL, 2010, p. 19). Guidelines and terms for the contracting process are usually set by legislators, while sponsor agencies tend to craft the specifics of these contracts (NCSL, 2010). The success of a PPP contract is dependent on a reasonable balance among technical, commercial, and legal conditions (USDOT, 9). In this section, we review six key issues related to PPP contracts, including PPP payment options, contract length, tolling rate policies, rate of return, non-compete clause, and hand-back provisions.

4.4.1. PPP Payment Options

Private contractor for PPP projects may be compensated in two general ways: user-fee revenues and sponsor payments. Sponsor payments can take the form of construction payments or availability payments (PB, 2010). Hence, private contractors may take three forms of revenue as the return for their inputs:

- User fees:

The user-fee approach involves collecting tolls from vehicle operators from toll facilities or fares from passengers on transit or rail systems. The private sector compensated by user-fees takes revenue-related risks associated with the change of demand, additional competition, or limits on toll rates. When user-fee revenue are not sufficient to cover the complete cost of financing, building and operating the improvement, a project sponsor may opt to provide a subsidy to the contractor in order to get the private involvement.

- Construction payments:

The aforementioned direct subsidies can be provided at either the construction or operation stage. For construction, the form of a lump-sum payment for a portion of the project cost made at the end of the construction period, or a series of progress payments corresponding to project milestones. Construction payments can be used in conjunction with users or as a way to reduce a long-term availability payment. The amount of such payment is usually determined, among other considerations, by the project capital needs, the sponsor's ability to use capital or operating funds to pay for the concession, the concession financing structure, and the credit quality of the project.

- Availability payments:

A means of compensating a private partner at the operation stage is availability payments. These payments made by the public sponsor are guaranteed by the "availability" of the facility based on performance standards set forth in the concession contract, such as incident management, snow removal, or maintenance related lane closure, etc. A similar approach is called "shadow tolls," in which the private sector gets compensated by the actual usage of transportation facilities, but the payments are provided by the public sector instead of direct users. Compared to the user-fee approach, availability payments (or shadow tolls) reduce the revenue-related risks for the private sector but retain those risks with the public sector, which has to secure funds from other sources (typically the general budget) to meet the obligations.

4.4.2. *Contract Length*

PPP options that have private involvement beyond the construction stage need to define the length of the concession period, often call the "term," in the PPP contract. A longer contract term allows the private contractor more sufficient time to recover the costs and to achieve a reasonable return on investment, and thus the private sector will be more willing to get invest, or provide a higher upfront payments in the case of long-term lease. However, an especially long contract period – such as 99 years in some recent PPP cases -- can give the perception that the government is losing its ability to protect the public interest for an extensive period of time. To mitigate such concerns, it may be prudent to include a clause in the agreement that ends the lease when the private investor has reached a specified rate of return (Buxbaum & Ortiz, 2007).

International experiences reviewed by USDOT (2009) show that the contract periods for recent PPP projects generally range from 30 to 40 years. Portugal tends to use a standard period of 30 years for its concessions. In Spain, concessions used to last as long as 75 years in the past, but current arrangements vary from 25 to 40 years, with the government setting the period based on what terms makes sense economically. United Kingdom's Highway Agency has set recent contracts at 30 years. In Australia, the contract period is often a bid variable to be considered in project selection. In the US, the length of PPP lease and concession agreements is sometimes dictated by state legislation, most commonly 50 years (FHWA, 2009).

A study by Virtuosity consulting for the OECD and the European Commission of Ministries of Transportation on successful examples of PPPs concluded that the optimal concession length is between 30 and 35 years; concessions longer than that range tend to be sub-optimal for taxpayers (Stambrock, 2005). The NCHRP (2009) survey of state DOTs in the US finds similar concerns; some respondents suggested concession terms of no longer than 30 years. Another recent report by HNTB (2011) suggests that the typical range for toll concession P3's is 50 years and for availability payment P3s 30 years.

4.4.3. Tolling Rate Policies

Tollways that rely on tolling revenues need to have rates sufficient to retire debt, pay for the cost of operation, maintenance and future capital improvements, and provide a reasonable return to investors (FHWA, 2009). Under public ownership, toll rates are rarely increased to adjust for inflation or other increasing costs of maintaining the toll roads. This is because public operators generally have weak incentives to price roads at a socially optimal level. For PPP projects that are compensated with user-fees, however, there are often concerns that the private investor will set tolls too high, resulting in a diversion of traffic from the tolled, privately operated highway to non-tolled, public highways, which could cause congestion and accelerated deterioration.

The FHWA report (2009) finds that all recent agreements for operation of existing or newly constructed toll roads have included limitations on how often and how much toll rates could be increased. In 2007, Virginia's first public-private partnership legislation included utility-style rate regulation, in which rate increases should be justified by higher costs. The concessionaire of the Dulles Greenway in Virginia is required to apply to the Virginia State Corporation Commission (SCC) prior to raising tolls. The utility-style regulation, however, may provide incentives for the private sector to inflate costs, and may be subject to political risk. In 2008, Virginia adopted a new law directing the SCC to approve requests for toll rate increases during the period from 2013 to 2020 that are equal to the greater of (i) the increase in the consumer price index from the last toll rate increase, plus one percent, (ii) the increase in the real gross domestic product from the last toll rate increase, or (iii) 2.8 percent. While private operators are usually allowed to increase toll rate in accordance with major economic indices, they are not required to do so, and are discouraged to do so if rate increase would decrease use of the facility and reduce revenues. In addition, careful selections of growth indices should be conducted so that middle- and lower-income groups are not disproportionately affected by high tolls (Buxbaum & Ortiz, 2007).

From an economic perspective, toll rates should approach the marginal societal cost of driving; therefore, in peak periods toll rates should be set high enough to efficiently manage congestion. However, for congested facilities, setting maximum fixed toll rates will likely be in conflict with a desire to minimize congestion through variable pricing. For these projects, limiting returns on equity or providing for revenue sharing has been used in lieu of rate caps to protect against monopoly profits (FHWA, 2009).

4.4.4. Rate of Return

Closely related to the setting of toll rates is the question as to how a reasonable rate of return should be established for private contractors of PPP projects. Studies show that the European private sector expects a return on its investment of 7% to 17% (Jeffers et al, 2006). For individual projects, the expected rate of return is affected by many factors; for instance,

concession deals involving “greenfield” projects tend to require higher returns than those on “brownfield” tolls.

Buxbaum and Ortiz (2007) identified windfall revenues as one of the main public concerns related to long-term concessions. This concern was further validated by the NCHRP survey (2009). Two general methods to address this concern have been competitive bidding and revenue sharing.

- Competitive bidding to capture market rates of return:

Under a competitive bidding process, a PPP project is awarded to the private contractor who offers the government the most value or agrees to the lowest public subsidy given the toll rate structure. As bidders are competing to make more attractive bids, the winning bid is presumed to reflect a competitive, if not the lowest, projected after-tax return. The actual rate of return depends on how efficiently a private contractor can operate the toll road and how attractive the road is to users. The Chicago Skyway and Indiana Toll Road concessions had employed such competitive bids instead of setting explicit limit on rate of return.

Another form of competitive bidding is for bidders to compete on the basis of the lowest “availability payments” provided by the public sector. In these PPP structures, private contractors compete with each other to bid the lowest availability payment that they are willing to accept in order to assume the risks and responsibilities in construction, operation or maintenance of transportation projects.

- Revenue sharing based on rate of return:

Setting a pre-set absolute limit on the rate of return may deprive the incentive for private contractors to operate the project efficiently once the return cap is exceeded. Instead, several agencies have opted for revenue sharing provisions that allow both the public sector and the private operator to share in the upside potential of these projects. For toll roads, the public sponsor may use market surveys to determine the thresholds above which the agency receives a portion of the toll revenues from the concessionaire. For managed lane projects, in which tolls are set in relation to traffic, returns can be shared to take advantage of increased revenues resulting from higher tolls when there is greater demand for use of the corridor (FHWA, 2009).

Revenue sharing is also used to protect the public interest, so that higher returns would not only benefit the private sector, but would provide higher takings to the public sector. Texas has employed revenue sharing in two projects, and the methods were perceived highly “as protecting the public interest in the long run and ensuring that the public and private sectors share common goals” (GAO, 2008, p. 44). Other tolling policy agreements may require the private investor to provide free service for transit and emergency vehicles so that user fees do not increase for these public services (Buxbaum & Ortiz, 2007).

4.4.5. *Non-Compete Clause*

For PPP projects that are compensated through tolls, non-compete clauses prevent the state and local governments from adding capacity within a specified distance so that demand for the PPP facility is not eroded. More accurately, these clauses may be “limited compete” if they do not ban improvements outright but contain negotiation provisions for remedies, for instance, the

private contractor may require the public sector to pay the concessionaire for ‘lost’ revenue (Buxbaum & Ortiz, 2007).

Non-compete clauses have been subject to public criticism due to the perception that they tie the hands of government to deliver needed transportation improvements. The most-cited example in the United States is California’s SR-91. In the non-compete clause, the California DOT agreed not to make improvements within one-and-a-half miles of the HOT lanes on SR-91 without consulting the private operator. In 1999, the private contractor objected the California DOT’s plan to add merging lanes to the existing free lanes for safety reasons. The objection raised public opposition and ultimately led to a lawsuit seeking nullification of the non-compete clause (USDOT, 2004). Other instances have been cited in Australia where the public sector has been unable to improve toll-free routes owing to similar agreements (AECOM, 2007).

Due to these concerns, the 2005 federal SAFETEA-LU transportation law bars states from including such non-compete agreements for the Interstate System construction Toll Pilot Program (RPA, 2007). In 2007, Congressmen Oberstar and DeFazio suggested avoiding non-compete clauses altogether. However, non-compete agreements may be necessary in some situations to secure private incentives to investment or to protect private partners from unfair competition arising from subsequent government actions (Samuel, 2007). As a balance, more recent agreements include some limited-compete clauses, under which the public sector is allowed to build other projects in its current long-range transportation plan. If necessary, future projects that are not in the exiting plan and that do fall within a narrowly defined competition zone may be compensated for damages done to PPP toll revenues. For example, the Pocahontas Parkway in Virginia includes a 6-mile non-compete zone, whereas the Indiana Toll Road agreement defines a 10-mile competition zone in which the state could provide compensation for projected loss revenues from building a new four-lane limited access highway, but can build anything else along the corridor (Buxbaum & Ortiz, 2007; Samuel, 2007).

Alternatively, the public sector can use other compensation mechanisms, such as shadow tolls or availability payments mentioned earlier in the report, to mitigate the concern about demand changes due to future competitions. Shadow tolls dictate that the public sector pay the private company “an amount per user of a roadway as opposed to direct collection of a toll by the private company” (GAO, 2008, p. 80). Availability payments allow the private sector to bid for annual payments that will become available once the project is open for use. These payments are based on the project meeting ongoing performance criteria, and if not met, the payments will not be made.

4.4.6. Hand-back Provisions

For long-term concession projects such as long-term leasing or DBFOM, there is a concern about hand-back conditions. In particular, how can we make sure the facility will be returned to the public sector at the end of the term in a state of a good repair?

Toward the end of the term, private operators may not have sufficient incentive to invest in maintenance and capital improvements, because they do not have enough time to get the return from the cost of improvements. This could leave the public sector with significant operations and maintenance obligations at the termination of the contract. Public agencies recognize this risk, and have used a variety of strategies, including hand-back audit, letters of credit, maintenance

reserve funds to protect the public and ensure proper maintenance by the concessionaire through the end of the term (FHWA, 9, p4).

UK's standard is that 25 percent of the asset life remains at hand-back. In the hand-back processes, a series of joint inspections between the government and the contractor will occur to determine whether adherence to the specified level of maintenance and repair has been achieved. Provisions to remedy unsatisfactory conditions are typically detailed. For instance, the contract may require establishment of a program of actions with milestones to bring the facility up to the expected standard (USDOT, 2009). In the US, the Chicago Skyway and Indiana Toll Road concessions both used letter of credit that would be available to the public agency if the concessionaire failed to return the facility in good repair. The Pocahontas Parkway concession requires the concessionaire to maintain an "extraordinary maintenance reserve" to fund any necessary renewal or maintenance work required to put the project in good condition at the termination of the contract. Several project agreements in Texas use detailed hand-back provisions that spell out what the condition of the facility must be at the end of the term and the amount that the concessionaire must hold in reserve to ensure its ability to deliver the project in good condition.

In the contract, hand-back provisions have three main purposes: (1) they form part of the concession life-cycle costing approach; (2) they help induce the concessionaire to maintain the facility throughout the concession term; and (3) they add certainty as to the condition of the assets that will revert to the public sector at the end of the term. Hand-back provisions are necessarily project specific because of the types of assets and specific project characteristics involved in each agreement (FHWA, 2009).

4.4.7. Contract Development in Practice: California SR-91

California was one of the pioneers in implementing PPPs in the highway sector. In 1989, the California legislature passed Assembly Bill (AB) 680, which paved the way for the California Department of Transportation (Caltrans) to approve up to four geographically dispersed pilot projects across the state involving BOT projects that would be financed solely by the private sector. In 1991, Caltrans executed agreements with private firms for one BOT pilot project in Northern California and three BOT pilot projects in Southern California. SR-91 is one of the two that have been implemented to date.

The SR-91 Express Lanes project was the first congestion-priced highway facility to be proposed in the United States. The project consisted of four express toll lanes that would operate in the median of the 91 Freeway for a 30-mile length. To date, only the express lanes of the first 10 miles (from the Riverside/Orange County boundary westward to the 55 Freeway) have been developed and operated. The Express Lanes project was financed in its entirety by a private consortium at a total cost of \$135 million and opened for traffic using fully automated tolling technology in December 1995 (TRB, 2009).

The SR-91 agreement between Caltrans and the private consortium, California Private Transportation Company (CTPC), provided a 35-year franchise from the date of opening, specified that the maximum rate of return to the private operator could not exceed 23 percent, stipulated that Caltrans would not build competing road capacity within a 3-mi "protection zone" adjacent to the express lanes, and provided that traffic enforcement and facility maintenance would be provided by the state on a reimbursement basis. As provided in the authorizing

legislation, any state expense incurred in the development and implementation of such a BOT project had to be reimbursed by the private-sector participant.

In the first few years after the opening, the SR-91 was viewed by many as a net public benefit. A designated impact study showed dramatic reductions in peak-hour travel times and average peak-hour travel speeds on the free lanes were also significantly improved. In the first six years of operation, CPTC provided \$6.8 million in tax revenue to the County. The profitability of the toll road to the private sector was also promising. The toll road broke even in the third month of operation and cash flow broke even in the third year of operation (Ni, 2009).

Despite the successful implementation of the SR-91 Express Lanes project, the PPP arrangement ran into problems several years later. Some citizens took the private ownership and the toll charge as an “incredible breach of public trust.” Whereas the “free” lanes on the 91 Freeway were enjoying reduced congestion because of the new toll lanes, safety issues arose as many drivers made abrupt lane shifts when deciding whether or not to use the tollway. In 1999, when the California DOT sought to add merging lanes to the existing free lanes for safety reasons, the CPTC objected. Several lawsuits were filed against Caltrans and the private contractor as a result of the non-compete restriction, and Caltrans ultimately was forced to make improvements to the toll-free lanes on SR-91. In 2002, the California legislature passed Assembly Bill 1010 (AB 1010) which authorized OCTA to buy out the private franchise and eliminated the absolute protection zone. In 2003, the OCT A purchased the toll lanes from CPTC for \$207.5 million (USDOT, 2004).

4.5. *Managing PPP Projects*

After a successful contract is negotiated, it still takes capacity and significant effort to manage the contract during all stages of the project development. This section reviews discussions about contract oversight and monitoring, transparency and public participation, use of PPP proceeds, and contract change management. At the end, we provide a case example of contract management in the United Kingdom.

4.5.1. Oversight and Monitoring

For transportation improvements that are delivered on a PPP basis, operations and maintenance responsibilities may have been transferred to the private sector. To protect the public interest, however, the public sector still need to undertake sufficient oversight and monitoring to make sure that private contractors fulfill their obligations to meet safety, maintenance, “hand-back,” and other standards, as specified by contract, over the course of the partnership. Such mechanisms can both identify when requirements are not being met, and also provide evidence to impose penalties and to seek remediation when the private sector does not do so.

The oversight and monitoring practices may be split into two phases: The construction oversight and the operations oversight. Construction oversight can be done by external verifiers or by in-house public managers. Many foreign countries employ an independent verifier who serves as an objective third party to administer and review the project (USDOT, 2009). The costs are often shared by the government and the PPP contractor. Sometimes, the private contractor is required to cover the cost up to a threshold amount, above which the cost is shared. To have the private contractor bearing part of the cost serve as an incentive for improve project quality, because inadequate performance leads to more extensive audits and higher verification costs. Even if the

construction audits are performed by the public sector, the approach may be different from traditional construction management: There is a paradigm shift, in that the State's role is to audit for compliance with contract terms, rather than the details of the actual work (PB, 2010). Likewise, for operations oversight, the State's role shifts from hands-on running of operations to contract management for compliance (PB, 2010). For the oversight to be effective, the original contract must include standards that can be readily measured, with penalties for failing to meet them.

The Indiana Toll Road is monitored by the Indiana Toll Road Oversight Board, which is composed of both state employees and private citizens. The Board meets on at least a quarterly basis to review the performance and operations of the concessionaire and identify cases of noncompliance. For the Chicago Skyway, oversight includes reviewing various reports, such as financial statements and incident reports filed by the concessionaire, and hiring independent engineers to oversee the concessionaire's construction projects. In both cases the concessionaire reimburses the public sector for oversight and monitoring costs—in Indiana up to \$150,000 per year adjusted for inflation. Penalties will be imposed on private contractors if a concessionaire breaches its obligations. In Texas, the public sector has sometimes retained the ability to issue fines or citations to concessionaires for nonperformance. In Indiana, the highway public-private partnership contracts in Chicago and Indiana allow the public sector to ultimately regain control of the asset at no cost if the concessionaire is in material breach of contract.

There are also extensive foreign experiences to provide oversight and monitoring of concessionaires. In Spain, the Ministry of Public Works assigns public engineer to monitor performance of each concession, during both the construction and operations stage. These engineers record user complaints and incidents in which the concessionaire does not comply with the terms of the concession. In both Victoria and New South Wales, Australia, projects must demonstrate that they incorporate adequate information to the public on their obligations and that there are corresponding oversight mechanisms. In both states the Auditor General reviews the contracts of approved highway public-private partnerships. In some instances, a separate statutory body, which may be chaired by a person outside of government, provides oversight. (The experiences of monitoring PPP projects with performance standards in UK are provided with more details below in subsection 4.5.5.)

4.5.2. Transparency and Public Participation

The lack of transparency in the PPP process has been voiced as one of the main concerns throughout the PPP literature. Some complicated PPP agreements have been criticized for being “rushed through without the public or their elected officials fully understanding the implications” (NCHRP, 2009, p24). Particularly noted as examples in which transparency was lacking from the public perspective, the Chicago Skyway and the Indiana Toll Road concessions have led to widely-spread concerns over the protection of public interest in PPPs. Public agencies have realized the need for transparency particularly during the procure process of PPP projects. In NCHRP's survey (2009) of state departments of transportation, 30 percent of respondents named transparency as a main concern about PPPs, and more than 70 percent considered it an important measure to protect the public interest.

Transparency in this context includes adequate opportunities for both public input and legislative review during the PPP decision-making process. Most agencies stressed engaging citizens throughout the project's life cycle, from the earliest planning stages through the operating phase

(USDOT, 2009). Concerns may arise, however, about the need to maintain some confidentiality during the proposal process to provide bidders' proprietary information and the state's negotiating stance. To address this, Buxbaum and Ortiz (2007) suggest that public sector should be clear and up front about what type of information should remain confidential and provide an explanation as to why confidentiality is necessary during the proposal process. To address this, several states—including Delaware, Indiana and Texas— have set guidelines for what information is shared when, in what form, and with whom. In general, confidentiality is kept at a minimum level. More often than not, the public sponsor publishes all non-sensitive material on multiple government websites.

During the procurement process, the transparency is less controversial and widely perceived as fundamental to the acquisition of public services or works. There are many international experiences in this regard. Both Victoria (Australia) and British Columbia (Canada) have developed public disclosure policies that are aimed at achieving transparency in procuring PPP projects. Portugal makes all proposals received available to every respondent. Spain solicits bids from its respondents with well-defined parameters and award criteria (NCHRP, 2009). Nevertheless, some best practices of PPP procurement also maintain certain level of confidentiality. For example, Siemiatycki (2007) finds that these practices often withhold selected technical and financial information from public scrutiny during the competitive tender process, although they release entire evaluation reports at the conclusion of the procurement process and commission a series of independent reviewers to oversee the process.

Even if the procurement process is transparent, the complexity of a PPP can make it easy to hide true costs and benefits. For example, some “off-budget” or “off-balance-sheet” financing methods and accounting gimmicks may be used to avoid reporting long-term lease obligations as debts and thus bypass restrictions on debt limits or requirements of voter approval (Bloomingfield, 2006). Such examples underscore the need for government to make the PPP process and related information as transparent as possible to the public.

Transparency remains important beyond the procurement process. For example, when revenue sharing provisions are included in the PPP agreements, the public should have access to annual traffic and revenue information, audited financial statements, and other documents used to determine the toll revenue returned to the public sector (Samuel, 2005). For example, the concession agreements for both Chicago Skyway and Indiana Toll Road require public disclosure of annual finances and performance.

4.5.3. Use of Proceeds

In PPP options such as asset-monetization long-term leasing, the private contractor provides an upfront payment to the government. This is often referred to as “monetization” of projects. In addition, PPPs that have revenue sharing provisions may generate a stream of ongoing proceeds for the government when the conditions for revenue sharing (for instance, tolling demand beyond a certain threshold) are met. In these cases, there are potential concerns about whether the proceeds are used appropriately from the public interest perspective. In particular, there are issues about how to balance transportation and other state or local priorities, projects within or between geographic regions, and benefits for current and future users (FHWA, 2009).

Most statutes require that the proceeds be used solely for transportation investment, for example, to advance the construction of unfunded capital programs or to reduce debt burdens. The

proceeds from the Indiana Toll Road, for example, were completely dedicated to transportation projects in the vicinity of the toll road and around the State and funded a 10-year transportation capital program. Some argues that it is okay to spend upfront lease payments in the early years. If funds are used for capital projects that have a long life, or are used to provide other lasting benefits, future users of those projects will also benefit as well as current users. If funds are used to retire debt, then the government's credit rating, risk assessment, and remaining borrowing capacity will be enhanced. Fitch, however, considers the choice of using up up-front payments a risk to the government's financial position, as it may limit the government's flexibility to meet future transportation needs. Thus Fitch emphasizes the need to match investment decisions made today with long-term (Fitch Ratings , 2006). Likewise, Buxbaum and Ortiz (2007) suggest that long-term leasing proceeds should be allocated to projects that benefit the users of the leasing facility and find mechanisms to ensure that projects can be funded over the life of the lease.

PPP-enabling legislation in 12 states prohibits revenues from being diverted to the state's general fund or for unrelated uses, such as budget relief. However, there are also cases that PPP proceeds are used for other purposes. The City of Chicago used proceeds from the lease of the Chicago Skyway to repay project debt, but also create reserve accounts and provide for programs unrelated to transportation. In particular, after paying down debts and funding social programs, the Skyway project placed \$500 million in a "rainy day" fund, which is earning \$25 million annual, as much as the city used to earn from operating the Skyway itself (Thornton 2007).

4.5.4. Contract Change Management

Since PPP are formal contractual relationships, it is important for both public sector and private sector to comply with agreements as contracted. However, there are circumstances that contracts need to be renegotiated or modified. How to manage necessary contract changes has been an area in which learning has occurred (USDOT, 2009).

There are quite some examples of contract changes in foreign countries where PPP has been used more extensively than in US. In Spain, officials consider it important to preserve flexibility by retaining the ability to renegotiate a concession agreement if it is in the public interest to do so (GAO , 2008). They referred such contract changes as "rebalancing" a concession agreement. For example, if the government believes that adding capacity to a certain concession highway or in the vicinity is in the public interest, it can require the concession to do so as long as the government provides adequate compensation for the loss of revenues. (Such "rebalancing" will be easier to accomplish if such negotiation has not been prohibited by overly strict non-compete clauses, see the subsection on "non-compete clauses".) Likewise, in Spain the government may rebalance a contract with a concessionaire so that the risk of market conditions change is shared between the public and private sector. If traffic is below forecasted levels, the government might offer an extension to the concession term to allow the concessionaire more time to recover its investments.

In the United Kingdom, the Highway Agency has recently adopted a two-tiered contract modification strategy. In the case of a major change, a contract review occurs to determine whether it is necessary to renegotiate a new contract. The M25 project in UK is the first to include this contract review condition. For minor changes, standard modifications can be handled through a step-change process within the existing agreement. Such step changes may result from eligible changes identified in the contract, changes in law, modifications initiated by the private partner, or changes to accommodate project improvements to enhancements. In Australia, the

government typically negotiates contract changes on an as-needed basis, but it has also established processes for handling both major and minor modifications to the contract. The level of flexibility is tied to the extent to which some risks are shared instead of clearly allocated. Originally, PPP contracts in Australia included fairly liberal material adverse effect provisions in the event of changes in conditions; more recent contracts have tightened these provisions to a more limited set of events (USDOT, 2009).

One notable example of contract changes in US is SR-91 in California. The 35- year franchise along 30-mile portion of 91 freeway was viewed by many as a net public benefit in the first few years after the opening. However, the project has encountered unexpected problems in later periods particularly with its non-compete clause. The Orange County Transportation Authority purchased the toll lanes from CPTC for \$207.5 million, and entered into a three-year Management Contract with a different private contractor, Cofiroute Global Mobility (CGM), in 2003, and then entered into a second operating agreement with CGM in 2006. In a detailed case study of SR-91, Ni (2009, p28) concludes that managing transportation PPP requires, among others, “a willingness to change and to learn, and the courage to take risks and explore practical solutions in an erratic political and economic environment.”

4.5.5. Contract Management in Practice: The United Kingdom Example

In the United Kingdom, the Highway Agency has a department’s representative (DR) who plays a significant role in contract management during the operations phase. In maintaining the partnership with the private contractor as intended, the DR has three key responsibilities. The first is performance monitoring. The DR conducts formal audits, site inspections, or spot checks of constructional or operations performance such as payment conditions or traffic management. The second one is financial monitoring. The DR tracks traffic and revenue data, processes monthly payments, maintains records incrementally, and makes annual adjustments based on deductions or bonuses. Finally, the DR is in charge of contract administration. He/she acts as liaison between the government and the PPP contractor as well as other third parties such as customers, records and reports the level of contract compliance.

Performance monitoring is a critical responsibility for the DR. If the PPP contractor is not in compliance with performance standards, the DR may take five levels of action:

- Comments and observations: The DR notifies the contractor in writing that certain requirements or standards are out of compliance.
- Nonconformance report: The DR files an official report on contractor noncompliance with requirements or standards.
- Remedial notice: The DR puts the contractor on notice that if compliance with requirements or standards is not achieved within a certain timeframe, penalty points will be assessed.
- Penalty point notice: The DR files a report and the contractor is assessed penalty points for noncompliance.
- Warning notice: The DR informs the contractor of potential significant contractual actions that may occur. This may eventually trigger the government’s step-in rights.

Certainly, noncompliance issues are best handled quickly and with the least amount of disruption. The performance is sometimes tied to contract payments. For example, in UK's M25 Motorway, the payment mechanism is comprised of the following potential adjustments: (1) lane availability (principle element), (2) route performance, (3) condition criteria, (4) safety performance, (5) unplanned events, and (6) proactive management.

As a liaison, the DR recognizes who retains what risks and communicates that well with the private contractor to make sure the contract manager's actions do not inadvertently make the public sector liable for a risk allocated to the PPP contractor. For example, if the private partner is responsible for roadway availability during winter weather, then the contractor bears the risk of keeping the roadway clear of snow and ice. If the contractor was unable to effectively conduct snow removal on time during a storm so that a portion of roadway had to be closed until the weather cleared, the contractor will be penalized for this service failure. If the DR can communicate well ahead to let the private contractor realize that it was its responsibility to keep the roadway clear, the contractor will be better prepared to deal with the situation and thus the Highway Agency will not be exposed to any claims for undue costs.

4.6. Conclusion

After the use of PPPs is authorized under favorable legal and political environments, the government still needs to have appropriate processes, suitable structures, and sufficient managerial capacity for the successful implementation of PPP. Such implementation represents a paradigm shift for state transportation departments from traditional project delivery functions, in particular, from designing, constructing, and operating projects to setting value and performance standards, and developing and managing contracts (PB, 2010).

In this section we review technical or procedure issues that are internal to state departments of transportation (DOTs) or other stakeholders in managing PPP projects. These issues are organized along some key components of PPP implementation, all of which are crucial to the success of PPP in protecting public interest:

- **Project selection and delivery option:** The project selection and delivery may involve two separate decisions in sequence. First, the departments need to select suitable candidate projects for PPP consideration. Second, for specific candidate projects there are a variety of valuation tools that can be used to determine whether some specific PPP options are better than traditional project delivery.
- **Procurement options:** For projects to be delivered on a PPP basis there are many choices regarding how the procurement is conducted, for example, who can initiate a proposal, when to process a procurement, whether it should be negotiated or bided, and what decision rules should be used to choose a private contractor. We discuss the concerns over public interest associated with these choices, and review related domestic or international experiences in PPP procurement.
- **Contract development:** The contract is one of the most important phases of the PPP management process as it “defines the salient points and contingencies” of the entire agreement (NCSL, 2010, p. 19). The success of a PPP contract is dependent on a reasonable balance among technical, commercial, and legal conditions (USDOT, 9). We

review six key issues related to PPP contracts, including PPP payment options, contract length, tolling rate policies, rate of return, non-compete clause, and hand-back provisions.

- Project management: After a successful contract is negotiated, it still takes capacity and significant effort to manage the contract during all stages of the project development. We review discussions about contract oversight and monitoring, transparency and public participation, use of PPP proceeds, and contract change management.

Chapter 5. Summary and Recommendations

5.1. *The Research Framework*

The purpose of this project is to study the public interest associated with PPPs, with the goal to maximize efficiency gains, mitigate potential risks, and address public concerns in launching and deploying PPPs in state highway development. We start from the premise that public-private partnership is a contractual relationship between public and private sectors, in which the public interest may be protected and advanced by aligning public values, institutions, and environmental conditions in different stages of PPP decision-making and implementation. In particular, we focus on three aspects of PPP consideration:

- **Understanding economic rationales of PPPs:** We provide a working definition of PPPs, and propose a taxonomy of PPP options.
- **Legal and political aspects of PPP decision-making:** Decision making about PPPs is often politically charged, even if there are sound technical reasons and sufficient institutional capacity to use a PPP.
- **Managerial issues in deploying PPP projects:** We need appropriate process and structure and sufficient managerial capacity to implement PPP projects.

The three aspects may be corresponding to three typical stages of PPP processes, that is, considering PPP options, launching PPPs, and then deploying PPPs. However, we should note that these aspects of decisions do not always come sequentially. Sometimes we better understand the tradeoffs associated with a PPP option after heated discussions about whether it should be launched; sometimes legal and political issues present themselves only after a PPP is implemented and they may be solved or mitigated by managerial approaches. Moreover, public values, institutions, and environmental factors are interacted in these aspects of PPP decisions in different ways.

5.2. *Understanding Public Interest in PPPs*

There is much confusion about PPPs due to inconsistent use of terminologies, misconceptions, or unrealistic expectations. In this report, we define PPPs as formal contractual agreements that “allow more private sector participation [on risks and responsibilities] than is traditional (US DOT, 2004). PPP is distinguished from privatization or service contracts by the level of private involvement. PPP is much broader than concession or asset-monetization leasing. PPP is often a financing tool but it does not always provide additional revenues.

We propose a framework to categorize PPP options together with other modes of infrastructure development along two dimensions. First, development options vary depending on stages of facility development, including construction, operation and maintenance, and expansion or rehabilitation. Second, there is a spectrum of public-private involvement in infrastructure development. At one extreme is the traditional mode of project delivery. At the other extreme is full privatization. Between the two extremes are PPP options including public-financing PPPs, private-financing PPPs, and value-capture PPPs.

The risks of a PPP project may be broadly categorized as elemental or global risks. A general

rule for effective risk allocation is that “each risk should be assigned to the partners who can best handle it” (Savas, 2000b). Some risks are typically retained with the public sector, as they may be more capable or suitable to handle them. For other risks, the allocation depends on private contractors’ capacity, their willingness in risk-taking, and specific contract agreements.

Different PPP options, with different ways of private involvement and risk taking, may have different advantages. In this report, we categorize PPP advantages by option-specific advantages and general PPP advantages. Option-specific advantages may include private expertise, life-cycle consideration, additional capital to expedite development, or supplementary budget revenues. General advantages include innovation and diffusion of private expertise and state-of-the-art technologies, competition in delivery among alternative options, and the opportunity for a new business sector in infrastructure investment.

5.3. Advancing Public Interest in the Launch of PPPs

PPPs are not totally new to the U.S, but they are used to a less extent in the U.S. than in some other countries, in part because of our unique tax-exempt municipal bond market, which allows state and local governments to borrow at lower costs than to involve the involvement of private investments. Due to the increasing gap between transportation demands and available public funding, many states are eagerly exploring the additional use of PPPs in state highway development.

Legal constraints, such as authorization and provisions, of PPPs vary across countries or states. In the U.S., while some PPP-specific legislation exists at the federal level to facilitate the use of PPPs for highway development, it is up to state government officials and legislators to decide whether and how to pursue PPP projects. PPP legislation varies widely from state to state. Although officials in many state governments are expressing interest in experimenting with new PPP legislation, first-hand experience with PPP projects in the United States, particularly privately financed projects, is still limited. Most practitioners and scholars agree that appropriate PPP legislation should be in place prior to private sector involvement in order to maximize project outcomes.

Political pressures and public concerns about PPPs fluctuate over time. From a public perspective, this often raises concerns—mostly driven by ideology. The major concerns surrounding PPPs can be organized into three main categories, all of which are driven by ideological terms: 1) Fear of losing control over a system that has historically been a public good; 2) Risk of increased costs to users and taxpayers rather than the speculated savings and efficiencies; and 3) An erosion of democratic values as profit motives become first priority. Broader institutional supports and public education and communication are critical to addressing public concerns as well as to determine whether a PPP is the best option for a particular project.

5.4. Protecting Public Interest in the Implementation of PPPs

After the use of PPPs is authorized under favorable legal and political environments, the government still needs to have appropriate processes, suitable structures, and sufficient managerial capacity for the successful implementation of PPP. Such implementation represents a paradigm shift for state transportation departments from traditional project delivery functions, in particular, from designing, constructing, and operating projects to setting value and performance standards, and developing and managing contracts (PB, 2010).

In this section we review technical or procedure issues that are internal to state departments of transportation (DOTs) or other stakeholders in managing PPP projects. These issues are organized along some key components of PPP implementation, all of which are crucial to the success of PPP in protecting public interest:

- **Project selection and delivery option:** The project selection and delivery may involve two separate decisions in sequence. First, the departments need to select suitable candidate projects for PPP consideration. Second, for specific candidate projects there are a variety of valuation tools that can be used to determine whether some specific PPP options are better than traditional project delivery.
- **Procurement options:** For projects to be delivered on a PPP basis there are many choices regarding how the procurement is conducted, for example, who can initiate a proposal, when to process a procurement, whether it should be negotiated or bided, and what decision rules should be used to choose a private contractor. We discuss the concerns over public interest associated with these choices, and review related domestic or international experiences in PPP procurement.
- **Contract development:** The contract is one of the most important phases of the PPP management process as it “defines the salient points and contingencies” of the entire agreement (NCSL, 2010, p. 19). The success of a PPP contract is dependent on a reasonable balance among technical, commercial, and legal conditions (USDOT, 9). We review six key issues related to PPP contracts, including PPP payment options, contract length, tolling rate policies, rate of return, non-compete clause, and hand-back provisions.
- **Project management:** After a successful contract is negotiated, it still takes capacity and significant effort to manage the contract during all stages of the project development. We review discussions about contract oversight and monitoring, transparency and public participation, use of PPP proceeds, and contract change management.

5.5. Recommendations

There are many types of PPPs, which may allow public agencies to access private project financing and specialized expertise, and thus save public investment, expedite project completion, or improve service quality and diversity. With the increasing gap between transportation demands and available public funding, it is helpful for the government to explore further use of PPPs in highway development. The study shows that widespread public concerns and legislative caution over PPPs are in part caused by confusion, misconceptions, or unrealistic expectations about PPPs. Such concerns may be addressed by public education and communication, broader legal and institutional supports, and capacity building of PPP decision-making and implementation. We propose the following recommendations:

- To further examine legal and institutional environments for PPPs, and thus we can take full advantages of alternative project delivery options and at the same time protect public interest by balancing risks, responsibilities, and rewards;
- To hold public education and outreach activities on PPPs, and thus we further engage political leaders and the general public to make informed decisions about the use of PPPs in state highway development;

- To select candidate projects for PPP considerations and conduct further analysis on whether a PPP option may be used to advance value for money, and, if so, how the procurement should be structured, how the contract may be developed, and how these project should be implemented.

References

- AASHTO Center for Excellence in Project Finance (2009). Project finance state by state. Retrieved from <http://www.transportation-finance.org/flash/map/map.aspx?target=ppp> (02/18/2011).
- AECOM (2007). *User guidebook on implementing public-private partnerships for transportation projects in the United States*. Washington, D.C.: United States Department of Transportation, Federal Highway Administration, 05-002.
- Barchan Foundation (2009). Comparing and understanding infrastructure delivery and financing. Retrieved from http://www.barchanfoundation.com/index.php?option=com_content&view=article&id=29:hp-two&catid=3:public-content (02/18/2011).
- Baxandall, P., Wohlschlegel, K., & Dutzik, T. (2009). *Private roads, public costs: The facts about toll road privatization and how to protect the public*. Boston, MA: U.S. PIRG Education Fund.
- Bloomfield, P. (2006). "The challenging business of long-term public-private partnerships: Reflections on local experience." *Public Administration Review* 66 (3): 400-411.
- Brod, L. (2008). "Legislators propose to privatize MSP airport and Minnesota state lottery." Minnesota House of Representatives. Retrieved from <http://www.house.leg.state.mn.us/members/pressrelease.asp?pressid=2731&party=2&memid=10756> (02/18/2011).
- Brown, T., Potoski, M., & Van Slyke, D. (2006). "Managing Public Service Contracts: Aligning Values, Institutions, and Markets." *Public Administration Review* 66 (3): 323-331.
- Brown, G. (2010). "Financing completed for LBJ managed lanes project." *Retiree Outlook* 2010.07: 2-7.
- Bryson, J., Crosby, B., & Stone, M. (2006). "The Design and Implementation of Cross-Sector Collaborations: Propositions from the Literature." *Public Administration Review*, Special Issue: 17-18.
- Buxbaum, J.N. & Ortiz, I.N. (2007). *Protecting the public interest: The role of long-term concession agreements for providing transportation infrastructure*. Los Angeles, CA: U.S.C. Keston Institute for Public Finance and Infrastructure Policy, 07-02.
- Chase, B. (2009). "Public-Private Partnerships in the United States: Evolving Market and New Opportunities." Collaboratory for Research on Global Projects. Retrieved from: http://crgp.stanford.edu/publications/working_papers/Chase_Brian_PPP_US_Evolving_Market_WP0053.pdf (02/18/2011).
- Donahue, J.D. (1989). *The privatization decision: Public ends, private means*. New York: Basic Books.
- Estache, A., Juan, E., & Lourdes, T. (2007). *Public-private partnerships in transport*. The World Bank, 4436.
- Federal Highway Administration (2006). "Design-build effectiveness study." Retrieved from <http://www.fhwa.dot.gov/reports/designbuild/designbuild3.htm> (02/18/2011).

- (2005). *Manual for using public-private partnerships on highway projects*. Washington, D.C.: U.S. Department of Transportation.
- (2005). *A summary of highway provisions in SAFETEA-LU*. Retrieved from <http://www.fhwa.dot.gov/safetealu/summary.htm> (02/18/2011).
- Fishman, E. (2009). “Major legal issues for highway public-private partnerships.” *NCHRP Legal Research Digest*, No. 51.
- Gilroy, L. (2009). *Reason Foundation Annual Privatization Report*. The Reason Foundation.
- Global Legal Group (2007). *The international comparative legal guide to: PFI/PPP projects*. London.
- Grimsey, D. & Lewis, M.K. (2005). “Are public private partnerships value for money? Evaluating alternative approaches and comparing academic and practitioner views.” *Accounting Forum* 29: 345-78.
- (2002). “Evaluating the risks of public private partnerships for infrastructure projects.” *International Journal of Project Management* 20(2002): 107-118.
- Harris, S. (2004). *Public private partnerships: Delivering better infrastructure services*. Washington, D.C.: Inter-American Development Bank.
- Hodges, J.T. & Dellacha, G. (2007). *Unsolicited infrastructure proposals: How some countries introduce competition and transparency*. Public-Private Infrastructure Advisory Facility.
- Iacono, M., Lari, A., Levinson, D., & Zhao, Z. (2009). *Value capture for transportation finance*. Minneapolis: Center for Transportation Studies, University of Minnesota, 09-18.
- Iseki, H., Eckert, J., Uchida, K., Dunn, R., & Taylor, B.D. (2009). *Task B-2: Status of legislative settings to facilitate public private partnerships in the U.S.* Berkeley: California Path Program Institute of Transportation Studies, University of California, Berkeley, UCB-ITS-PRR-2009-32.
- Kettl, D.F. (1993). *Sharing power: Public governance and private markets*. Washington, D.C.: Brookings Institute.
- Leavitt, W.M. & Morris, J.C. (2007). “Public works service arrangements in the 21st century: The Multiple-sector partnership as an alternative to privatization.” *Public Works Management Policy* 12 (1): 325-330.
- Lovell, R. (2010). “Texas LBJ freeway managed lanes P3.” *Infrastructure Journal* July 28. 2010.
- McGraw Hill Construction (2009). *Public-private partnership: Accelerating transportation infrastructure investment*.
- National Conference of State Legislatures Foundation for State Legislatures (NCSLO) (2009). “Transportation funding options for state legislatures: A focus on public-private partnerships.” Paper presented at NCSL Spring Forum Pre-Conference Meeting, April 22-25, 2009, Washington, D.C.
- (2010). “Public-Private Partnerships for Transportation: A State Legislator's Toolkit.” Paper presented at NCSL Spring Forum Pre-Conference Meeting, April 22-25, 2009, Washington, D.C.

- National Cooperative Highway Research Program (2009). *Public sector decision making for public private partnerships*. Transportation Research Board of the National Academies, 391. Retrieved from http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_391.pdf (02/18/2011).
- National Council for Public-Private Partnerships (2003). *Critical choices: The debate over public-private partnerships and what it means for America's future*. Washington, D.C: National Council for Public-Private Partnerships.
- (2002). *For the Good of the People: Using PPP's to Meet America's Essential Needs*. Retrieved from: <http://www.ncppp.org/presskit/ncpppwhitepaper.pdf> (02/18/2011).
- National Transportation Library (2009). "Intermodal surface transportation efficiency act of 1992 - summary." Retrieved from <http://ntl.bts.gov/DOCS/ste.html> (02/18/2011).
- Ni, A.Y. (2009). *Managing public private partnerships of transportation infrastructure: Lessons learned from California's SR-91*. San Bernardino: California State University, San Bernardino, 2008-SGP-1039.
- Parsons Brinckerhoff (PB) (2010). *Public-Private Partnership Project Screening and Assessment*. Parsons Brinckerhoff.
- Partnerships Victoria (2009). *Partnerships Victoria requirements*. State of Victoria. Retrieved from [http://www.partnerships.vic.gov.au/CA25708500035EB6/WebObj/A7PublicInterest/\\$File/A7%20Public%20Interest.pdf](http://www.partnerships.vic.gov.au/CA25708500035EB6/WebObj/A7PublicInterest/$File/A7%20Public%20Interest.pdf) (02/18/2011).
- Savas, E.S. (2000). *Privatization and public-private partnerships*. London: Chatham House Publishers.
- Siemiatycki, M. (2007). "What's the secret? -- Confidentiality in planning infrastructure using Public-Private partnerships." *Journal of the American Planning Association* 73 (4): 388.
- Stambrook, D. (2005). *Final report: Successful examples of public-private partnerships and private sector involvement in transport infrastructure development*. Virtuosity Consulting: CEM JA00028491.
- Thornton, E. (2007). "Roads to riches: Why investors are clamoring to take over America's highways, bridges and airports - and why the public should be nervous." *Business Week* May 7, 2007.
- U.S. Department of Transportation (USDOT) (2009). *Public-private partnerships for highway infrastructure: Capitalizing on international experience*. Washington, D.C.
- (2008). *Innovation wave: An update on the burgeoning private sector role in US highways and transit infrastructure*. Washington, D.C.
- (2007). *Case studies of transportation partnerships in the United States*. Washington, D.C.
- (2004). *Report to congress on public private partnerships*. Washington, D.C.
- (2001). *TEA-21: Moving Americans into the 21st century*. Retrieved from <http://www.fhwa.dot.gov/tea21/> (02/18/2011).

- (2009). *State P3 legislation*. Retrieved from http://www.fhwa.dot.gov/ipd/p3/state_legislation/state_legislation_overview.htm (02/18/2011).
- United States Government Accountability Office (GAO) (2008). *Federal highway aids: Increased reliance on contractors can pose oversight challenges for federal and state officials*. Washington, D.C: GAO, GAO-08-198.
- (2008). *Highways public-private partnerships: More rigorous up-front analysis could better secure potential benefits and protect the public interest*. Washington, D.C: GAO-08-44.
- Zhang, X. (2005). “Critical success factors for Public–Private partnerships in infrastructure development.” *Journal of Construction Engineering & Management* 131 (1): 3-14. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=a2h&AN=15382461&site=ehost-live> (02/18/2011).
- Zhao, Z., Das, K.V., & Larson, K. (2010). “Joint Development as a Value Capture Strategy in Transportation Finance.” Working paper.