

PUBLIC-PRIVATE PARTNERSHIPS FOR HIGHWAY INFRASTRUCTURE

International Technology Scanning Program Summary Report

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BACKGROUND AND OVERVIEW

In June 2008, a team of nine professionals representing government, private industry, and academe visited Portugal, Spain, the United Kingdom, and Australia to collect and evaluate information about public-private partnership (PPP) programs and projects for highway infrastructure. The team met with representatives of the public and private sectors involved in PPP arrangements.

The purpose of this scan was to: (1) examine programs, policies and practices used by other countries that actively solicit and involve the private sector in the delivery of highway infrastructure, (2) document lessons learned, and (3) make implementation recommendations that will improve U.S. policy and practice.

The principal medium of information exchange occurred during presentations by host agencies or private sector representatives, but roundtable discussions, social events, and site visits also provided opportunities for the collection of information. Generally, each of the countries visited has a relatively mature PPP program for highway and road infrastructure. While some degree of harmony exists between the programs in each country, some markedly different policies and practices were identified. Hence, the findings, and recommendations of this scan benefitted from the alternative perspectives observed. A preliminary description of the results of this scan is presented in this report.

For the purposes of this report, a public-private partnership is defined as a contract between the public and private sector for the delivery of a project or service where the private partner has responsibility for acquiring the majority of the necessary financing.

International Technology Scanning Program

The Federal Highway Administration's (FHWA) International Technology Scanning Program connects U.S. highway and transportation officials with their counterparts throughout the world. It started in 1991 with an asphalt pavement technology scan of five European countries, and its impact continues to be felt more than 17 years later. Since the first scan, FHWA - in concert with and now in formal partnership with the American Association of State Highway and Transportation Officials (AASHTO) and the National Cooperative Highway Research Program (NCHRP) - has conducted more than 50 scans on subjects ranging from geotechnology soil nail walls to pedestrian crossing technologies to intermodal transportation facilities. The impact on U.S. policy and technology can be seen in areas ranging from the use of stone matrix asphalt surfaces in Maryland and design-build contracting in Utah to the application of lane rental techniques in Minnesota and right-of-way procurement practices in Florida.

PPP Scan Motivation, Purpose & Scope

Comprehensive highway PPP programs are relatively new to the United States and not widely utilized. Limited highway funds, unmet needs for new highway capacity, interest from private investors, and other factors have led to substantial discussion of PPP projects and programs at the state and federal level and implementation of projects in a few leading states. In contrast, some

countries have extensive, and in some cases, long term experience with infrastructure PPPs, particularly highways. In fact, some public agencies have completed long-term concession agreements and the facilities have been returned to the public agency after many years of private operation.

Many public agencies also have multiple PPP arrangements, which have been in place for more than a decade. Furthermore, they continue to invite the private sector to compete for the opportunity to develop, finance, operate and maintain public facilities for terms ranging generally from 30 to 50 years. A fuller understanding of the factors that led to successful implementation of PPPs in other parts of the world is needed before exploring the success factors within any individual agreement. This includes an exploration of the preceding conditions and public expectations, the philosophical perspectives on the role of the private sector, the original rationale for implementation of public private partnerships, and the issues that need to be confronted, including public acceptance.

With this understanding, the lessons learned in the procurement and contracting process can be put in the proper context and the issues can be better framed for application here in the U.S. A successful public-private partnership will include appropriate performance measures for the maintenance of physical infrastructure and the transportation of people and products through the facility, as well as management of user charges and rates where applicable.

Equally important to these measures are creative mechanisms to update an agreement to accommodate the future demands on the facility. Finally, what are the metrics for measuring success? The current U.S. practice and experience base does not provide a wealth of knowledge in any of these areas.

Accordingly, the purpose of this scan was to examine programs, policies and practices used by other countries that actively solicit and involve the private sector in the delivery of highway infrastructure. The objectives were to document lessons learned from public agencies that have completed highway concession contracts and/or are administering mature agreements with private operators of public roads.

The scan did not simply focus on contract procurement procedures and project performance standards, but was broad enough to capture those factors important to achieving public acceptance of PPPs, and how these expectations are translated into specific PPP contract terms. The results of this scan will enable U.S. highway agencies to benefit from the collective experiences gained by other countries and to initiate legislation, policies and principles that can lead to a successful PPP program. An international perspective will be valuable to U.S. highway agencies that are partnering with foreign investors and developers. The scan trip report will document lessons learned and best practices experienced by public agencies in other countries. Such lessons or practices may be adapted to the U.S. highway agencies that are implementing or considering PPP programs.

Travel Itinerary

During the trip, the team visited a variety of representatives in four countries as depicted in the following table.

Public Private Partnership Scan

Date(s)	Location	Meetings with Representatives from	Site Visits
June 16	Lisbon, Portugal	Estradas de Portugal, S.A. [5] Brisa [2]	Brisa Traffic Control Center
June 17-18	Madrid, Spain	Polytechnic University of Madrid [3] Comunidad de Madrid [1] Madrid Calle-30 [2] Madrid Centro Financiero [4] Ministerio de Fomento [1]	Calle-30 Highway M-45 M-12
June 19-20	London, UK	Highways Agency [1] Department of Transport [1]	None
June 20-22	Travel to Australia		
June 22	Team Mid-Scan Meeting		
June 23	Sydney, AU	Roads & Traffic Authority, New South Wales [1] Treasury, New South Wales [1]	Cross City Tunnel Harbour Tunnel Lane Cove Tunnel M-2
June 24	Sydney, AU	Infrastructure Insight [2] Infrastructure Partnerships Australia [4] Leighton Contractors [2] Allens Arthur Robinson [2] Macquarie Capital Advisers [2] Parsons Brinckerhoff [2] Thiess [2] Transurban [2]	None
June 25-26	Melbourne, AU	VicRoads, Victoria [1] Partnerships Victoria, Dept. Treasury & Finance [1] East-West Transport Link [1] Southern & Eastern Integrated Transport Authority [1]	CityLink Motorway EastLink Motorway
June 27	Brisbane, AU	Main Roads, Queensland [1] Infrastructure, Queensland [1] Infrastructure & Planning, Queensland [1] AirportLink/Northern Busway, [1]	North-South Bypass Tunnel
June 28	Team Final Scan Meeting		

[1] = government or public agency; [2] = private company or concessionaire; [3] = university; [4] = professional or trade organization; [5] = state-owned enterprise/concessionaire

The team met again on September 23-24 in Washington, D.C.

Team Members

The team is co-chaired by Jan Weingart Brown (FHWA) and Bob Pieplow (CalTrans) and additional members include Roger Driskell (Illinois DOT), Steve Gaj (FHWA), Michael Garvin (Virginia Tech), Dusty Holcombe (Virginia DOT), Michael Saunders (FHWA), Jeff Seiders (Texas DOT), and Art Smith (National Council for Public-Private Partnerships).

KEY LEARNING POINTS OF THE SCAN

The scan team learned a significant amount about established PPP programs during their visits with the host countries. The team identified several critical points that were consistently observed across the nations. These points are the salient messages from the scan:

- PPPs are an effective strategy for delivering highway projects, and they are service arrangements as much as financial ones
- Potential PPP projects must be selected, analyzed, structured and procured thoughtfully
- Managing the partnership over the life of the contract is critical to providing the services expected and maintaining the public/private relationship
- Public sector institutional capacity requires strengthening and continuous improvement for PPP program effectiveness.

GENERAL CHARACTERISTICS OF PPP PROGRAMS IN HOST COUNTRIES

Within each country visited, PPP arrangements play an important role in facilitating national and regional mobility. While PPP strategies, policies, and practices across the countries were similar in many respects, significant differences in several areas were identified. This variety is rather beneficial to the scan's objectives since it provides a broader spectrum of perspectives for consideration as the PPP market in the United States continues to evolve.

At this stage, one cannot conclude whether a particular policy or practice is better than another. In fact, such conclusions may be impossible to reach given the complex socio-political environment in which highway infrastructure resides. Yet, differing approaches should give both policy and decision-makers the opportunity to appraise their advantages and disadvantages and determine if implementation resolves a need and is in the public's interest.

To provide a very basic perspective of the host country PPP programs, they will each be briefly described in the following areas: (1) role of PPPs in national/regional highway network, (2) PPP program administration & management, (3) PPP funding mechanisms, (4) overview of procurement process, and (5) overview of risk allocation and management.

Role of PPPs in National/Regional Highway Network

Across the host nations, PPP arrangements are a modest portion of the overall national roadway network. In all of the host nations, however, PPPs have played a key role in the development and management of critical highway corridors.

Portugal. Portugal has approximately 16,500 km of total roadways, but PPP concessions are fundamental to the National Motorway Network (the equivalent of our Interstate Highway System). The planned Motorway System will ultimately be 3,300 km. Currently, 2,660 km of the Motorway System is operational, of which 2,500 km (94%) is under a PPP arrangement. So while only 15% of its current total roadways are PPPs, these arrangements are certainly focused upon the nation's strategic surface mobility corridors. In addition, PPP arrangements are used exclusively by the national government.

Spain. While the total roadway network covers more than 30,000 km, the National Highway System is approximately 10,000 km. Of this total, 4,300 km (43%) is currently under a PPP arrangement. An additional 1,500 km of network enhancements and upgrades are under

construction through PPP contracts, which will increase the percentage of the National Highway System under PPPs to 58%. PPPs are also used by Spain's Autonomous Communities (Comunidad); while these arrangements are not initiated by the national government, it may lend funding and management assistance to the autonomous jurisdictions.

United Kingdom. The National Motorway System is comprised of 4,412 miles (7,100 km). This system constitutes only 3% of the total roadways in the UK but carries 33% of all traffic and 62% of freight. Currently, 10% of this system is managed under PPP arrangements; however, the UK is in the final stages of procuring its largest PPP project to date. Once closed, this will place 17% of the national system under PPPs. Local jurisdictions also have the authority to execute PPP arrangements.

Australia. Unlike the other countries visited, nearly all highway PPP activity in Australia has occurred at the state or municipal level and primarily within three states: New South Wales, Victoria, and Queensland. PPP arrangements at the national level for development and enhancement of the interstate motorway system are under consideration but projects have yet to be solicited.

New South Wales was essentially the "first-mover" in highway PPPs within Australia, entering into its first arrangement via an unsolicited proposal for the Sydney Harbour Tunnel, which opened for service in August 1992.¹ Subsequently, the state has used seven additional PPP contracts to complete the orbital (perimeter or ring road) around Sydney; in total, 108 km of highway.

Victoria has two highway PPP contracts. The first, a 22 km highway named CityLink, opened in 2000 to provide a north-south connection to Melbourne's central business district and its airport. The second, a 40 km highway named EastLink, opened in 2008 to provide another north-south connection on the eastern fringe of Melbourne.

Queensland has two highway PPP contracts. The first was an arrangement brokered by the Brisbane Municipal Council, the North-South Bypass Tunnel, to provide another crossing of the Brisbane River; this tunnel is currently under construction. The second is a state project, AirportLink which is a multi-faceted \$4.6 billion connection between downtown Brisbane and the airport, where the preferred bidder was selected in May 2008 and financial close is expected in August 2008.

PPP Program Administration & Management

The public entities charged with administering and managing highway PPPs are structured rather differently among the host nations. The organizations that manage PPP programs range from traditional highway agencies to state-owned enterprises.

Portugal. Estradas de Portugal, SA (EP) has responsibility for oversight and development of the national highway network. EP was formed in 2005 as a state-owned enterprise, and it holds a 75-year concession with the national government to manage and develop the national highway system. In other words, EP will execute future PPP agreements on behalf of the Portuguese government and ultimately all assets under existing PPP contracts will transfer to EP when the

¹ No other unsolicited highway proposals have been developed in Australia.

existing contracts expire. Prior to 2005, the predecessor of Estradas de Portugal operated as the government's highway agency. Its conversion from agency to state-owned enterprise was driven largely by the need to move its debts off-balance sheet, so that the Portuguese government could remain in compliance with EU budgetary standards.

Spain. The Spanish highway system is managed by the Director General of Roads, who reports to the Secretary General for Transportation within the Ministerio de Fomento (rough translation, the Department of Development), so there is no distinct national highways agency or department. The Director General has oversight of the national PPP program. Autonomous Communities also have their own roadway agencies. The Government Delegate, who works on behalf of the Ministry of Public Works, plays a key role in the administration and management of individual PPP contracts.

United Kingdom. The Highways Agency is a unit of the Department for Transport and manages the "English strategic road network". It has sole responsibility for the national motorway PPP program. Similar to Spain, the Department's Representative plays a pivotal role in the administration and management of individual PPP contracts.

Australia. The administration and management approaches adopted by the three states differ slightly. In *New South Wales*, the Roads and Traffic Authority (RTA) of the state has oversight of its highway system as well as its PPP program. In *Victoria*, the state has created temporary public authorities for the sole purpose of managing the procurement of its highway PPP projects. Once operational, the public authorities are disbanded and the responsibility for contract administration and management is handled by VicRoads, the state's highways agency. In *Queensland*, the state has followed the model in Victoria for the procurement of AirportLink, creating an independent authority. The state's Department of Main Roads will ultimately assume responsibility for its contract management.

PPP Funding Mechanisms

PPP arrangements require revenue sources or rights to support their capital, operating, financing, and transaction expenses and to provide a return on equity investments. A variety of mechanisms are employed by the host countries to provide such funding – real tolls, shadow tolls, and direct payment mechanisms. Real tolls are relatively well-understood; users pay a fee to utilize an asset. Shadow tolls and direct payment mechanisms are less so. Often, shadow tolls are viewed as payments from a public entity to a contractor that are based upon the volume of users of an asset. In Portugal and Spain, however, a shadow toll is comprised of a service payment, which is linked to traffic volume, and an availability payment, which is linked to the level of service provided. The simple notion of a direct payment mechanism was presented in the UK as the fee the public entity pays the contractor; the payment mechanism is comprised of several components but the *availability* of service is the principal one.² Another mechanism is ancillary revenues that might be derived from commercial development or land use arrangements along a roadway such as service stations, restaurants, or utility corridors.

² In early PPP arrangements in the UK, shadow tolls based only upon volume of service were commonly used; the UK has evolved to use payment mechanisms that are based heavily upon availability of service. Hence, this overall approach to payment is often referred to as **availability payments**.

Portugal. Portugal utilizes direct real tolls and shadow tolls to provide the revenues necessary to support PPP projects. EP evaluates the economics of the proposed PPP project and recommends a tolling/funding strategy to the Portuguese government, which makes the final decision regarding toll structure. In situations where expected traffic volumes are/were high enough, EP will generally recommend real tolls and may permit the concessionaire to employ congestion pricing schemes. In addition, the government may substitute shadow tolls for real tolls on urban commuter routes. Of the 2,500 km that is currently under PPP contracts, 1,400 km (55%) is real toll, 900 km (37%) is shadow toll, and 200 km (8%) is no toll. Toll-free PPPs result, for example, when a private partner builds a connector road that is not tolled as part of an overall highway concession agreement.

In circumstances where expected traffic volumes are/were low, EP has recommended a dual approach where real tolls are combined with shadow tolls with two components, a service payment linked to traffic volume and an availability payment linked to the level of service provided. In these cases, the initial basis for the real toll is common for all projects and has a contractual cap while the shadow toll amount is a bid variable. As traffic on these roads increases, the real toll revenues rise while the rate of shadow toll contributions by the government falls. Further, EP is considering removing shadow tolls from highways where the real tolls have become sufficient to meet project financial requirements.

Spain. Similar to Portugal, Spain utilizes both real and shadow tolls. Of the 4,300 km of the National Highway System currently under PPP contracts, 3,800 km use real tolls while 500 km utilize shadow tolls. The government conducts a feasibility analysis to determine whether the expected traffic volume will permit the use of real tolls. If not, shadow tolls are generally utilized in lieu of any real toll. In the Madrid metropolitan area, shadow tolls alone are generally used for PPP projects. The shadow tolls paid during a period usually are linked to traffic volume and the level of service provided. Only one PPP project in the Madrid region relied exclusively upon real tolls. Other regions in Spain rely more heavily upon real tolls. Like Portugal, Spain also requires construction of toll-free connector roads as part of some of its concession agreements.

United Kingdom. The national motorways under PPP contracts in the United Kingdom, with one exception the M-6, use either shadow tolls or direct payment mechanisms exclusively. Early PPP contracts used shadow tolls based only upon traffic volumes, which proved somewhat of a perverse incentive. Recent PPP contracts have used a payment mechanism based primarily upon the availability of a required level of service (i.e. an availability payment).³ Funding challenges, however, are driving the UK government to actively consider the use of real tolls on future highway PPPs.

Australia. In the three states, real tolls are utilized for highway PPP projects. While governments may propose either a lump sum or an annual contribution to the contractor in their Request for Proposals, respondents (bidders) have typically proposed the elimination or reduction of these contributions by government in their proposals.

³ The United Kingdom does toll some bridges in its existing PPP contracts such as the Second Severn Crossing, which is along the M4.

Overview of Procurement Process

Generally, all of the host nations use a competitive procurement process for the selection of PPP contractors. The principal difference between the countries is the extent of negotiation that occurs during procurement.

Portugal. EP utilizes essentially a two-stage competitive procurement process to select its preferred bidder. In the first stage, a Request for Proposals (RFP) is issued. Proposals received from all respondents are evaluated based upon objective criteria, and two respondents are short-listed. In the second stage, EP enters into negotiations with the two remaining teams and ultimately selects its preferred bidder. Financial close occurs after the preferred bidder is chosen. Interestingly, EP makes all proposals received in the first stage available to all respondents for ten calendar days, and it also makes the final two proposals received in the second stage available to all respondents for ten calendar days. This practice helps facilitate the transparency of the process among all respondents.

Spain. Spain utilizes what it calls the “open competition model” for procurement of highway PPP projects. Effectively, the government issues a call for tenders, and interested parties submit binding proposals. The award is made on the basis of the “most economically advantageous tender.” The Spanish government views this approach as competitive and efficient, but it also recognizes the importance for it to clearly delineate its expectations and terms for the project in its request for tenders.⁴

United Kingdom. The UK generally employs a multi-stage competitive procurement process for highway PPP projects. The process starts with publication of a notice in the Official Journal of the EU soliciting qualifications statements from interested parties; those pre-qualified then move into the tender stage where the government issues more details and guidance to its short-listed teams in its Instructions and Guidance to Tenderers (IGT) In addition, the IGT includes an “illustrative design.”⁵ The respondents then prepare and submit their detailed tenders (or proposals), which often have unique features or conditions. Since the process encourages such tender flexibility, it can diverge at this point into independent negotiations and subsequently independent evaluations. Ultimately, a preferred respondent is chosen and the process enters the post tender stage to finalize the contract and reach financial close. Probity officers are employed throughout the process to maintain accountability and fairness.

In the case of the M25 procurement, which is the UK’s largest highway PPP to date, prior to the tender stage, pre-qualified teams were issued an Invitation to Submit Outline Proposals (ISOP) where three teams were short-listed based upon published criteria. This phase was introduced to reduce the transaction costs and to improve the effectiveness of the process.

Australia. All three States generally follow a multi-stage competitive procurement process that begins with an invitation for Expressions of Interest (EOI). Following receipt of EOI’s, a short-list is created, and then the government issues a detailed RFP.⁶ Proposals are then received from the short-listed teams, negotiations with individual teams are conducted, and final proposals are

⁴ Spanish Institute of Foreign Trade. (2006). *Industry Reports: Road Infrastructure Concessions in Spain*, Madrid, p. 12.

⁵ An “illustrative design” is provided by the government to demonstrate to its respondents that a feasible design solution for the project exists – or at least this is the meaning of the term inferred by the scan team.

evaluated against defined criteria (such as tolling structure, concession length, design features, etc.) and a preferred bidder is selected. Subsequently, contracts are finalized and financial close is reached. Interestingly, the states generally request a conforming proposal, i.e. one that is in full accordance with the RFP, while also allowing non-conforming proposals, i.e. ones with alternatives or deviations from the RFP. This allows the private sector some latitude to bring new project ideas or concepts for consideration by the public sector.

Risk Allocation & Management

All public agencies visited emphasized risk allocation as an important aspect of a PPP project. If significant risks throughout the project's lifecycle are not transferable to the private sector, then the project is likely not an appropriate candidate for delivery via PPP. The basic risk allocation philosophies in each country (or state) differ, particularly with regard to market or demand risk and its impact upon the private partner's ultimate financial situation. Further, practices related to changes in conditions throughout a project's lifecycle are also markedly different.

Portugal. EP conducts a risk analysis prior to commencing project procurement in an attempt to “balance” the allocation of risk. It evaluates the expected rate of return for the private sector. If this expected rate is too high, then EP will consider adjusting the scope of work or shortening the contract term for the project. If the expected rate is too low, then EP may extend the concession period or include a government subsidy. Once the project commences, EP will consider restructuring the conditions of the PPP agreement if the ex ante uncertainties in the project turn out to disproportionately favor either the public or the private sector, a practice termed “re-balancing”.⁷

Spain. Like Portugal, the Spanish government attempts to appropriately assign project risks when it conducts a thorough risk analysis during the “informative study”. If the expected rate of return for a PPP project is too high, then the government will investigate means to reduce this rate such as increasing the project's scope of work to include feeder or connector roadway segments. If the expected rate is too low, then the government will consider measures to increase the rate such as including public subsidies. Once the project commences, the Spanish government will consider re-balancing the contract if the expected “economic-financial equilibrium” is not maintained. In other words, if risk distribution proves detrimental to either party, then a restructuring may occur.

However, Spanish law requires that two conditions be met before re-balancing is triggered. First, the change in conditions must produce a substantial material effect upon the party impacted. Second, this effect must be sustained over a reasonable period of time. The rationale for this re-balancing concept is basically two-fold: (1) the public and private sectors enter into the PPP agreement for the general public good using the best information available at the time of the agreement, and (2) this practice supports “win-win” outcomes, which promotes stability in the market.

⁶ In some cases, the contract for the proposed project is included with the RFP.

⁷ Portugal's risk allocation and management practices were likely borrowed from Spain, which has utilized these techniques for some time in its highway PPP program.

United Kingdom. The Highways Agency has learned that a “robust, auditable allocation of risk” is preferable to maximum risk transfer. Over time, the Agency has sought to create a stable environment for risk allocation and management through measures such as the creation of a standard baseline contract document and the techniques that it employs during project procurement such as conducting risk workshops and negotiating risk adjustments prior to finalizing project specific agreements. Once a project commences, PPP contracts have provisions for changes to accommodate unforeseen events, but this regime is generally limited. The pending M-25 PPP contract, however, allows for a “contract review” to consider potential major modifications to the agreement. Like Portugal and Spain, the UK may shorten the term of PPP contracts when the private partner’s actual revenues exceed the originally projected revenues.

Australia. Similar to the UK, Australian states have learned that reasonable risk transfer is preferable to maximum risk transfer. All highway PPPs to date in the three states visited are real toll projects, and the states share the philosophy that private investors in these deals, both equity and debt-holders, must bear the downside market risks. In other words, if the revenues or rates of return expected do not materialize, then the private investors must endure the consequences.

The maturity of the PPP market in Australia supports this philosophy since both investors and lenders have grown comfortable with these conditions and the marketplace itself can provide remedies to financial hardships, i.e. restructuring financing arrangements, etc. Contracts in Australia originally included fairly liberal “material adverse effect” provisions in the event of changes in conditions; more recent contracts have tightened up these provisions generally to a limited set of specific events.

SUMMARY OF INITIAL FINDINGS

The team gained valuable insights about established PPP programs during their visits with the host countries. Foremost, the relative maturity of the host nation PPP programs offered a rich environment for the collection of useful and tested information regarding PPP policies and practices. In many cases, the team received details regarding second and even third generation PPPs. Hence, the degree of institutional learning that had occurred was clear. Further, the diversity among policies and practices observed also provided alternative perspectives of various issues. Not surprisingly, this experience base provided the team with numerous findings; these are organized subsequently into general, project lifecycle, and additional findings.

General Findings

- **PPPs are a critically important and growing percentage of the national highway networks in the host nations.** As described previously, only a moderate percentage of the overall highway and roadway networks are under PPP arrangements. The segments, though, that are PPPs are typically critical components of the national or regional system for vehicular mobility. For instance, EastLink in Melbourne, Australia is a vital perimeter road that provides commuters and freight access into the city's central business district via a high quality, limited access route.
- **Public agencies in the host countries have faced or continue to face similar challenges to those in the United States when it comes to providing serviceable highways and roadways.** Not a single public agency visited indicated that they had a surplus of funds available for expansion, restoration, and preservation of their highway assets. The usual suspects – escalating demands, deteriorating assets, insufficient public resources – are the cause of the general scarcity of funds. The countries visited, however, have used PPP arrangements as a means to leverage private sector investment in highways assets, but they are currently doing so through established and credible processes.
- **Significant institutional learning, in both the public and private sectors, has occurred in the countries visited over roughly the last decade.** Most PPP programs in the countries visited began in response to fiscal crises, and the private sector was viewed, particularly by politicians, as a potential solution. Not surprisingly, the early PPP arrangements in these countries, while well-intentioned, did not necessarily provide the best value for the public. Since that time, the planning, procurement, and management of PPP projects have improved substantially. Substantial institutional learning was evident in all the host nations. This circumstance is very advantageous for the United States since as a “late-mover” in this market its institutions can adopt tested second and even third generation policies and practices.
- **Highway PPP arrangements, particularly in the most mature markets, are not just financial transactions; rather, they are the selected project delivery strategy based upon a value for money or feasibility analysis.** In the majority of the countries visited, this perspective was either firmly held or gaining traction. For instance, the policy in Victoria regarding any potential infrastructure project is that budgetary funds must be available to support it in order for it to be considered for inclusion in a capital program. If the potential project has the attributes necessary for a PPP, then it will be evaluated through Victoria's

“Value for Money” guidelines. Only if the project demonstrates value for money as a PPP will it proceed that way. Otherwise, the budgetary funds will be utilized to finance its conventional delivery. In Spain, the philosophy is slightly different. If the public sector’s feasibility analysis indicates that a PPP approach is viable, then highways are typically delivered by PPPs. In either case, though, the government determines that a PPP arrangement is the preferred method of delivery based upon a systematic methodology.

- **Highway PPP arrangements do not “automatically” require user fees.** The scan found that various sources of funds are used throughout the world – from real tolls exclusively to a combination of real tolls and shadow tolls to shadow tolls or direct payment mechanisms (often principally availability based) exclusively. While the concept “the user pays” remains a solid economic argument, the reality is that the socio-political environment in other countries is also a barrier to widespread tolling, as it is in the United States.
- **The maximum contract period (or concession period) for highway or road contracts observed was 50-years and most periods ranged between 30-40 years.** This is a contrast to several of the recent long-term lease agreements of existing assets coupled with large upfront payments in the United States. None of the countries visited had implemented a model of this sort. The two primary determinants described for the contract period were: (1) the timeframe should be long enough so that many elements of the facility, such as pavements, within the project will have had to gone through at least one major renovation and (2) the period must be adequate to allow the PPP contractor with a reasonable timeframe to collect the revenue necessary to obtain its expected return on investment.⁸
- **All public agencies indicated that PPP arrangements can allow the delivery of projects sooner than would be possible through their other delivery methods.** This is a common refrain among agencies with significant PPP experience. In some cases, this detail is used as a tool to promote the PPP approach over traditional delivery methods.
- **One man’s BOOT (Build-Own-Operate-Transfer) is another’s DBFO (Design-Build-Finance-Operate).** The definitions, acronyms and nomenclature used worldwide relative to PPPs are far from standard. In lieu of trying to keep all of this straight, the key variables to consider are what scope of services is the private sector being asked to provide (or alternatively how are the project lifecycle activities organized/packaged) and what source of funds are supporting the scope of services being solicited.
- **The necessary public sector mindset and skills base for successful PPP programs and projects differ substantially from conventional practices.** All of the public agencies visited emphasized the significance of these two points and indicated the importance of building public sector capacity in PPP program management. In Australia, Victoria and Queensland have found it beneficial to establish temporary, independent authorities to manage highway PPP procurements while Portugal created EP specifically for the administration of concessions. Interestingly, a Highways Agency representative in the UK also commented that when the Private Finance Initiative began the Agency was not “risk averse but rather was risk ignorant.” This circumstance has remedied itself with experience and effort.

⁸ More amenable tax treatment of PPP arrangements abroad also appears to help reduce contract periods.

- **Innovation by the private *and* public sectors in PPP arrangements is evident.** In the case of the private sector, innovation is typically stimulated by competition for the award of an integrated, commercial enterprise, i.e. the right to develop/enhance and manage an infrastructure asset for a finite period of time. The innovations that result are generally borne out of the integration of design, construction, and operation within a single entity and during asset utilization. In the case of the public sector, innovation is typically driven by public stewardship interests. For instance, the EastLink project in Victoria, Australia has provisions to return to the users of the facility a share of any debits (penalties) collected from the PPP contractor for failure to meet Key Performance Indicators.
- **A reasonable balance between technical, commercial, and legal conditions and terms in a PPP contract is integral to its success.** While all highway projects are engineering efforts, PPP projects are also long-term enterprises. As one public official put it, once the agency's engineering staff has established the project's principal technical provisions it's a good idea to have the agency's commercial and legal team take them for a "road test" to assess their alignment with the business dimensions of the project.
- **In general, the representatives of the PPP contractors visited and questioned exhibited a focus upon their customers, an emphasis upon lifecycle management and value, and a pride in "ownership" and stewardship of their assets.** While the team recognizes that these individuals had an interest in behaving this way, their comments and answers demonstrated to the members of the team that their business model depends upon these attributes. Moreover, if they desire to transfer this business model elsewhere, then their track record will either enable or hinder this transfer.
- **Similarly, public agencies have recognized that a PPP arrangement is in fact a long-term "partnership" with the private sector that is founded upon a contract.** As such, the public sector's contract management team will be the one responsible for sustaining this relationship. Doing so will require understanding both the "spirit" and the "letter" of the contract.

Project Lifecycle Findings

These findings basically follow the chronological order of a PPP arrangement's lifecycle – from preliminary project planning through to project handback.

- **All public agencies emphasized the importance of adequate front-end or preliminary planning for a project to fully comprehend its business case and potential lifecycle value.** This is necessary to understand what service a potential asset should provide and where value is derived. Such comprehension will undoubtedly influence the remaining decisions regarding project delivery, including whether the project is a PPP candidate.
- **The two most commonly cited attributes of a project that potentially make it a PPP candidate were scale and complexity.** Not surprisingly, the scale attribute is necessary to offset the transaction costs of PPPs, although variable monetary amounts (ranging from \$10 million to \$50 million) were suggested as the minimum scale necessary. Complexity is often coupled with scale, and this attribute is generally seen as the ingredient that enables, or perhaps compels, the private sector to find novel or unique project solutions.

- **When defining or scoping a PPP project, the primary focus should be upon identifying and conveying the outputs desired without inappropriately compromising existing technical standards.** Outputs of the project are what its customers focus upon – reliable travel times, safe travel environment, comfortable ride, etc. The transition to thinking about what customers desire first rather than developing a prescriptive definition of the asset is a major transition in practice. However, an emphasis upon defining and measuring outputs should not come at the expense of sound engineering. Most countries visited still rely upon existing technical specifications and standards, at least as a means to establish baseline technical requirements.
- **Risk analysis and allocation are paramount to PPP project success.** Certainly, proper risk allocation is not a new concept; however, the public agencies visited with significant PPP experience have evolved from stressing maximum risk transfer in PPP arrangements to reasonable risk transfer. Indeed, one public official described this evolution as a move away from “maximum risk transfer to optimal risk allocation.”
- **All public agencies emphasized the need for transparency during the procurement process for PPP projects.** The typical scale and complexity of PPP highway projects generates an unusually high level of public, political, and media attention. Nearly all of the agencies visited go to substantial lengths to make project documents and records accessible. More often than not, they publish all non-sensitive material upon multiple government web-sites. In addition, some agencies utilize a public auditor to monitor proceedings. A practice such as this is particularly important in a procurement process that is utilizing competitive negotiations. Further, most agencies stressed engaging citizens throughout the project’s lifecycle from the earliest stages of planning through to the operating phase. Particularly, the need to inform the public regarding the means to access and use a new facility prior to its opening was highlighted.
- **The commitment and reliability of the government to see PPP project procurements through to closure is essential to stability within this market.** Given the enormous transaction costs involved in PPP projects, private participants must have confidence that the public sector is committed to closing deals expeditiously with rare exceptions. Without this confidence, private participants will search for other places to put their business development funds at risk.
- **In many of the countries visited, the PPP project development time was remarkably efficient.** In some countries visited, the entire procurement process, from circulation of an environmental document to attainment of financial close, averages 12 months. In such cases, the government has clearly done substantial front-end planning. Regardless, this level of efficiency is enviable, especially since environmental standards and public involvement appear to be embraced.
- **Multiple public agencies claimed that PPP projects provide better design and construction price and time certainty when compared to their conventional approach.** Several of the countries visited indicated that the scale, complexity, and competition for PPP contracts generally lead to design and construction efficiencies, which result in better pricing and scheduling by the private sector. In addition, public and third-party studies indicated significant advantages in these two specific areas.

- **Most countries utilize an Independent Verifier/Reviewer to monitor the design and construction phases of a PPP project.** The Independent Verifier serves as an objective third party to generally administer (certify pay requests, etc.) and review (compliance with requirements, on-site visits, etc.) the project during design and construction. The payment schemes and contractual relationships used for the Independent Verifier varied. As well, Victoria, Australia introduced a Proof Engineer and a Construction Verifier to augment the Independent Verifier in its second PPP project (EastLink).
- **All countries utilize Key Performance Indicators (KPI's) or Performance Measures in their PPP contracts to assess service along with incentives and disincentives to motivate contractor performance.** KPI's are the means for assessing whether the outputs desired from the asset are being provided by the PPP contractor. Contractors are usually monetarily rewarded for exceeding performance targets or showing positive trends, and they are monetarily debited for missing performance targets or showing negative trends. In one project, the public sector agency has decided to distribute any amounts debited from the contractor to the highway's users since they in fact paid for a level of service that they did not receive.
- **Practices for managing changes/uncertainty throughout the contract period vary and range from re-balancing actions to limited material adverse effect impacts.** Re-balancing is a significant modification process, but it is one that is intended to be applied symmetrically – the conditions can be modified in either the public or private sector's favor. Similarly, material adverse effect changes can be quite arduous, but in the countries where this approach is taken, the public agencies have evolved to substantially limit the triggers of such provisions. For instance, in lieu of granting zones with protection from competition or including no-compete provisions in contracts, the public agency will identify a limited set of routes by name that if improved or materially modified would initiate the need for a contract change.
- **Effective PPP contract management is vital to maintaining the public sector's risk posture and to sustaining a good working relationship with the PPP contractor.** The public agency's contract manager must understand the line between risk liability and risk transfer when interacting with the PPP contractor regarding issues. Further, the contract manager must recognize that the PPP contractor is likely his/her counterpart for the better part of 30 years, so keeping the bigger picture in perspective is more important than a petty disagreement or discrepancy.
- **Handback provisions appear to necessitate good asset management practices by the private sector, but the handback process is generally untested in the countries visited.** Typically, the handback provisions specify residual service lives for the different elements of a facility within a project at the end of the contract's term. Undoubtedly, this is easier said than done. Many skeptics also worry that private contractor's will permit the assets to gradually deteriorate and then attempt to renovate them to the minimum standard just prior to the end of the contract. Several comments from a private operator might calm such concerns. First, the private contractor wants customers to use their asset, so they have an implicit incentive to maintain it. Second, and perhaps more importantly, delaying timely routine maintenance and performing major renovations toward the end of the contract period when traffic volume is stable and likely at its pinnacle would disrupt peak cash flow. Finally, the

escalating cost of deferred maintenance is also a deterrent to poor asset management practices.

Additional Observations

- None of the public officials or private participants consulted had direct experience with the handback provisions or processes for a PPP contract, even though some countries like Spain have had concessions expire.
- Business development costs of PPP proposals are substantial for both the public and private sectors.
- Tax benefits appear to be gained more easily by PPP contractors abroad; this is likely due to accounting practices that focus more on the risk held relative to an asset as opposed to the control/ownership held relative to an asset.
- Selection criteria used for award of PPP contracts are generally similar across the countries visited.
- Most countries visited still rely upon existing technical specifications and standards within PPP arrangements – at least as a means to establish baseline technical requirements.
- Fully-electronic toll collection (ETC) is common abroad, which improves throughput and efficiency.
- Some countries are utilizing innovative performance measures for highway safety, which has reportedly improved accident and fatality rates.
- Spain, in particular, is considering extending concession periods as an incentive/reward for PPP contractors that consistently meet or exceed required levels of service.

PRELIMINARY RECOMMENDATIONS AND IMPLEMENTATION ACTIONS

As the team debated its recommendations and implementation actions in the final meeting during the scan tour, an important question arose “what’s the end game here?” Put differently, what principal outcome should this scan tour and its implementation strategies facilitate? After some discussion, the team agreed that *the overarching outcome desired would be the pervasive use of a project development process by state or local highway agencies that selects an effective project delivery system from a range of options, including PPPs – where an effective project delivery system is defined as one that provides the greatest benefits to society and meets the objectives of government.*

The recommendations and implementation actions that follow are geared toward this end.

Short-Term Actions

1. Convene executive workshops where representatives from countries visited or elsewhere can speak directly to both public and private sector decision makers. Providing information to both the decision makers (executives) and those implementing the programs (Directors or

staff members) will be very beneficial to promoting the concepts and ideas learned to State DOT representatives.

2. Develop training guidelines for PPP program managers, procurement officers, contract managers, and financial & legal specialists that State DOT's can use to tailor development and training programs to their own specific needs.
3. Encourage FHWA to convert the scan team into an expert task group to implement scan findings.
4. Encourage AASHTO to establish a group focused upon PPPs, perhaps as a section in one of its sub-committees. The implementation of this recommendation will allow the discussion concerning the development of PPPs to stay active and involve stakeholders at all levels of AASHTO, State DOT's and FHWA.
5. Create a set of "state of practice" publications, which further highlight the lessons learned from the scan tour and possibly expand the scope of inquiry to include other nations not visited. Issues such as business case development and analysis, value for money and risk analysis, procurement processes, contract provisions, change management, etc. are all important topics for these publications to address.
6. Develop comparative case studies of representative projects, past and current, that highlight maturing/evolving policies and practices. For instance, the Victorian Government has developed two projects - City Link and East Link. An in-depth review of the project specifics, lessons learned, procurement changes, and program evolution would meet one of the principal objectives of the scan trip, which was to learn how PPP programs and projects have evolved with time.

Mid-Term Actions

7. Develop a strategy to facilitate research in the following areas:
 - a. Investigate advantages/disadvantages of alternative organizational forms for PPP divisions
 - b. Examine methods for identifying and analyzing candidate PPP projects
 - c. Investigate the evolution and effectiveness of KPI's
 - d. Investigate the risk mitigation practices of the private sector in PPP arrangements to determine if private participants are assuming real levels of risk
 - e. Investigate the determinants of concession length both domestically and abroad
 - f. Evaluate methodologies for establishing & managing toll structures
 - g. Investigate & identify appropriate metrics for assessing:

- i) Benefits/costs of PPP programs and projects
- ii) Overall PPP program and project performance

Long-Term Actions

- 8. Develop & publish principles and guideline documents, which update or complement existing documents that are similar in nature, such as:
 - a. Establishing a PPP program
 - b. Identifying and evaluating candidate PPP projects
 - c. Procuring PPP projects
 - d. Creating PPP contracts
 - e. Managing PPP contracts
 - f. Measuring PPP program and project performance

CONCLUDING THOUGHTS AND NEXT STEPS

During the scan trip, the team clearly observed that PPPs are a fundamental part of the host nation transportation networks. Further, these nations are continuously improving their policies and practices. The United States should capitalize upon their tested experience and feel comfortable that it can implement effective PPPs as well.

The team will subsequently draft and publish the final report. Development of a fundable, feasible, and effective implementation strategy is also a priority.