

# **Pensions & Infrastructure: The Path to Common Ground**

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## About the Authors

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## ABSTRACT

In the absence of occasional failed levees, collapsed bridges, and rolling blackouts, few people notice that California's infrastructure maintenance has been neglected. However, it is generally known that California's infrastructure is decaying and some experts would argue that it is wholly inadequate to meet the needs and challenges of the 21<sup>st</sup> century.

Undeniably, Los Angeles is the most congested city in the nation; the State Department of Transportation does not have enough money to both build new projects and maintain existing ones; and congestion is a concern in most urban and suburban areas. With a \$46bn budget deficit and critical shortfalls in pension and healthcare benefits, bickering legislators who must reach a 2/3s majority cannot agree on how to close short-term gaps let alone develop a strategy to tackle the long forgotten infrastructure backlog.

One idea gaining support is the use public-private partnerships (P3s) for infrastructure delivery, with benefits of better, faster, and cheaper service provision and the release of state financing capacity for other priorities.

Many countries facing fiscal crisis including Australia, Chile, Spain, and the U.K. have gone down this path and achieved taxpayer value by adding P3s as an alternative to traditional methods of project delivery. Simultaneously, pension plans with long-dated liabilities have increasingly become interested in investing in infrastructure projects that offer stable, inflation-linked cash flows. The combination of proven delivery models with pension fund appetite for infrastructure offers an exciting opportunity for public officials in California trying to stretch limited budgets and free-up financing capacity.

California's Public Infrastructure Advisory Commission (PIAC), a new entity now being established in the Business, Transportation, and Housing Agency, has the legislative authority to coordinate and advise on the structuring of public-private partnership transactions. Assuming that these transactions can both deliver attractive risk-adjusted returns for pensioners and better value for taxpayers over conventional delivery, it would appear that we are on the cusp of a new era of pension dollars flowing into California projects.

This paper discusses international experiences and U.S. history surrounding the use of the public private partnership model, current organization of the market and growth prospects for pension investment in infrastructure, as well as recommendations for government and pensions in the spirit of enhancing outcomes for taxpayers and pensioners.

It is not widely known, but the private franchise model for infrastructure delivery was common in the U.S. prior to WW II. Today the model is experiencing somewhat of a renaissance, with positive experiences in Australia, Canada, and the UK being emulated by several U.S. states and with many countries worldwide adopting P3 Agencies to coordinate, prepare, and structure P3 projects on a programmatic basis. The shift to P3s is not without its critics, however, and the debate in the U.S. has been especially fierce with the public finance and project finance industries pitted against one another. Some criticism of the P3 model is warranted—it introduces a number of governance challenges and fails to resolve many fundamental bottlenecks that prevent infrastructure revitalization—but it does seem to

have a role in faster, cheaper, and better project delivery. Further ideological debate will be unproductive, and government agencies should look beyond the beliefs and biases of the two warring camps and begin to run objective comparators to find whether or not value for money can be achieved for the taxpayer.

Pension appetite for infrastructure has been growing since the mid-1990s. If pension allocations for infrastructure were to eventually reach 5-10% across the nation, current stocks of pension capital would support 15% of America's infrastructure investment needs for the next 25-50 years. Pioneering infrastructure funds have resolved early criticisms of economically-targeted investing by stepping in to bundle diversified portfolios of assets that offer pensions attractive risk-adjusted returns. But funds charge high fees. Large Australian and Canadian plans have attempted to reduce fees by hiring large investment teams invest in projects on a direct basis, with benefits of greater control of portfolio design and diversification.

The article concludes with several recommendations. To ensure maximum gain for the taxpayer, host governments ought to focus on enhancing the quality of project screening and selection; building up public management skills and resources critical in a P3 environment; and using public resources in a targeted way to maximize the benefits of private sector participation and investment. To ensure maximum gain to the pensioner, pension funds should learn more about full range of strategic opportunities for investment in infrastructure, whether through or alongside managed funds, or through direct investment in infrastructure assets.

## I. INFRASTRUCTURE BACKLOG & FISCAL DEFICIT IN CALIFORNIA

In the mid 20<sup>th</sup> Century, California developed one of the finest systems of roadways, electricity grids, and water distribution systems in the Western world.<sup>1</sup> But since 1970, California's population has doubled to 38 million and older infrastructure systems are nearing the ends of their useful service lives.<sup>2</sup> With the rise of social spending priorities such as education, social security, healthcare, and corrections, infrastructure maintenance has been neglected for decades.<sup>3</sup> So far rating agencies have turned a blind eye to growing backlogs of deferred infrastructure maintenance, so there has been no impact on credit rating or cost of borrowing for state and local governments allowing the house to fall apart. As evidenced by annual report cards from the American Society of Civil Engineers that give the State's road, bridge, water, dam, levee, and electricity transmission infrastructures failing grades,<sup>4</sup> the competitiveness, quality of life, and global leadership position of the Golden State are in jeopardy.

Sadly, California's finances are also a mess. The state is virtually bankrupt and year over year tax revenues are down by 20-30%.<sup>5</sup> By refusing to pass the Governor's proposed tax measures last month, voters have signaled a desire for belt-tightening as opposed to new taxes. Today the state budget is dedicated almost entirely to education, healthcare, and corrections and little remains for infrastructure.<sup>6</sup> Borrowing costs are already higher than any state in the Union. In recent weeks, both the New York Times and the Economist have run articles calling California the "Ungovernable State".

New solutions are needed desperately. Despite the complex political environment, progress is being made, specifically in the area of transportation. Seeds are being planted for innovative programs to address infrastructure problems in new ways. One innovative concept, put forward by the Treasurer's office, calls to establish a California Transportation Financing Authority (CTFA) to make it easier for

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<sup>1</sup> The central period of development of California's state-level infrastructure systems occurred during the Governorship of Pat Brown (1959-67). For a review of Pat Brown's legacy see Ethan Rarick, *California Rising: The Life and Times of Pat Brown*, (University of California Press, 2005).

<sup>2</sup> See: Orr, R. & Keever, G. (2008) "Expanding Options for Delivery California's Infrastructure" Unpublished Working Paper. Collaboratory for Research on Global Projects, Stanford University.  
<<http://www.lhc.ca.gov/studies/activestudies/infrastructurefinancing/OrrFeb09.pdf>>

<sup>3</sup> See: Bouvard, F., Dohrmann, T., and N. Lovegrove, (2009) "The case for government reform now." *McKinsey Quarterly*. Public Sector Practice, June Issue.  
<[http://www.mckinseyquarterly.com/Public\\_Sector/Managment/The\\_case\\_for\\_government\\_reform\\_now\\_2371](http://www.mckinseyquarterly.com/Public_Sector/Managment/The_case_for_government_reform_now_2371)>

<sup>4</sup> According to the ASCE: 28% of California's bridges are structurally deficient or functionally obsolete, 44 dams have been deemed deficient by the State, Leaky pipes cause the State to lose 222 million gallons of drinking water a day, 71% of California's major roads are in poor or mediocre condition, and 60% of California's major urban roads are congested. See: American Society of Civil Engineers, California Infrastructure Report Card 2005.

<sup>5</sup> The National Conference of State Legislatures concludes that in the first 10 months of the fiscal year (FY) 2009, California's personal income tax fell by 20%, general and sales tax was off by 13%, and corporate income tax dipped by 8%. And the worst may be yet to come. See: NCSL. (2009) State Tax Performance through April 2009. Updated June 8, 2009. <<http://www.ncsl.org/documents/fiscal/StateTaxPerformanceJune2009.pdf>> See also: Text of Governor's Address to the Legislature, June 2, 2009: "Now as I stand here today we are in the midst of the greatest economic crisis since the Great Depression. In the past 18 months one-third of the world's wealth has vanished. And because of that and because of California's outdated and volatile tax system, our revenues have dropped 27 percent from last year."

<sup>6</sup> See: P. Luchetti, "Investing in California's Infrastructure," Bay Area Economic Forum, June (2006): 1-67.  
<<http://www.bayeconfor.org/media/files/pdf/CAInfrastructureJune06.pdf>>

local governments to approve user fees to fund construction of new state highway capacity.<sup>7</sup> The CTFA might have been written into law last year, had it not been for the veto of the Governor at a time when the Governor was vetoing all Democrat-originated bills in the thick of the budget battle. The proposed legislation would have granted authority to the CTFA to authorize a project sponsor to collect tolls if a project: (a) added capacity to the highway system, (b) was approved by local referendum, (c) had alternative non-tolled lanes, and (d) excess revenues were pledged for transportation activities. The CTFA would also have granted authority to project sponsors to use congestion pricing to regulate usage at peak hours and enhance mobility. User-fee backed finance could be a useful tool to finance new transportation corridors, combat congestion through demand pricing, levy fees to logistics companies and other heavy system users, and generally enhance the utilization of transportation infrastructure resources.<sup>8</sup>

A second innovative concept involves P3 approaches for project financing and delivery. The passage of Senate Bill 2X 4 provides for the establishment of the Public Infrastructure Advisory Commission (PIAC). PIAC's statutory function is to: (a) Identify transportation project opportunities throughout the state that may be considered for public-private partnerships (P3s), (b) Research and document similar transportation projects throughout the state, nationally and internationally, and evaluate lessons learned from these projects, (c) Assemble and make available to Caltrans and regional transportation agencies a library of information, precedents, research, and analysis, (d) Advise Caltrans and regional transportation agencies, upon request, regarding infrastructure partnership suitability and best practices, and (e) Provide, upon request, procurement related services to Caltrans and regional transportation agencies for P3s.

A third set of changes pertains to proposals presented over the past month to privatize state assets including prisons, state parks, and sports stadiums.<sup>9</sup> Although a stop-gap measure, privatization of assets does close budget deficits swiftly and prevents snarls with creditors.

All of these threads are part of a larger story. More flexibility in implementing user fees will support the development of new transportation capacity, congestion pricing will greatly enhance efficiency of the existing system, P3s offer a new tool in the toolkit for delivering infrastructure more quickly and at lower cost, and privatizations—if handled intelligently—will not only raise cash but improve long-term operating efficiency as well.

In the discussion that follows, we analyze experiences and debates pertaining to the future of privatizations and P3s in California. We then review the global trend towards greater pension fund investment in infrastructure projects and discuss how P3 and pension trends could converge. Finally, we

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<sup>7</sup> See: Orr, R.J., and G. Keever. "Enabling User-Fee Backed Transportation Finance in California." CRGP Working Paper #0041, 2008. <[http://crgp.stanford.edu/publications/working\\_papers/Orr\\_Keever\\_Enabling\\_User\\_Fee\\_Backed\\_Transportation\\_Finance\\_wp0041.pdf](http://crgp.stanford.edu/publications/working_papers/Orr_Keever_Enabling_User_Fee_Backed_Transportation_Finance_wp0041.pdf)>

<sup>8</sup> See: AB 3021(Nava), California Transportation Financing Authority. Bill Analysis, Assembly Committee on Transportation. <[http://info.sen.ca.gov/pub/07-08/bill/asm/ab\\_3001-3050/ab\\_3021\\_cfa\\_20080411\\_143313\\_asm\\_comm.html](http://info.sen.ca.gov/pub/07-08/bill/asm/ab_3001-3050/ab_3021_cfa_20080411_143313_asm_comm.html)>

<sup>9</sup> See: Yi, Matthew. (2009) "Governor urges fast action on budget cuts." *San Francisco Chronicle*. Wednesday, June 3, 2009. <<http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2009/06/03/MNMD17VE9F.DTL>>

discuss broader public policy issues that need to be addressed if alternative approaches to infrastructure delivery are to serve the best interests of taxpayers, users, and pensioners.

## II. PRIVATIZATION AND P3s—EXPERIENCE, DEBATE & THE WAY FORWARD

### A Global Narrative

With its \$46 billion dollar deficit, California is not the first state to face fiscal crisis and rotting infrastructure at the same time. Over the past four decades, Australia, Chile, Spain, and the U.K. have faced similar pressures. To balance a budget, a state has four options: (1) increase taxes or user fees, (2) cut spending, (3) restructure liabilities, and (4) sell assets/concessions. Worldwide, as in California, it is out of fashion to raise taxes. Restructuring liabilities—including defaulting on obligations to creditors and pensioners—is usually the end game. Cutting spending and selling assets, although uncomfortable, tend to be more feasible. Selling concessions can achieve both ends—raising cash and reducing long-term operating costs.

Several countries that have gone down this road are now well beyond the asset privatization stage. For example, Australia continues to routinely use private provision, having found that in some—but not all—cases it can provide superior results. In Canada, private provision is used as a routine method of procurement because it has been shown to offer substantial lifecycle cost savings over conventional methods. As California embarks on this path, it is wise to consider lessons from abroad, and leapfrog directly to the medium- to long-term objective of using private provision as a means of achieving “faster, better, cheaper” delivery and not

#### Box 1. The 100 Year Pendulum between Public and Private Provision of Infrastructure

For more than a century, public and private sectors have shared responsibility for the delivery of infrastructure in America, although in varying degrees at different points in time and on different projects. There are many different models of how the public and private sectors can productively work together, but all come back to fundamental principles of allocating risk and responsibility for design, build, finance, maintenance, and operation tasks (i.e. “D”, “B”, “F”, “M”, and “O”). Across countries and over time a host of factors seem to drive the pendulum of risk and responsibility for infrastructure delivery to sit more with the public or private sector. Consider the following illustrations:

- **Sovereign Bankruptcy** - During periods of recession and fiscal crisis, governments may sell assets and concessions in order to raise cash and to move financing of existing assets off balance sheet to free-up financing capacity for other social programs.
- **Lack of Sovereign Fiscal Capacity** - When a sovereign has a high debt burden “project revenue streams” that are ring-fenced through techniques of project financing may be deemed more creditworthy than the sovereign itself and thus receive better terms of financing (this is one reason why project finance is so common in developing countries).
- **Persuasion of Multilaterals** - In many developing countries from the mid-1980s to present, MDFIs such as the World Bank and Asian Development Bank have been active in promoting the enactment of privatization legislation on the basis of enhancing efficiency.
- **New Nations and Rapid Growth** - It has been common for governments to rely more heavily on the private sector for planning, financing, and delivery of infrastructure— this was true in the U.S. in the 1800s when many canals and railroad were constructed under concession arrangements with European investment, it is also true today in China, India, and the Middle East where rates of growth exceed 5%.
- **Times of Crisis** - Following the Three Mile Island Disaster in the 1970s plans for more than 100 nuclear power stations were cancelled in the U.S. In the face of massive supply shortfalls, the PURPA legislation was enacted opening the power sector to private development and after that a huge boom in private power development occurred through the 1980s; by the 1990s the “Independent Power Producer (IPP)” model became a U.S. export product and was transported worldwide.
- **Modern P3 model** - Although the P3 model was first used to get projects off balance sheet in the U.K., almost twenty years of tinkering has shown that it can deliver projects “faster, cheaper, better” due to a whole number of inherent advantages - including a lifecycle perspective, more competition, and more optimal risk transfer -- which results in 10-20% overall savings to taxpayers over costs of conventional procurement and therefore provides a direct and material benefit to society.

The final proposition is still being tested, and many more “value for money” assessments and audits will be necessary to confirm the experiences of the U.K. with this model. In particular, the U.K. conclusion is sensitive to assumptions about public sector and private sector discount rate and to levels of inefficiency that may have existed within conventional public sector procurement models that may be driven out with competition.

just to think of privatization as a tool for plugging budget deficits.

### **The U.K. Story—From Privatization to P3**

The UK is perhaps the most commonly cited international example. In the 1980s many prominent “privatizations” were undertaken under Margaret Thatcher. Prisons, airports, roads, and utilities were all transferred to private hands. By moving assets off the state balance sheet, the UK was able to shore up budget deficits and free-up borrowing capacity for other social priorities. However, by the mid-1990s, the UK rhetoric was evolving away from “privatizations” and towards “P3s.” The main criticism of “privatizations” was that once state assets were sold off, they were lost forever—i.e. the old adage about not wanting to “sell off the family silver”. The shift towards “public private partnerships” introduced an important change—instead of gaining title to assets the private sector would merely be offered 10-30 year operating-concessions. Moreover, under P3s, the so-called “Third Way”, the state would maintain an important role in identifying, approving, preparing, and overseeing projects. Rather than continuing down the road of one-off, *ad hoc*, privatizations, new coordinated programs of P3s were developed to mesh strengths of the state with advantages of the private sector in with standardized contractual frameworks to reduce transaction costs. The UK Private Finance Initiative (PFI) program, as it became known, underwent several overhauls and ongoing refinements over a decade of successive Tory and Labor governments. But the general lesson over 15 years was that infrastructure services could, in some cases, be delivered faster, better, and cheaper by using the public-private partnership format. The United Kingdom’s experience with its PFI has been that the costs of design, construction, financing, and operations of a project over its full lifecycle are on average 17% lower (and sometimes as much as 40% lower) than conventional public finance and delivery.<sup>10</sup> Australia has reported similar results.<sup>11</sup> In summary, while the UK first moved to sell assets as a cash-raising measure, it has learned over time that public private partnerships can actually result in a direct and material benefit to taxpayers. Today, approximately 15% of UK projects are delivered as P3s, with the remainder delivered through conventional public sector procurement.

To determine which mode is the most efficient, an analysis called a “value for money assessment” is conducted to compare lifecycle costs—i.e. costs of design, construction, financing, maintenance, and operation—of the two delivery modes. The mode that represents best value to the taxpayer is selected..

The most recent stage in the continual evolution of UK procurement reform involves a new idea, the idea of the government as “commissioner of procurement”—i.e. the government should not be predisposed to

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<sup>10</sup> See: UK Treasury Taskforce, “Value for Money Drivers in the Private Finance Initiative,” A Report by Arthur Andersen and Enterprise LSE, (2000): 1-58 ; specifically, see pg. 51, which compares actual cost data from UK P3 projects versus net present cost of public sector comparator and reports mean estimated cost savings for a sample of 29 projects at 16.9% (with standard deviation of 14%). The high standard deviation is explained by a non-normal distribution with long right-side tail (three of 29 projects have 40%+ costs savings over the public sector comparator).

<sup>11</sup> A recent study in Australia reviewed the performance of 21 P3 projects and 33 conventional projects. The study determined that P3s demonstrate “superior cost-efficiency” over conventional procurement. The evidences shoed that while conventional procurements were completed on average 23.5% behind schedule, P3s were finished on average 3.4% ahead of schedule. The study also showed evidence that the net cost over-run was \$602 million for \$4bn worth of conventional procurements, but only \$52 million for an equivalent volume of PPP procurements. See: Allen Consulting Group (2007), *Performance of PPPs and Traditional Procurement in Australia: Final Report*, November 30<sup>th</sup>. <<http://www.ippp.org/TheAllenGroup.pdf>>

any single procurement tool, but should have an array of procurement tools available—including conventional delivery and various forms of P3s (i.e. leases, concessions, management contracts)—and should be responsible for running the numbers and selecting the “proper tool for the proper job” without a predisposition or preference towards one model or the other.

### **The International Trend Towards P3 Agencies**

With the success of the UK PFI program, dozens of countries have adopted legislation for P3s to try to reduce delivery costs. But one of the lessons that has been learned in the UK and internationally is that while enabling legislation is necessary, it is insufficient to achieve success with the P3 model. International experience shows that the public sector must also take an active role in orchestrating and coordinating public private partnership activities. For this purpose, more than 45 governments have established P3 Units or Agencies over the past decade.<sup>12</sup> P3s serve three important functions: educating line ministries on how to use P3 procurement (center of excellence), advising on how to prepare and structure projects for tender (advisory), and monitoring important milestones in the procurement process to ensure value for money and quality control (regulator). Simply privatizing assets and putting up a regulator—as per the 1980s World Bank privatization model that most economists have studied—turns out to be inadequate because there is not sufficient capacity to identify, prepare, and structure new projects. As noted earlier, countries like Canada have gone in this direction without the pressures of fiscal deficit, but to deliver projects more efficiently. With the establishment of PIAC, California is positioned to be at the forefront of U.S. states to move in this exciting new direction; New York is pursuing parallel approaches with its Asset Maximization program.

### **Historical U.S. Experience**

Although programs like PIAC to coordinate P3 programs is a relatively new concept in the U.S., an early variant of the P3 model was actually quite common in the U.S. early in the 20<sup>th</sup> Century. U.S. governments, local, state, and federal, used two infrastructure delivery models from the inception of the nation until about the 1930s—the public works model and the private franchise model.<sup>13</sup> The Erie Canal, Illinois and Michigan Canal, and Cumberland Road are examples early in the 20<sup>th</sup> Century of the public works model being applied to deliver infrastructure where the government entity directly financed and operated the project instead of ceding these responsibilities to the private sector. Zane’s Post Road, the Keokuk Power Plant and Dam, and the New York City Subway represent early examples of the private franchise model of infrastructure delivery, where the government entity “pulled” the projects from the private sector by offering land grants or selling franchises or concessions.

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<sup>12</sup> See: Farrugia, C., Reynolds T., and Orr, R.J.. "Public-Private Partnership Agencies: A Global Perspective." CRGP Working Paper #0039, August 2008.  
<[http://crgp.stanford.edu/publications/working\\_papers/Farrugia\\_etal\\_PPPAgencies\\_WP0039.pdf](http://crgp.stanford.edu/publications/working_papers/Farrugia_etal_PPPAgencies_WP0039.pdf)>

<sup>13</sup> This short section on historical perspective is summarized from a longer report published by Stanford University and KPMG. See: M. Garvin *et al.*, “America’s Infrastructure Strategy: Drawing on History to Guide the Future,” Report by KPMG and Stanford University, (2007): 1-48.  
<[http://crgp.stanford.edu/events/presentations/CA/CRGP\\_KPMG\\_whitepaper.pdf](http://crgp.stanford.edu/events/presentations/CA/CRGP_KPMG_whitepaper.pdf)>

After U.S. independence, the country was largely underdeveloped and state and federal governments had limited financial resources and weak credit; generally there was no income tax. The dual use of the public works and private franchise models achieved at least two purposes: it allowed scarce government resources to be extended to more projects (a strategy of leveraging assets) and it gave governments flexibility in hedging political issues where only government action would suffice. In managing this dual system to support infrastructure expansion and economic growth, governments tended to push projects using the public works model and pull projects using the private franchise model. Public works included trade-oriented projects such as navigable river improvements, harbors, and public buildings. Private projects involved canals, railroads, electricity plants, and other user fee-based improvements. Use of this dual system ceased during 1929–45 and shortly thereafter.<sup>14</sup>

The Brooks Act of 1972 mandated that the design-bid-build delivery system be used for all federal construction and related projects, provided competitive selection processes for designers, and statutorily separated the design process from construction. Collectively, statutes enacted between 1947 and 1972 established the highly segmented design-bid-build delivery system as the only one for federal projects, established bidding procedures, and by default made public financing the predominant funding strategy.

States were affected by these federal policies. They were required to follow the federal procurement rules in order to receive federal funds for roads under the 1956 Interstate Highway Act and for wastewater improvements under the Environmental Protection Agency's Construction Grants Program. Since then, some states, such as Virginia, facing a need for new infrastructure and limited financial resources, have enacted statutes that re-enable the private franchise model to obtain new infrastructure. This state activity was encouraged by the federal government, as in Executive Order 12803:

*...in order to allow the private sector to provide for infrastructure modernization and expansion, State and local authorities should have greater freedom to privatize infrastructure assets...User fees are generally more efficient than general taxes as a means to support infrastructure assets.*

## **Contemporary U.S. Experience**

At the national level, the debate over P3s has been a drawn out affair. Senator Daniel Patrick Moynihan, of New York was a pivotal modern day player. He served as Chairman of the Senate Environment and

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<sup>14</sup> During the depression and after World War II, a view of infrastructure developed in the federal government which treated projects as economic catalysts per se (by providing jobs and economic activity) and as components of national defense, all of which was to be orchestrated by the federal government. The implementation of this view led to a highly segmented, mandatory design-bid-build system (sometimes involving operation) in which the master developer project delivery system was not permitted and public financing was the only possible method of financing. In particular, in 1947 the federal government changed its procurement process for the armed services and all civilian agencies with legislation: the Armed Services Procurement Act of 1947 and shortly thereafter the Federal Property and Administrative Services Act of 1949. Prior thereto, the federal government permitted the engagement of separate design services for public buildings (thus recognizing the value of design services and separating them from a master developer) and required federal approval of design specifications for roads eligible for federal cost reimbursement. The 1947 legislation allowed flexibility in the procurement of design services but required prior publication of specifications and public invitations to bid for all supplies and services, including construction. The 1949 legislation replicated these procedures for civilian agencies. The collective effect was to encourage the design-bid-build delivery system of infrastructure for all federal projects, but not prohibit other approaches.

Public Works Committee from 1992-93. He is largely credited with grandfathering the 1991 ISTEA legislation. Under ISTEA, mass transit became eligible for highway trust fund money; metropolitan planning organizations (MPOs) were established; and the Infrastructure Investment Commission was legislated. In 1993, the Commission report called for government credit enhancement funding to encourage private sector and pension fund investment in American infrastructure. In 1998, TIFIA was enacted fulfilling that recommendation.<sup>15</sup> Another key development during the 1990s was the 1992 Energy Policy Act, which reformed the 1935 Public Utility Holding Company Act and launched a rapid period of growth for the independent power and project finance industries. The 1990s probably would have been the launch point for P3s, lockstep with Europe and Canada, but the public finance community on Wall Street counteracted this initiative.

Under the George H.W. Bush administration, former U.S. Secretary of Transportation Mary Peters and Undersecretaries Tyler Duvall and Robert Horner have been advocates of the P3 model. At the end of their term, the U.S. DOT leadership team published a proposal calling for a dramatic overhaul of federal transportation programs. One of six central themes in the report was for “more efficient pricing and leveraging of Federal resources” including “expanding the use of public private partnerships and allowing jurisdictions to toll Interstates and other major highways (while conditioning their use of toll revenues).” The report concluded that “the public benefit of P3s include, among other things, reduced costs, acceleration of project delivery, more appropriate allocation of risks, and higher quality projects.”

However, P3s have not been adopted at the national level, largely due to two outspoken state Congressman. In 2007, Peter DeFazio (D-OR) and Jim Oberstar (D-MN) published an open letter, partly in reaction to the sale of brownfield toll roads such as the Chicago Skyway. They said, “We write to strongly discourage [states and localities] from entering into public-private partnership (“P3”) agreements that are not in the long-term public interest in a safe, integrated national transportation system...” They went on to say, “The Committee will work to undo any state P3 agreements that do not fully protect the public interest and the integrity of the national system.”<sup>16</sup> Later, Oberstar and DeFazio softened their position in a policy paper, but still stressed the critical importance of protecting the public interest.<sup>17</sup>

Since 2008, Building America’s Future—a coalition formed by Governor Rendell, Mayor Bloomberg and Governor Schwarzenegger—has been rallying support for renewed federal commitment to funding America’s infrastructure needs.<sup>18</sup> Since early 2009, the law firm McKenna, Long, and Aldrige has been

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<sup>15</sup> Personal conversations with Daniel Flanagan, Chairman of the 1993 Infrastructure Investment Commission. He gives credit to David Seltzer, now of Mercator Advisors, for drafting much of the 1993 Infrastructure Investment Commission report and the later TIFIA legislation.

<sup>16</sup> See: James Oberstar and Peter DeFazio. Open Letter from U.S. House of Representatives Committee on Transportation and Infrastructure. May 10, 2007. <<http://transportation.house.gov/Media/File/Full%20Committee/PPP%20letter%20to%20Govs%2005-14-07.pdf>>

<sup>17</sup> See: Oberstar, J. and DeFazio, P. (2007) “Public Interest Concerns of Public-Private Partnerships” Position Paper, Transportation Research Board. <<http://transportation.house.gov/Media/File/press/PPP%2006-04-07.pdf>>

<sup>18</sup> In a recent editorial, Gov. Paterson, Rendell and Schwarzenegger argue that “By combining government oversight with private-sector efficiencies, we can build more projects; we can build them more quickly; we can improve services for our citizens; and we can lower costs for taxpayers.” See: Huffington Post, “The Moment for Public Private Partnerships is Now”, June 3, 2009. <[http://www.huffingtonpost.com/gov-david-a-paterson/the-moment-for-public-pri\\_b\\_210972.html](http://www.huffingtonpost.com/gov-david-a-paterson/the-moment-for-public-pri_b_210972.html)>

promoting the concept of a Partnerships U.S.A. as a national P3 center of excellence, and has established a Council of Project Finance Advisors (CPFA) to advise in this process.<sup>19</sup>

## **California Experience**

Although California experienced many periods of significant growth in its early years, much of its infrastructure was built in the post-WWII boom period of the second half of the 20<sup>th</sup> century—when most U.S. infrastructure projects were being implemented using the design-bid-build system. Thus the dual system of public works and private franchise was not widely prevalent, ever. Accordingly, most infrastructure in California was funded by a combination of state and federal funds, with state funds raised largely through bond issuances, some underwritten by dedicated revenue streams. As a result, California now has relied exclusively on a single approach to delivering infrastructure, without considering other viable alternatives that have been shown to be effective at other times in U.S. history and in other parts of the world. A related outcome of this history is that California has been less inclined to charge user-fees or other sources of revenues for use of its transportation system.

In the late 1980s California experimented on an extremely limited basis with the private franchise model of delivery and financing, issuing legislation that authorized four projects: two in Northern California and two in Southern California. Both of the Southern California projects have been completed—the most recent being State Route 125, which opened in November 2007. Depending on the constituency to which one speaks, the projects were considered to be successes or failures. In the past two years, several Regional Transport Agencies—including Metropolitan Transport Agency, Metropolitan Transport Commission, Riverside County Transportation Commission, and San Diego Association of Governments—have begun to explore plans to develop projects using the P3 delivery mode.

## **Contemporary Experience in other U.S. States**

Today the private franchise model is one of the modalities that falls under the rubric of P3s and no fewer than 26 states have approved legislation for this mode of procurement. States where substantial P3 activity has emerged in recent years include Florida, Illinois, Texas, and Virginia. The most common transaction formats have been the lease and concession models, with much written about transactions such as the Dulles Greenway, Indiana Toll Road, and Chicago Skyway. There have also been many false starts—the Pennsylvania Turnpike, Midway Airport, and Alligator Alley all made headlines when they failed to reach financial close. Greenfield procurements using the P3 mode have been less common. One exception was in Texas, with an ambitious greenfield program proposed to build an integrated highway, transit, and utility corridor estimated at a cost of more than \$100 bn. The project was blocked as an integrated concept by the legislature in 2007, but individual segments are continuing to move ahead. Several international firms—ACS Dragados, Balfour Beatty, Cintra, Halcrow, SKANSKA—that entered

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<sup>19</sup> See: PRNewswire, “Former Governor Howard Dean and Former Mayor Stephen Goldsmith Launch Council of Project Finance Advisors (CPFA) Working Group”, News Release from McKenna, Long and Aldridge, June 3, 2009. <<http://news.prnewswire.com/DisplayReleaseContent.aspx?ACCT=104&STORY=/www/story/06-03-2009/0005037877&EDAT>>

the U.S. in the early to mid 2000s in hopes of a large P3 market materializing now have tempered enthusiasm, and a few have mothballed their U.S. offices.

In New York State, Governor Paterson created the New York State Commission on State Asset Maximization in October 2008 to explore asset maximization opportunities throughout the State. The Governor’s goals were to identify measures to more efficiently leverage the State’s resources, spur job creation, derive new revenues to maintain and enhance the State’s infrastructure, and encourage economic growth. The Commission’s work spanned various asset classes, including transportation, K-12 education, higher education, energy, social infrastructure, IT and underutilized property. In its Final Report, the Commission identified specific assets suitable for PPPs and recommended potential pilot projects, and recommended a plan to for sustainable asset maximization through the creation of a SAM Board, which would serve as centralized entry point and oversight authority for PPP projects throughout the State.<sup>20</sup>

### Shifting from Public Finance to Project Finance

More often than not the debate about P3s is ideological, and does not delve into the deeper issues. When we discuss P3s, we make a fundamental shift from the world of public finance and public works to the world of project finance and market imperatives. The table below summarizes some of the main differences between the two systems.

#### Box 2. Comparison of Public vs. Project Finance

	<b>Public Finance</b>	<b>Project Finance</b>
<b>Underlying Logic</b>	Social returns; public works	Economic returns; market imperatives
<b>Borrower</b>	Public entity	Single-asset project company
<b>Source of Debt Repayment</b>	Typically general tax collections (except in the case of revenue-based bond issues)	Typically project revenues (except in the case of government guarantees or dedicated tax streams)
<b>Rating Agency Focus in Creditworthiness Assessment</b>	Strength of the tax base and existing levels of indebtedness of public entity <sup>21</sup> ; Limited scrutiny of economics of individual projects (except in the case of revenue-based bond issues, which start to mimic project finance arrangements)	Project revenue forecasts; Debt service coverage ratios; Project contracts
<b>Who Drives the Process?</b>	Elected officials	Financial executives
<b>How are Projects are Selected &amp; Prioritized?</b>	Politicians simultaneously evaluate multiple social, environmental, and	Financial executives identify, rank, and short-list projects in a funnel-

<sup>20</sup> See: New York State Commission on Asset Maximization, Final Report, June 1, 2009. <[http://nysamcommission.org/pdf/SAM\\_FINAL\\_REPORT.pdf](http://nysamcommission.org/pdf/SAM_FINAL_REPORT.pdf)>

<sup>21</sup> In assessing economic base, Moody’s reviews economic growth (with indicators such as retail sales, building permits, and employment data); economic diversity; overall community wealth (property values); and socioeconomic characteristics. In assessing debt factors, Moody’s reviews all the debt for which the issuer’s tax base or citizens are the source of repayment; term structure of debt; and rate of principal retirement. In assessing financial factors, Moody’s considers General Fund balance; growth of revenues and expenditures; and financial performance relative to budget. In reviewing management capacity, Moody’s considers an issuer’s organization; division of responsibilities; professional qualifications; and power to execute its responsibilities. All of these inputs flow into Moody’s calculus for rating local governments. See: Moody’s Rating Methodology for Local Governments, Moody’s Website, Accessed June 14, 2009.

	economic criteria; politicians generally prefer projects that increase jobs, grow the tax base, or reward favored special interests	based process based on greatest risk-adjusted returns
<b>What Happens if Project Runs Over Budget/Schedule?</b>	More tax money is allocated and politicians make excuses; project limps along for years	Equity investors and potentially lenders lose invested capital; project is restructured; sometimes government steps back in and recoups an asset
<b>Exit Strategy</b>	Politicians don't think in these terms; they do not generally realize that infrastructure assets can have economic value; they do not think to strategically develop and sell assets as a way to boost revenues	Financial executives sell assets either individually or in portfolios to pension funds and other institutional investors who need long-term, inflation-linked cash flows
<b>Main Criticisms</b>	Too many white elephants; Parochial and political selection processes; Inefficient; Restrictions on use of bond proceeds; Public entities may not have sufficient resources to manage assets	Too many toll roads; User fees restrict access; Natural monopolies can be abused

*Source:* Author's analysis

Except in the energy sector, few U.S. government agencies, financial institutions, or developers have much if any experience structuring project finance arrangements. The major infrastructure systems in California were built according to the public finance model and are an artifact of the public works mindset. But the public model has increasingly come under pressure. The rise of social spending priorities has constrained infrastructure outlay, assets are reaching the ends of their useful service lives, and present-day fiscal crisis has added new strain. According to Caltrans, there is no longer enough tax money to maintain the current system and to invest in new systems to confront challenges of the 21st Century. Current funding streams and cost structures support one or the other, but not both.

Most people are calling for P3s out of desperation, recognizing that the old system is broken, but not knowing what the new system means. What the shift to P3s means, is that we shift from the world of public finance to the world of project finance. In a world of project finance, projects must be revenue-generating, and if they are not, then the government must permanently allocate a tax stream for maintenance and operations if financing is to be obtained. This forces a shift in paradigms, from one of providing infrastructure as a public service and politicians cutting ribbons to one of only undertaking projects with attractive risk-adjusted return to society – such a shift discourages white elephants and puts a great deal more emphasis on project screening and selection and individual project level economics and structuring to ensure value. For projects that do not have positive economics, the government is forced to explicitly evaluate whether social and environmental benefits make it worthwhile to cross-subsidize from other revenue streams. In summary, the shift to public-private partnerships means also a shift to the greater project-level scrutiny by the finance community of project economics.

**Characterizing the P3 Debate as a Contest of Embedded Social and Professional Identities**

The debate over the merits of the P3 model has been highly contentious and emotional. It has generally been informed by the separate evolution of the public and project finance professions, respectively, with

discrete sets of relationships, resources, and political interests around these professional groupings. Project finance bankers, infrastructure fund executives, P3 transaction advisors (including legal, financial, and technical), and pension consultants who place capital into P3 structures fall into the P3 camp. To make a gross generalization, these individuals typically subscribe to Project Finance International magazine and follow the P3 and infrastructure conference circuits. Public employees, municipal finance bankers, bond insurance representatives, some domestic contractors, and public finance transaction advisors (including legal and financial) tend to be wedded to the conventional model. Individuals within this group typically subscribe to The Bond Buyer magazine and congregate at public finance conferences. Few professionals have functional fluency to work comfortably with both models and to translate between the languages and conventions of the two camps.

An intelligent government should be agnostic to the biases and beliefs of the two “industries”, and instead compete them against one another head to head using objective value for money analyses and audits to find where value for the taxpayer lies. With this kind of competition, research evidence suggests that both public and private sector become more efficient over time.<sup>22</sup>

### **Conventional Wisdom of Tax-Exempt Municipal Financing being Lower Cost.**

One difference between the U.S. and other countries is access to and tax-exempt municipal financing. Many analysts have argued that this difference puts the project finance at a disadvantage in the U.S. However, there are several reasons why the conventional wisdom should be re-examined. The first is that cost of capital is but one component of the overall cost of delivering a complex infrastructure project. When we shift from a "design-bid-build, public finance" model (where private involvement is constrained to the construction contract and investors buying tax-exempt bonds) to a fully private "DBFMO" model (where the private sector performs all aspects of delivering an asset and associated service), then we are shifting entire "delivery configurations" and we can't simply compare costs of financing in isolation. We must compare the all-in costs of the entire configurations. In the latter case, even though the cost of "F" may be higher, efficiencies gained in the "D" "B" "O" and "M" stages may make the all-in lifecycle costs lower in the aggregate. This is where the recent emphasis on "value for money" assessments and audits in the U.K. and Canada leads us.

The second reason to re-examine the conventional wisdom is that tax-exempt borrowing actually carries a higher cost than what appears on the face, due to the tax subsidy provided to municipal bond issuers and investors. There are other reasons as well. The issuance of additional debt, particularly at a time when tax

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<sup>22</sup> Economic studies show that typically when competition is introduced in an industry, innovation and efficiency increase, whether the industry is publicly or privately owned. An example comes from a study of the productivity of Canadian railroads after World War II—once competition was introduced, there was no evidence that the performance of Canadian National Railroad (government-owned) was inferior to that of Canadian Pacific Railroad (privately-owned).<sup>22</sup> The authors of the railroad study conclude that “any tendency toward inefficiency resulting from public ownership was overcome by the benefits of competition.” Yet, defying best practice, California’s transportation sector (among others) is still dominated by public entities that have the equivalent of monopoly power over many segments of the value chain. *See*: Vickers and G. Yarrow, “Economic Perspectives on Privatization,” *Journal of Economic Perspectives*, Spring (1991): 111-132. *See also*: D.W. Caves and L.R. Christensen, “The Relative Efficiency of Public and Private Firms in a Competitive Environment: The Case of Canadian Railroads” *The Journal of Political Economy*, 88/5 (1980): 958-976.

revenues are down, may result in a rating downgrade which would lead to a higher cost of debt. And, in recent months, many municipal and state authorities were struck with unanticipated costs related to the use of complex and poorly understood bond structures.<sup>23</sup> Moreover, some renewable projects receive a tax credit, which makes financing cheaper when done privately. Finally, the use of tax-exempt bonds places restrictions on the types of projects that may be financed as well as the use of bond proceeds.

### **Unresolved Problems and 2<sup>nd</sup> Order Unintended Consequences.**

Proponents of P3s do not typically volunteer the fact that the model does not solve several of the more pressing problems causing California's infrastructure to lapse into decay. Nor do they typically volunteer the fact that there is a whole set of 2<sup>nd</sup> order unintended consequences that result when we use P3s as a tool to solve 1<sup>st</sup> order fiscal deficits and delivery inefficiencies.

In terms of *unsolved problems*, three are critical: (1) the lack of available tax or user fee revenue streams with which to pay back initial financing (whether it be municipal financing or private financing), (2) long, drawn-out, antagonistic, excessively litigious environmental review processes that delay new projects by anywhere from three years to two decades, and (3) social and stakeholder gridlock with thousands of interest groups, NGOs, and national, state, and local governmental entities taking sides and collectively generating a "haze of information and misinformation" that collects-up on the internet where it confuses even the most informed.

With respect to 2<sup>nd</sup> order *unintended consequences*, P3s introduce new governance complexities including (1) potentially reducing flexibility for cross-subsidization (when projects with strong revenue generating capacity are sold-off leaving behind weaker assets that are not financially self-standing), (2) creating possibilities for disputes and renegotiations between public and private sector (when unforeseeable social, political, technological, and economic changes over the 20-50 year concession period make it impossible to create 100% complete contingent-claims contracts and introduce the inevitability of renegotiation<sup>24</sup>), and (3) potentially impairing network continuity (when coherent infrastructure systems are chopped-up into discrete segments and managed by independent operators). Unlike some who believe that the cure is worse than the disease, we believe that these governance challenges can be resolved through careful project selection, institutional design, and oversight. These ideas are discussed in the final section, below.

### **Summary**

Following on the heels of other countries, the U.S. has been moving incrementally towards P3s for two decades. However, never before have fiscal pressures been so great and the likelihood of large-numbers of privatizations so high. As it seeks to resolve short-term budgetary capacity constraints, California has an opportunity to test the value of the P3 model as a supplement to existing models of delivery. California has enabling legislation, strong leadership within the Business, Transport, and Housing Agency, and a

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<sup>23</sup> See, for example: "From Midwest to M.T.A., Pain from Global Gamble," New York Times, 11/1/2008; "Mass Pike Swap Payment a Looming Threat," The Bond Buyer, 1/14/2009.

<sup>24</sup> See: Guasch, J.L. (2004) Granting and Renegotiating Infrastructure Concessions: Doing it Right, The World Bank Institute Development Studies. See also: Orr, R.J. (2006) "Investing in Foreign Infrastructure: The Legacy and Lessons of Legal-Contractual Failure" CRGP Background Paper.

<[http://crgp.stanford.edu/events/presentations/gcr2/Orr\\_Final.pdf](http://crgp.stanford.edu/events/presentations/gcr2/Orr_Final.pdf)>

large backlog of projects. California also has the benefit of being rather late to adopt this model and thus is in a favorable position to draw upon expertise and experience from countries like Australia, Canada and the U.K. and states like Texas, Virginia, Florida, and Illinois. The way forward is with comparators and not with further ideological debate. Unlike the Silicon Valley model of “fail early and fail often”, the challenge of implementing policy is that it is somewhat of a “one shot game” with little margin for error. But, by drawing on lessons of experience, California should be well positioned to select appropriate projects and refine and adapt the P3 model to fit local constraints and conditions and to use it do deliver value for money to the taxpayer.

### III. PENSION FUNDS AS INFRASTRUCTURE INVESTORS—APPROACHES, EVOLUTION, ORGANIZATION & GROWTH PROSPECTS

As the P3 model has advanced, public pension allocations to infrastructure have been growing for more than a decade to the point that infrastructure is being heralded as a new asset class. Investors have been attracted to the asset class by the promise of long-term, relatively stable, and substantial returns matching long-term liabilities. With growing investor appetite, fund managers from banking, industrial, and private equity backgrounds have jumped on the bandwagon bringing to market a cornucopia of fund products.<sup>25</sup> Box 3 summarizes four different strategies being offered in the market today. Historical data on risks and returns is limited, with few scholarly studies.<sup>26</sup> Generally, it is known that project company investments have limited upside, so that “at least six or seven projects out of ten must succeed to generate an acceptable return overall.”<sup>27</sup> Box 4 shows the set of pension fund, sovereign fund, and other institutional investors reported to have allocations for infrastructure.

#### Investment Approaches and Fees

When undertaking infrastructure investments, different pension funds rely to varying degrees on internal staff

#### Box 3. Different Strategies within the Infrastructure Asset Class

Few would argue with the statement that infrastructure underpins all of human economic prosperity. However, in the market today, there is a lack of agreement on what constitutes “investable infrastructure”. Some fund management teams are still defining infrastructure using the old one-size-fits all fixed, physical asset definition—and creating eclectic asset bundles with opaque risk-return profiles. But others in the market are offering more precise groupings. Four discrete strategies are emerging:

1. *Fixed-Income Style Strategies* provide an inflation-linked bond-alternative with investments structured to eliminate market risk and generate predictable flat-line cash flows.
2. *Private-Equity Style Strategies* add value by applying strategic management expertise—i.e. giving older assets a face-lift, expanding service capacity, bundling smaller assets, generating organic growth, initiating a rate-case review, or moving assets to more efficient tax structures.
3. *Development Strategies* bring new assets from concept to reality, navigating the perilous process of permitting, planning, engineering, construction, and commissioning.

Those funds pursuing the latter two strategies will occasionally refer to their model as one of creating “mispriced bonds”—i.e. creating an asset that produces a steady cash flow with NPV that exceeds cost of assembly.

4. *Enhanced Infrastructure Strategies* invest broadly in growth companies that serve the infrastructure industry—i.e. construction, engineering, building materials, heavy equipment, technology, and pre-fabricated components providers—and are being offered as a way to capitalize on unprecedented flows of public dollars into economic stimulus programs worldwide.

Confusion concerning what infrastructure “is” as an asset class exists because different strategies depend on different underlying definitions. The implication for pension investors is the need to understand that infrastructure is at best a heterogeneous grouping and to identify strategies that meet their specific risk-return objectives.

<sup>25</sup> See: Orr, R.J. and D. Shah (2009) Global Infrastructure Executives—Pioneering a New Profession, Project Finance International, Annual Global Infrastructure Report, June 2009.

<sup>26</sup> One recent study identifies only a handful of scholarly publications reporting data on risk and return for infrastructure. See: Beeferman, L.W. (2008) Pension Fund Investment in Infrastructure: A Resource Paper, Occasional Paper Series, Pensions and Capital Stewardship Project, Harvard Law School, No. 3, Dec. 2008.

<sup>27</sup> See: Esty, B. (2002) Returns on Project-Financed Investments: Evolution and Managerial Implications, *Journal of Applied Corporate Finance*, Vol 15, Iss 1. See also: Gatti, S., Rigamonti, A., Saita, F. and M. Senati (2007) Measuring Value-at-Risk in Project Finance Transactions, *European Financial Management*, Vol 13, No 1, 135-58.

versus external third-party consultants for organizational capacity, expertise, resources, decision-making, and performance monitoring. The following *organizational models* are typical:

- **Reliance on Non-Discretionary Consultants.** Some pensions rely heavily on third-party consultants to provide research, design portfolio allocations, provide advice on specific investment decisions, and monitor performance, all on a consulting basis;
- **Reliance on Discretionary Consultant.** Going a step further, pensions may grant authority to a third-party consultant to design and invest a defined portion of the pension asset base on a discretionary basis according to predetermined goals and parameters;
- **Self-Sufficient Internal Staff.** This model puts relatively low reliance on consultants and more emphasis on internalizing within the hierarchy of the pension fund (or within a captive asset management vehicle) a large, skilled, professional investment staff to do research, make portfolio construction decisions, and execute investments;

Of the three models, the use of non-discretionary consultants tends to be more common for larger pension funds with a large enough core staff to coordinate consultants, assemble research, and make investment decisions internally; the second model is common for smaller pensions that lack all but the most basic internal organizational capacity or that wish to enter a specific asset class where expertise is lacking. The large internal staff model, or the so-called “Canadian model” because it is a common approach for infrastructure in Canada (amongst the likes of AIMCo., BCIMC, CPP, and OMERS), is relatively uncommon in the U.S. where public pension plans have a more permanent and symbiotic relationship with their consultants. Under the Canadian model, specialist consultants may still be retained for specific due diligence, legal, audit, or transactional tasks, but there is not a fundamental dependence on them for overall portfolio construction and/or investment decisions and there is no intentional transfer of fiduciary responsibility.

**Box 4. Universe of Pensions & Other Institutional Investors with Infrastructure Interest**

<b>Sovereign Funds</b>	<b>European/Australian</b>	<b>American</b>
Abu Dhabi Investment Company (ADIC) - UAE	AMP Capital Investors	Alberta Investment Management Corporation (AIMCo)
Alaska Permanent Fund - US	APG (All Pensions Group) - Netherlands	Arizona State Retirement System
Alberta’s Heritage Fund – Canada	British Airways Pension Investment Management	Boilermakers & Blacksmiths National Pension Trust
Australian Future Fund	Guernsey Financial Services Commission - European	British Columbia Investment Management Corporation
China – Africa Development Fund – China	HESTA Super Fund - Australia	Caisse de depot et placement du Quebec
Government Investment Unit (Pusat Investasi Pemerintah (PIP)) - Indonesia	Industriens Pension - Denmark	California Public Employees Retirement System (CalPERS)
Government of Singapore Investment Corporation –	Irish National Pension Funds Reserve	California State Teachers’ Retirement System (CalSTRS)

Singapore		
Government Pension Fund – Global - Norway	Network Rail	Canada Pension Fund
Investment Corporation of Dubai - UAE	Pensioenfonds Zorg en Welzijn (PGGM)	Chicago Teachers Pension Fund
Khazanah Nasional – Malaysia	Pensions Denmark	Cincinnati Retirement System
Libyan Investment Authority	PGGM - Netherlands	Illinois State Board of Investment
Mudabala Development Company – Abu Dhabi	Police Superannuation Scheme (PSS) - Australia	Illinois Teachers’ Retirement System
Mumtalakat Holding Company – Bahrain	Rail Pen - UK	Kansas Public Employees Retirement System
National Pensions Reserve Fund – Ireland	Samsung Life Insurance	Labors International Union of North America
New Zealand Superannuation Fund	State Annuities Superannuation Scheme – Australia	Missouri State Employees’ Retirement System
Oil Stabilization Fund – Iran	State Authorities Non-contributory Superannuation Scheme (SANCS) - Australia	Municipal Employees Retirement System of Michigan
Public Investment Fund – Saudi Arabia	State Superannuation Scheme (SSS) - Australia	New York City Retirement Systems
Qatar Investment Authority	Swiss Re	Ontario Municipal Employees Retirement System (OMERS)
State Capital Investment Corporation - Vietnam	UniSuper - Australia	Ontario Teachers’ Pension Plan (OTPP)
State Oil Fund – Azerbaijan	Wellcome Trust - UK	Operating Engineers Central Pension Fund
Strategic Investment Funds – France		San Bernadino County Employees’ Retirement Association
Temasek Holdings – Singapore		Teacher Retirement System of Texas
		Washington State Investment Board
		Western Conference of Teamsters Pension Trust Fund

**Source:** Author’s research, 2009

In addition to variations in organizational models, pension funds can select from a variety of infrastructure *investment styles*:

- **Direct Investment.** Pensions can invest directly in equity or debt of a single-asset project-company (e.g., Dallas Police and Fire’s recent bid for a 10% equity stake in a Texas toll road);

- **Unlisted Funds.** Pensions can invest in private infrastructure funds that aggregate equity (and sometimes debt) stakes in single-asset project companies that are financed on a project finance basis (e.g., Alinda Capital);<sup>28</sup>
- **Co-Investments.** Pensions can invest in infrastructure assets alongside fund managers. Some General Partners require that co-investors also be investors in the fund, while others do not. The fees and responsibilities of co-investors are determined on a case-by-case basis.
- **Listed Funds.** Pensions can invest in publically-listed infrastructure funds trading on a stock exchange that like their unlisted peers are typically established to aggregate stakes in project companies (eg. Macquarie Power Fund);
- **Fund of Funds.** Pensions can invest in a highly diversified “infrastructure fund of funds” that in turn makes investments in 8 to 30 listed and unlisted infrastructure funds and invests directly in project companies (e.g., Pantheon Infrastructure Fund of Funds);

Typically, pension funds will mix and match organizational models and investment styles.

Different approaches are associated with different management fees. Consultant fee structures come in all stripes and varieties. Infrastructure funds offering ready-made fund products typically charge a 2% management fee and a 20% carried interest over an 8% performance hurdle (the infamous ‘2 & 20’). Fund of funds typically charge another layer of management fees ranging from 50 to 100 basis points plus a 10% carried interest; their value-add is typically research-based and involves sorting and ranking fund managers and reporting on performance. Placement agents and investment banks take fees when capital is placed. The Canadian model is well-regarded because it reduces fee leakage to all of these intermediaries in the supply chain, but staffing costs are of course higher. And the Canadian model is only feasible for relatively large infrastructure programs with scale and ability to pay competitive market-based salaries. Borealis is reported to have more than 50 staff, in order to manage a 20% infrastructure allocation from OMERS amounting to more than \$8 billion. CPP is reported to have a similarly large staff for its multi-billion infrastructure allocation. The management expense ratio for this approach is reported to be less than 50 basis points.

There are political, administrative, and historical reasons why the “direct, large-internal staff” approach is not widely utilized in the U.S.—some of these may exist for logical reasons and others are probably artifacts of happenstance. Much of it has to do with the dominance of the tax-exempt bond model in financing infrastructure, which targets retail rather than institutional investors. As already noted, generally U.S. pension plans are organized so as to rely on high-cost consultants and fund managers. However, current discussions in the market indicate that several U.S. pension funds are exploring

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<sup>28</sup> Unlisted infrastructure funds may have significant “blind-pool risk” at the time of investment meaning that the pension fund is investing in a manager who is promising to assemble a diversified portfolio of investments according to pre-defined criteria, e.g. sector, geography, development stage, financing style, etc., but with no guarantee that such assets will be available at attractive pricing or even at all. Pension funds may decide to sell their stakes in unlisted infrastructure fund before maturity of the 10 year closed-end investment period, but liquidity is not certain on the secondary market.

possibilities of pooling capital to achieve the economies of scale of the Canadian model. Rather than continuing to “buy” ready-made infrastructure fund products from fund managers that show up knocking on their doors, the idea is that a group of funds might band together and try to dictate terms to the market, by offering, say, 75 basis points plus due diligence expenses.

## **Evolution of Pension Appetite for Infrastructure**

Taking a 50-year view, public infrastructure spending has been displaced by many social priorities (education, healthcare, crime prevention). Workers who represent these other social priorities have had their pension plans swell up to very high volumes. Today, these stocks of pension capital are looking to step into infrastructure to take advantage of economic opportunities that decades of neglect and congestion on the public side have created.

In the mid-1990s, pension plans were growing rapidly and were recognized as a potential source of capital to renew the nation’s deteriorating urban environments.<sup>29</sup> Debate was fierce during the early-1990s when Secretary of Labor Robert Reich (Clinton administration) suggested that pensions invest in low income housing alongside the Federal Government’s \$20bn “Rebuild America” program, with the view that pensioners would gain social, ancillary, and collateral benefits of job creation and economic growth in addition to making an attractive risk-adjusted return.<sup>30</sup> Economically-targeted investing (ETI), as it became known, was criticized as flying in the face of ERISA and the fundamental tenant of fiduciary responsibility, which is that pension trustees seek “solely” and “exclusively” to maximize returns for pensioners. The ETI debate spawned mountains of reports, and although ultimately ETI programs were approved, the concept has remained controversial. Empirical research is inconclusive. Some studies show that conflicts of interests associated with economically-targeted investment schemes and country and/or industry restrictions result in lower investment returns; yet, other studies conclude that these effects are insignificant.<sup>31</sup>

Since the mid-1990s, the world has changed significantly with pension funds becoming more sophisticated and more effective at manager selection and diversification.<sup>32</sup> Some infrastructure investment has occurred on an ETI basis, but for the most part infrastructure investment has occurred on a globally opportunistic rate-of-return basis. A whole class of new infrastructure managers has risen up that specializes in aggregating investable infrastructure opportunities. Pioneering infrastructure funds formed

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<sup>29</sup> See: HUD Unveils Plan for Pension Funds to Invest in Housing," Wall Street Journal, August 3, 1994, p. A2. See also: Reich, R. "A Moral Workout for Big Money," New York Times, September 11, 1994, sec. 3, p. 9.

<sup>30</sup> See: Moore, C.C. (1995) Whose Pension is it Anyway? Economically Targeted Investments and Pension Funds, CATO Policy Analysis No. 236. <[http://www.cato.org/pub\\_display.php?pub\\_id=1097&full=1](http://www.cato.org/pub_display.php?pub_id=1097&full=1)>

<sup>31</sup> For a study that shows no significant association between in-state and economically-targeted investing, see: Mitchell, O.S & Yang, T., (2005) “Public Pension Governance, Funding, and Performance: A Longitudinal Appraisal. Pension Research Council WP 2005-2. Available at SSRN: <<http://ssrn.com/abstract=755045>> For a study that finds a negative association between in-state and economically targeted investing, see: Coronado, J.L., Engen, E.M, and B. Knight. (2003), “Public Funds and Private Capital Markets: The Investment Practices and Performance of State and Local Pension Funds”, *National Tax Journal*, Vol. LVI, No. 3, 579-594.

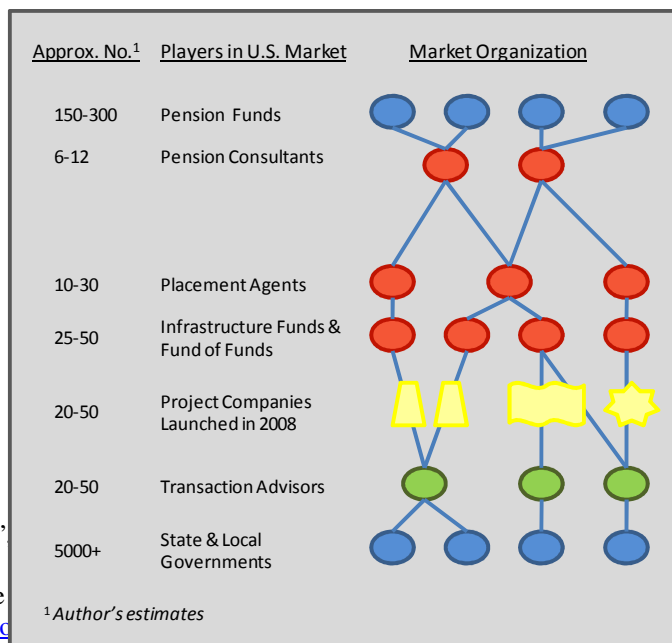
<sup>32</sup> Personal conversations with Robert Reich, former U.S. Secretary of Labor.

in the mid-1990s began to approach government agencies worldwide looking for assets that penciled out on a risk-return basis.<sup>33</sup> Their cold calls were greeted openly, as developed country governments were buckling under the load of social spending priorities and developing countries were being encouraged by the multilaterals to bring in the private sector. Several infrastructure funds formed around these early opportunities were successful. By the early 2000s, the older concept of project finance had morphed into the new concepts of P3s and infrastructure, widening the purview of the discipline from primarily energy and natural resources to one also including transportation and social infrastructure, both broad and heterogeneous buckets. With the convergence of these trends, and the steady growth of the stock of pension capital throughout the 1990s, the birth of widespread pension investment in infrastructure was born. In the 2000s, the growth of the industry was fueled with further with the availability of cheap, covenant-light, long-dated debt financing and acceptance by lenders of high rates of leverage. These conditions enabled many infrastructure assets with low unlevered return on asset (ROA) projections to be structured with debt financing to generate acceptable rates of return on investment. In the wake of the financial crisis, it is unclear how the infrastructure market will develop in the next round of the business cycle. There is a lot of excitement about the asset class, but a scarcity of debt financing makes it difficult to get deals closed and assets with low ROA projections may no longer be viewed as attractive in the absence of leverage to enhance returns.<sup>34</sup>

### Current Market Organization

A schematic overview of the organization of the market for pension investment in infrastructure is presented in Box 5. At the top of the food chain are the pension funds (eg. CalPERS, NYSERS). Pension consultants (eg. Meketa Investment Group, PCA), often described as the “gatekeepers, advise the pension funds on their infrastructure investment strategies. Infrastructure funds (eg. Meridian, Starwood Energy Capital) are pooled investment vehicles serving multiple investors, typically funded upfront under a limited partnership structure with a 10 to 12 year fixed lifespan, and typically with a permanent staff for sourcing, conducting due diligence, structuring, monitoring, and exiting transactions. Placement agents (eg. Helix Associates, Probitas Partners) specialize in assisting infrastructure funds in arranging meetings and raising investment from the pension funds and their consultants in accordance with regulatory and compliance requirements. An infrastructure fund that closes at \$1bn will typically raise capital from 10 to 30 different pensions and other institutional investors. Once an infrastructure fund

**Box 5. Organization of Market for Pension Investment in Infrastructure**



<sup>33</sup> See: Orr, R.J., (2007) “The Rise of Infra Funds” *International, Global Infrastructure Report*.

<sup>34</sup> “Politics and the Financial Crisis Slow the Drive” <http://www.nytimes.com/2009/06/05/business/ecc>

reaches financial close, its primary task is to put capital to work by identifying opportunities to buy attractively priced infrastructure assets from governments, corporates, and other funds that fit its mandate. Exclusive, sole-sourced transactions are preferred, but infrequent. Most assets are bought at public auction. It is rumored that Macquarie Bank, one of the largest infrastructure platforms, has more than 500 “deal seekers” in the U.S. and more than 1200 in other countries. Their role has been to dislodge assets.

Government agencies seldom have the capabilities to structure infrastructure divestitures or greenfield procurements on their own, and almost always retain a transaction advisory team to prepare projects and run auctions. A transaction advisory team for a toll road transaction typically includes a market consultant to forecast demand scenarios, an engineering consultant to assess technical risks, a financial consultant to model cash flows, a legal consultant to draft the concession agreement, and occasionally a public relations consultant to communicate plans within and outside of government.

### **Growth Prospects**

In 2007, U.S pensions were valued at just over \$15 trillion (109% of GDP) and represented 60% of pension capital held globally.<sup>35</sup> If 5-10% of this amount were invested in infrastructure, this would equate to \$750 billion–\$1.5 trillion. Levered conservatively at 60% debt to equity, this would amount to \$1.9–\$3.8 trillion of overall investment for infrastructure projects.

OECD and World Bank research shows that most developed countries invest in infrastructure at the rate of 3.5% of GDP, which for the U.S. in 2007 amounted to \$490 billion. Assuming that 15% of infrastructure transactions (\$73 bn per annum) could be delivered via the public-private partnership format (which is what the UK and Canada have concluded to be the appropriate mix of conventional and P3 delivery), then the \$1.9–3.8 trillion that is available could provide for a staggering 26-51 years of public-private partnership investment needs, assuming zero growth of the pension capital stock. Despite the very high volume of capital available, there are plenty of factors limiting market growth. Below I review briefly issues on both the supply side—i.e. institutional investors who are prepared to invest in projects—and demand side—i.e. government agencies who have projects in need of capital.

*Supply of capital.* Presently, it appears that there is more equity capital available than there are project opportunities to exploit or debt financing to go along with it. However, several factors could cause available equity capital to dry-up and limit further growth. First and foremost is *lack of education* among pension trustees. Infrastructure is a complex and heterogeneous asset class and it is important for pension trustees and staffs to have *realistic expectations* concerning infrastructure strategies and implications for risk-and-return. For example, unrealistic return expectations promised by the first wave of infrastructure funds could cause fallout for some pensions. Moreover, given the relatively *low ROAs* of many infrastructure assets and without continued availability of long-term debt financing, it may be more difficult to structure attractive returns to equity on an ongoing basis. This brings us to the issue of fees,

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<sup>35</sup> The ‘P11’ countries covered in the study included Australia, Canada, France, Germany, Hong Kong, Ireland, Japan, Netherlands, Switzerland, UK and US; overall these countries had US\$24,932 bn in pension capital, or 82% of the collective GDP of these countries. See: Watson Wyatt Worldwide. (2008) Global Pension Assets Study, January, 2008. <<http://www.globalaging.org/pension/world/2008/global%20pension%20assets%20study.pdf>>

which further reduce the attractiveness of holding infrastructure assets in a pension portfolio. While the current organization of the industry seems to permit *unnecessary fee leakage*, it is also the case that many public pensions have a difficult time doing direct investing because they are unable to pay competitive salaries and depend every year upon the legislature’s approval of their budget for staffing. Next, as we learned with the ETI uproar in the mid-1990s, it is important that state legislatures not try to force pensions to invest in the home state. *Politicization of project selection* conflicts with fiduciary responsibility and casts a cloud over infrastructure investing as a whole. *Labor issues* also tend to be at the fore. The dilemma for public pension plans is that private infrastructure projects may potentially marginalize public employee jobs.<sup>36</sup> Several pensions, such as CalPERS, have dealt with this dilemma by issuing a policy or responsible contractor program to encourage fair wages, benefits and working conditions for labor.<sup>37</sup>

*Demand for capital.* On the demand side of the market, most government ceding authorities confront a *lack capacity, knowledge, and resources* to use the P3 procurement mode effectively and to bring their projects to market. Even worse, they don’t know what they don’t know—i.e. they tend not to realize that using P3 procurement necessitates a whole new set of *public management skills* in order to create and sustain partnership arrangements internally and externally. As a result, *project preparation* tends to be done poorly across the board. Moreover, across the U.S. *fragmentation of the public sector* is high with dozens of federal agencies, 50 state governments, and 1000s of city, county, and other local governments. As each of these entities embraces P3s, they tend to re-invent the wheel and repeat the same mistakes. *False starts* are fairly typical and *market inefficiency* is a problem. Since the financial crisis, a *lack of debt financing* has made it difficult to bring projects to financial close and it is not yet clear if and when this problem will resolve itself. Finally, parties who benefit economically by maintaining the status quo of conventional public-finance, design-bid-build delivery have a history of mounting *hostile opposition* in state legislatures and a credible counterweight to this opposition has not yet emerged—although if the pension funds were to organize themselves that could be a prospect.

#### IV. THE WAY FORWARD

Up to this point in the paper, we have discussed what “is”—California’s huge fiscal deficits; international experiences with public private partnerships; the P3 value proposition of faster, cheaper, better in some cases; the U.S. debate on this subject at state and national levels; the incremental move of pension funds into infrastructure investing; and the organization of the U.S. infrastructure market from top to bottom.

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<sup>36</sup> Here, principles of fiduciary responsibility introduce a seeming double-standard. On the one hand, they restrict a pension from selecting sub-standard projects in order to create *positive side-benefits* for pensioners in terms of job creation and regional economic growth. But the principle is not symmetrical. The principle does not unconditionally enable pensions to invest in attractive projects if those projects have a *negative side-impact* on pensioner jobs.

<sup>37</sup> CalPERS has a responsible contractor program in place, which it initiated in 1994 for its investments in real estate and more recently has expanded to cover infrastructure. The policy has been amended several times, applies to investments that are more than 50% CalPERS-owned, and is intended to encourage equitable salaries, benefits, and working conditions.

In this final section, we shall shift to discussing the “ought”. Where “ought” we go from here? How “ought” governments proceed? How “ought” pensions proceed? How “ought” the market be organized?

The recommendations set forth are subjective, based on my vantage point at Stanford University as an educator, public policy advisor, and consultant in the P3 arena and based on my specific experiences observing the P3 debate for many years; attending commercial and private conferences; advising host governments at local, state, national, and international levels; participating in meetings with labor unions, public works directors, and P3 agency heads; reviewing scholarly literature; and actively studying P3 governance regimes and institutional arrangements across countries and sectors. Issues remain complex, beliefs continue to evolve, and alternate points of view are welcomed.

As a caveat, the entire discussion that follows hangs on the hypothesis that there is a quantifiable value proposition for U.S. government agencies in reconciling the public works model with market imperatives as achieved in other Anglo countries.

### **The Way Forward for Government Agencies**

*Project screening and delivery mode selection.* Ensuring best value to the taxpayer in infrastructure selection and delivery has two core components. The first lies in selecting the best projects, and the second lies in delivering projects in the most efficient format.

Step one is to identify the complete universe of project concepts within the jurisdiction and apply screening criteria to identify, rank, and prioritize those that pencil out on a cost-benefit basis<sup>38</sup> and that achieve local, state, and national goals. Step two is to configure the allocation of delivery responsibilities—i.e. “D” “B” “F” “M” and “O” functions—across the public and private sector in the format that ensures the lowest net lifecycle costs of delivery.

Los Angeles Metro now has a consultant under retainer to run project screening and selection for transportation and transit projects in Los Angeles County, with an emphasis on the two steps discussed above (see Appendix 1). Project screening and selection criteria that have been discussed as part of the PIAC process include: (a) environmental clearances, (b) regional political support, (c) viability of plan of funding/financing, (d) positive cost-benefit to society, and (e) project size. The process that PIAC will adopt to assess value for money of greater private sector participation in delivery is still being determined, but it will likely involve a consultant to prepare the report with review by the CTC and/or legislature.

Critics will note that project screening and value for money assessment is more of an art than a science. There are several comebacks. Clearly, performing an analysis with limited data is always better than not doing any analysis at all. Moreover, having a screening and selection process forces us to articulate our goals and enables relative rank ordering of project concepts against those goals, which is a big

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<sup>38</sup> One common heuristic used in cost-benefit analysis is the Kaldor-Hicks criterion, which states that there is a net welfare benefit associated with a policy alternative if the winners from an initiative can compensate the losers and still improve their lot. Federal financing for any capital project should pass this test. *See*: Gramlich, E. (1998) *A Guide to Benefit-Cost Analysis*. Waveland Press, Prospect Heights, Illinois.

improvement over what we do today. Finally, this process shifts us closer to merit-based decision-making and away from parochial, political decision-making.

Selecting the best delivery mode can be a contentious process. Many groups hostile to the P3 model have an economic interest in protecting the status quo; and many groups promoting the P3 model have an economic interest in seeing its diffusion. Further debate between self-interested parties about the merits of either model will be unproductive. The debate is complex and has many moving parts. My advice is to set the debate aside, and empower engineers and accountants to start performing value for money assessments. Finding disinterested consultants with integrity and objectivity to prepare these reports must be a priority. To ensure accountability and transparency, the reports should be audited by an uninterested third party and published on a website.<sup>39</sup> Mandatory VfM assessments on all projects of greater than, say, \$25mn, is something that the taxpayer should demand.

*Programmatic Approaches to P3.* The majority of U.S. P3s have been completed on a one-off, *ad hoc* basis, without building up longer-term programs. The promise of PIAC and the New York Asset Maximization Board lie in developing permanent capabilities within government to screen, structure, and monitor P3 arrangements that benefit the public interest. A number of prominent P3 failures can be traced back to an attitude within government that P3 arrangements are a way to pass the buck, abrogate responsibility, and shift headline risk to the private sector. But in reality, a capable and committed public sector is critical for P3 success. As described by Clive Harris:

*“... if private provision is to be sustainable and to benefit consumers of infrastructure services, governments will have to address many of the problems overlooked in the initial rush towards private participation”<sup>40</sup>*

Van Slyke offered similar sentiments in his critique of public sector contracting for services:

*“... requires personnel with contract-management experience, policy expertise, negotiation, bargaining, and mediation skills, oversight and program audit capabilities, and the necessary communication and political skills to manage programs with third parties in a complex political environment”<sup>41</sup>*

Involving private companies does eliminate the need for public capacity; rather it creates a need for new types of capacity as the public sector roles shifts from “rowing” to “steering”. The public sector must stay at center; it must learn to be the “conductor” to orchestrate delivery from a network of specialized actors.

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<sup>39</sup> For example, see: Value for Money Report, Autoroute 25, Pricewaterhouse Coopers, November 5, 2007. Especially note the letter from Fairness Auditor André Dumais, Eng. on page 4 & 5 of the PDF document. <[http://www.ppp.gouv.qc.ca/admin/Fichiers/Autoroute25-AJaune\\_29nov%20\(2\).pdf](http://www.ppp.gouv.qc.ca/admin/Fichiers/Autoroute25-AJaune_29nov%20(2).pdf)>

<sup>40</sup> See: Harris, C. (2004) Private Participation in Infrastructure in Developing Countries, World Bank Working Paper No. 5. <<http://rru.worldbank.org/Documents/PapersLinks/1481.pdf>>

<sup>41</sup> Van Slyke, D.M. (2003) The Mythology of Privatization in Contracting for Social Services, *Public Administration Review*, Vol. 63, No. 3, pg. 296-315.

To be an effective conductor, the public sector must internalize a whole new set of public management skills.<sup>42</sup> Some of these skills are as follows:

- Doing project screening & selection against goals,
- Using value for money reports to objectively determine best delivery configurations,
- Ensuring high quality project preparation,
- Entering into long-term concession agreements,
- Managing public relations to sustain the partnership externally,
- Sustaining the partnership internally over multiple changes in government,

Even under DBFMO procurements, where the primary delivery tasks are passed to the private sector, the public sector still has an important role to play. It can take hundreds of hours and millions of dollars to develop a bankable project that is ready for private sector bidders. Typically a cadre of specialized consultants must be involved. It is necessary to prioritize between a host of alternative projects, define a feasible project concept, ensure that project fits within the regional plan, articulate project output targets, hire technical, financial, environmental and other advisors to prepare project documents, pull together various studies into a project information memorandum, draft a request for proposals, determine the proper bid variable(s), authorize bidding documents, manage the bidding process and chair a bidders meeting, communicate plans to the public, enlist support within government, manage controversy and criticism... and the list goes on and on!

One of the primary reasons for the infrastructure deficit in so many emerging countries is not a lack of capital (billions of dollars are available seeking bankable projects) but rather a lack of capacity and expertise on the part of public sector to "prepare" projects for private sector developers. If project preparation is done poorly, and deals fall apart, host governments can quickly spoil their reputations as seekers of investment.<sup>43</sup> During the 1990s, the emphasis of the World Bank and other multilateral institutions was primarily focused on setting-up regulatory bodies in emerging economies to oversee privatizations and the fundamentals of building capacity for project preparation to catalyze new value-generating projects was largely ignored.

Historically, a hodge-podge of market participants have sought to fill the project preparation void in the market, including investment banks (like UBS, Morgan Stanley, etc), advisory teams at accounting firms (like KPMG, PWC, etc), management consultants (like McKinsey, Bain, etc), technical advisory groups within multilateral institutions (like IDB, ADB, etc), project finance advisory practices within commercial banks (like Mizuho, RBC, etc), business development groups at contractors (like Bechtel, PB, etc), and deal-flow sourcing teams at infrastructure funds (such as Macquarie, Babcock, Actis, etc). A smart public

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<sup>42</sup> See: U.N. Economic Commission for Europe, (2005). Governance in Public Private Partnerships for Infrastructure Development. < <http://crgp.stanford.edu/events/presentations/gcr2/UN%20PPP%20guidelines%2005.pdf>>

<sup>43</sup> Atanu Chakraborty, who is now the head of the ports sector in Gujarat, articulated this problem in a short paper back in 2001. He had witnessed the failure of dozens of projects in India due to a lack of public sector capacity to "prepare" projects, or, as is sometimes said in India, to "cook" projects so that they are ready for private sector bidders. See: Chakraborty, A. (2001) Project Preparation: The Cinderella of Private Sector Participation (PSP), India Infrastructure Report, pg. 76-77.

<[http://crgp.stanford.edu/events/presentations/India/Chakraborty\\_project\\_preparation.pdf](http://crgp.stanford.edu/events/presentations/India/Chakraborty_project_preparation.pdf)>

sector is one that coordinates all of the available skills from the market, and ensures that there are no gaps. For some tasks, the government may have a comparative advantage over the private sector—such as land assembly, policy formulation, and oversight of long-term regional development plans. In recent years, a number of jurisdictions have recognized that project preparation is an important but difficult task and have put in place P3 agencies to integrate engineering, legal, finance, accounting, tax, environmental, social, and public policy knowledge and skills. Successful integration of these skills is critical in preparing successful P3 projects! New programs like PIAC and the New York Asset Maximization Commission offer the potential to get beyond one-off, ad hoc approaches to more programmatic approaches such as these.

*Structuring Projects to Smoke out Margin Where Private Capital Flows In.* Many public projects are not viable on a project finance basis. This presents an interesting dilemma for attracting pension investment, because fiduciary responsibility requires that pensions obtain attractive risk-adjusted returns. Theoretically, there are two solutions. The first is to override the principles of fiduciary responsibility; for example, the state legislature may step in and insist that state pension plans invest in local projects to create jobs and regional economic growth. The problem with economically targeted investing, is that pension managers are put in an awkward situation of having to invest in projects that may be subpar relative to other opportunities, with no end in sight to the potential politicization of investment decisions and circumvention of sound underwriting principles.

The second solution, which is much more defensible, is for the government to develop through entities like PIAC expertise in structuring projects to tease out the level of risk-adjusted-return that is just high enough to attract private capital to flow in. If user fees are insufficient to generate an attractive return, the public sector can step in and allocate tax dollars to plug the gap. Viability gap funding and availability payments are two approaches; the former involves an upfront grant and the latter involves an annual grant paid by the public sector to the service provider subject to performance levels. Although such grants must be funded out of tax dollars, they do leverage government resources much further.

## **The Way Forward for Pensions**

At least two opportunities lie ahead for pensions as the infrastructure market matures:

*Becoming More Knowledgeable of Politics.* First, pensions can do more to understand the controversial nature of the PPP debate and become more active in it. Recent attempts to develop P3s in Texas, New Jersey, and Pennsylvania have all resulted in embarrassing failures for the political champions who were behind these schemes and in the case of Texas, more than five private sector firms spent more than \$10 million dollars apiece in project development expenses only to have the legislature put the entire program in jeporady.<sup>44</sup> Relatively few pension trustees or consultants have a background in planning, public policy, urban revitalization, engineering, or design and therefore this group of individuals at the top of the food chain with money under management is at a disadvantage in understanding the nature of project preparation risks. With greater knowledge, pensions could be more active in shaping these risks.

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<sup>44</sup> Private conversation with several market participants who have been active in Texas.

*Reducing Fee Leakage.* Fees are prohibitive if the supply chain shown in Box 5 grows too long with too many intermediaries.<sup>45</sup> Today, several managers are offering vehicles that reduce fees (e.g. AIMCo., Borealis, CP2, QIC etc.) Recent reports suggest that several U.S. pension plans are planning to launch a vehicle to make direct investments and thereby dictate terms to the market.<sup>46</sup> It is unclear as of yet how a pooled vehicle would formulate its strategy given differences in strategic orientations, diversification targets, and exposure limits of different pension plans. Nor is it clear how such a vehicle would deal with issues such as governance, fees, compensation of investment professionals, voting and co-investment rights for smaller LPs, etc. If those issues prove intractable, pensions can of course still club together on a deal-by-deal basis to explore common opportunities, make direct co-investments, and share due diligence expenses. The primary reason that more U.S. public pensions do not take the direct approach themselves is that they are limited in offering competitive salaries and some face difficulties in getting annual operating budgets approved from their legislatures. Liquidity risk may also factor into the equation.

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<sup>45</sup> Annual fees typically amount to 0.25-0.5% paid to discretionary pension fund consultants, 1.5-2% paid to infrastructure funds, and 0.5-1% paid to infrastructure fund of funds. One-time fees typically include 1-5% paid to placement agents at the time a pension plan invests equity in an infrastructure fund and 1-5% paid to various intermediaries and transaction advisors who structure deals on behalf of the host government agencies, with the wide range of variability associated with transaction size. Commercial banks also earn commitment fees in the range of 0.5-1% on debt placements.

<sup>46</sup> See: Jacobius, A., "Stimulus Bill May Help CalPERS", *Pensions & Investments*, Feb. 23, 2009. <http://www.pionline.com/apps/pbcs.dll/article?AID=/20090223/PRINTSUB/302239953>

## **APPENDIX 1 LA METRO SCOPE OF WORK**

The Los Angeles County Metropolitan Transportation Authority (Metro) is seeking the services of a Management Consultant/Program Manager team (Contractor) to provide specialized and expert advice in the development of a public-private partnership (PPP) program and delivery of high priority transit and highway transportation projects in Los Angeles County, California. The Contractor shall provide the PPP expertise and resources necessary in all disciplines critical to successful PPP transportation project delivery, to assist Metro in identifying and potentially selecting viable PPP transportation projects and advancing these projects through the PPP program.

Services and expertise provided by the Contractor shall include, but not be limited to, the following: strategic planning, program management, financial advice (including maximizing leverage of Metro's existing and anticipated future revenues and funding sources), technical and business analyses and advice, legislative analysis and remedies, feasibility and risk assessments, strategic marketing and stakeholder outreach, state and federal procurement requirements, project implementation and operations management (if requested), and advice regarding the resources necessary for the development of Metro's multi-disciplinary PPP team (Services).

Contractor's technical and engineering expertise will not be required for development of Preliminary Engineering or Final Design-level project development plans, nor will Services include assumption of federal or state environmental clearance efforts. Metro will provide legal services and expertise, but will look to Contractor to assist with necessary legislative remedies. Metro will likely engage other consultants to provide services not included in this Statement of Work, and Contractor will be expected to coordinate Services with efforts of Metro staff and its other consultants.

### **BACKGROUND**

As is the case throughout the U.S., Los Angeles County is facing a significant shortfall in transportation funding needed to meet the mobility needs of over 12 million people by the year 2030. We have many critical transit and highway projects identified in our Draft 2008 Long Range Transportation Plan (LRTP) presented to the Metro Board in January 2008, but don't foresee funding available to build everything. Our January 2008 Draft Plan recommends building six major transit corridor projects, adding 160 carpool lane-miles to fill existing gaps and providing freeway interchange improvements. The draft plan also identifies strategic unfunded plan projects, broken down into two tiers. The first tier includes projects that have significant analysis. The second tier identifies other projects that have little study completed, but may prove to provide mobility benefits upon further analysis. The January 2008 Draft LRTP identified funding sufficient to complete the recommended projects within the next 25 years and recognized that new revenue sources are needed before any of the strategic unfunded projects could be considered, or any of the funded, recommended projects could be accelerated.

In November 2008, Los Angeles County voters approved Measure R, a half-cent sales tax increase that is expected to provide the local resources to finance new transportation projects and accelerate those already in the pipeline. Over 30 years, it is projected to generate \$40 billion for congestion relief projects. As a result of Measure R, some of the January 2008 Draft LRTP Strategic tier 1 and 2 projects now have full or partial funding. The projects and programs contained in Measure R are detailed in the Measure's Expenditure Plan. With the passage of Measure R, the January 2008 Draft LRTP financial plan is

currently being updated, and project costs and schedules are being revised. The updated LRTP will be presented to the Metro Board of Directors at its January 2009 meeting.

Since November 2007, our Board has taken various steps to develop a Framework and Work Plan to initiate the consideration of PPP as an alternative project delivery method for some of these priority projects and further our commitment to improve our County's transportation system. The Board has adopted the PPP Framework and requested further exploration and evaluation of the potential use of PPP as a project delivery model, to enhance our ability to meet the County's transportation goals. The PPP program is guided by the goals of:

- Improving mobility by accelerating project delivery;
- Utilizing cost effective contracting and construction methods;
- Providing projects which will be an integral component of the existing transit and highway infrastructure;
- Providing operations and maintenance which meet or exceed certain established performance criteria; and
- Allocating risk fairly and appropriately among all partners.

The objective of Metro's Workplan and the purpose of this solicitation, is to obtain assistance in identifying PPP projects for Metro Board consideration and potential implementation, and recommendations for the development of Metro's PPP organizational structure and business plan.

#### **AGENCY PROVIDED INFORMATION**

General information about Metro's Public-Private Partnership Program, including the Board-adopted Framework and Board Motions and Reports, as well as the January 2008 Draft LRTP, can be obtained at Metro's website, [www.metro.net/projects\\_studies/ppp/default.htm](http://www.metro.net/projects_studies/ppp/default.htm). The website provides links to transit projects for which Metro has recently initiated preliminary stages of environmental clearance. Some highway projects are currently being studied by the California Department of Transportation (Caltrans). Other projects in our "Strategic" list have no current study information available, but may have been the subject of previous planning studies.

Following information is available at [www.metro.net/board/mtgsched.htm](http://www.metro.net/board/mtgsched.htm)

- Metro Board meeting schedule and agenda

Following information is available at [www.metro.net/projects\\_programs/ppp](http://www.metro.net/projects_programs/ppp)

- Metro Board adopted PPP Framework, Work Plan and Project Suitability Screening Criteria
- Current status of planning studies

Following information is available at [www.metro.net/projects\\_programs/lrtp](http://www.metro.net/projects_programs/lrtp)

- Lists of approximately 47 Recommended and Strategic Unfunded Tier 1 and 2 transit and highway projects identified in our January 2008 Draft LRTP, pages 26 (Figures L and M), 30 (Figure P) and 31 (Figure Q). Estimated costs for the Recommended (priority) projects are in Figures L and P.
- Matrices of performance analyses of the Strategic Unfunded Tier 1 and 2 projects, included in the January 2008 Draft LRTP Technical Document, pages 97 (Figure 5.24), 98 (Figure 5.25), 99

(Figure 5.26) and 100 (Figures 5.26 and 5.27). Estimated costs for the Unfunded projects are in Figures 5.24 and 5.25.

- Summaries of Metro funding sources, “Financial Model and Assumptions” in January 2008 Draft LRTP Technical Document, starting at page 60.

Note: The January 2008 Draft LRTP is currently being revised to incorporate the Measure R Expenditure Plan, and will be presented to our Board at its January 2009 meeting.

Following information is available at [www.metro.net/measurer](http://www.metro.net/measurer)

- Language of Measure R which appeared on Los Angeles County’s November 2008 ballot, and the Measure R Expenditure Plan, which identifies additional partially or fully funded projects.

## **DESCRIPTION OF CONTRACT WORK**

The contract work that is described in further detail in the Scope of Services will include, but is not limited, to:

- Development of comprehensive program delivery strategy
- Development of Metro’s PPP policy, organizational structure and business plan
- Advice with respect to maximizing current and future revenue and funding sources
- Screening of projects to identify likely PPP candidates
- Technical evaluation to determine value-added benefit of private involvement
- Consideration of environmental alternatives development efforts to determine technical applicability of future PPP opportunities
- Analyses of contractual, statutory, investment and risk considerations
- Detailed valuations and financial analyses of specific projects or programs
- Development of procurement strategy, proposal evaluation process and selection criteria
- Assistance with preparation of solicitation documents, e.g., Requests for Qualifications and Requests for Proposal
- Written and oral evaluations of proposals and bidder qualifications
- Development and presentation of reports
- Briefings for stakeholders, executive management and Board members
- Participation in negotiations and preparation of agreements and contracts
- Program and project management, including quality control, and administrative support and staffing
- A contract option to provide continued program management support during project implementation

The actual services may vary, and some of the Tasks defined in the Scope of Services may not be requested unless/until authorized by Metro Board action at strategic milestones in the PPP program development.

Nevertheless, the Board is interested in expeditiously pursuing the screening, evaluation and possible selection of the projects. Respondents are requested to provide a recommended schedule as to when each Task should be started, based on respondent's PPP experience. We anticipate proceeding without delay upon issuance of Notice to Proceed.

Proposals are to address the tasks identified in the Scope of Services, but may include general comments on the ways in which the described tasks might be improved to enhance the Services. Respondent may highlight issues which it is felt should be identified in consideration of Metro's stated goals, as well as any other information respondent considers pertinent.

## SCOPE OF SERVICES

### GENERAL REQUIREMENTS

#### Contractor Workplan

Upon receipt of a work order authorization to proceed with a Task or Tasks, develop and update as required, a comprehensive workplan for the Contractor Tasks described in each Task Scope. Draft is to be provided to Metro within fourteen (14) days of receipt of signed work order, and the final workplan will be prepared upon receipt of Metro's comments. The workplan will provide an overview of the proposed team, scope of work, schedule, task and subtask responsibilities, deliverable responsibilities, budget and invoicing procedures for the respective Tasks.

*Deliverables: Draft and final workplans*

#### PPP Team Meetings

In coordination with Metro, prepare the agenda for regularly-scheduled team meetings. The team meetings are to ensure effective coordination, early identification of issues and recommendations to resolve those issues, and timely delivery of the Services. Meeting minutes with dated and assigned action items will be furnished to Metro within three days after each meeting and, upon Metro approval, distributed to all.

*Deliverables: Meeting agenda, minutes, action items*

#### Monthly Reports

Prepare monthly activity reports identifying status of the work effort, documenting work undertaken during the monthly billing period and tasks to be accomplished over the next thirty (30) days, as well as anticipated challenges and issues and potential methods for resolution. These monthly reports are to be submitted with monthly invoices.

*Deliverable: Monthly activity reports*

#### Stakeholder Outreach and Board Action Preparation

- Assist with executive staff and Board member/staff briefings and presentations, as required
- Assist with meetings with various project stakeholders (i.e., elected officials, coalitions, COGs, etc.)
- Prepare all supporting documents and presentation materials required for Metro staff to prepare Board recommendations, briefings, and to conduct stakeholder outreach
- Assist with, and participate in, Board meeting activities, as directed. Board meeting activities will include preparation of all documents, presentation materials and 6 – 10 briefings for Board members and/or staff, per Board meeting activity.

*Deliverables: Draft and final briefing materials*

## **CONSULTING SERVICES**

### **Task 1**

#### **Program Development**

Develop a comprehensive Project Management Plan (PMP) for the full Scope of Services defined in this Statement of Work. The draft is to be provided to Metro within fourteen (14) days of Notice to Proceed, and the final PMP will be prepared upon receipt of Metro's comments. Metro may require the PMP to be updated as necessary. The PMP will describe the proposed project team to accomplish all seven tasks, including task and subtask responsibilities, scope of work and proposed approach, overall project schedule, milestones for all Tasks and other information Contractor determines is essential for the PMP.

*Deliverable: Draft and final PMP plans.*

### **TASK 2**

#### **Project Screening**

Conduct high level analysis of the full slate of draft LRTP transit and highway projects to provide recommendations to Metro staff as to which projects could be regarded as candidates for potential PPP implementation, to be subjected to more detailed assessment in Task 3. In particular, given Metro's current operating environment, consider the feasibility of advancing any of the transit projects and advise what steps would be necessary to make the transit project(s) viable. Contractor must coordinate with the High Desert Corridor project's Joint Powers Authority to assess the analysis that has already been, or will be undertaken for that project and to avoid duplication of effort.

It is anticipated that some projects will be eliminated from further PPP analysis due to the lack of existing information. However, all projects are to be given at least a cursory review.

- Consider Metro's Board-adopted PPP Project Suitability Screening Criteria, modifying as necessary with Metro's approval, to be used to evaluate draft LRTP projects for potential compatibility with the PPP delivery model, either as single projects or as a package of projects
- Utilizing final approved screening criteria, conduct high level evaluation of draft LRTP projects for PPP potential, eliminating from further consideration those projects which do not meet said criteria
- Conduct high level financial feasibility and risk analyses of projects which pass the initial screening; analyses are to include political, legislative and technical issues and/or other issues as agreed upon by Metro and Contractor
- Evaluate opportunity to combine projects under single PPP contracts
- Consider opportunity to operate Metro's transit systems and transit projects under the PPP model
- Advise what agency framework would likely be required for a PPP model
- Provide advice with respect to maximizing Metro's current and future revenue and funding sources
- Based on findings of suitability screening for PPP compatibility, feasibility and risk analyses, identify for Metro staff those projects recommended for further study in Task 3. In a technical memorandum, describe pros and cons of all projects in the draft LRTP, including rationale for project elimination as applicable
- If, as a result of the screening process, projects are identified as likely potential PPP compatible candidates but are not recommended at this time due to identified concerns which could be mitigated,

suggest appropriate time frame and/or actions required to advance said project(s) to a level of readiness for future Metro consideration

- Provide support with stakeholder outreach to discuss recommendations
- Assist with executive staff briefings, and preparation of Board recommendation and Board member/staff briefings

*Deliverables: List of projects recommended for further strategic and feasibility analyses. Draft and final technical evaluation report summarizing analyses of projects' feasibility, describing pros and cons of all projects, limitations of projects not selected and rationale for elimination, and recommended approach to readying future potential projects. Evaluation is to also include analysis of PPP transit systems operations, and steps required to achieve likelihood; discussion of possible leveraging of funding sources.*

### **TASK 3**

#### **Strategic Assessment**

Undertake a more detailed assessment of those selected projects recommended for further analyses as a result of Task 2 screening. This Task 3 is to provide Metro staff a further refined list of recommended projects which could be considered for final selection in Task 4.

- Conduct detailed economic analyses, technical feasibility studies including constructability and potential technology improvements, and comprehensive financial models based on available information, including but not limited to, identification of:
  - Cost and revenue projections
  - Sensitivity analyses illustrating impact of various factors on cost and revenue
  - Cost of capital and discounted cash flows
  - Qualitative project risk assessment including comparison of traditional project delivery model to PPP model (public sector comparator)
  - Agency overhead costs over full term of concession
- Research, develop and evaluate financing alternatives and determine level of funding and/or value additions required by Metro to make project financially attractive
- Conduct risk assessments to identify project risks considering:
  - financial, market, operating, political, construction & development, and environmental factors
- Develop comprehensive risk strategies and risk allocation matrices, identifying recommended assignment of risks for private and public partners for each project
- Conduct value for money and life cycle cost analyses
- Propose project-specific PPP structures (i.e., availability payment)
- Recommend to Metro staff projects that have a high probability of success as PPP and should be considered for further study, and describe limitations of those projects not recommended and rationale for elimination
- Assist with stakeholder outreach, including industry forum(s), to discuss recommendations
- Assist with executive staff briefings, and preparation of Board recommendation and Board member/staff briefings

*Deliverables: From the list of projects identified in Task 2, develop refined list of 2 to 3 projects, or combination of projects, to be considered for final project selection in Task 4. Draft and final technical memorandum summarizing analyses of projects feasibility, discussing rationale for recommendations and/or elimination of projects; include details of strategic assessment analyses, value for money, life cycle cost analyses and risk allocation matrices.*

## Task 4

### Business Case

At the direction of the Metro Board, Metro staff will determine final project(s) suitable for recommendation to the Board for selection as PPP projects to be advanced through solicitation and procurement. Contractor will develop recommended optimum business case model(s) and deal structure using a comparative analysis approach of two of the three Board-selected final candidate projects. The business case model is to demonstrate that, considering costs, benefits and best use of public and private sector capabilities, choosing to proceed with the ultimately selected project(s) as a PPP procurement is in the best interest of Metro.

- Develop business case models for two of the three final candidate projects
- Undertake a comparative analysis of the projects
- Assist in development of project performance expectations, including:
  - benchmark criteria for value for money and total project life-cycle costs
  - public sector comparator findings
  - comprehensive project risk assessments and optimal allocations
  - financing options
- Provide advice as to legislative remedies, if necessary, and potential approaches to secure needed authority
- Describe appropriate project implementation strategy for Metro selected project, or recommended package of projects, including defined project scope, schedule and budget to achieve project objectives
- Identify optimal corporate and governance structure for concession (i.e., JPA)
- Provide advice on procurement strategy
- Recommend internal Metro organizational structure necessary to guide the development of a Metro PPP program, including various disciplines and institutional structures, administrative procedures, policies and objectives required by Metro to implement, document, administer and effectively manage (through planning, design, construction and operational phases) a PPP program
- Assist with executive staff briefings, and preparation of Board recommendation and Board member/staff briefings

*Deliverables: Recommendation of 1 or 2 projects or package of projects, determined most likely to be successfully delivered under a PPP model, for Metro consideration. Provide optimum business case model comparison and deal structure analysis and draft and final technical memorandum. Provide all supporting documents required to prepare Board recommendation, including business case models and all appropriate analyses used to reach selection decision. Undertake all actions requested to secure needed legislative remedies. Provide draft and final approved Metro PPP program plan.*

## TASK 5

### Procurement

With Board approval of selected project(s), assist Metro staff with solicitation process, including document preparation, and negotiations with private partner Proposers.

#### • Procurement process

- Assist with develop of submission requirements, proposal evaluation and selection criteria, and a Proposer pre-qualifying process
- Assist with development and execution of marketing strategies, assess interest of industry and identify potential solicitation interest
- Participate in industry forum and stakeholder outreach
- Assist with development of statutory legislation changes, if necessary

*Deliverables: Marketing strategies report; potential Proposers list; presentation materials; industry forum; legislation*

#### • Requests for Qualification (RFQ) / Expressions of Interest (EOI)

- Assist in preparation of RFQ/EOI documents
- Participate in pre-proposal meetings
- Assist with development and preparation of evaluation methodology; assist in analysis and evaluation of responses, including reviewing Proposer credentials and financial and technical capabilities
- Coordinate and assist with preparation of responses to Proposer questions
- Prepare technical evaluation of Proposals for source selection team
- Advise on selection of RFQ/EOI shortlist

*Deliverables: RFQ/EOI documents; proposal evaluation methodology and assistance with evaluations; technical memoranda*

#### • Requests for Proposal (RFP)

- Assist with developing RFP to be issued to formally qualified Proposers
- Assist in preparation of RFP including:
  - Statement of Work
  - Payment and compensation structure
  - Performance specifications (lifecycle costs, environmental, customer service, etc.)
  - Performance measure benchmarks
  - Performance deductions
  - Technical details
- Assist in review of proposals and prepare written and oral evaluations for evaluation team that include risk and financial analyses
- Assist in review of Proposers' operational history, ability and financial strength and prepare technical evaluation for Metro staff providing assessment of Proposers' abilities to perform
- Participate in interviews of Proposer firms
- Assist with stakeholder presentations

- Assist in facilitating discussions with Proposers to manage expectations and ensure a fair and transparent procurement process
- Coordinate and prepare responses to Proposers' questions
- Assist with preparation of negotiating plan to negotiate with Proposers within the competitive range
- Assist with debriefing of unsuccessful Proposers, as requested

*Deliverables: RFP documents; technical evaluation of Proposers' qualifications and the proposals; recommendations for offer and plan for closing*

## **TASK 6**

### **Concession/Contractual Agreements**

Assist Metro in negotiations with the selected Proposer and in finalization of deal structure and terms. Contractor is also required to assist Metro with development of all contractual agreements required to complete negotiations with selected Proposer and reach contractual and financial close, ensuring all Metro performance specifications, benchmarks, financial and business terms, etc., are appropriately addressed. Contractor will assist with executive staff briefings, and preparation of Board recommendation and Board member/staff briefings.

#### • Concession Development and Negotiations

- Advise on type, scope, requirements and issues to be addressed to support development of necessary concession/contractual agreement documents, including financial oversight procedures and quality assurance plan
- Review specifications for transition and service monitoring, as required, including establishment of milestones, for inclusion in concession agreements
- Participate in negotiations; assist with finalization of deal structure and terms
- Ensure all related due diligence requirements and issues are identified and addressed, including final assessment of business terms

*Deliverables: Negotiations minutes, technical analyses of concession issues, transition procedures, etc., drafts of concession agreements, procedures and plans.*

#### • Contract and Financial Close

- Assist with preparation of Board recommendation
- Assist with stakeholder, executive staff and Board member/staff briefings and presentations
- Assist in finalization of concession documents and facilitate financial close

*Deliverables: Signed contract; financial close*

## **TASK 7 (OPTION)**

### **Implementation Management**

Provide Metro support for oversight of project implementation, including management assistance with design and construction contract. Option also includes possible oversight assistance with project operation and contract performance management.

- Plan and implement evaluation, monitoring and compliance audit of performance measure benchmarks
- Provide oversight of financial procedures
- Monitor quality assurance plan
- Provide project implementation and benchmark achievement analyses as needed, including reviewing periodic progress reports and recommending action

*Deliverables: Project implementation strategy; project performance expectations; project management and quality assurance plans; periodic progress reports and recommendations*

**End of Statement of Work**