West Coast Infrastructure Exchange

Final Report

CH2MHILL®

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Table of Contents

Attachments

Why the West is One

Facing the Pacific across more than 3,000 miles of western coastline, the states of California, Oregon and Washington and the Province of British Columbia confront common challenges if they are to craft the future they want. The West Coast states have long shared mutual concerns, including floods and drought, the movement of goods and people over long distances, and the imperative to protect and preserve natural resources while building a support structure for economic growth. Today, along with British Columbia, they face the added challenge of climate change, including sea level rise, and the need for infrastructure development and modification to deal with the potential threat along the entire Pacific coast.

The West Coast jurisdictions also have a long history of working together across state and national boundaries to address issues that affect their mutual interests: stewardship of timberlands, wildlife, and offshore oil reserves; dealing with large-scale regional economic disruptions such as the concentrated impact in the West of the defense industry decline of the 1990's; the depletion of fisheries; state-federal tensions; and their regional competitiveness in the global economy — to name a few.

> *"One cannot be pessimistic about the West. This is the native home of hope. When it fully learns that cooperation, not rugged individualism, is the quality that most characterizes and preserves it, then it will have achieved itself and outlived its origins. Then it has a chance to create a society to match its scenery."*
>
> Wallace Stegner
> *The Sound of Mountain Water*

In joining together to strengthen their people and economies, Western state and provincial governments have often used innovations and efficiencies of uniquely Western invention. Not long ago, for example, the governors of California, Oregon and Washington, along with the governor of Alaska and the Premier of British Columbia officially joined forces in the Pacific Coast Collaborative, "a formal basis for cooperative action, a forum for leadership and information sharing, and a common voice on issues facing Pacific North America."

Today, the people of the West Coast and their governments must deal with the urgent need to fund the development of an infrastructure to serve populations that will grow by a combined 6.5 million in the next decade. They have to replace old and broken highways, bridges, ports, schools, and hospitals. They have to construct systems that meet changing water resource and distribution needs, and refurbish and relocate energy transmission. And to provide a more secure energy future, they must expand renewable energy generation and retrofit buildings to make them more energy and cost efficient. These are just a few of the infrastructure challenges confronting the economies and the governments of the West Coast.

The need to find new models to develop and finance public infrastructure is genuine, as this report makes clear. However, each jurisdiction will need to determine how to establish a new public consensus on approaches that break with the past. For example, tolls and other user-pays financing methods challenge long-held expectations that publicly-owned facilities ought to be paid with general taxes and available to all at low-or-no cost. The people of the West Coast also share an expectation that government should provide a high level of services, but they have seen enough examples of seeming endless delay and cost-overruns on large projects to be skeptical. So, to win the public's support for both the large-scale infrastructure investments that need to be made and for new financing approaches, the West Coast must rebuild public confidence in their governments' ability to do things smart and right.

The West Coast jurisdictions can do the best job of redesigning the way they plan, build, and finance public infrastructure by working together. When appropriate, this may include using private investments in a cost-effective manner, so long as the use avoids duplication of effort and does not waste time or scarce public dollars. Success will require sharing the best ideas and best practices from California, Oregon, Washington, and British Columbia. And it will require bringing together the best people from private and public finance, business, labor, environmental protection, and technology around the world, and putting them to work under the auspices of the West Coast Infrastructure Exchange.

Introduction

Many state and local governments are finding that their ability to fund infrastructure through traditional capital markets are much more constrained. The Great Recession has hit the tax revenues of state and local governments hard in recent years, and states have struggled to maintain balanced budgets. Moreover, weakened government finances have constrained both operating and capital budgets and made it more difficult to issue debt. Traditional funding sources (taxes) and traditional financing mechanisms (tax-exempt debt) that were failing to meet infrastructure needs before the recession are now woefully inadequate for closing the infrastructure investment gap. Competition for tax dollars and the poor credit condition of some jurisdictions require new sources of funding, new mechanisms for long-term borrowing, and new approaches to lower the costs of project development and operations.

This capacity restriction comes at a time when demand for new infrastructure and innovation in infrastructure is increasing. The American Civil Society for Engineers (ACSE) reported in 2009 that the United States will need to spend $2.2 trillion over the subsequent five years to fund infrastructure needs, and approximately $286 billion annually through 2025. Building on the 2009 ASCE report, combined estimates of the 30-year infrastructure investment need for the three West Coast states easily reach $1 trillion.[1]

These two dynamics – greater need for infrastructure coupled with constrained public budgets – means that states need to look at new models to deliver infrastructure projects. We must not assume that capacity additions are always the best answer. For example, small-scale, distributed approaches to managing surface water runoff can dramatically reduce the scale wastewater treatment plants, lower costs, and provide better environmental outcomes. We must also examine new financing mechanisms, including direct charges for infrastructure use. Technology now allows for electronic tolling of vehicles which generates revenue to finance the facility and also sends the right price signal. Charging for facility use provides incentives for people to use them more efficiently and often they can be built at smaller scale and therefore less expensively.

Smart project selection and scaling also means accounting for the effects of climate change before we build new or replace existing infrastructure. Coastal areas must account for rising sea levels while areas reliant on irrigation must plan for lower rainfalls and snow packs. All must plan for more extreme weather events. Our infrastructure investments also have the chance to mitigate these effects with thoughtful analysis on implications for long-term green-house gas emissions.

[1] American Society of Civil Engineers, State Report Card, 2009

Around the world, alternative models to project development and finance now provide examples for West Coast jurisdictions to explore and adapt to their circumstances. The traditional approach where a public jurisdiction develops a detailed design and then awards a construction contract to the low bidder does not always deliver the best value to citizens. Performance contracts with private entities that design, build, operate and sometimes finance facilities can provide better value and less risk for the public. With growing interest among large investors in infrastructure as an asset class and growing evidence of better value for dollar in other parts of the world, these public-private approaches deserve a close look.

Traditional	Performance-Based Infrastructure
Limited analysis of alternatives, focus on capacity additions	Thorough analysis of alternatives, consider demand and supply side solutions equally, benefit-cost-risk analysis drives decision-making
Focus on capital costs of project	Consider capital and operating costs in full project lifecycle analysis
Project planning doesn't consider impact of climate change	Project planning accounts for predicted changes in sea level, precipitation and extreme weather events
Each jurisdiction finances and delivers projects on their own	Jurisdictions plan together and pool resources to lower project costs and deliver better regional outcomes
Projects funded through general taxes, gas taxes, and federal grants	Projects funded with user fees such as variable tolls for highways and bridges, or savings through innovation
Design-Bid-Build. One group designs the project and an entirely separate group with the low bid builds the project	Design-Build-Operate-Maintain. Public owner transfer risk through a contract with one entity for best value on delivered infrastructure services over life of project
	Design-Build-Finance-Maintain. Public owner transfers risk through a contract with one entity which delivers financing and project with best value for public owner over life of project
Tax-exempt debt offers lowest cost of construction capital for public projects	Taxable debt in context of public-private partnership delivers more value to public

Partners in the West Coast states have come together to explore these innovative methods to help meet the overall infrastructure needs of the three states and to consider the creation of a non-profit mechanism – the West Coast Infrastructure Exchange (WCX) – that could begin to help inform, transform, and facilitate the finance of infrastructure projects in new ways. The WCX has the potential to serve as a center of expertise and a gateway to national and international partners for eligible infrastructure projects. But first, in order to facilitate the development of a pipeline of innovative, investable infrastructure projects that are attractive to private partners, partner states need to understand the changing landscape and then establish the right tri-state structure, systems, and project evaluation tools which will allow for predictable and standardized investment decision-making.

Successful implementation of the WCX model could create a new leadership role for the West Coast states and drive growth in much-needed infrastructure investment, improving the region's economic and competitive position over time.

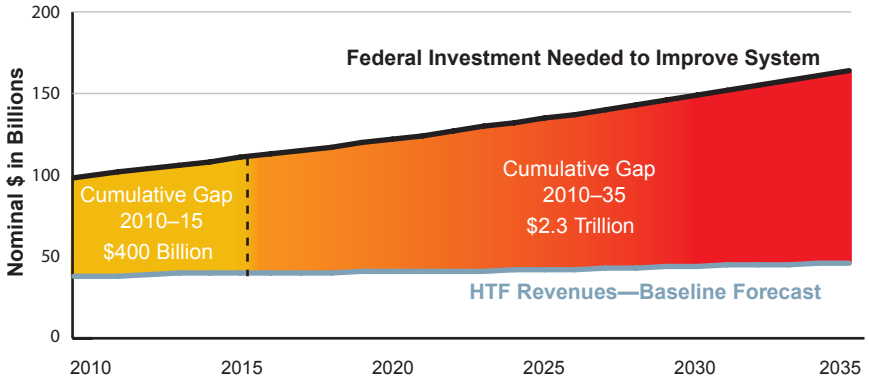
Need for Action

Investment in Infrastructure Falling Short

Spending on infrastructure by the federal government has declined in recent years. According to the most recent reports by the Congressional Budget Office, spending on transportation and water infrastructure as a share of U.S. GDP has declined over the past fifty years, falling from 3.1% of GDP in 1959 to 2.4% of GDP in 2007.[2] At the same time when levels of federal infrastructure investment are falling short of demand, West Coast states are experiencing declining resources.

Meanwhile, the need for infrastructure investment has risen. The Report of the National Surface Transportation Infrastructure Financing Commission[3], an independent commission established by Congress in 2009 tasked with making recommendations on alternative approaches to funding and financing surface transportation infrastructure, concludes that the highway and transit funding gap will reach $2.3 trillion by 2035.

A Large and Widening Gap Between Federal Revenues and Transportation Needs, 2010-35



Source: National Surface Transportation Infrastructure Finance Commission

The Environmental Protection Agency (EPA)[3] similarly confirms the dire need for infrastructure repair and upgrades in the water sector. The EPA estimates that from 2000-2019 the gap in spending for clean water will be $21 billion and the gap in spending for drinking water will be $45 billion beyond an estimated 3% annual increase in funding. In the absence of increased spending on infrastructure, total shortfall for the 20-year period 2000-2019 would be $122 billion for clean water and $102 billion for drinking water. This information is consistent with more recent estimates recently published by the Center for American Progress[4], which concludes that bringing America's

> *"Comparing estimates of surface transportation investment needs with baseline revenue projections developed by the commission shows a federal highway and transit funding gap that totals nearly $400 billion in 2010-15 and grows dramatically to about $2.3 trillion through 2035."*
>
> Surface Transportation Infrastructure Financing Commission

[2] Congressional Budget Office

[3] US EPA 2002, The Clean Water and Drinking Water Infrastructure Gap Analysis. September 2002

[3] "Summary Report: Paying Our Way: A New Framework for Transportation Finance," National Surface Transportation Infrastructure Finance Commission, Feb. 2009

[4] Center for American Progress Feb 2012, Meeting the Infrastructure Imperative

"If the State, during times of limited or shrinking resources, continues to finance all required infrastructure investments with borrowing paid for by the General Fund, debt service payments will continue to grow. That growth will come at the expense of other vital public services."

Bill Lockyer,
California State Treasurer

infrastructure into a state of good repair would require an additional $48 billion of federal investment per year on top of current infrastructure spending levels, which in FY2010 totaled roughly $92 billion in grants, credit subsidies, and tax expenditures.[4]

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A key challenge facing West Coast states' policy makers is to undertake the important task of funding infrastructure investment in an environment of reduced levels of federal investment and declining state and local sources of revenue, and to do so in a manner which reduces the impact on General Obligation debt and other legal borrowing limits does not impair the balance sheets of state and local governments.

Financing Challenges in the States

With the exception of federal support for transportation, state and local governments' primary source of financing for local infrastructure has been tax-subsidized municipal bonds. These securities now comprise a $3.7 trillion market that has served the U.S. well for decades. Now, however, despite the fact that the cost of raising municipal capital is lower than it has been in more than 40 years (with yields on AAA-rated, 30-year general-obligation bonds of just 3.3% in September 2012[5]), the municipal bond market is facing new stress which may make accessing this traditional capital source more difficult in coming years. What has changed?

The primary risk to the municipal bond market comes from the dawning realization that the deep fiscal challenges faced by state and local governments are not receding despite signs of economic recovery. Although overall tax receipts returned to pre-recession levels in 2012, the U.S. Government Accountability Office now projects that due to rising pension and health care costs, the gap between state and local government revenue and spending will steadily deteriorate through 2060 unless policy changes are made.[6]

[5] Municipal Bond Market Weekly, R. W. Baird & Co. Incorporated, Oct. 2, 2012

[6] "State and Local Governments' Fiscal Outlook: April 2012 Update," U.S. Government Accountability Office, GAO-12-523SP, April 2, 2012

Many cities are already feeling the pain. While municipal bond defaults and bankruptcies remain rare, they are on the rise. The two California cities that filed for and remain in bankruptcy in 2012 (Stockton and San Bernardino) are not likely to be the last according to Moody's Investors Service which is now reviewing the financial position and bond ratings of troubled cities throughout California and other states.[7] The agency also noted that bankruptcy risk may be higher among smaller cities, many of which do not even have bond ratings.

Already there is evidence of a decline in traditional financing as cities become more cautious about adding to their debt loads. Despite the lowest interest rates in a generation, new municipal bond issuance in 2011 (as opposed to refunding existing debt to take advantage of low interest rates) was down 45% from 2010 levels, at its lowest level since 1997. Year-to-date through August 2012, issuance is up just 8%, remaining far below historical trends.[8]

"Cracks are starting to appear in the municipal bond market. If you're investing for income, it's time to pay attention."

CNN Money Magazine, September 28, 2012[9]

And while economic conditions and revenues are likely to improve as the recession recedes, the size and persistence of the Federal deficit has resulted in serious recommendations, including those of the Simpson-Bowles Commission and the Congressional Budget Office among others, to eliminate or dramatically reduce Federal support for tax-exempt bond financing for state and local infrastructure borrowing. And though the outcome of this debate is far from certain, and will be vigorously opposed by municipal issuers and the financial services industry, the fact that it is taking place at all suggests that the prudent course for state and local governments, builders, and investors alike should be to prepare to meet financing needs through alternative means. Federal direct grants and subsidies for transportation, flood control, and other vital infrastructure are likely also on the deficit reduction table, along with other domestic spending priorities, all of which could bring further pressure to bear on state and local government budgets.

"The traditional source of public infrastructure financing – tax exempt financing – is inadequate to meet the infrastructure need."

Allan Emkin, Managing Director, Pension Consulting Alliance

This distressed situation should in fact offer fertile ground – if not a call to action — for innovative financing approaches. In an environment characterized by higher risk, slower growth, financial market volatility, and persistently low interest rates, the traditional spread, or difference, between the cost of traditional capital and more innovative financial structures has narrowed.

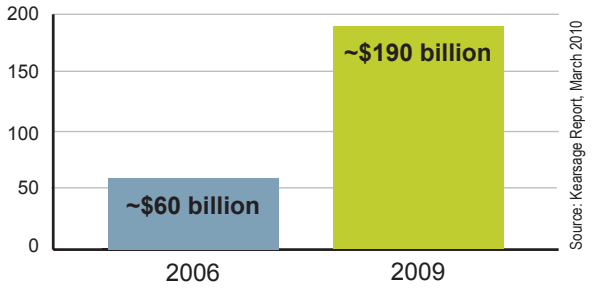
[7] "Moody's examines why some California cities are choosing bankruptcy," Moody's Investors Service, August 17, 2012

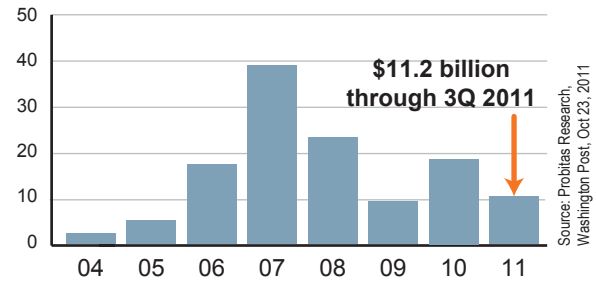
[8] Securities Industry and Financial Markets Association (SIFMA), US Municipal Issuance Data, monthly to August 2012

New Approaches to Infrastructure Finance

Historically, there was little incentive for state and local governments to engage in innovative financing structures when lower-cost municipal bond financing was available. But now "the world has changed for long-term investors," according to Allan Emkin, managing director and founder of Pension Consulting Alliance and advisor to many state pension funds.[9] There is growing evidence that investors are increasingly looking to balance risks and investment returns and will gravitate to innovative structures to achieve those goals.

Rising Pension Fund and Investor Interest





Some cities have already realized this evolving reality, while others see it as inevitable. Andrew Strober, Philadelphia Mayor's Office of Transportation and Utilities, does not see a lack of capital availability as a problem for Philadelphia in the short run, but notes that there is a need "for more and more innovatively structured private capital because (a) the current low yield environment will not hold and (b) the city will eventually exhaust its credit capacity with all of the infrastructure needs it faces."[10]

Ironically, in part because of the risks in stock and bond markets, large private investors such as pension funds, insurance funds and other institutions are showing increasing interest in the infrastructure sector as a safer form of investment. Kearsarge Global Advisors reported that as of 2010 over $190 billion of global equity capital had been committed for infrastructure investment, up from approximately $60 billion in 2006, with leveraged purchasing power of about $475 billion.[11] In addition to companies that invest in infrastructure, there are over 30 infrastructure funds ready to invest in the U.S. market with a levered purchasing power of approximately$475 billion. In addition, some new allocations and investments in infrastructure are happening (reference CALPERS and CALSTRS).

This class of investors is more able to accept and actively manage infrastructure project risk than traditional municipal bond investors, many of whom are individuals.

[9] Presentation to Employees Retirement System of Rhode Island, Allen Emkin, Pension Consulting Alliance Inc., October 24, 2011

[10] Interview with Andrew Strober, Chief of Staff in the Mayor's Office of Transportation and Utilities, Philadelphia, Pennsylvania, July 12, 2012

[11] "Benefits of Private Investment in Infrastructure," Kearsarge Global Advisors in coordination with Abertis, Allen & Overy LLP, Barclays Capital, Carlyle Infrastructure Partners, Chadbourne & Parke LLP, Citi Infrastructure Investors (CII), Credit Suisse, Debevoise & Plimpton, Freshfields Bruckhaus Deringer, Fulbright & Jaworski, Mayer Brown, McKenna Long & Aldridge LLP, Merrill Lynch, Morgan Stanley, RREEF, RBC Capital Markets, Scotia Capital, and UBS

Larger institutional investors are also more likely to push for technology innovation and operating efficiencies, potentially lowering the overall cost of infrastructure delivery.

Other countries such as Canada and Australia have already begun to take advantage of new approaches that can channel additional investment into infrastructure, and they are beginning to achieve success. In 2002, the Province of British Columbia launched Partnerships BC, the first agency in the country to focus on public private partnerships. In 2007, the Government of Canada established PPP Canada, a Crown corporation, which leads efforts to improve the delivery of public infrastructure projects in partnership with the private sector and has thus far provided $1.2 billion in seed funding in its P3 Canada Fund. "Public-private partnerships promise better value, timeliness, and accountability for public infrastructure projects," says Sam Katz, Mayor, City of Winnipeg.[12] Partnerships BC is a unique public and private entity that provides transaction analysis, bidding, structuring, and management services for public project owners in British Columbia. Its private sector agility is critical, but so is the public oversight provided by the company's sole member, the Minister of Finance. Partnerships BC has supported approximately $12.5 billion in innovative public-private partnerships thus far.

As the upside potential for this new source of capital – plus related improvements in operating and project delivery efficiency – becomes more apparent, innovative financing and partnership structures are beginning to emerge and seek footing in the United States as well. These include new initiatives such as the Chicago Infrastructure Trust, NY Works and a new generation of energy infrastructure banks.[13]

West Coast States Team Up

In light of these emergent needs, the West Coast states, through in-person meetings, follow-up calls, and conversations began to develop an initial vision and scope for a regional infrastructure exchange which would serve as an infrastructure investment facilitator for the West Coast states. The first step toward realizing the regional infrastructure exchange was to hire consulting expertise to help the states assess how to best move in this complex environment and scope out regional infrastructure challenges and new opportunities to connect infrastructure and economic development.

[12] "Infrastructure Spotlight: Improving Canada's Infrastructure Through Public Private Partnerships," Infrastructure Canada, July 2012, www.infrastructure.gc.ca

[13] "New Approaches for Infrastructure Finance: State and Local Perspective," remarks by Robert Puentes, The Brookings Institution, prepared for the Fifth U.S./China Investment Forum held April 11, 2012, at the U.S. Department of the Treasury

With funding from the Rockefeller Foundation, the West Coast states retained CH2M HILL, a global leader in full-service engineering, construction, and operations, which had assembled a team of leading experts representing the infrastructure, finance and policy fields.[14] The West Coast states charged CH2M HILL with clarifying the problem, identifying the barriers, and defining strategies that could be implemented within a multi-state collaborative effort. The process began with extensive research including the collection and review of current information and interviews with experts across the finance and project development industries. The team also focused on the development of organizational, service, and governance strategies that could be offered via the multi-state exchange. Research culminated in a multi-day strategic planning workshop in July, 2012 that included more than 30 individuals with representation from Governors' and State Treasurer Offices, a Department of Commerce, an Infrastructure and Economic Development Bank, two large pension funds, asset and risk managers, planners, engineers, and public policy specialists. Over the course of the workshop, a strategic plan was developed to establish the vision and tenets of a Strategic and Business Plan which were designed to support a regional exchange.

The goal was to explore the feasibility of a stand-alone, self-funded, and sustainable non-governmental organization to provide value-add expertise not currently available at most levels of state and local government. The parties also hoped that the West Coast Infrastructure Exchange (WCX) could help develop innovative approaches to scale performance-based infrastructure that was publicly-owned and acceptable to community stakeholders. In addition, WCX partners hoped to package investable infrastructure projects in a manner that would be attractive to Environmental, Social, and Governance investors (referred to here as Impact Investors[15]). Impact Investors presently commands as much as $14 trillion[16] in capital around the world, and they are seeking to place this capital into infrastructure projects that offer dependable financial returns in exchange for reasonable levels of risk. In addition, they are seeking returns that include job creation, climate and environmental enhancements, social benefits, and strengthened regional economic competitiveness.

[14] The CH2M HILL consultant team was comprised of Svanda-Coy Consulting, Impact Infrastructure, LLC, EKO Asset Management Partners and ECO Northwest.

[15] Impact Investors include public and private pension funds, foundations, family offices, and socially responsible investment funds

[16] "Impact Investments: An Emerging Asset Class", 11/29/2010, Nick O'Donohoe, Christina Leijonhufvud, Yasemin Saltuk, Antony Bugg-Levine, Margot Brandenburg J.P.Morgan, Rockefeller Foundation, & Global Impact Investing Network

Developing a Plan

Lessons Learned

An early task for CH2M HILL was to consider the vision the West Coast states had for an infrastructure investment facilitator against the international experience with alternative financing mechanisms that exist in the market. In the course of the last two decades, there has been an enormous expansion of alternative delivery models in worldwide experience. Since the 1980s, the world has witnessed the use of a public-private partnership (PPP) delivery model resulting from the need for innovation as well as, in some locations, intensive fiscal shortage. The shortage of public finance and the strong need for investment in public services resulted in the accelerated introduction of private finance into public infrastructure in Asia. In South America, Chile launched the first modern large-scale PPP program in the late 1970s. At about the same time, countries in East Asia who were experiencing an economic boom invited the participation of private finance into their infrastructure developments. In the last 30 years, most countries have at least flirted with the idea of delivering infrastructure through public-private partnerships and there exists several examples of countries, states, and provinces around the world which have created specialized institutional entities to fulfill different functions.[17] Several of these entities are instructive to the entity envisioned by West Coast states.

Victoria, Australia, provides a "whole of government" policy framework to providing public infrastructure through PPPs. Known as **Partnerships Victoria**[18](PV), the PV team is part of the Commercial Division in the Department of Treasury and Finance for the Victorian government. PV policy applies to departments and agencies associated with large scale infrastructure and delivery projects. All projects are screened through the PV Framework, and a key objective of PV policy is to establish consistency in project delivery among government entities. Under the PV Approach, government entities are in the business of purchasing services at an agreed quality, quantity, and timeframe – not assets. Thus, PV policy replaces traditional short-term contracts with long-term contracts; upfront payments with ongoing performance based payment; and input specifications with output specifications. The focus of attention is on the quality of the services being delivered.

Partnership British Columbia (PBC) is organized by the Province of British Columbia to serve public agencies including ministries and Crown corporations

[17] See Brookings-Rockfeller "Moving Forward on Public Private Partnerships for a comprehensive review of PPP units

[18] www.partnerships.vic.gov.au/

within the province and has pioneered the development of "performance-based" infrastructure. PBC is governed by a board of directors reporting to the Minister of Finance. With 42 full-time equivalent employees and an annual budget of $9 million, PBC is now fully self-supporting as a result of hourly fees for services paid by public sector agencies. PBC serves as advisor to the public agency owner where it performs business case evaluations, procurement manager of project delivery, RFP and RFQ evaluation services, and contracts preparation and negotiation. PBC supports the owner through financial close.

Another type of PPP unit is the **Office of Transportation Public-Private Partnerships** (OTP3), a political subdivision of the Commonwealth of Virginia. OTP3 works in coordination with the Virginia Secretary of Transportation across all modes of transportation implementing a statewide program for project delivery via the Public-Private Transportation Act (PPTA) of 1995. OTP3 services include project identification, project screening, project development, project procurement and contract management.

The Chicago Infrastructure Trust (CIT) takes another approach; it is a professionally managed and governed infrastructure fund that, for qualifying infrastructure projects, provides funding and credit support, coordinates/facilitates attracting private investment, has grant-making capabilities, and enables the sharing of labor, resources and knowledge among units of local government. CIT, which is a new, non-profit organization created by ordinance by the City of Chicago in May, 2012, is capitalized by a $2.7 million appropriation by the City Council of Chicago.

The **European PPP Expertise Centre** (Expertise Centre) is an example of a collaborative, multi-jurisdictional venture among the European Investment Bank, the European Commission, and European Union member countries. Funded by EIB and EC, the Expertise Centre is staffed by members contributing time and expertise through seconded staff. Membership is exclusively for the public sector and is open to PPP taskforces in member states. The mission of the Expertise Centre is to strengthen the ability of the public sector to engage in PPP transactions. It does this by helping members to share experience and expertise, analysis and good practice, by identifying best practices, and producing reports which are available to public.

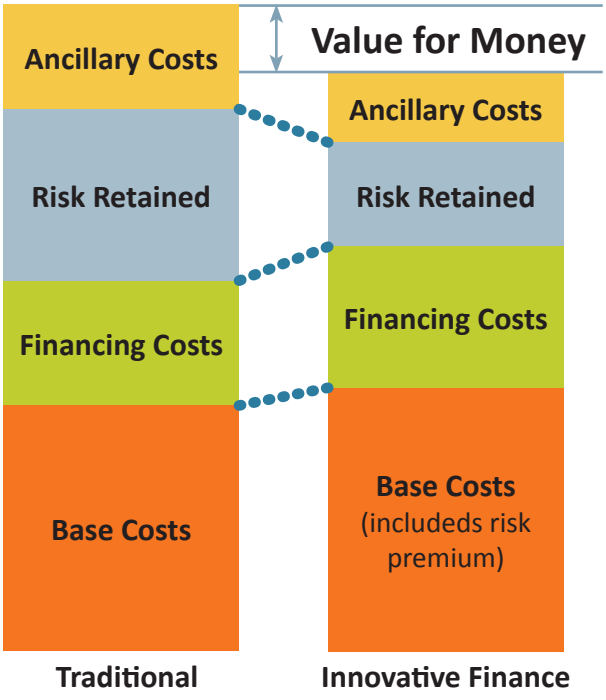
The examples have demonstrated that public private partnerships can deliver more value to the public. Figure 1 illustrates the value for money that can be gained through these performance-based infrastructure approaches compared to traditional delivery methods.

Envisioning the West Coast Infrastructure Exchange

The challenge in connecting infrastructure projects with institutional, and Impact Investors in the U.S. is three-fold. First, there is widespread investor belief that bureaucratic delays and environmental review requirements plague domestic public infrastructure projects, making governments unreliable partners. Investors are looking for predictable deal flow for viable projects – those that are defined, buildable, and feasible with policy level support and environmental approvals in place or pending. Second, the U.S. market lacks a transparent and objective method for vetting infrastructure projects to reveal the financial performance characteristics of value and risk associated the full range of costs and benefits. Those values, when compared to the cost of traditional funding vehicles, have the potential to offset the returns typically required by the private sector, especially when considering the value of money associated with the transfer of risk, the creation of jobs, and other social and environmental bottom line benefits. Third, the use of private capital, ranging from private equity groups to pension funds and specialized impact investment funds, faces persistent political challenges resulting from, among other things, the lack of a broad understanding of the benefits and drawbacks of privately financed projects. The U.S. needs a political champion to guide the debate beyond simplistic discussions over challenges about "privatizing." towards new "performance-based" but public infrastructure.

Figure 1

Value for Money in Traditional Financing Mechanisms and Innovative Finance



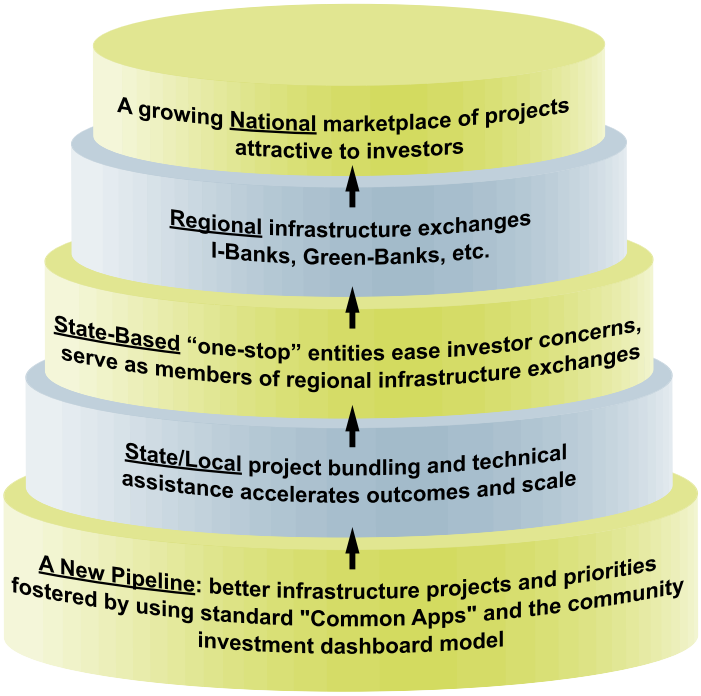
Source: Adapted from: "Benefits of Private Investment in Infrastructure, Kearsarge Global Advisors, March 2010

At the same time, the experience of other countries has shown that an organization like the WCX could offer the West Coast states a real opportunity to address the infrastructure service delivery challenge. The WCX could begin now to help inform, transform, and facilitate the finance of infrastructure projects in new ways. The WCX could help address the challenge of a shortfall in public project finance by clearing the path for Impact Investors in search of infrastructure opportunities generating competitive rates of return. The WCX could also work with state and local governments to enhance their capacity in risk management, project vetting, and project finance. In time, the WCX could also act as a consolidator of information and policy regarding performance-based contracting and provide technical assistance to public entities interested in procuring projects through alternative contracting

methods and provide essential performance metrics needed to inform private investments.

Infrastructure Acceleration Layer Cake

The creation of WCX as a regional infrastructure investment facilitator could propel the WCX to an important role in the national debate around infrastructure reform. Visionaries are needed at multiple levels to achieve the goal of an acceleration vehicle which is aligned and integrated across the spectrum of project delivery: From the community level where projects and priorities are fostered, to the state/local level for bundling and technical assistance, through a state-based performance infrastructure unit dedicated to supporting alternative project delivery within a given state, to regional exchanges such as WCX, and finally to a growing national marketplace of projects attractive to investors. While building on lessons learned from other countries, states, and provinces which are already inviting private participation in the delivery of public infrastructure, such an approach could offer new pathways for



WCX Mission Statement

The West Coast Infrastructure Exchange seeks to promote near-term job creation and long-term economic competitiveness by closing the gap between the demand for funding public infrastructure and the supply of funding. We do this by:

- Identifying public project development and delivery methods that yield more measurable value for the public dollar
- Creating and advancing new mechanisms for project finance, including those that could attractive to private investors that have traditionally not invested in public infrastructure
- Connecting investors to opportunities by providing consistent, comprehensive and high-quality data
- Helping investors and project sponsors identify, understand and mitigate risk,
- Sharing and developing best practices as well as strengthening public sector capacity and expertise in these new approaches
- Ensuring that an estimated $1 trillion in future West Coast infrastructure investment considers climate risk factors

infrastructure innovation and stronger outcomes that place a distinctly U.S. mark on the public-private partnership (PPP) delivery model.

Laying the Foundations

Over the course of the July 2012 workshop, participants established a possible Mission Statement, articulated essential Guiding Principles, and identified a conceptual Organizational Structure to potentially guide the establishment of the WCX.

Workshop participants suggested that the WCX should have the specific goal of enabling a marketplace between public sector infrastructure projects and private sector investors. Working with industry leaders from both the public and private sectors, the WCX will:

- Arm project designers and sponsors with consistent, broadly accepted, transparent and objective metrics, protocols and ultimately a Business Case Evaluation tool to assess risk; value social, environmental, and economic costs and benefits; and balance risk/reward returns from structured deals
- Enable investment prioritization through the creation of specific, objective, and transparent sustainable business cases for individual projects
- Streamline the project evaluation process for investment professionals
- Accelerate the movement of pre-vetted projects into the financing pipeline at a volume and quality needed to reduce overall transaction costs
- Support project planning and transactions by adding supplemental project assessment, packaging and procurement capacity to project sponsors
- Add a new level of transparency and objectivity to the market space

WCX Guiding Principles

In order for the WCX to be successful, the organization must ultimately exhibit three characteristics:

- It must demonstrate value for the public, elected officials and government agencies
- It must have clear authority to fulfill its mission
- It must have the capacity and resources to perform its mission

By offering these tools and services across the regional, the WCX could add value, establish a sustainable business model, and play an essential role in the investment decision-making process.

Organizational Structure

The participants in the work session evaluated several organizational models for the WCX. The group envisioned that the organization would take the form of a non-profit governed by a board of directors. It would initially be created via memorandum of

understanding between the participating states. Flexibility for growth beyond the three states was also seen as key to governance design.

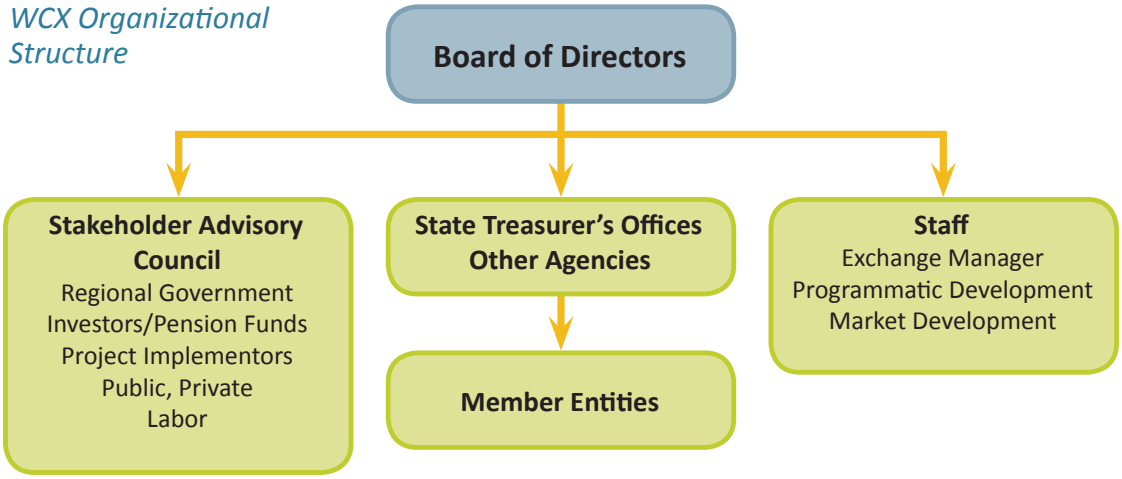
Based upon our international assessment and workshop discussions, CH2M HILL further recommends that the structure of the WCX would consist of three major elements: a Board of Directors, an Exchange Manager, and an Advisory Council.

The **Board of Directors** could be appointed by the governors and treasurers of each participating state. Regional planning agencies could also be permitted to offer designees. One staffing option is for the organization to have a Board of Directors with privately funded dispersed staff rather than a large central office. The Board of Directors sets the strategic direction of WCX by establishing the work program, approving the annual budget and supervising the Exchange Manager.

The **Exchange Manager** would report to the Board of Directors. The Exchange Manager would be charged with programmatic and market development and would be expected to organize a staff in those two areas with initial support coming from loaned personnel, interns, and consultants. As revenues are generated and reserves are established, a full time staff would be put into place.

The **Advisory Council** would be made up of representatives of local and regional governments, institutional investors including pension funds, project implementation specialists, public and private project developers, and organized labor.

WCX Organizational Structure



Proposed Implementation Plan

The participants recognized that it would take time to develop the authority and resources from each of the participating states. For that reason they preferred a phased approach to starting up the organization.

Recommended Phasing

Based upon the workshop and further considerations by our team of experts, actions required to plan and implement the WCX have been divided into two phases, each with a set of strategies. Beginning in January, 2013, CH2M HILL recommends that WCX perform activities necessary to enable it to function as a self sustaining, non-profit private entity. This phase, which could be governed by an existing joint jurisdictional document, could focus on identifying the market and public policy barriers that currently impede private investment in public infrastructure. Infrastructure gaps and risk mitigation strategies would be identified. Also during this period, the WCX could develop an education and training program and focus on workforce development activities with public agencies. This phase could also include activities to establish the foundation for a project database. For example, WCX could work with the Impact Investment community to identify long-term performance data to better inform future analyses. In addition the organization could focus on creating a shared vision and single voice for regional and national innovation strategies.

Table 1

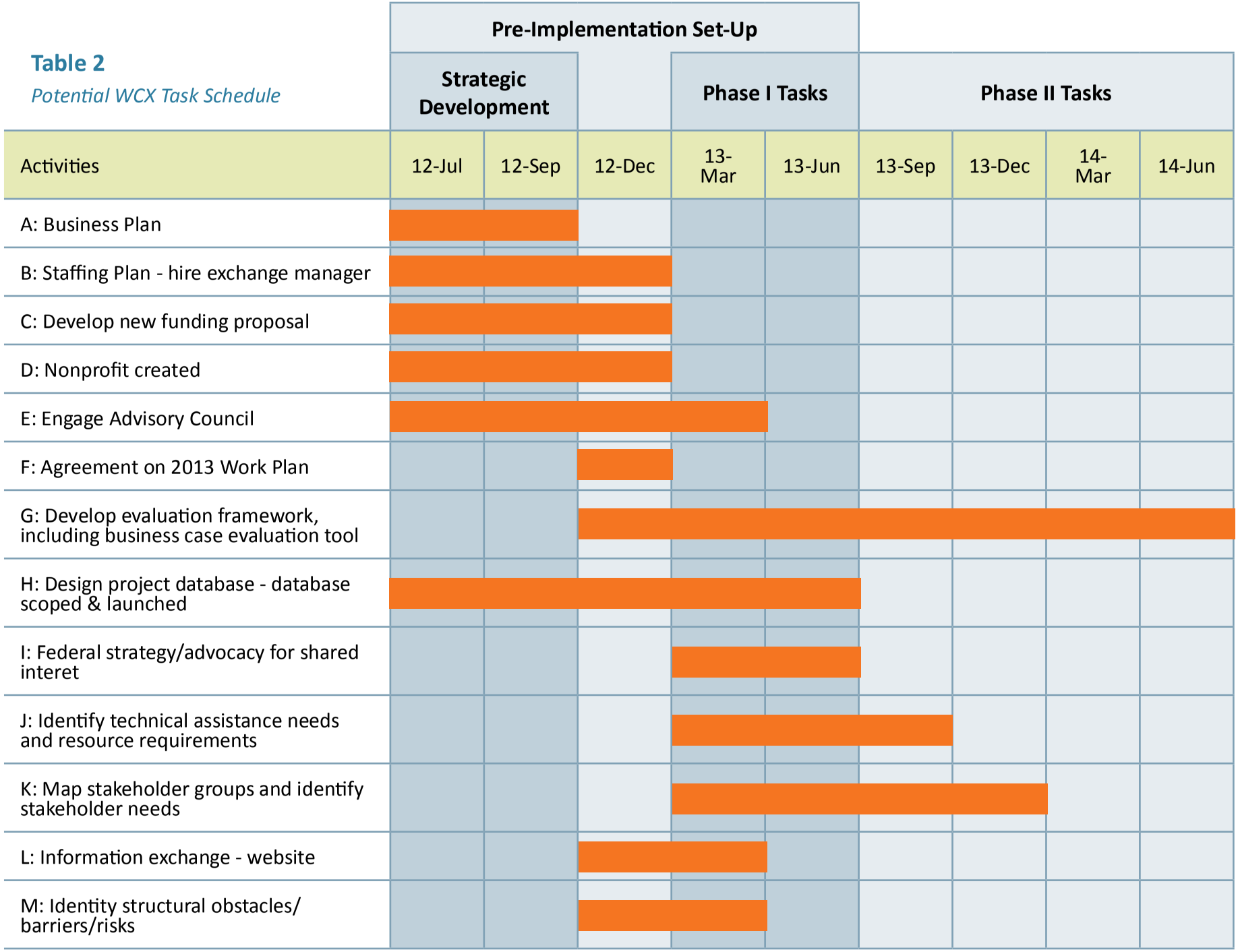
Phase I and Phase II Tasks for the WCX

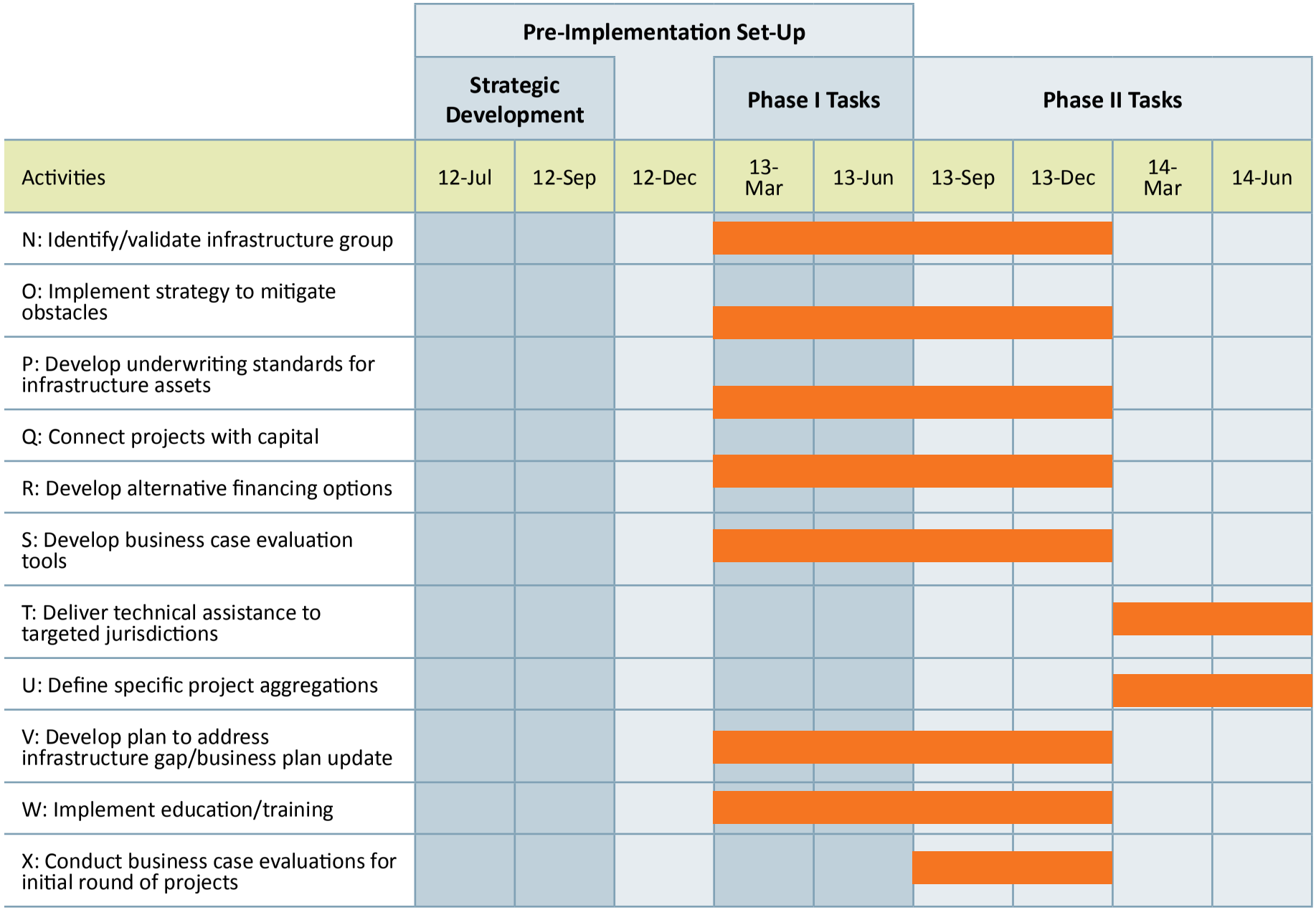
Phase I	Phase II

▶ Develop evaluation framework, including business case evaluation tool
▶ Design project database
  ■ Determine what information should be captured
  ■ Determine if there are available database sources that can be adapted to the needs of the WCX
  ■ Understand how to incent database development
▶ Identify technical assistance needs and resource requirements
▶ Information exchange
  ■ Case studies
  ■ Best practices
  ■ Human development
  ■ Education/training
▶ Map stakeholder groups and identify stakeholder needs
▶ Identify structural obstacles/ barriers/risks
▶ Identify/validate infrastructure gap
	▶ Connect projects with capital
	  ■ Identify new investment structure potential
	▶ Develop database
	▶ Deliver appropriate technical assistance to targeted jurisdictions
	▶ Implement education/ training
	▶ Exchange information
	▶ Implement strategy to mitigate obstacles
	▶ Develop plan to address infrastructure gap
	▶ Define specific project aggregations
	▶ Conduct business case evaluations for initial round of projects

Table 2

Potential WCX Task Schedule




Pre-Implementation Set-Up
Strategic Development
Phase I Tasks
Phase II Tasks
Activities
12-Jul
12-Sep
12-Dec
13-Mar
13-Jun
13-Sep
13-Dec
14-Mar
14-Jun
N: Identify/validate infrastructure group
O: Implement strategy to mitigate obstacles
P: Develop underwriting standards for infrastructure assets
Q: Connect projects with capital
R: Develop alternative financing options
S: Develop business case evaluation tools
T: Deliver technical assistance to targeted jurisdictions
U: Define specific project aggregations
V: Develop plan to address infrastructure gap/business plan update
W: Implement education/training
X: Conduct business case evaluations for initial round of projects

During phase two, the WCX could move to remove existing barriers towards using alternate financing strategies, providing technical assistance to local governments, and aggregating projects into finance bundles. WCX could facilitate the development of an investable "project pipeline" through its development of an efficient database that serves to match pre-vetted opportunities with investors. WCX could work with state, local, and regional governments/project sponsors to package and position projects for private funding, and could seek early opportunities to connect capital with projects. Key activities by WCX could also include development of alternative funding options which generate competitive rates of return and development of business case evaluation tools.

Engaging Private Capital

WCX representatives indicated interest in pursuing a wide range of innovative/alternative financing and delivery options to provide additional funding to address the infrastructure backlog. One clear immediate focus is to supplement funding from the traditional municipal bond market with funding from private and institutional lenders such as:

- **Large Equity Capital Groups**, such as Global Infrastructure Partners
- **Small and Mid-sized Equity Capital Groups**, particularly impact funds focused on environmental or infrastructure areas
- Indirectly, Public Pension Funds could be educated about the future promise of this model since they are major investors in the Capital Groups mentioned above. Due to their fiduciary responsibilities and varied governance structures, emerging financing models will have to be proved effective before public pension funds become a viable source for direct investment

These funding sources, however, typically carry higher interest rate requirements than the rates local/regional agencies have paid in the municipal bond market because these sources often do not qualify for tax-exempt status and typically must show higher rates of return to their investors. However, when coupled with alternative delivery responsibility, these forms of financing may result in a reduction of risks in construction costs, operations, and other areas over the life of service delivery. By creating a business case analysis framework and tools that fully vet the advantages/disadvantages of these private funding sources with those provided by traditional municipal financing and delivery, these options may be more fairly considered by local and regional agencies.

During the workshop, there was lively dialogue regarding frameworks that might help bridge the expectation gaps between municipal agencies and private funders. There was discussion that some institutional and impact investors may be willing to take a lower rate of return than the 10-12% range that is the target of many of the equity capital groups and institutional investors, and that WCX may be in a position to eventually identify new asset management models to broker deals between institutional investors willing to accept mid-range returns and project sponsors. WCX could perform this role by developing a rigorous project framework to identify projects deemed investible. This framework would also provide a means to identify similarly-sized investible projects which could be "bundled" to achieve a scale that would be of interest to private investors.

WCX representatives also expressed interest in looking beyond equity capital and institutional investors to find other creative ways to increase the number of infrastructure projects that could be funded within the three states, such as:

- Achieving greater leverage out of funds available through the state revolving loan funds that exist for water, sewer and some other functional areas within the three states
- Expanding use of energy service corporation funding vehicles where demonstrated savings in future operational costs is used to support financing of up-front capital investments
- Creating new fee structures where appropriate to supplement existing tax/fee structures (e.g., creating dedicated storm water utilities fee programs to support storm water management capital projects)

Business Case Evaluators

A clear priority task for WCX – validated at the workshop and by our team of experts – was the need for the development of Business Case Evaluators (BCEs). BCEs will allow WCX to standardize its approach to evaluate infrastructure projects across a range of sectors with a diversity of costs, benefits, and associated risks. Application of a standard business analysis would provide WCX partner states with a means of vetting projects to qualify for entry into the project finance pipeline, helping to attract interest and detailed evaluations by external investors. The aim is for WCX to identify and establish a standard BCE featuring a transparent and objective set of metrics and protocols; grow the portfolio of metrics by infrastructure class using new and contributed input; and make the BCE available for adoption and deployment to the WCX member entities and other interested partners.

It is recommended that WCX task a multi-disciplinary standards work group to achieve the goal. There also may be value in partnering with other groups such as Partnerships BC and the Chicago Infrastructure Trust to promote the development of common BCE protocols. The work group will perform the following suggested tasks:

- Research and review BCE tools and frameworks in use in the marketplace. Develop a technical memorandum that identifies candidate analysis methods and tools for the BCE framework for WCX projects, which builds upon research conducted to date by WCX.
- Review infrastructure investment guidelines from pension funds and other private investors. Gather input from potential Impact Investors regarding the BCE tools and framework to determine whether the model can be improved to meet the needs and objectives of the investment sector.
- Identify protocols for benefit/cost and risk analysis to assess cash and non-cash costs and benefits. Make preliminary decisions on such issues as which forms of analysis are most critical and at which stage the various analysis forms should be applied.
- Develop prototype model to illustrate the selected forms of financial and non-financial analysis and develop sample project applications for key infrastructure groups including water/sewer, transportation, energy, and social infrastructure/facilities. Select best practices for performance evaluation and risk analysis to inform WCX recommendations within a specific portfolio of infrastructure categories.
- Finalize the BCE framework and develop a guidance document that documents recommended tools and procedures.

Conclusion

Policy leaders in the West Coast states are stepping out in the complex environment of infrastructure project finance – defining infrastructure challenges from a regional perspective and looking for new opportunities to connect infrastructure and economic development. Through the proposed WCX approach, the West Coast states can begin now to help inform, transform, and facilitate the selection, development, and finance of infrastructure projects in new and important ways – a critical move given the inadequacy of traditional approaches moving forward.

This new approach to infrastructure financing will result in an important shift by state and local government from a reflexive commitment to status quo financing mechanisms, project types, and sources of repayment. By investing in the development of research and analysis to comprehensively document the market potential for this change and identify productive pathways that protect public benefit, stakeholders will have the information necessary to support a move towards high-performance infrastructure investments.

West Coast Infrastructure Exchange
List of Attachments

Attachment !: Summary of the WCX Strategic Workshop

Attachment ": Slides Presented at the WCX Strategic Workshop

Attachment #: List of Literature Reviewed for the WCX Project

Attachment A: Summary of the WCX Strategic Workshop

West Coast Infrastructure Exchange
Strategic Planning Workshop Meeting Summary

Dates: July 16 and 17, 2012
Location: CalPERS Headquarters, Lincoln Plaza East, 400 Q Street, Sacramento, CA 95811
Attendees:

Dan Carol, State of Oregon Governor's Office
Ben Ward, State of Oregon Governor's Office
Tom Rinehart, State of Oregon Treasurer's Office
Mark Mathers, State of Nevada
Will Fox, Partnerships BC
Stan Hazelroth, CA Infrastructure and Economic Development Bank
Daniel Malarkey, State of Washington Department of Commerce
Dave Merwin, CalPERS
Laurie Weir, CalPERS
Mark Campbell, California Debt and Advisory Commission
Chris Ellis, CalSTRS
Judy Chambers, Pension Consulting Alliance
Frank Moore
Robert Barry, California Debt and Advisory Commission
Steve Coony, State of California Treasurer's Office
Rohimah Moly, State of California Treasurer's Office
Michael Matichich, CH2M HILL
Kathryn Pett, CH2M HILL
Matthew Wilson, CH2M HILL
David Knowles, CH2M HILL
Ricardo Bayon, EKO Asset Management Partners
Debra Coy, Svanda-Coy Consulting
John Williams, Impact Infrastructure LLC
Kate Lyman, CH2M HILL

NOTES BY AGENDA TOPIC [comments from participants are paraphrased and not directly quoted]

DAY 1: July 16, 2012

Introductions and Session Chartering *(What do you want out of this meeting? How do you define success for this meeting? How will you know we've been successful?)*

- CalPERS: We want to have a strong game plan with some marked deliverables so that we all know what we're doing, and all have the same vision and goals.
- OR Governor's Office: We need a roadmap. There are many potential ways to leverage the 3 states - what could those be and what are the impediments?
- Washington: Greater clarity on the purpose of the exchange. Does the WCIE have a value proposition for the member jurisdictions at the state and local level?
- California Infrastructure Bank: We want to know what role the infrastructure bank can play in this effort, and how we will divide up the work.
- Nevada Treasurer's Office: Our office is very passionate and interested in the idea of this exchange. If there is a role for Nevada to play, we're coming up against our window to introduce legislation. We want to understand the value added here if we want to consider it this year.

- CA Treasurer's Office: We want the exchange to help us make investible infrastructure inevitable, compelling, and irresistible. We also want the consultant team to know what to do for the next two months.

Project Objectives and Charge to the Group

- State of Oregon: We need to develop a value proposition for state and local governments. We want the exchange to stand up in July 2013 – what we can do between now and then will be about creativity and nimbleness.
- State of California: It is complicated in California. There are over 4,500 separate jurisdictions in the state. In 2007, we determined that we needed $500 billion to meet infrastructure needs. We figured we could get $300 billion. Then things started to happen that eroded that notion. Everything became much more expensive and now the estimate is $750 billion. The achievable conventional financing capability is probably less than $300 billion now. We're looking to figure out how to do somewhere between $250-500 billion of needed infrastructure, and we've got to figure out some other way to finance this.
- State of Washington: In Washington, we have more infrastructure that needs to be prepared than we have financing. That is what interests the executives in Washington. Infrastructure is an asset class that could be interesting to institutional investors. Another important question is regarding potential revenue mechanisms. The real issue is sources of repayment.

Market Assessment *(notes below reflect the questions raised during the presentation, not the content of the presentation itself)*

- Question: How accurate is the American Society for Civil Engineering (ASCE) data on the state of infrastructure in the country? Isn't there a conflict of interest in terms of an engineering group perhaps overstating the need?
    - There may be an opportunity for this exchange to get better information out there.
    - One of the things this ASCE data tells us that there is a dire need to set priorities and to be smart so that states get maximum benefit for their dollars.
    - It is important to note that the estimate of the need is also a function of how it will be paid for.
- Comment: There's investor interest in the infrastructure sector. More and more investors are putting into place programs with specific infrastructure allocations.
- Question: Are the private infrastructure fund growth numbers (showing ~$190 billion in 2009) US numbers?
    - Answer: these are global figures.
- Question: Aren't most of these funds structured for private equity style returns?
    - Answer: That's a key question. This is just targeted towards infrastructure. It's likely that they are private equity style.
    - Foundation family offices are now starting to look at 6% returns. If we could put some pressure on them to look at 5-6% rather than the more traditional 17% returns, that would be good.
- Comment: Procurement methods are now shifting to "Design-Build-Finance-Operate" models.

    - Comment: The single biggest political issue we have to deal with in state-managed projects in California is the existence of a strong public engineer lobby – they are very resistant to being replaced by private engineers. We're trying to get some short term gains and want to look for options that aren't design build.
        - Perhaps California should choose other, non-transportation projects for new financing models.
    - Comment: There are more DBFO projects in Canada.
- Comment: By the year 2011, 32 states had authorized some level of P3s. the trend is upward movement towards authorizing this.
    - Response: This should be qualified –the fact that legislation has passed doesn't mean it's been used, and there's enormous variance in what specifically is enabled. Some states have only enabled toll roads.
    - Comment: WA has a cautionary tale. In the mid-90s there was a big procurement for a public private partnership to build a bridge. It resulted in major public protests.
- Comment: In the US, our experience with the revenue stream from PPPs is that they have been like a concession, or almost like a tax. We could get very innovative to change this. There are other ways to look at revenue generation.
- Comment: In the short term, the exchange should work within the existing enabling legislation for the three states. The legislation in the three states is not the same so the exchange must allow for flexibility to accommodate that.
- Comment: It is important that the exchange have early successes. We need to make sure to select projects that will succeed.
- Comment: The traditional cost of capital – muni bonds – are cheap. Muni owners and local interests might be concerned or have the assumption that there's a huge higher cost of capital. There's a complex story behind that – the work force is the GO bond, but it's in competition with a lot of other things. The debt-service ratio is an underlying issue. What role will this infrastructure exchange play in surmounting that perception?
    - Response: As you shift from a traditional DBB to PPP, the owner is going to see an increase in the base costs and financing costs, but there will be a reduction in risk. Ultimately this is a risk transfer proposition – shifting the risk to a third party.
    - Response: Is there any clear trend showing that PPPs in this country *have* delivered value for money? We shouldn't use this as a rationale unless there is real evidence. Also, investors will want the public sector to retain the risk.
        - Comment: The risk within different parts of a project should be owned by the entity best able to manage it.
        - Comment: It is our challenge to create projects that deliver value for investors' money. The experience in the US is mixed.
- Comment: For local governments – if infrastructure can be built with bonds, they would never look at pension capital as an alternative sources because it's always going to be more expensive.
- Comment: Stakeholder education and outreach will be very important.
- Comment: Streamlining project delivery is another way to reduce project costs.

- Comment: The federal stimulus package has hidden the problem we're facing now and just served to reinforce the notion that infrastructure should be built through federal grant funding.

Which projects are the right ones? (*Is there something missing from the list of criteria presented for identifying projects?)*

- Comment: The sensitivity test charts shown in the presentation show a potential for projects to have a negative net present value. This was deemed useful, as illustrating there could be that possibility.
- Question: How do we monetize or quantify non-financial factors within projects? There was discussion that varying levels of treatment of non-financial factors may be appropriate at early stages of the analysis vs. later ones and for larger projects than for smaller ones. In some cases a multi-criteria analysis, such as illustrated in the slide show may be sufficient; in other cases monetization of the non-financial factors may be needed.
- Comment: If a project has made it through the screening process presented, it's strong enough to use tax-exempt financing. The real key in this exchange is to look for projects that are good enough to be interesting to private equity but not so good that they could get tax-exempt financing.
- Comment: CalPERS will run projects through its own due diligence process; it's not necessary for the exchange to do that for potential investors. We should focus the model on helping governments think through their financing options.
- Comment: The exchange should be the matchmaker for projects. Maybe there are some projects that could be financed through tax-exempt methods but would actually be cheaper with an alternative project delivery method.
- Comment: The important thing to note about Partnerships BC is that all infrastructure projects are required to submit proposals as if they were PPPs.
- Comment: The exchange needs to determine how to get information out to interested investors and how to conduct the screening process. It should also include a lifecycle cost analysis for projects.
    - Comment: It's important to figure out which types of investors we are trying to attract. Some investors prioritize environmental attributes higher than others do.
- Comment: The final report should discuss where and how to apply screening and evaluation tools (at the federal level, state level, on a voluntary basis, etc).
- Comment: It's important to keep in mind that the overall purpose of this effort is to lower total project costs. We need to keep the two ideas separate – new and different project delivery approaches and new mechanisms for financing the project.
    - Comment: We should educate project planners and designers about how to define a better project that will pass a business case evaluation.
- Comment: Projects in the state of Washington are highly decentralized; there's no database with technical data of all projects in one place.
- Comment: Investors will want to know what types of funding have been committed by local or regional government agencies.

- Comment: The business case evaluation needs to describe both the expected return from a project and the time horizon for that return.
- Comment: Municipalities are going to be reticent to paying double the interest rate for private equity.
    - Comment: There's an equity issue here. Places with strong tax bases will be able to afford the higher cost of private capital, and many of these same localities have strong credit ratings and therefore access to lower-cost municipal borrowing. Places that are struggling are not likely to afford the more expensive private capital and may be unable to access the municipal bond market.
- Comment: The overarching call is to improve business cases for projects, whether or not they do traditional financing.

[Target project types identified by the 3 states]

- Question: What types of projects is CH2M HILL working on that might benefit from new financing mechanisms?
- Comment: Washington does not have an idea of typical projects to populate the matrix. The biggest demands are in transportation, but these might be difficult to do given the limited capacity for tolling. Washington does not leverage funds for drinking water or wastewater. Washington agrees that water projects are an interesting group of projects for this purpose.
- Comment: Another criterion for evaluating projects could be its potential to create jobs.
    - Response: Would prefer this to be generalized into a benefit/cost analysis.
- Comment: Oregon is scouring for early win candidate projects that we can start to develop pro forma business cases on them for the fall. The biggest gap is centralized/engaged project sponsors. Either it's an agency that doesn't want to plan or a bunch of tiny institutions. Right now we're bunching up water/irrigation projects. It's been Oregon's experience that people are willing to pay more for improved service in the water/irrigation arena, especially in eastern OR where there are significant current service challenges. We think there's a ton of potential with those.
    - There are a couple of public buildings in Oregon that could be a test case. We are interested in finding an engaged project sponsor that wants to be a test case. Need to have somebody willing to try. The downtown courthouse in Portland is one such example; it will cost about $200 million to rebuild.
- Comment: In California we do not have much of an answer in terms of readily identified projects. Energy efficiency is a likely early adopter, especially the commercial side. Several transportation projects are interested. In transportation, we are interested in projects that are bigger than $100 million.
- Comment: In an example in Wilmington, Delaware, they had contractors come in and do energy efficiency upgrades, with private financing and the repayment coming from projected operational savings, using an energy service corporation (ESCO) model. The contractor is guaranteeing the savings. The interest rate could be much higher. Making a building more energy efficient can still save money in the long run.

Governance Policy Overview and "Strawman" *(notes below reflect the questions and comments raised during the presentation, not the content of the presentation itself)*

- Question: What services should the exchange provide?
    - Comment: Perhaps the exchange should screen projects.
    - Comment: There could also be a business development function - to go out and find projects that fit. The exchange could be the trusted party that functions as an intermediary between the capital and jurisdictional side.
    - Comment: The exchange should host a shared database on joint venture projects or should help lping local/state governments upload projects/
    - Question: Would the exchange raise capital and structure deals?
    - Comment: Serving as a center for expertise could become a core function of the exchange.
- Question: How should the exchange be staffed?
    - Comment: It's hard to answer this until we figure out what exactly it's doing.
- Question: What kind of oversight will the exchange need?
    - Comment: We need to know who the organization is for – is it for jurisdictions or service providers and investors?
    - Comment: The exchange needs a good, strong advisory group or access to good real-world data and advice. It will need to maintain that independent patina.
    - Comment: The exchange shouldn't be overseen by people who have vested interests in the outcome of the decision-making,
- Question: How will the exchange be funded?
    - Comment: State appropriations are not foreseeable before July 2013.
    - Comment: Perhaps funding could come from other sources that have a stake in the exchange's success, such as unions.
- Comment: Overall, the exchange has to be attractive and have a value proposition for the public owners of infrastructure assets. It also needs to be implemented in stages and have a flexible design.
- Question: How did the exchange become focused on these three states (OR, WA, CA)?
    - Response: It's basically a historical accident, but also resulted from the leadership of the existing Pacific Coast Collaborative, who got together earlier this year.

[Collaborative organizations with similar charters]

- Question: Is the Chicago infrastructure trust capitalized? It does not look to have any capital investment.
- Question: How many staff does OTP3 have and how many projects have they done? Have they done anything other than in northern Virginia? Do they pray premium for the staffing services?
    - Answers: They have 9 paid staff. They have fully completed 3 projects and have 19 projects in progress. Yes, they have engaged in projects outside of northern Virginia.
- Question: Is Partnerships BC looking to extend outside boundaries of Canada?

- Comment: OTP3 is a public entity within the secretary of transportation's office. Partnerships BC is different because it does not have a strong linkage back to a public body.
- Comment: Investors often don't have confidence that public agencies can actually manage a project; this is part of the problem in attracting investors.

[Governance Strawman]

- Comment: As it is depicted now, the exchange would not provide project-specific advice because of the conflict of interest issue from the seconded staff. But perhaps there can be conferences where teams of professionals can offer ranges of information about how it might work.
- Comment: There's best practices and then there's deal-doing. There's already a best practices industry. Getting capacity at the state level to do the hard politics – we're losing that. If we're not making the case for hundreds of smart people to be deployed at the project level, we're not doing the marketplace a service.
- Comment: The challenge will be to standardize documents, but these documents will have to vary by state.
- Comment: The exchange needs to be unique and not look like everything else.
- Comment: The exchange needs to have a few things to put in a toolbox that have clear value in accelerating project development.

Conclusions from Day 1 *(One year from now, what is it you want to have achieved?)*

- Comment: We want to have built a better project pipeline/database. The exchange should have a shared back office that gives investors access and ability to look up all projects of a certain type. We could get this populated by June 2013.
- Comment: By June 2013, we should have a website active and work groups in action.
- Comment: Having a standardized screening process for projects across states would make it easier for investors.
    - Comment: As long as seconded staff didn't actually do the evaluation it would eliminate the conflict of interest.
- Comment: Would like to see some more hard analytics making the case for new financing mechanisms. There are two financial hurdles that US PPPs have to overcome- 1) tax-exempt borrowing, and 2) corporate income tax.
- Comment: We need to make the case that what we are doing is stretching the public dollar in the best way possible. We need to find out if there are some asset classes where users are willing to pay more soon. We need to explore new sources of revenue.
- Comment: The proposed reliance on seconded staff and focus on conflict of interest is due to the lack of ability of the states to hire their own staff. This model should be considered Phase I – until the exchange has funding.
- Comment: We need to develop information so that a marketing manager can solicit funds from a foundation, and we need to develop a list of activities that will be good enough to get more money from our legislatures.
- Comment: A transmission project could be a good example of something that is multi-state.

- Comment: Each state needs to be able to conduct internal processes in the way that works for them.
- Comment: It may be difficult to gather data from member jurisdictions. There needs to be an incentive for jurisdictions to provide that information.
- Comment: The exchange needs to have early success stories.
- Comment: Getting a database going would be huge for investors. I am reasonably confident that if we get these foundational steps that the projects and investment will flow. There's only a few places in CA that are sophisticated enough to even talk about this.
- Question: What is really meant by the term "exchange?"
    - Response: It was purposely chosen because it is ambiguous.
    - Response: It refers to a matchmaking process – connecting projects with capital.
- Comment: The slide depicting the mission of the exchange could be refined to add analysis of projects to understand which ones are financeable in new ways and what the project opportunities are.
- Comment: It's important to frame the exchange effort as focused on jobs and competitiveness, not specifically PPPs. Messaging is important.
- Comment: The strength of the exchange will be in its openness. We need to address the issue of real transparency.

DAY 2: July 17, 2012

Finance Options and Models *(notes below reflect the questions and comments raised during the presentation, not the content of the presentation itself)*

- Question: Would leveraging existing water and clean water programs be considered for the exchange as an example of the 'monetizing of assets' approach to implementing more of the unfunded infrastructure mandate? During discussion, the speaker who had introduced the topic said yes, that is a good example of another way to raise funding for more projects.
- Comment: Need to add a revenue line item into projects – could generate revenue off of the climate cap and trade system. It would be a new revenue source. Another selling point is that cap and trade could generate a lot of money that can generally only be spent for mitigation.
- Comment: Using "natural systems" to deliver the same results as traditional gray infrastructure is a hot topic for investors. That goes to the policy of addressing climate change.
- Comment: It's not just the size of the funding source that we should look at, but also the mission. Some equity funding groups have a specific mission to help sponsor sustainable infrastructure projects.

[Do we have the right list? Have we captured all of the potential sources of funding?]

- Comment: One obstacle to institutional investors and matching certain kinds of projects is the asset managers themselves. We need to be in touch with the people who advise the pension funds. There's a disconnect between investment managers and pension funds and institutional investors and the projects themselves. Investment managers want a higher level rate of return.

But some institutional investors may be willing to take a lower rate of return than the 10-12% range or higher that is the target many of the equity capital groups and institutional investors.

- Comment: One model worth exploring might be for the exchange to provide or help identify an asset manager, possibly a non-profit, to broker deals between institutional investors willing to accept mid-range returns and project sponsors.
- Comment: The exchange will need to educate a whole new workforce in the public sector. This is a paradigm shift and it will take time.
- Comment: Water/sewer/irrigation projects are ready-made for the types of income streams that these investors are looking for. We need to set up a model for projects to follow, in which a standard, credible project evaluation framework (the" car wash") identifies projects that would be deemed investible, and which could serve as the basis for bundling similar investible projects.
    - Find equity money that can be leveraged for 8%
- Comment: The exchange needs to establish a standard way of doing business and needs to address the burden of transactional costs.
- Comment: The way the IRS code is written restricts layering public pension system capital with private activity bonds. There is conflict language in California law that prevents pension funds from investing in assets that cities and counties have issued municipal bonds on. Some of the pension fund representatives indicated they have not had good experiences working with nonprofits because there's a conflict in the goals of the entities – in some previous deals, this has proven a challenge in making required returns. In general, investors realize that rates of returns are lower these days, but with an 8% return, taking a construction risk is going to be hard.
- Comment: To address the concerns indicated by the pension fund representatives, rather than being set up as a non-profit, the asset manager could instead be set up as a for-profit entity, but one with objectives that would be focused in achieving returns in a lower range (6-8% rather than the 10-12% or higher range).
- Comment: The exchange should not put a possible range of returns on a specific investment. The goal should be to identify an investment manager who will do the investment no matter what the return is.
- Comment: Having a west coast collaborative may help us get changes in the federal IRS code.

Draft Mission Statement for the Exchange

The WCX seeks to address the infrastructure gap and help achieve regional policy objectives including competitiveness, job creation, and climate change policy. We do this by:

- identifying value strategies to leverage public dollars, enable project sponsors, and increase measurable impact,
- creating and advancing new mechanisms for project finance and effective delivery,
- sharing and developing best practices,
- connecting investors to opportunities and collaborative data,
- helping identify, understand and mitigate risk, and
- strengthening public sector capacity and expertise.

Tasks for the Exchange

- Comment: We need to first develop a business case evaluation framework before we figure out financing mechanisms for individual projects.
- Comment: This exchange should stand on its own and the value should be self evident and apparent.

EARLY TASKS (now – June 2013)	LATER TASKS (after June 2013)
Develop evaluation framework (car wash)	Connect projects with capital • Identify new investment structure potential
Design Project database • What information is captured • Are there available database sources that can be adapted to needs • Understand how to incent database development	Develop database
Identify technical assistance needs and resource requirements	Deliver appropriate technical assistance to targeted jurisdictions
Information exchange • Case studies • Best practices • Human development • Education/training	Implement education/training
Map stakeholder groups and identify stakeholder needs	Exchange information
Identify structural obstacles/barriers/risks	Implement strategy to mitigate obstacles
Identify/validate infrastructure gap	Develop plan to address infrastructure gap
	Define specific project aggregations
	Conduct business case evaluations for initial round of projects

Lunch with Representatives of the State of California Governor's Office (Wade Crowfoot, Cliff Rechtschaffen)

- Question: What's the benefit of a multi-state exchange?
    - Response: It would concentrate expertise in one agency, like has been done with BC Partnerships. At the regional level, it would provide a shared voice around the policy and a place for investors to go to get connected to projects.
    - Response: It would allow the three states to have a shared voice at the federal level.
    - Response: It would allow the creation of a standard underwriting approach to doing projects of a certain type, and would allow for acceleration more quickly than states could do individually.

- Comment: CalPERS set aside 2% of its total fund (about $5 billion) for infrastructure investments and created a new asset class. One of our observations is that it's possible to invest in private infrastructure but it's not easy to invest in publicly held infrastructure. This group provides a forum for CalPERS to be an investor voice. This group can help overcome some of the impediments.
- Comment: CalPERS would benefit from the work that the tri-state exchange is doing because the result would be the development of a pool of potentially investible infrastructure assets.
- Comment: The reality is that investment councils have been looking for 8-12% returns. The big finding is that there's money out there. We're just not bringing them great projects. Also, not every project is right for this.
- Question: Are there any other multi-state groups like this one?
    - Response: One regional multi-jurisdictional model is the European P3 Expertise Center.
    - Response: The idea is that each of the states would do what they can within their parameters but use the resources of all 3 states. No new legislation should be needed.
- Question: When will the exchange need the Governor's office to jump in?
    - Comment: As you're explaining the concept, the more specificity and the more tangible list of projects you can develop would be helpful.
- Comment: The exchange needs to get over the challenge of finding asset owners who are game.
- Comment: There are more states interested in this.

Comments on the Final Report

- It needs to address the need for the exchange.
- It should provide examples of success.
- It should discuss possible opportunity areas.
- It should provide project design documents to pitch to investors.

Discussion on Funding for the Exchange

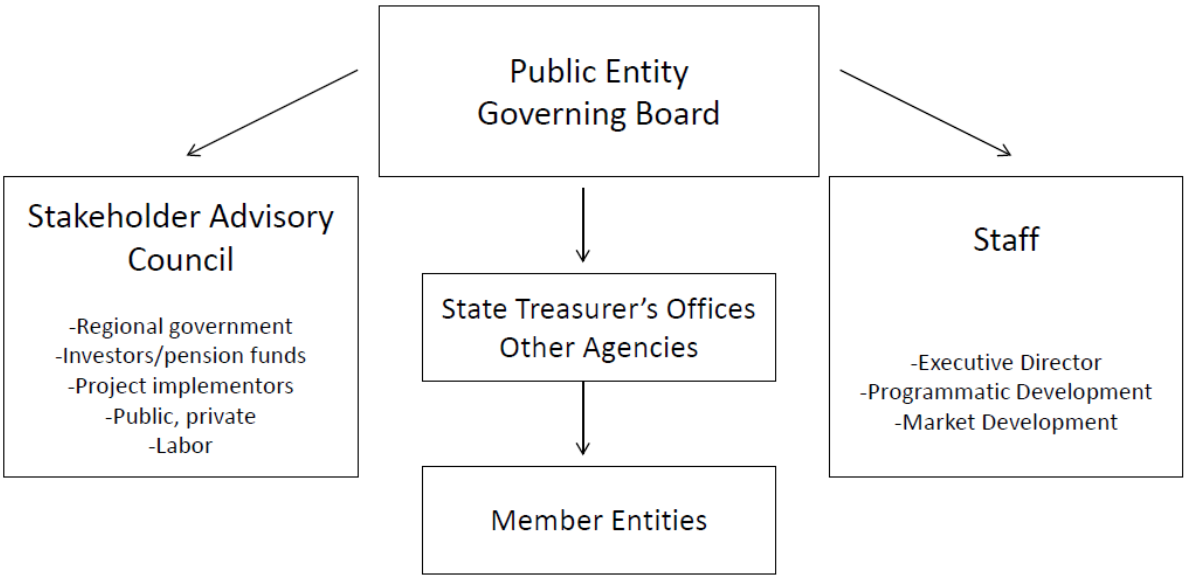
- There is $75,000 available for hiring an exchange manager.
- There is still some funding in the convenings budget – maybe $20,000.
- We need to develop a budget and have a document that can be used for fundraising.
- Oregon is scouring for money; there is no funding identified yet after this year.

Further Discussion on Governance

- Comment: The exchange should include a Stakeholder Advisory Council, which would be made up of regional governments, investors, project implementers, and public and private entities.
- Question: Can CH2M HILL come up with a list of candidate projects? We want to see case studies that test out this question.
- Question: Who is going to do the work of creating and refining the database of projects?

- Comment: It is okay with California and Washington for Oregon to continue to be the fiscal agent of the exchange. The exchange will have an interim operating structure through the Oregon treasury.
- Comment: Each state should have one voting representative in the exchange.
- Comment: The executive director would be an employee of a nonprofit formed by the exchange.
- Comment: California will need a couple options to review in terms of the legal structure of the exchange.

Potential Governance Model



Messaging of the Exchange

- Needs to focus on investable infrastructure.
- Should provide data on infrastructure gap and need (bankrupt cities and counties).
- Should provide examples from other organizations (like Partnerships BC).
- Should discuss potential projects.
- Should elaborate on the existing financial crisis.
- Should discuss system change ("converging storm, converging opportunity").
- Should stimulate investor interest.
- Perhaps develop a chart on different types of infrastructure and what households typically pay (for example – a water/sewer bill vs. a cable/internet bill).

Action Items and Next Steps

- CH2M HILL will draft a strategic/business plan that will be finalized by the end of September. If there are pieces of the plan needed before that for sales purposes, the CH team agreed to help with that.
- CH2M HILL will send out copies of the slideshow presented at the workshop along with notes from the workshop.

Attachment B: Slides Presented at the WCX Strategic Workshop

Context, Financing Options and Governance:

Identifying a Path for Success

West Coast Infrastructure Exchange

Workshop

Sacramento, CA

July 16-17, 2012

Market Trends and Context

Matthew A. Wilson PhD.

AS INITIALLY PRESENTED AT WORKSHOP – DOES NOT REFLECT FINAL DECISIONS

Topics

- Macro Level Trends
- Regional Level Trends
  - California, Oregon, Washington
- Finance Trends and Investor Demand
- Challenges and Opportunities
- Implications for the *West Coast Infrastructure Exchange*

Macro Level Trends

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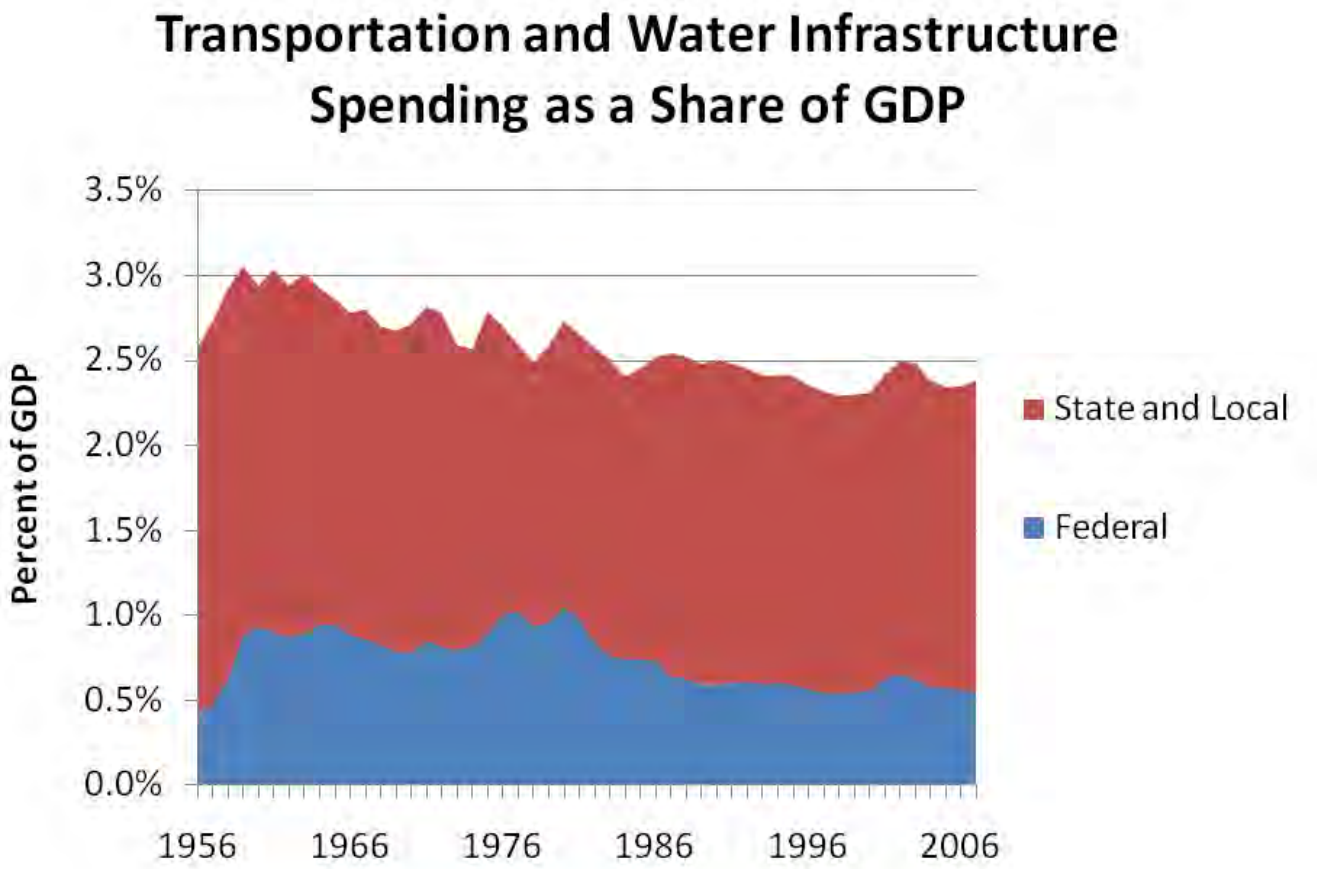
The Infrastructure Deficit

Results from a steady decline in Federal and State government infrastructure spending, combined with a steady increase in the need to repair aging infrastructure and initiate new builds.

This deficit is predicted to accelerate in the near term as state and local governments, which account for a growing share of infrastructure spending, face budget shortfalls that continue following the Great Recession of 2007.

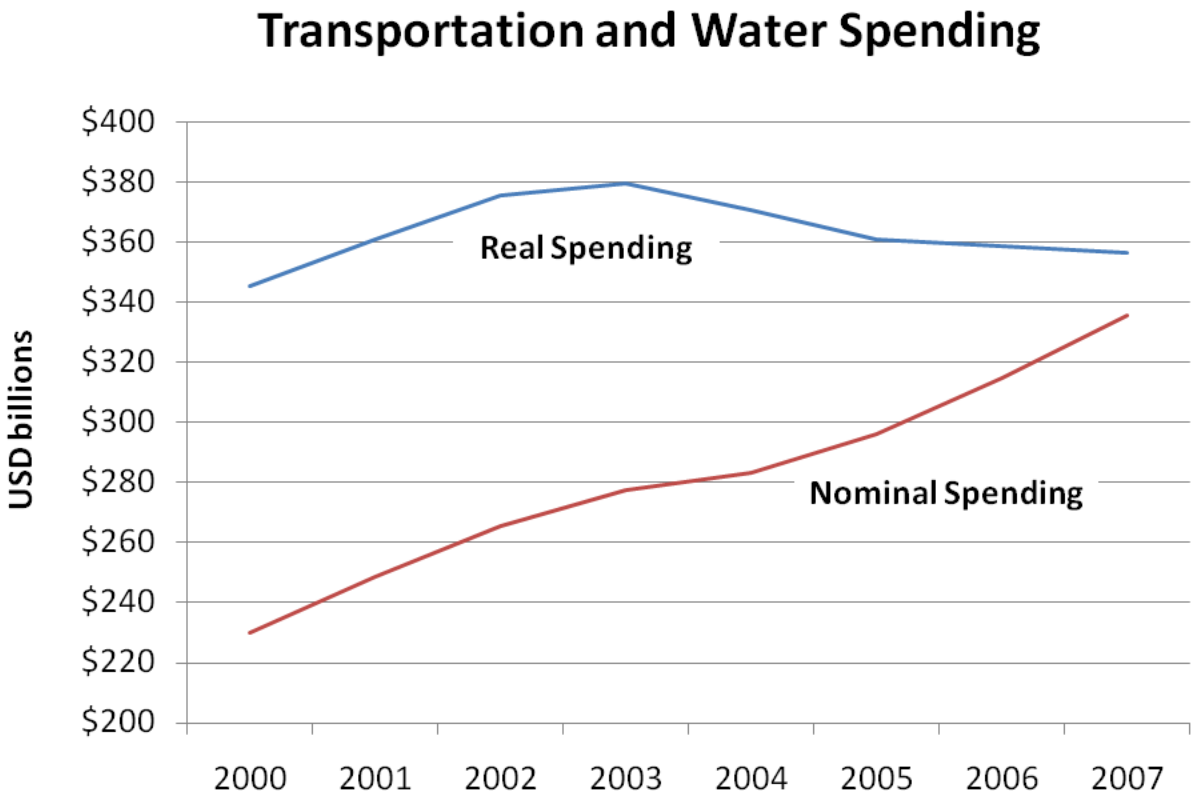
Government Spending on Infrastructure Has Declined



Source: Congressional Budget Office

The Price of Raw Materials Has Risen Affecting Spending Impact

Real infrastructure spending has declined significantly since the early 2000s even though nominal spending has risen.



Source: Congressional Budget Office

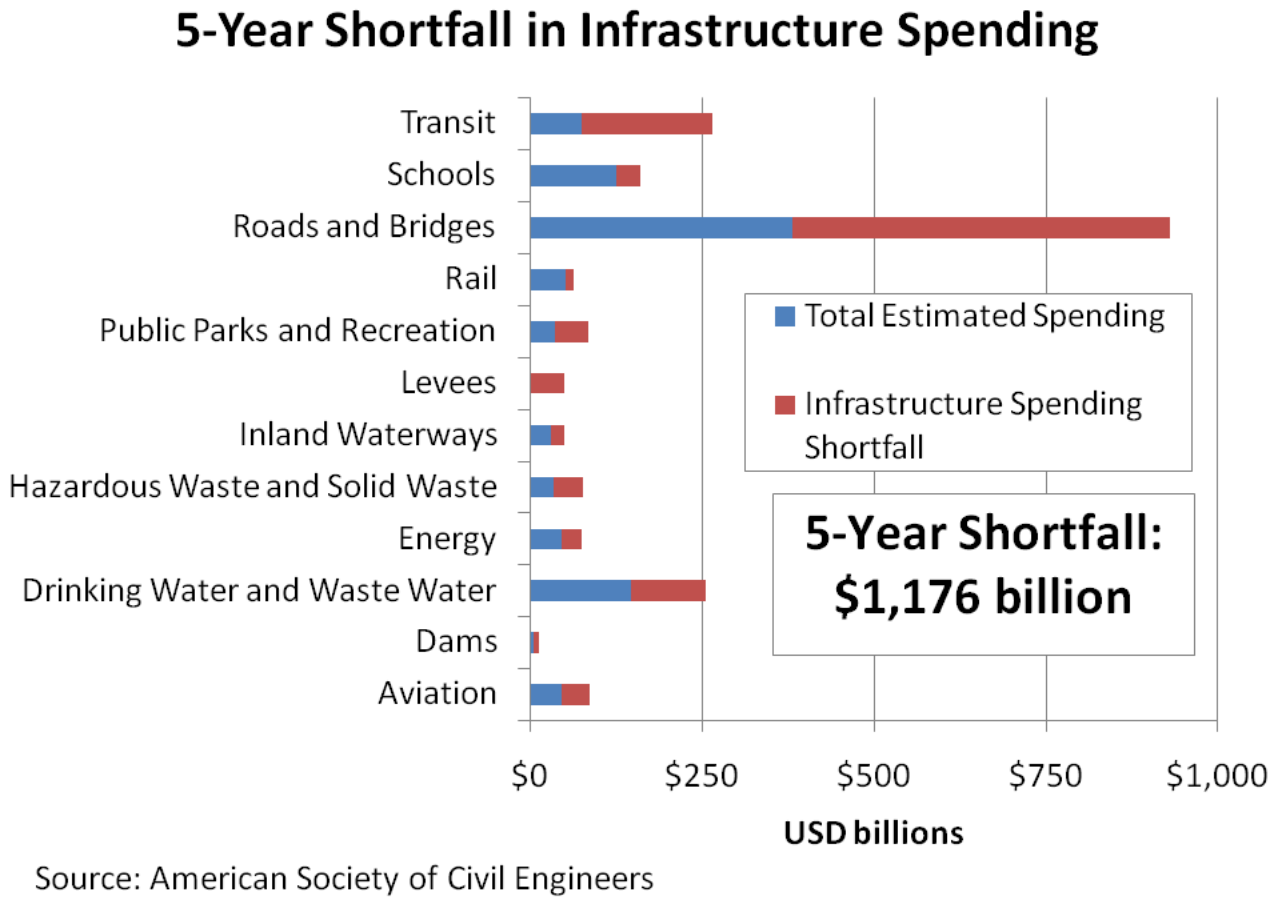
The Need for Investment has Risen

US Infrastructure Report Card 2009

Roads	**D-**	Poor road conditions cost U.S. motorists $54 billion a year in repairs and operating costs-$275 per motorist. Americans spend 3.5 billion hours a year stuck in traffic, at a cost of $63.2 billion a year to the economy. Total spending of $59.4 billion annually is well below the $94 billion needed annually to improve transportation infrastructure conditions nationally.
Aviation	**D**	Air travel and traffic have reportedly surpassed pre-Sept. 11 levels and are projected to grow 4.3%annually through 2015.
Rail	**C-**	Freight rail tonnage is expected to increase at least 50% by 2020. The freight railroad industry needs to spend $175 to $195 billion over the next 20 years to maintain existing infrastructure and expand for freight growth. Expansion of the railroad network to develop intercity corridor passenger rail service is estimated to cost approximately $560 billion over 20 years.
Transit	**D**	Transit use increased faster than any other mode of transportation – up 21%-between 1993 and 2002. In 2002, total capital outlays for transit were $12.3 billion. The Federal Transit Administration estimates $14.8 billion is needed annually to maintain conditions, and $20.6 billion is needed to improve to "good" conditions.
Navigable Waterways	**D-**	A single barge traveling the nation's waterways can move the same amount of cargo as 58 semitrucks at one-tenth the cost-reducing highway congestion and saving money. Of the 257 locks on the more than 12,000 miles of inland waterways operated by the U.S. Army Corps of Engineers, nearly 50% are functionally obsolete. By 2020, that number will increase to 80%. The cost to replace the present system of locks is more than $125 billion.
Bridges	**C**	Between 2000 and 2003, the percentage of the nation's 590,750 bridges rated structurally deficient or functionally obsolete decreased slightly from 28.5% to 27.1%. However, it will cost $9.4 billion a year for 20 years to eliminate all bridge deficiencies.

Source: American Society of Civil Engineers 2009

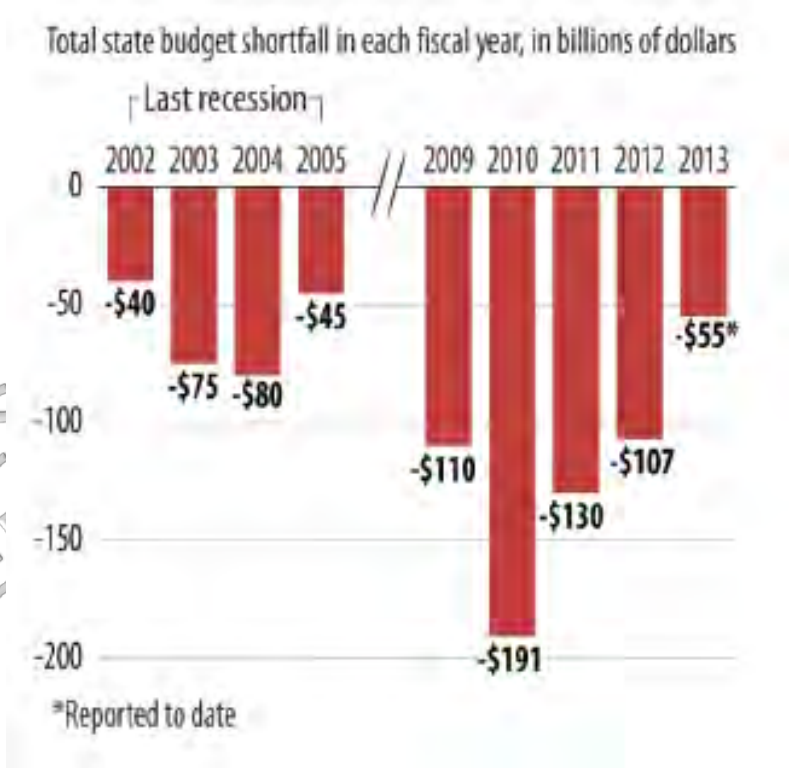
Continued Shortfalls are Anticipated



Source: American Society of Civil Engineers

State Budget Shortfalls Contribute to the Deficit

State finances are recovering from the Great Recession, but budget shortfalls remain large by historical standards as the economy remains weak and unemployment is still high



Source: Center on Budget and Policy Priorities, 2012

Cities Are Struggling

Third Calif. city files for bankruptcy

5.Source: The Washington Post
Publication date: July 11, 2012
Facing a budget shortfall of $45.8 million, the City Council of San Bernardino, Calif. voted to declare bankruptcy Tuesday night.

Stockton bankruptcy: Other California cities concerned

Source: Los Angeles Times
Publication date: June 27, 2012
City managers in Southern California are casting a wary eye on Stockton, the latest municipality to be headed toward bankruptcy court after spending on civic projects and labor costs accelerated far past its ability to pay its bills.

Mammoth Lakes files for bankruptcy

Source: Los Angeles Times
Publication date: July 2, 2012
The High Sierra town of Mammoth Lakes said Monday that it filed for bankruptcy

Regional Infrastructure Trends

California, Washington, Oregon

California Key Facts

- •Roads
- •Drinking Water
- •Mass Transit

- 30% of California's bridges are structurally deficient or functionally obsolete.
- 66% of California's major roads are in poor or mediocre condition.
- 68% of California's urban interstates are considered congested.
- Vehicle travel on California's highways increased by 27% from 1990 to 2007.
- California spends $2 billion less each year on highway maintenance and rehabilitation than is needed.
- California has $18.17 billion in wastewater infrastructure needs.
- 69 of California's 1,247 dams are in need of rehabilitation to meet applicable state dam safety standards.
- California's drinking water infrastructure needs an investment of $27.87 billion over the next 20 years.
- California's ports handled 216 million tons of waterborne traffic in 2005, ranking it 3rd in the nation.
- California reported an unmet need of $1.7 billion for its state public outdoor recreation facilities and parkland acquisition.

Source: American Society of Civil Engineers State Report Cards 2009

Washington Key Facts

•Roads
•Bridges
•Mass Transit

- 29% of Washington's bridges are structurally deficient or functionally obsolete..
- 33% of Washington's major roads are in poor or mediocre condition.
- 27% of Washington's major urban highways are congested.
- Vehicle travel on Washington's highways increased 27% from 1990 to 2007.
- Washington has $3.75 billion in wastewater infrastructure needs.
- 29 of Washington's 950 dams are in need of rehabilitation to meet applicable state dam safety standards.
- Washington's drinking water infrastructure needs an investment of $6.67 billion over the next 20 years.
- Washington's ports handled 122 million tons of waterborne traffic in 2005, ranking it 7th in the nation.
- Washington reported an unmet need of $60.6 million for its state public outdoor recreation facilities and parkland acquisition.

Source: American Society of Civil Engineers State Report Cards 2009

Oregon Key Facts

- Roads
- Bridges
- Schools

- 25% of Oregon's bridges are structurally deficient or functionally obsolete.
- 18% of Oregon's major roads are in poor or mediocre condition.
- 42% of Oregon's major urban highways are congested.
- Vehicle travel on Oregon's highways increased 41% from 1990 to 2007.
- There are 122 high hazard dams in Oregon.
- 8 of Oregon's 1,204 dams are in need of rehabilitation to meet applicable state dam safety standards.
- Oregon's drinking water infrastructure needs an investment of $4.27 billion over the next 20 years.
- Oregon's ports handled 36 million tons of waterborne traffic in 2005, ranking it 24th in the nation.
- Oregon reported an unmet need of $123,000 for its state public outdoor recreation facilities and parkland acquisition.
- Oregon has $2.88 billion in wastewater infrastructure needs.

Source: American Society of Civil Engineers State Report Cards 2009

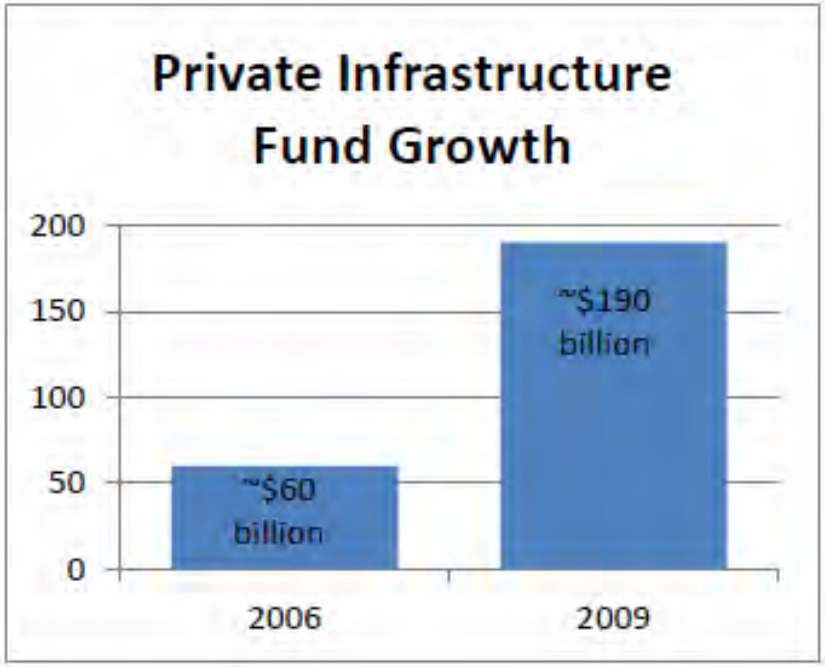
Investor Demand

AS INITIALLY PRESENTED AT WORKSHOP – DOES NOT REFLECT FINAL DECISIONS

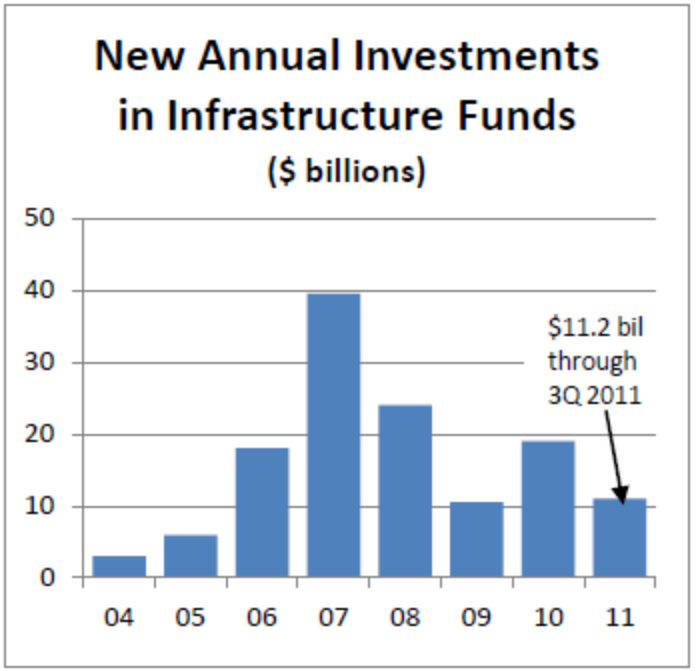
Growth in Available Private Capital

- Investor interest in the Infrastructure Sector is strong, with more investors putting into place programs with specific infrastructure allocations.
- Billions of dollars in infrastructure-focused capital are sitting on the sidelines, looking for projects if they could figure out how to invest.

Rising Pension Fund and Investor Interest

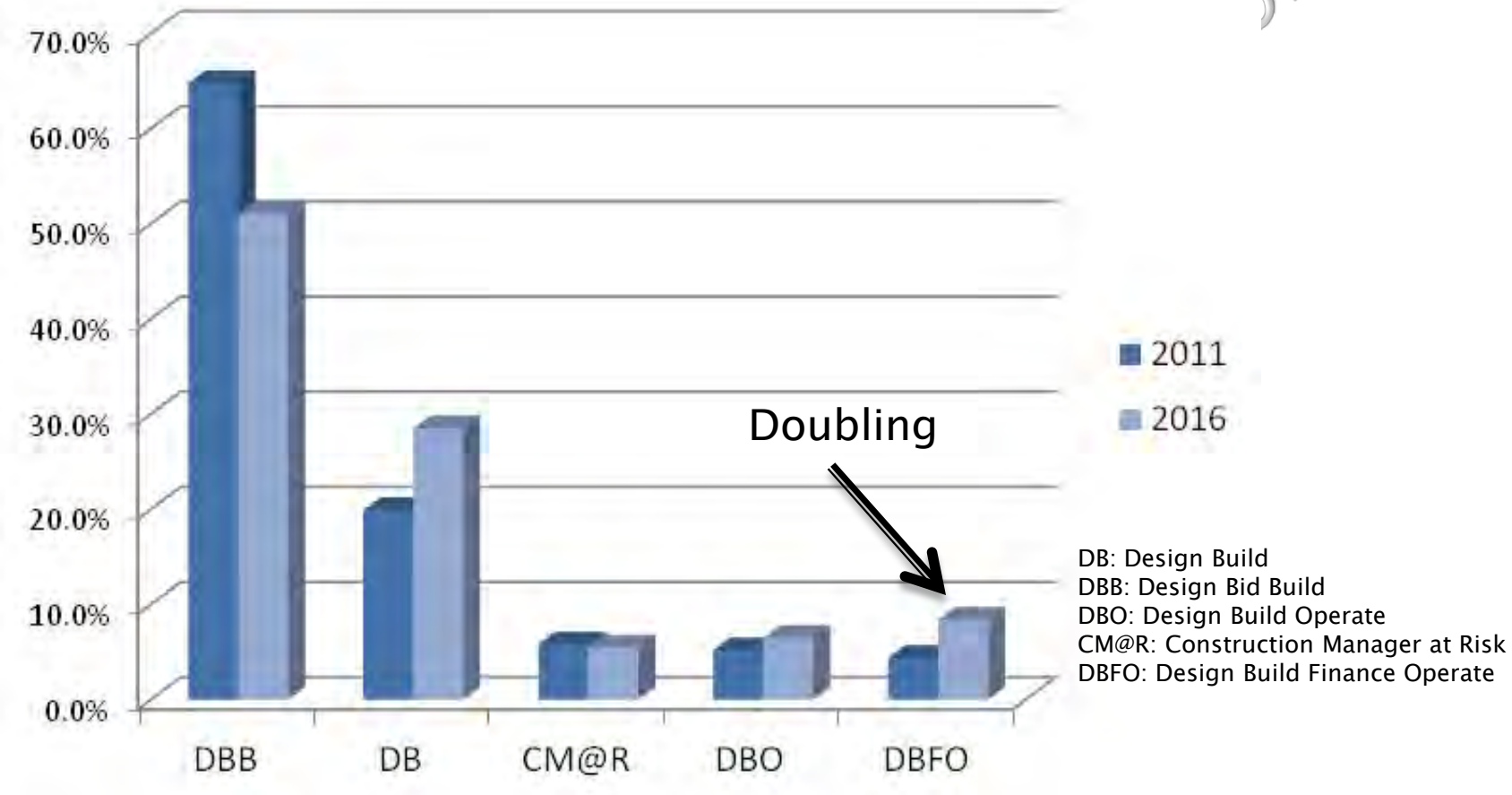


Source: Kearsage Report, March 2010



Source: Probitas Research, Washington Post, Oct 23, 2011

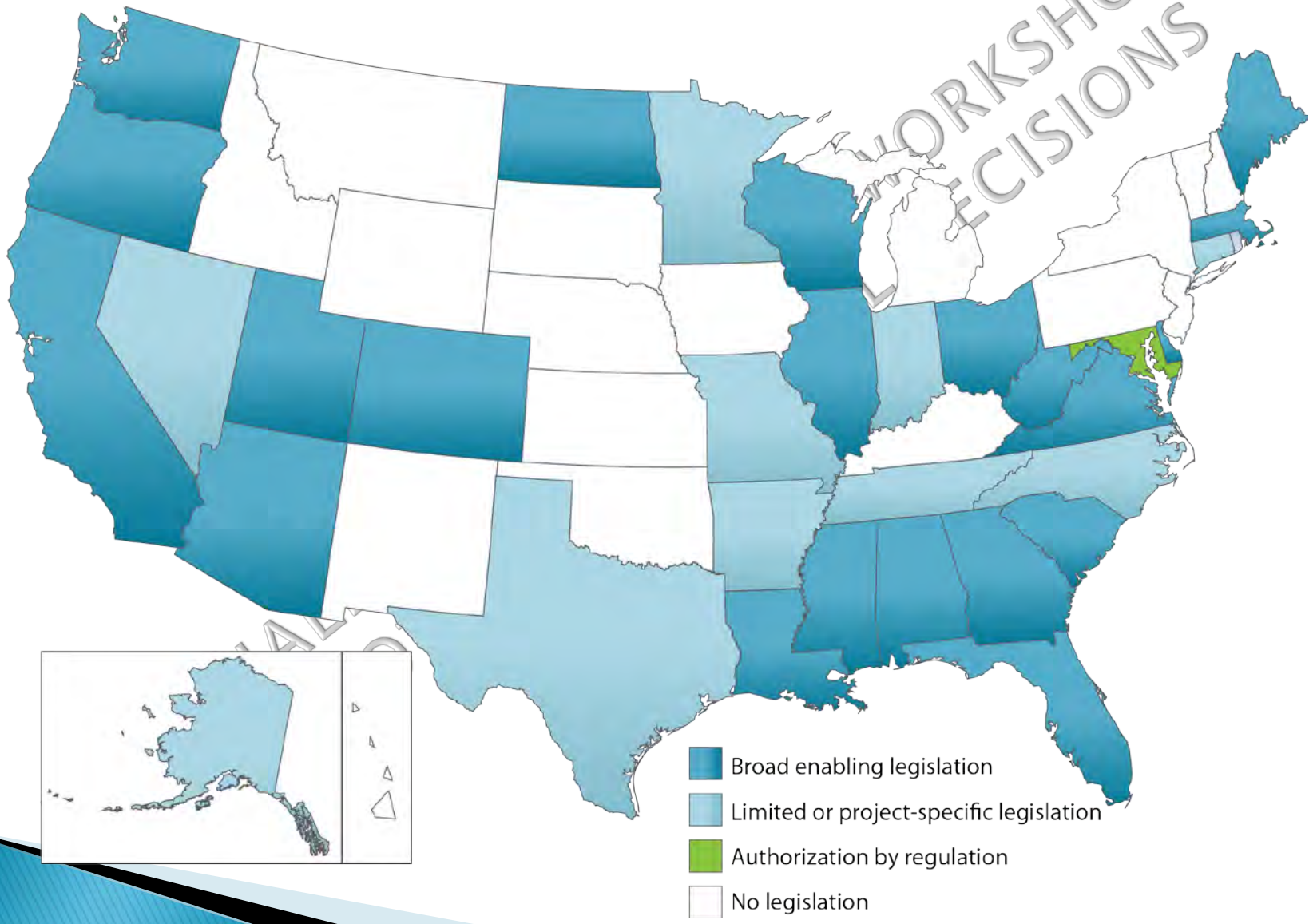
Alternative Procurement Methods are Anticipated to Increase



DB: Design Build
DBB: Design Bid Build
DBO: Design Build Operate
CM@R: Construction Manager at Risk
DBFO: Design Build Finance Operate

Source: Global Water Intelligence 2011

P3 Enabling Legislation for Transportation



Source: National Conference of State Legislatures 2012

Challenges and Opportunities

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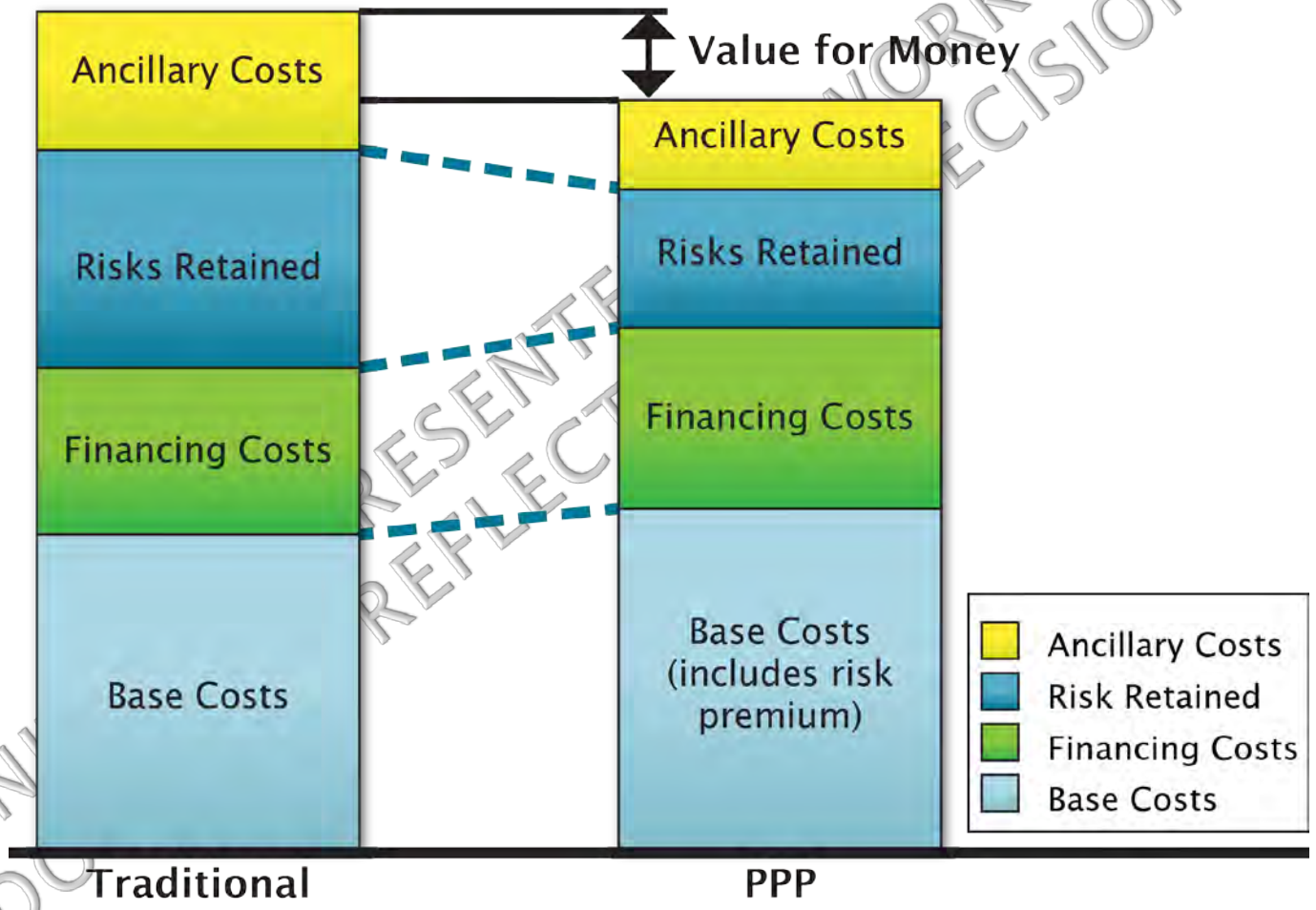
Traditional Cost of Capital: Municipal Bonds Have Historically Low Interest Rates

Raw Data Source: Bondbuyer.com

Private Capital Delivery Costs: Value for Money



Adapted from: *Benefits of private investment in infrastructure*. Kearsarge Global Advisors, march 2010

Degrees of Risk Allocation

Risk Allocation Table

	Risk Allocation Table	Traditional Design-Bid-Build Approach	Design-Build Approach (DB)	Design-Build-Operate Approach (DBO)	Design-Build-Operate-Finance Approach (DBOF)
Design & Build	Design/Build Cost	Owner	DB Entity	DBO Entity	DBOF Entity
	Schedule/Completion	Owner	DB Entity	DBO Entity	DBOF Entity
	Construction Warranties	Owner	DB Entity	DBO Entity	DBOF Entity
Asset Management	Water Quality Performance	Owner	Owner	DBO Entity	DBOF Entity
	Capital Replacement	Owner	Owner	DBO Entity	DBOF Entity
	Power	Owner	Owner	DBO Entity	DBOF Entity
	Biosolids	Owner	Owner	DBO Entity	DBOF Entity
	Life Cycle Costs	Owner	Owner	DBO Entity	DBOF Entity
	Operation & Maintenance	Owner	Owner	DBO Entity	DBOF Entity
Financing	Long Term Financing	Owner	Owner	Owner	DBOF Entity
	Interest Rate	Owner	Owner	Owner	DBOF Entity

Implications for WCIE

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Implications for WCIE

- The infrastructure deficit in the region is very real, the need is great, and underlying trends causing the gap are anticipated to continue in the near term.

Implications for WCIE

- The tax-exempt municipal bond market is becoming capacity constrained. As that constraint becomes more apparent, there are exciting opportunities for the P3 market to open up.

Implications for WCIE

- The opportunity to meet the growing demand for P3 delivery models can be successfully managed by investing in stakeholder education and outreach.

Which projects are the right ones?

- Mike Matichich

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Topics

- Criteria for Selecting Projects
- What type of project will define success for WCIE
  - Near-term
  - Long-term

Criteria for identifying projects (both near-term and long-term)

- Satisfies important public objective (e.g., reduce congestion, reduce or eliminate pollution)
- Specific functional areas (water, transportation, etc.)
- Project is "Ready to Move"
  - Sponsoring agency has taken actions indicating it is ready to move forward
  - Shovel-ready [plans & specs developed]
  - Strong supporting business case evaluation (B/C ratio, NPV)
- Financially sound
  - Dedicated, reliable revenue stream; or
  - Solid commitment by local agency or other entity to repay debt
- Apparent match with requirements of at least one of the financing options deemed to be of interest to WCIE

Criteria for identifying projects (Additional factors for near-term 'early win' add-ons)

- Employs proven technologies
- Clearly 'Enabled' by existing statutes & regulations
- Size/Scale achievable
- Sponsoring agency shows indications of flexibility/broad view on financing/delivery options
- Centralized project sponsor decision-making authority
- Low political risk
- Very strong business case evaluation (i.e., lead with projects that pose fewer financial risks)
  - High B/C ratio for the project;
  - Reasonable 'affordability' parameters for any required user fees, taxes, other repayment sources
  - Strong financials even for downside scenarios on cost and revenue assumptions

Business Case Evaluation (BCE) should include:

- Clear, specific project definition
  - Objectives
  - Customers
  - Implementation Schedule
  - Life cycle cost estimates (capital and O&M)
- Financial
  - Clearly defined evaluation framework
    - Period of evaluation
    - Discount rate, other financial evaluation assumption
  - Risk analysis (e.g., sensitivity analysis around key cost and revenue parameters, with context-specific parameters and assumptions)
- Non-financial
  - Often useful to also document the non-financial supporting benefits that help differentiate options.

Examples from two BCE frameworks illustrate potential areas of coverage and degree of complexity

- ProjectSelect™
- Partnerships BC Business Case Evaluation framework

ProjectSelect™ is a freeware BCE support tool that CH2M HILL developed in partnership with Clean Water Services in Hillsboro, OR to support a wide range of investment decisions.

Uniform, context-specific evaluation assumptions are used to frame the financial portion of the evaluation.

Evaluation Parameters and Corresponding Assumptions

This worksheet describes the evaluation parameters (both financial and non-financial) and allows the user to refine calculation methodologies

Financial Parameters

Net Present Value	Estimated current value of net revenue forecast	Detailed Formula
Equivalent Annual Cost	Annualized cost of alternative over forecast period	Detailed Formula
Payback Period	Expected time (years) to recover initial capital investment	Detailed Formula
Benefit - Cost Ratio	Ratio of discounted revenues to discounted costs	Detailed Formula

Non-Financial Evaluation

User-Defined Criteria	Weighted performance scoring of alternatives against non-financial objectives

☐ Exclude non-financial performance evaluation of project alternatives

Discount Rate

Borrowing rate	0.00%
Expected inflation	0.00%
Real rate (calculated)	0.00%
Real rate (override)	4.50%

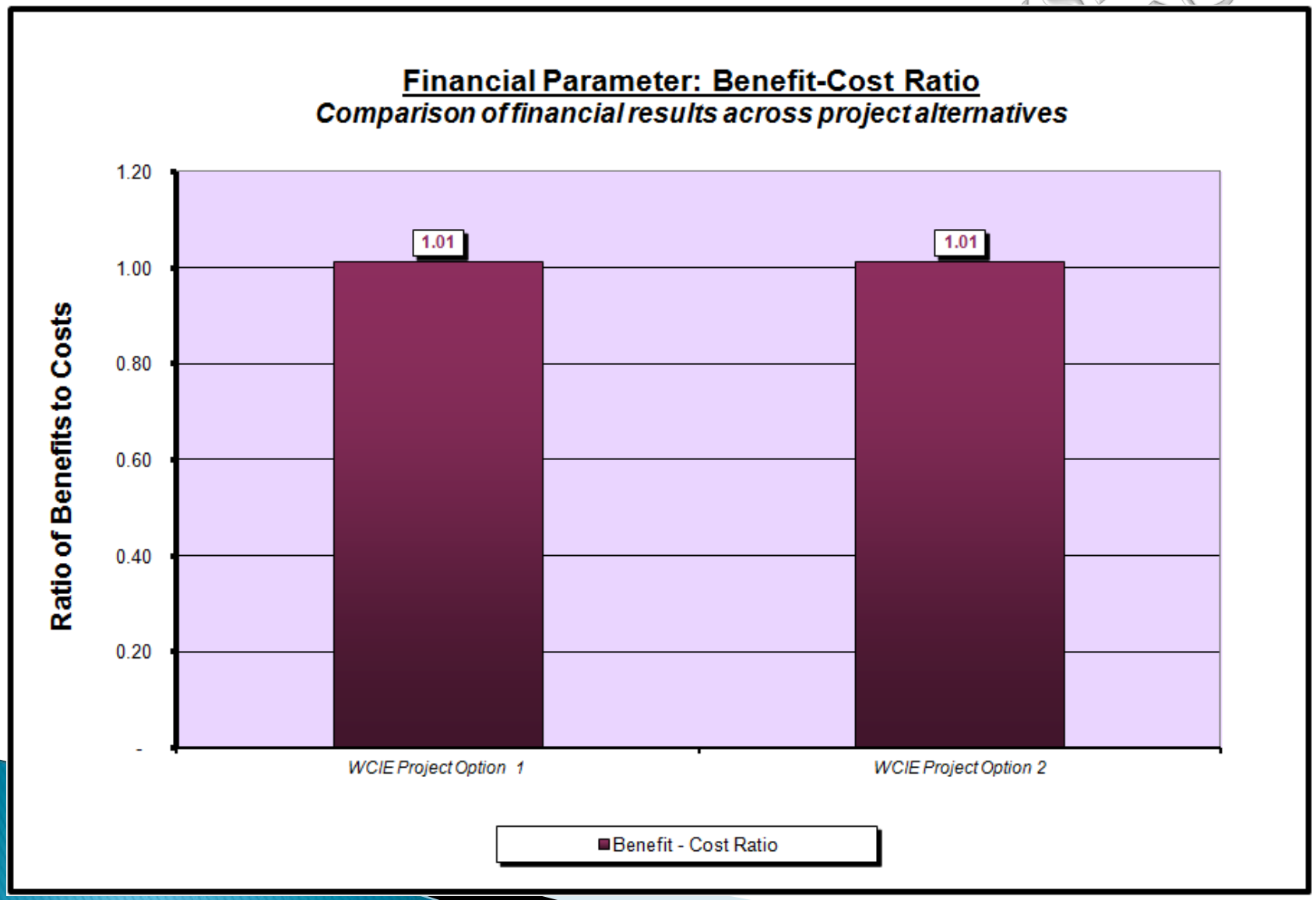
☑ Use manual override for Real rate

Effective discount rate: **4.50%**

Other Financial Assumptions

Enter all costs and revenues for project alternatives in:	◉ Uninflated (Current) Dollars ○ Inflated (Nominal) Dollars	☐ Display NPV and EAC results in ***MILLIONS*** of dollars
Assume all costs and revenues for project alternatives occur at:	◉ Start of year ○ End of year ○ Mid-year NOTE	
For the Payback Period Financial Parameter, use:	○ Undiscounted Costs (Simple) ◉ Discounted Costs	

Base case financials might show two candidate projects to be roughly equal…



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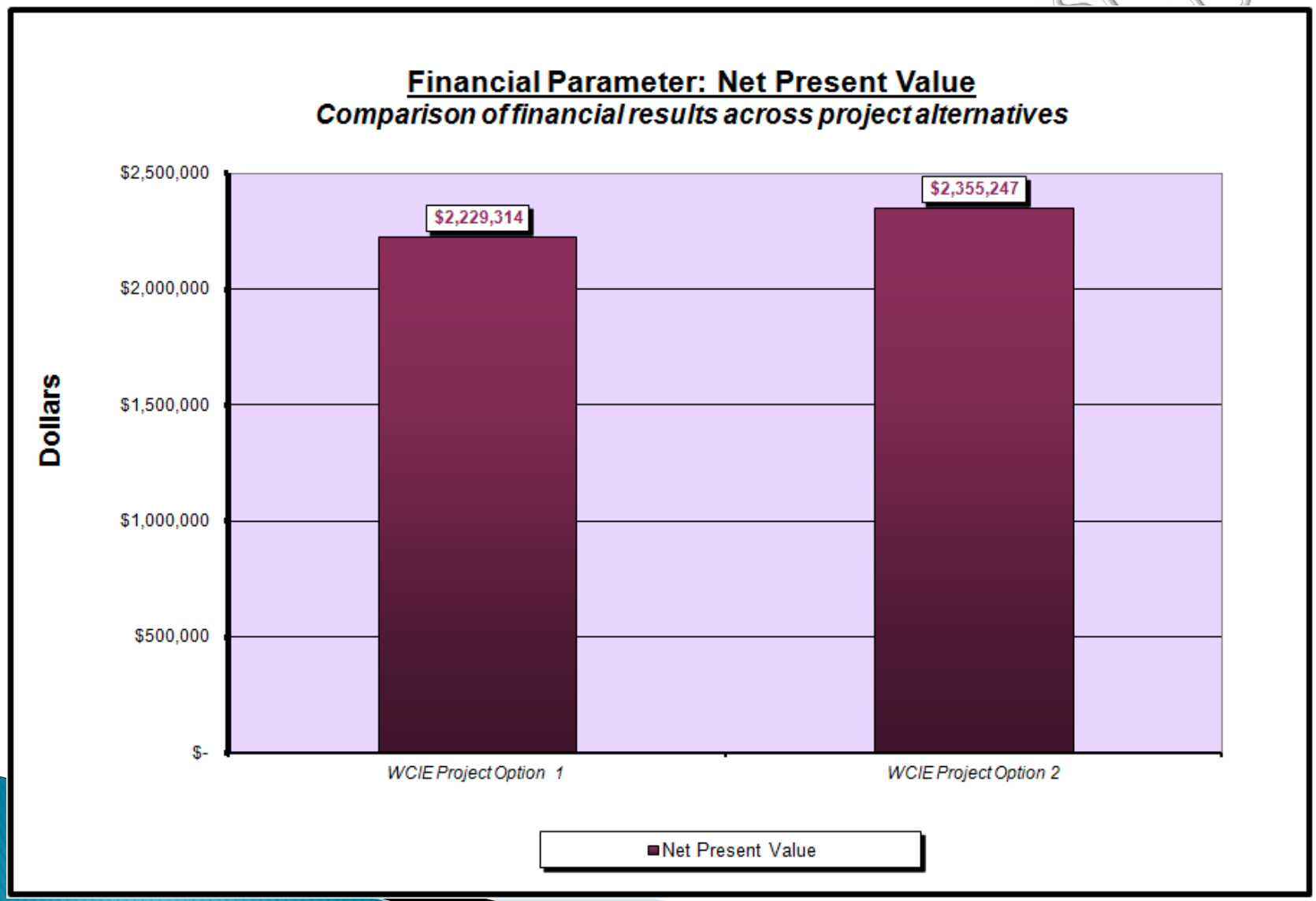
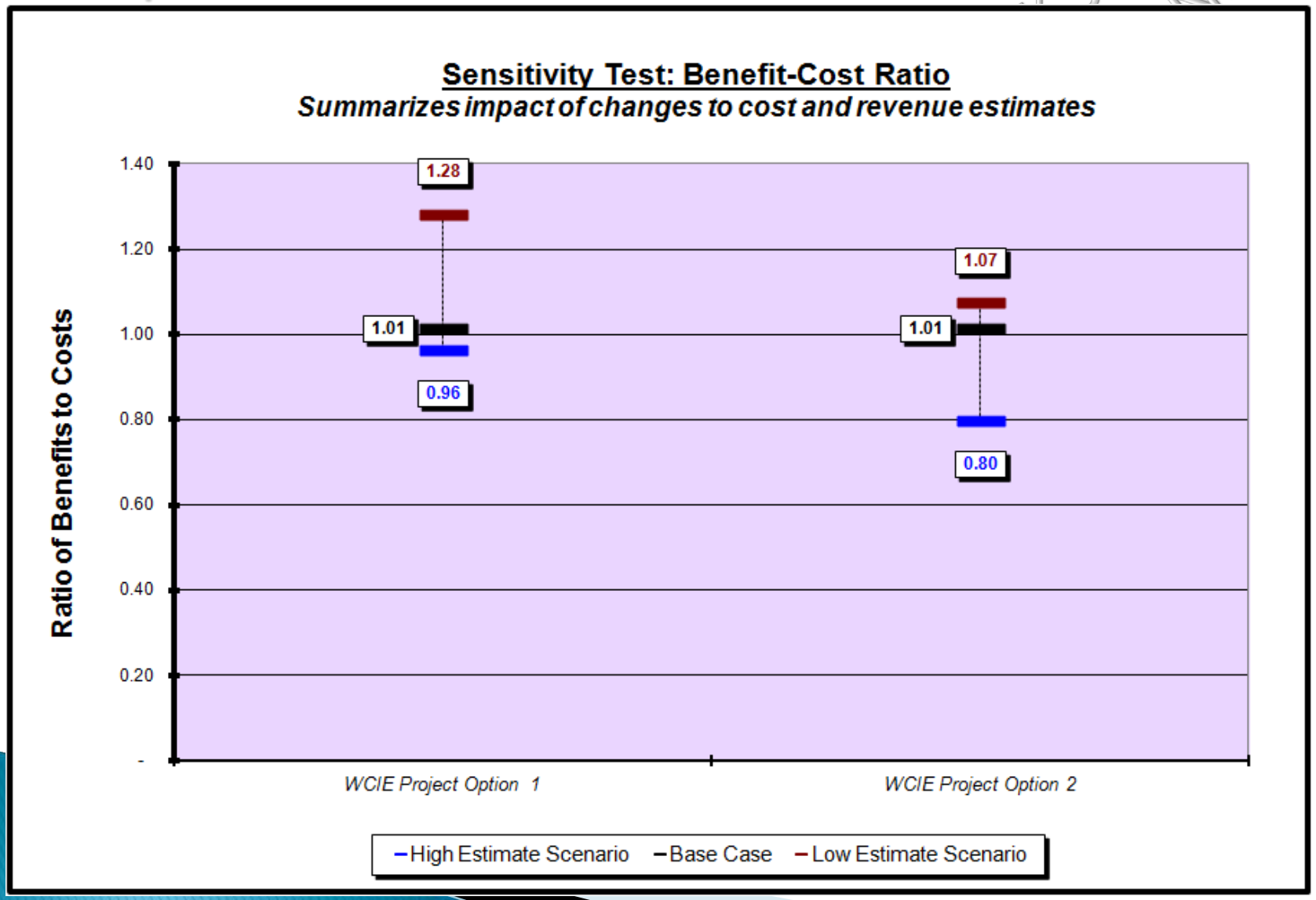


… but sensitivity analyses for key cost and revenue variables might show a clear advantages for one of the options.



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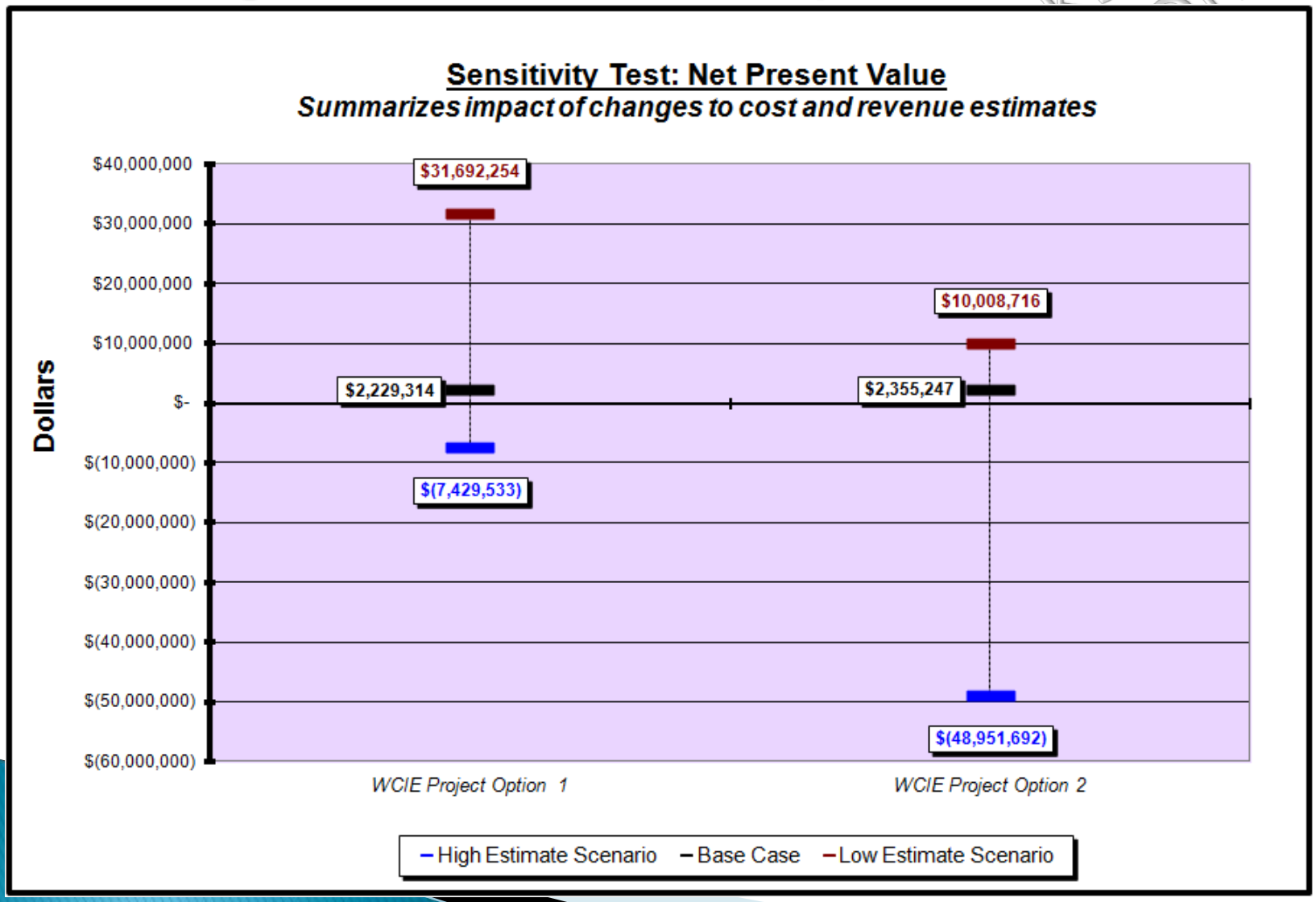
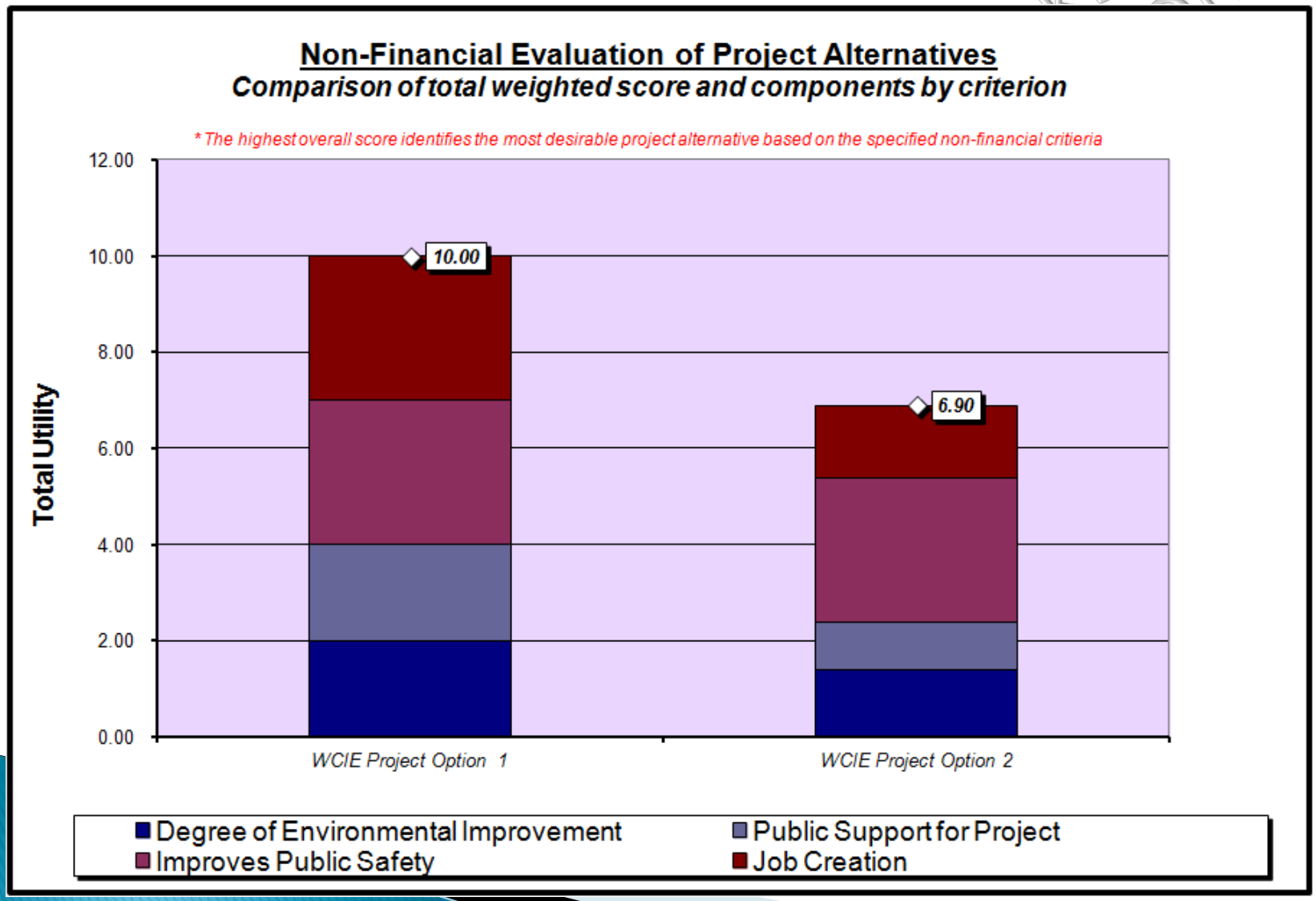


Relevant non-financial factors can also help to differentiate priority projects to advance



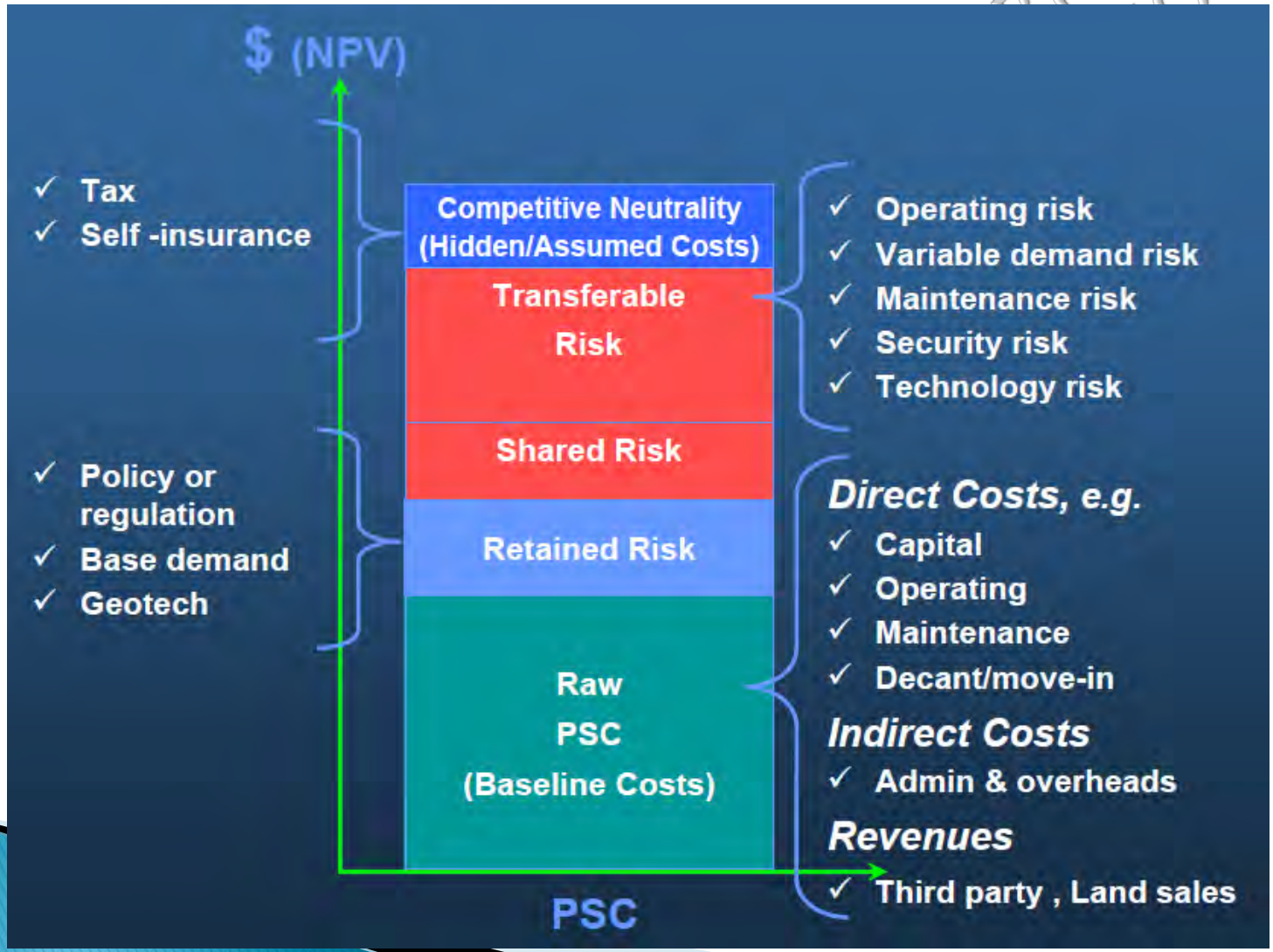
Insights from Partnerships BC on creating & implementing a Business Case Evaluation framework

- Flexibility in specific parameters such as discount rates is helpful in fitting the framework to all contexts
- Many small projects are not viable for the P3 framework and don't merit the effort to do a rigorous business case study
  - "Perfect world" a 2-3 month process
  - Typically a year-long effort
- Having professional staff that can conduct the BCEs in a consistent fashion strongly aids credibility

The Partnerships BC guidance documents recommend that some form of quantitative analysis be performed, in light of the project phase and evaluation.

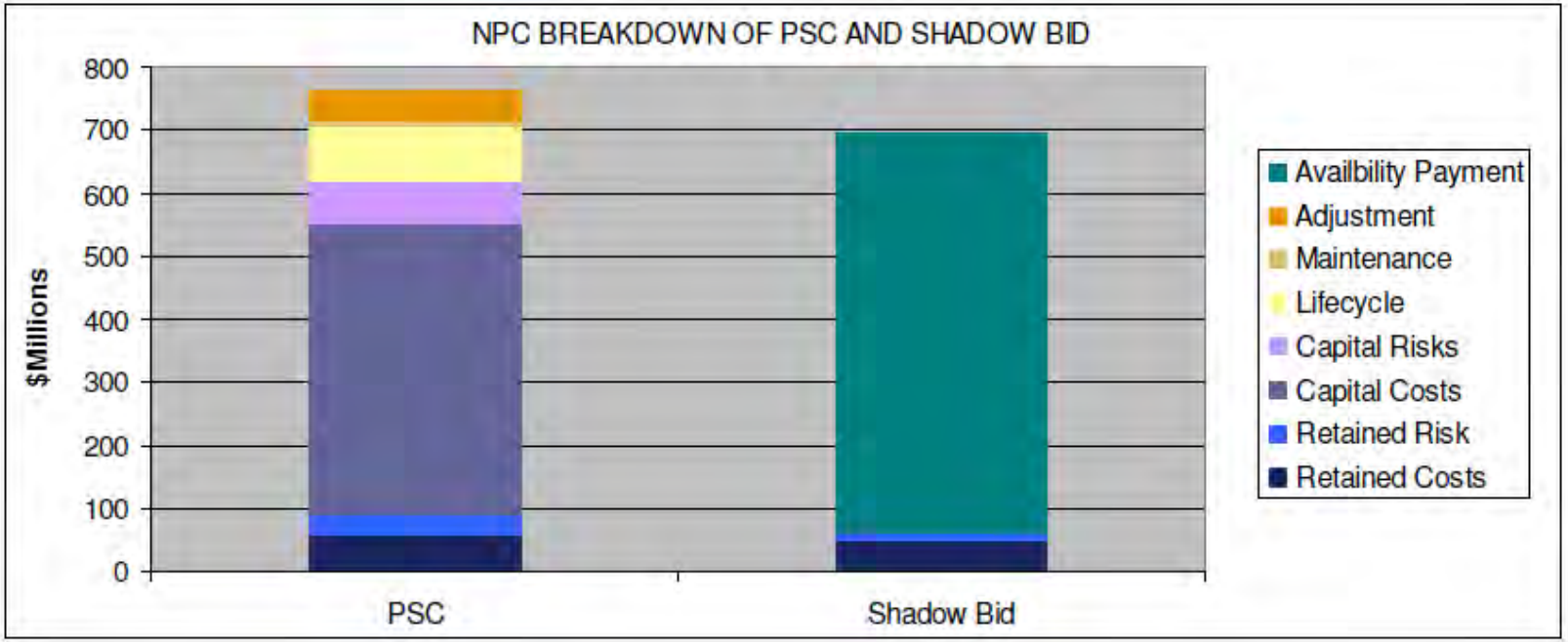
Business Case Section	Analysis
Part B (Investment Decision)	▪ Multiple Criteria Analysis (MCA) ▪ Net Present Cost (NPC) Analysis ▪ Operational Efficiencies ▪ Sensitivity Analysis (MCA)
Part C (Procurement Decision)	▪ Multiple Criteria Analysis (MCA) ▪ Comprehensive Risk Analysis (includes Monte Carlo analysis) ▪ Financial Analysis (PSC and Shadow Bid) ▪ Sensitivity Analysis (Financial Model)
Part D (Recommended Option Affordability)	▪ Accounting Analysis ▪ Funding Analysis ▪ Budget

The financial analysis component in Partnership BC's BCEs includes development of a Public Sector Comparator (PSC) that reflects the full life-cycle risk-adjusted cost of traditional public delivery.



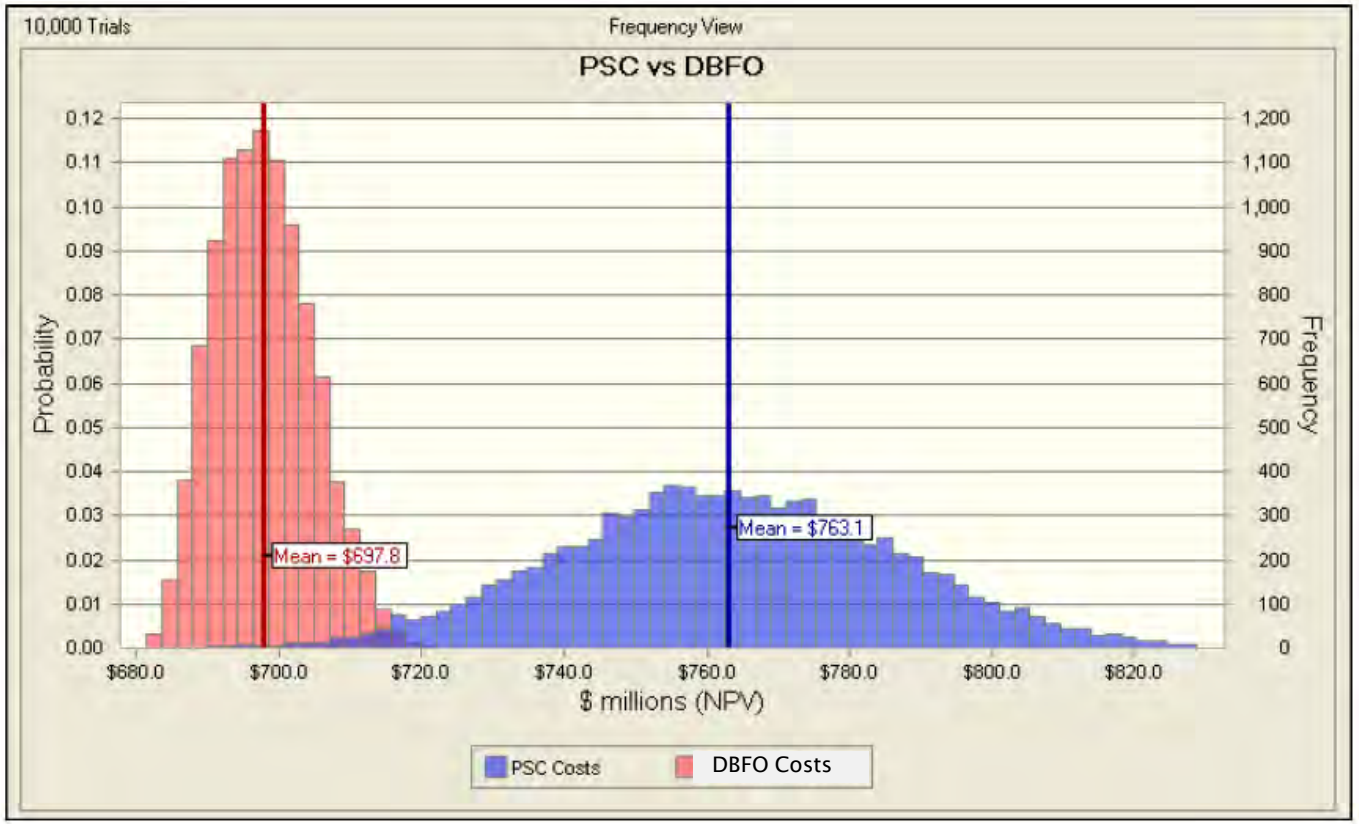
The PSC is then compared with a shadow bid of delivery through a PPP

Simplified NPC Breakdown of PSC and Shadow Bid



When called for based on project stage and complexity, the analysis includes a frequency analysis based on probability for identified uncertainties

Comparing Frequency Distributions of Risk-Adjusted Cost: PSC and DBFO



Facilitated Discussion re: Project Selection Criteria

AS INITIALLY PRESENTED AT WORKSHOP – DOES NOT REFLECT FINAL DECISIONS

Presentation: Target Project Types Identified by the 3 States

AS INITIALLY PRESENTED AT WORKSHOP – DOES NOT REFLECT FINAL SELECTIONS

In discussion with State reps, preliminary thoughts on opportunities for early wins and longer-term opportunities were identified

California

- Transportation
- Energy projects related to the grid
- Water/Sewer [existing examples of public-private-partnerships that can be built upon]

Potential Early Wins

- Schools
- Public Buildings

Longer-Term Priorities

Washington

- Schools
- Public buildings
- Energy efficiency projects
- Some water/sewer projects [even though the state has worked to address the backlog through state and Federally seeded programs, there remains a gap of several hundred million $]

Potential Early Wins

- Transportation (some very large and have complexities that may make early action problematic)

Longer-Term Priorities

Oregon

Potential Early Wins

- Examples of previous successes that could be built upon/extended
  - Long Beach Courthouse
  - Cool Schools program
  - Water supply (where people are willing to pay more for certain benefits/service enhancements)

Longer-Term Priorities

- For Certain
  - Water/sewer
  - Energy
  - Public Buildings
- Potential
  - Community hospitals
  - Transportation
  - Broadband
  - Schools (mixed success)

Facilitated Discussion re: Specific Project Areas Identified by the 3 States

AS INITIALLY PRESENTED AT WORKSHOP – DOES NOT REFLECT FINAL SELECTIONS

California

	Transportation	Energy	Water/Sewer
Typical Project Size?			
Centralized Project Sponsor?			
Proven technologies?			
Likely strong financials (B/C ratio, NPV?)			
Definable, reliable funding source?			
Likely low political risk?			

Washington

	Schools	Public Buildings	Energy Efficiency	Water/Sewer
Typical Project Size?				
Centralized Project Sponsor?				
Proven technologies?				
Likely strong financials (B/C ratio, NPV?)				
Definable, reliable funding source?				
Likely low political risk?				

Oregon

	Water/Sewer	Energy	Public Buildings
Typical Project Size?			
Centralized Project Sponsor?			
Proven technologies?			
Likely strong financials (B/C ratio, NPV?)			
Definable, reliable funding source?			
Likely low political risk?			

Context, Financing Options and Governance:

Identifying a Path for Success

West Coast Infrastructure Exchange

Workshop

Sacramento, CA

July 16-17, 2012

Organizational Structure and Governance

- Kathryn Rett, Esq.

AS INITIALLY PRESENTED AT WORKSHOP – DOES NOT REFLECT FINAL DECISIONS

Agenda

- Part I Organizational Structure and Governance Analysis
- Part II Collaborative Organizations with Similar Charters
- Part III Structure and Governance "Straw Man"

Organizational Structure and Governance Analysis

- Part 1

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Organizational Structure and Governance Analysis

- What **Services** does the organization provide?
- How will the organization be **Staffed**?
- How will the organization receive **Oversight**?
- How will the organization be **Funded**?
- What are the **Overarching Considerations** that influence formation?

What Services does the organization provide?

- Expertise
  - The Exchange makes technical, legal and financial expertise available to public agencies and public officials
- Educate
  - Public agency procurement staff that there are financing models utilizing private financing that are viable;
  - Investors on policy issues of the agencies surrounding accountability, transparency and conflict of interest
  - Elected officials and staff around limitations on public resources, availability of private capital and private sector market issues
- Nexus
  - The Exchange links investment strategies to assets

How will the organization be Staffed?

- There will be an Exchange manager with a website to drive alignment and acceleration in short-term.
- There needs to be someone to engage in project opportunities.
- The Exchange should be like Partnership BC.

How will the organization receive Oversight?

- The Exchange must have transparency, public accountability and strong conflict of interest provisions.
- The Exchange should have a governing board to help make the entity politically feasible.
- The Exchange should have a strong academic connection.

How will the organization be Funded?

- The Exchange will be funded initially through foundation grants
- The Exchange could move to fee for service model
- State appropriations will NOT be available in the foreseeable future
- Building trade unions and teacher unions might also be funders during start-up

What Overarching Considerations influence formation?

- The first phase should not require a legislative effort.
- The Exchange should be attractive to private capital.
- The Exchange must have some early successes.
- The structure of a multi-jurisdictional Exchange will necessarily be influenced by the policy choices which have been made by each member state.

Facilitated Discussion

Did we hear you correctly?

Collaborative Organizations with Similar Charters

- Part II

AS INITIALLY PRESENTED AT WORKSHOP – DOES NOT REFLECT FINAL REFLECTIONS

Overview of collaborative organizations with similar charters

- Partnership Victoria (Australia)
- Chicago Infrastructure Trust (Chicago)
- Office of Transportation Public-Private Partnerships (Virginia)
- Partnership British Columbia (Canada)
- European PPP Expertise Centre (European Union)

Partnerships Victoria (PV)

- PV is not a separate legal entity but a policy which provides a "whole of government" framework to providing public infrastructure through PPPs.
- PV policy applies to departments and agencies associated with large scale infrastructure and delivery projects.
- PV team is part of the Commercial Division in the Department of Treasury and Finance for the Victorian government.

PV Framework

- All projects are screened through PV Framework
  - Establishes consistency among government entities
- Projects utilize the method of project delivery which provides the best value for money
  - No delivery method is presumed to be more efficient than another
- Public sector comparator benchmark is used to determine value for money from private sector bids

PV Approach: Purchasing Services not Assets

- Purchasing services at an agreed quality, quantity, and timeframe
- Replaces traditional short-term contracts with long-term contracts
- Replaces upfront payments with ongoing performance based payment
- Replaces input specifications with output specifications.
- Provides government greater strategic flexibility
- Focuses attention on the quality of the services being delivered.

Chicago Infrastructure Trust (CIT)

- CIT is a professionally managed and governed infrastructure fund that will serve the following purposes for qualifying infrastructure projects:
  - Provide funding and credit support
  - Coordinate/facilitate attracting private investment
  - Have grant-making capabilities
  - Enable sharing of labor, resources and knowledge among units of local government
- Funding
  - CIT is capitalized by a combination of moneys appropriated by the City Council of Chicago and capital provided by a range of third-party investors and organizations

CIT Governance

- Governance
  - CIT is a non-profit organization created by ordinance by the City of Chicago
  - Five voting members appointed by the Mayor with approval by the Council with expertise in financing and development of infrastructure; capital markets; or municipal finance
  - Three non-voting advisory members appointed by Mayor (from public sector)
  - Three non-voting members appointed by voting members

Office of Transportation Public-Private Partnerships (OTP3)

- Implementing a statewide program for project delivery via the Public-Private Transportation Act (PPTA) of 1995
- OTP3 is a political subdivision of the Commonwealth of Virginia
- Works in coordination with the Va. Secretary of Transportation across all modes of transportation
  - Department of Aviation
  - Department of Transportation
  - Department of Motor Vehicles
  - Rail and Public Transportation
  - Commercial Space Flight Authority
  - Navy/Marine Military Auxiliary Radio System
  - Motor Vehicle Dealer Board
  - Port of Virginia

OTP3 Oversight Steering Committee

- Comprised of several high administrative officials from various transportation agencies
- Prioritize potential PPTA projects
- Make policy recommendations to the Secretary of Transportation on whether unsolicited proposals should advance based on OTP3 policy review, comments received from affected jurisdictions and/or the general public
- Evaluate the Statements of Qualifications and/or Proposals to determine which Respondents will advance further in the process
- Provide high-level policy and procurement guidance to the OTP3 on an as-needed basis

OTP3 Services

- Project Identification
- Project Screening
  - Complexity
  - Acceleration opportunities
  - Transportation priorities
  - Project efficiencies
  - Risk transfer
  - Funding
- Project Development
- Project Procurement
- Contract Management

Partnership British Columbia (PBC)

- Partnerships BC is organized by the Province of British Columbia to serve public agencies including ministries and Crown corporations within the province.
- PBC is governed by a board of directors reporting to the Minister of Finance.
- PBC has 42 FTE
- Annual budget – $9 million
  - Initially subsidized to 20%
    - Capital Asset Management Framework required that all projects seeking provincial funding in excess of $50m must do business case analysis
    - Treasury board which permits and funds projects in province requires PPP screening by PBC
  - Now 100% comes from hourly fees from public sector agencies

PBC Governance

- Board Composition
  - Seven individuals
  - Representatives from both public and private sectors
- Best Practices Guidelines
  - Transparency
  - Accountability
  - Conflicts of Interest
- Board Committees
  - Audit and Risk Committee – financial information
  - Human Resources and Governance Committee – human resource issues, compensation matters, succession planning, senior management development

PBC Strategic Service Units

- Finance and Administration
  - Finance and Accounting
  - Human Resources
  - Administration
  - Facilities
  - Information Technologies
  - Contract Management
  - Corporate Governance
- Projects
  - Business and Market Development
  - Project Development
  - Senior Project Advice
  - Corporate Relations
- Partnerships Services
  - Business Development
  - Policy and Practices
  - Procurement Services
  - Knowledge Management
  - Shareholder Relations
  - Communications
  - Legal Services

PBC Project Development Tasks

- Advisor to owner
- Procurement of other advisors for owner
- Business case evaluation
- Procurement manager of project delivery for owner
- RFP and RFQ evaluation and management of process
- Contracts preparation and negotiation
- Support owner through financial close
- Support setting up design and construction management team in limited cases
- Chief project officer in limited cases
- O&M oversight in limited cases

European PPP Expertise Centre (Expertise Centre)

- A collaborative venture among the European Investment Bank, the European Commission, and European Union member countries.
- Funded by EIB and EC; members contribute time and expertise (by seconding staff)
- Membership is exclusively for the public sector – open to PPP taskforces in member states
- Membership: Initially 24 (2008), grown to 35 (2011)

Expertise Centre Mission

- Strengthen the ability of the public sector to engage in PPP transactions.
- Helps members to share experience and expertise, analysis and good practice.
  - Structured approaches to identifying best practices
  - Produces reports which are available to public
  - Help Desk facility to give rapid responses to immediate questions, or re-direct questions to members
  - Help new members set up PPP program, refine policy, or analyze institutional bottlenecks
  - Holds regular Private Sector Forums
  - Does not advise on individual projects

Expertise Centre Staffing and Governance

- Staffed by a executive director, administrative staff, and interns.
- International team of 18 professionals seconded from external organizations – both member (public) organizations and private sector.
- Expertise Centre is supervised by a Steering Committee of senior staff of EIB and the EC.
- Advisory Committee made up of representatives of Expertise Centre's membership advises the Steering Committee on Expertise Centre's work program.

Interviews and Institutions Matrix

»

AS INITIALLY PRESENTED AT WORKSHOP – DOES NOT REFLECT FINAL DECISIONS

What **SERVICES** does the organization provide?

	Technical Expertise to Public Agencies	Educate on PPP and Finances	Link Investment Strategies to Assets
PV			
CIT			■
OTP3	■	■	■
PBC	■	■	■
EC	■	■	■

How is the organization **STAFFED**?

	Manager and Website	Someone who Engages Project Opportunities	Like PBC
PV			
CIT		■	
OTP3		■	
PBC		■	■
EC	■	■	

How will the organization receive **OVERSIGHT**?

	Transparency, Accountability, COI	Politically Connected Governing Board	Strong Academic Connection
PV	■		
CIT	■	■	
OTP3	■		
PBC	■	■	
EC	■	■	■

How is the organization **FUNDED**? Can the organizational structure be financially viable assuming the funding constraints of foundation grants, fee for service, and no state appropriations?

	YES	NO
PV	■	
CIT		■
OTP3		■
PBC		■
EC	■	

What are the **OVERARCHING CONSIDERATIONS** that influence formation?

	No Legislation Needed*	Attractive to Private Capital	Early Successes	Multi-Jurisdictional*
PV	FAIL	PASS	PASS	FAIL
CIT	FAIL	PASS	PASS	FAIL
OTP3	FAIL	PASS	PASS	FAIL
PBC	FAIL	PASS	PASS	FAIL
EC	PASS	PASS	PASS	PASS

*The Exchange likely cannot engage in project delivery or I-banking practices on a multi-jurisdictional/ regional basis without legislative changes.

Structure and Governance "Strawman"

- Part III

AS INITIALLY PRESENTED AT WORKSHOP – DOES NOT REFLECT FINAL DECISIONS

Exchange "Strawman" Agenda

- Mission
- Members
- Funding
- Staffing
- Oversight
- Governance
- Activities

Mission and Statement of Objectives

- The mission of the Exchange is to develop a Center of Expertise for the advancement of public-private partnerships in the west coast region of the United States.
- The Exchange strengthens the ability of the public sector to engage in PPP transactions by increasing local expertise, and strengthening institutional and managerial capacities to manage collaborative partnership investments.
- The activities of the Exchange result in advancing the PPP market, generating an increase in PPP public infrastructure projects, and creating value for taxpayers.

Members

- Membership in the Exchange is limited to public organizations whose role includes policy responsibility and the promotion of PPP projects or programs at regional, state, or local level.
  - Limiting membership to the public sector helps ensure a free and open exchange of information on a peer-to-peer basis without fear of compromising negotiating positions on current or future deals.
- Members could include, e.g., state infrastructure banks, state pension fund managers, transportation agencies, water groups, municipalities, MPOs, or special service districts.

Staffing

- The Exchange has four paid staff members:
  - Executive Director
  - Project Development Coordinator
  - Market Development Coordinator
  - Office Manager
- The Exchange has fully seconded Professional Team
  - Staffing model relies heavily on inward secondments from the private and public sector organizations to develop the human capacity and institutional structure necessary to support a thriving PPP US market.
- Interns
  - College internship programs are established to provide additional staff support.

Funding

- Initial funding comes from foundations and/or one-time state appropriations.
- Members pay annual membership fees which would be calculated in a manner to enable the Exchange to become self-supporting.
- Public and private companies contribute expert professional staff on a seconded basis.
- Create incentives to use Exchange services
  - Funders including I-Banks to provide carrots?

Oversight

- Management Committee
  - The Management Committee, comprised of a representative of the executive branch of each member state, approves the annual work program and budget.
- Advisory Board
  - The Advisory Board is made up of representatives of the Exchange Members. The Advisory Board advises the Management Committee on the Exchange's work program and, through the Management Committee, guides the Executive Director on delivery of the program.

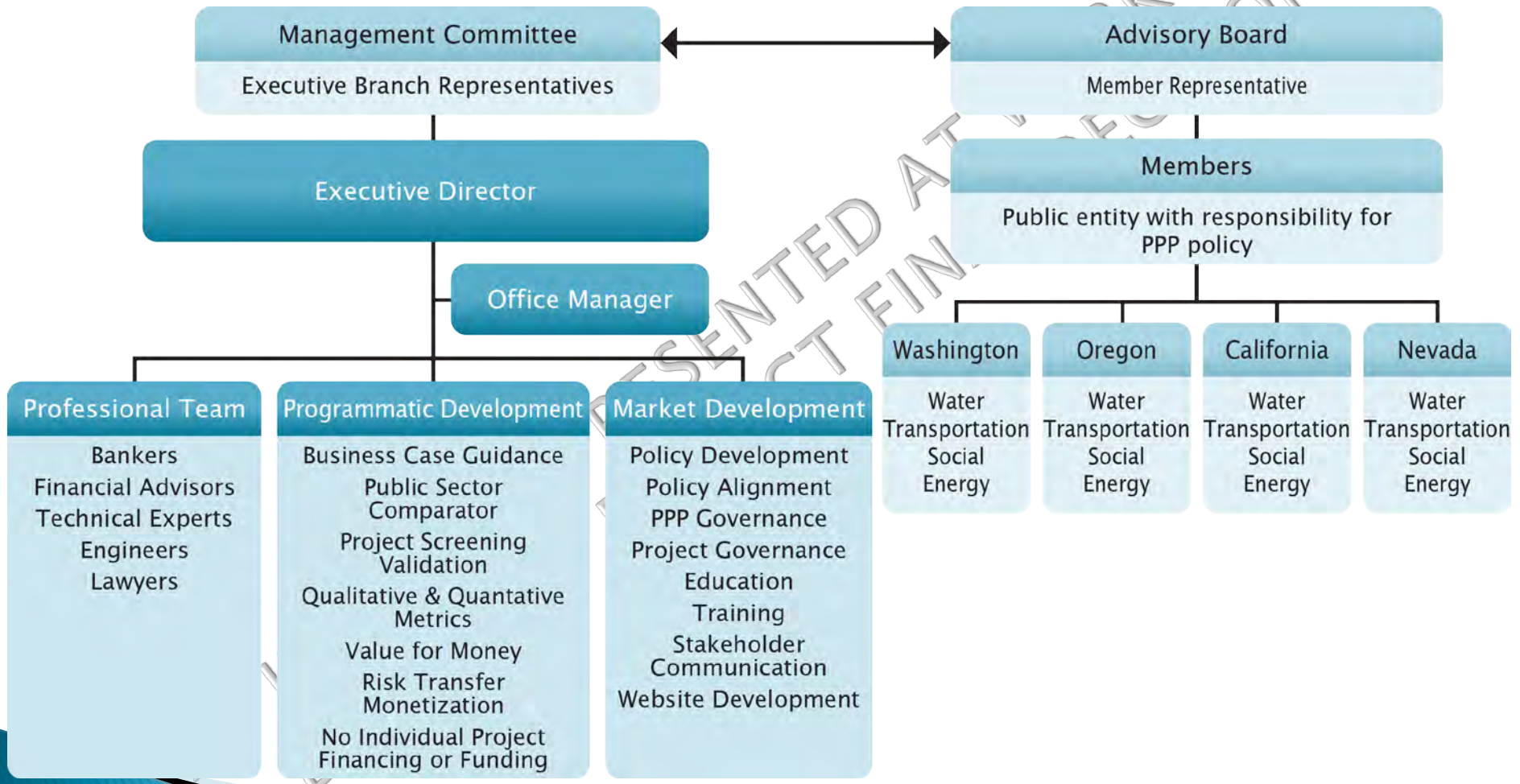
Governance

- Membership in the Exchange is conditioned on agreement to the following governing principals:
  - Transparency – the Exchange develops an active transparency policy regarding its activities and policies that are in line with relevant member agency regulations
  - Public accountability – the books, records and meetings of the Exchange are public records subject to open records and meetings requirements
  - Conflict of interest – the Exchange is subject to conflict of interest provisions to protect against disclosure of information that would create a conflict of interest or unfair competitive advantage in project procurements

Organization Chart

AS INITIALLY PRESENTED AT WORKSHOP – DOES NOT REFLECT FINAL DECISIONS

WCIE Organizational Chart



PPP Project Flow Chart

AS INITIALLY PRESENTED AT WORKSHOP – DOES NOT REFLECT FINAL DECISIONS

WCIE PPP Project Flow

Potential Work Stream Activities and Objectives

- Value for Money
  - To perform a quantitative assessment including monetizing the transfer of project risk
  - To perform a qualitative assessment analyzing methods to the identification, quantification and valuation of non-financial (social and economic) benefits
- Support development of policies to enable better decision-making and analysis
  - To prepare a policy framework for a wider application of life-cycle cost analysis that would include the total cost comparison of competing alternatives by analyzing initial costs and discounted future costs.
- Increase public sector training on infrastructure finance and P3 delivery methods
  - To create a workforce development series to upgrade the skills and expertise of public officials, employees and agencies.

Facilitated Discussion

Reaction to Proposed Exchange Strawman

Financing Options Tuesday AM session

- Mike Matichich

AS INITIALLY PRESENTED AT WORKSHOP – DOES NOT REFLECT FINAL DECISIONS

Beyond financing: alternatives for "monetization" of assets can provide additional value to address public infrastructure needs

		Model Example:
Institutional	Allowed rates of return on utility rate base valued at FMV	Louisville Water Co.
New products	Use of operation byproducts to create new revenue streams	Inland Empire (CA) and MMSD (WI) : sale of solids byproducts as fertilizer
Regional services	Water utilities leverage assets / expertise outside service area	Regional laboratories, solids mgmt services
Define new fee for service	Create new fee structure for previously untapped service area	Montgomery County MD – funding $240 M CIP program through impervious area fee for stormwater management

Topics

- Financing options best suited to the target project types
  - Overview of financing options
  - Options with features best suited to the target projects
- Investment criteria and other requirements of some private funding sources
  - Infrastructure Fund Management
  - Meridiam Infrastructure
- Composite “strawman” elements, including implementation requirements
  - Near-term
  - Longer-term

Presentation: Financing Options Best Suited to the Target Near-term Projects

AS INITIALLY PRESENTED AT WORKSHOP – DOES NOT REFLECT FINAL DECISIONS

Current and potential infrastructure financing mechanisms within the 3 West Coast states

Current Financing Mechanisms

- Revenue bonds
- General Obligation Bonds
- State Revolving Fund (SRF) Loans
- Taxes, User Fees, Tolls
- One-off P3s
  - Concessions with financing
  - DBOs
- Energy Service Corporation (ESCOs)
- Tax Increment Financing

Potential New Financing Mechanisms

- Increased/enhanced use of one-off P3s
  - Concessions with financing
  - DBOs
- Single project private financing
- Pooled offerings to private financiers
- Infrastructure Banks (State, cross-State, or Federal)
- State or Exchange insurance/backing for private finance

Potential sources of funding for the new/emerging financing mechanisms

- Pension funds, such as CalPERS and CalSTRS
- Equity capital groups
  - Large, such as Carlyle Group
  - Mid-sized, such as Alinda Capital
  - Smaller
- Vendor financing (e.g., Siemens Financial Services, G.E.)
- Equity capital wrapped into concession or other form of P3 alternative delivery (e.g., Santa Paula)
- State-supported backing or support to enable/encourage private funding (history of credit enhancement/guarantee programs in some of the states)
- Federal

Typical attributes of funding sources

	Range of Project Size	Potential borrowing term	Potential range of interest rates
Pension Funds	Min of $150 M for some	20 years or more possible	
Large equity capital groups	Min of $150 M; prefers larger than that	20 years or more possible	10-12% typical range for pure finance option; might achieve closer to 8% for 'blended' deal
Mid-sized equity capital group	Min of $75 M; prefer higher	20 years or more possible	Same basic range as for large equity capital.
Small equity capital group	Min of $75 M; prefer higher		Same basic range as for large equity capital.
Vendor Financing	Max of $60 M	Typically 10 years or less; some 20 year deals.	Likely between muni financing and equity capital

Potential barriers and solutions

Source	Potential Barriers	Potential Solutions to the Barriers
Pension Funds	• Cost of financing vs. traditional muni financing.	• More holistic evaluation framework ("WCIE BCE Framework"); • Education and information exchange • Credit enhancements
Large equity capital groups	• Cost of financing vs. traditional muni financing; • Projects too small to interest financial groups.	• More holistic evaluation framework ("WCIE BCE framework"); • Education & information exchange; • Pooling of projects; • Integration with alternative delivery • Credit enhancements
Mid-sized equity capital group	• Cost of financing vs. traditional muni financing; • Projects too small to interest financial groups	• Same as large equity capital groups
Small equity capital group	• Cost of financing vs. traditional muni financing	• Same as pension funds
Vendor Financing	• Cost of financing vs. traditional muni financing; • Limited term of financing	• Same as pension funds

Potential WCIE or state agency role to encourage increase in the use of these non-standard sources of funding

- **More holistic evaluation framework** – Develop BCE framework that incorporates more complete financial analysis (along lines of the Partnership BC's PSC) and also considers non-financial factors of interest to WCIE
- **Education and Information Exchange** – Help relevant State and local agencies post and share information about their projects with each other & with potential funding partners
- **Pooling of Projects** – Provide assistance to State and local in bundling projects if needed to achieve size thresholds to be of interest to the funding sources

Facilitated Discussion re: Target Financing Options Best Suited to the Identified Project Types

AS INITIALLY PRESENTED AT WORKSHOP – DOES NOT REFLECT FINAL DECISIONS

Elements of a Financing Option "Strawman"

AS INITIALLY PRESENTED AT WORKSHOP – DOES NOT REFLECT FINAL DECISIONS

Near-term

- Focus on financing mechanisms for individual projects
  - Direct financial investment by private capital (pension funds, equity capital groups)
  - Concessions or other P3 options that include finance component for individual projects
- Target projects identified include water/sewer, energy efficiency
- Focus on creating matches between projects and financing groups that have track record, investment criteria in infrastructure investment
- Identify methods to communicate project attributes and characteristics to primary funding sources identified by State for the 'early win' projects
- Develop "WCIE Business Case Evaluation" Framework to help identify and communicate high-impact fundable projects

Discussion of Financing Option "Strawman"

AS INITIALLY PRESENTED AT WORKSHOP – DOES NOT REFLECT FINAL DECISIONS

Attachment C: List of Literature Reviewed for the WCX Project

West Coast Infrastructure Exchange (WCIE) Research - 6/26/2012

Author/Source	*Title*	*Date*
Case Studies and Reviews of P3 Projects		
Climate Group	Public-Private Partnership: Local Initiatives 2007	2007
Environmental Protection Agency	Infrastructure Financing Options for Transit-Oriented Development	2012
Federal Highway Administration	Case Studies of Transportation Public-Private Partnerships in the United States	2007
Florida Department of Transportation (FDOT)	I-595 Corridor: Value for Money Analysis	2010
Greater Vancouver Transportation Authority (GVTA)	Golden Ears Bridge: Value for Money Report	2006
Keston Institute, USC	Protecting the Public Interest: The Role of Long-Term Concession Agreements for Providing Transportation Infrastructure	2007
University Transportation Center for Alabama	Evaluation of Public Private Partnerships	2010
Virginia Department of Transportation (VDOT)	PPTA Program Assessment - Phase 1 Diagnostic Report	2010
Industry & Government Reports		
American Association of State Highway and Transportation Officials (AASHTO)	THE FORUM ON FUNDING AND FINANCING SOLUTIONS FOR SURFACE TRANSPORTATION IN THE COMING DECADE Report	2011
Association of Metropolitan Sewerage Agencies (AMSA)	A National Clean Water Trust Fund: Principles for Efficient and Effective Design	2003
Association of Metropolitan Water Agencies (AMWA)	Prospects for Bond Financing	2011
American Water Works Association (AWWA)	Development of a Strategic Planning Process	2003
American Water Works Association (AWWA)	Avoiding Rate Shock: Making the Case for Water Rates	2004
American Water Works Association (AWWA)	Innovative Funding of Water Infrastructure for the United States	2012
American Water Works Association (AWWA)	Study on Private Activity Bonds and Water Utilities	2009
Congressional Budget Office (CBO)	Subsidizing Infrastructure Investment with Tax-Preferred Bonds	2009
Coy, Debra	Alternative Capital for Infrastructure Finance	2011
Dornbrier	Testimony on Innovative Water Infrastructure Financing	2012
Georgia	Public Private Partnership legislation	
Government Accountability Office (GAO)	Clean Water Infrastructure: A variety of issues need to be considered when designing a clean water trust fun	2009

Government Accountability Office (GAO)	Highway Public-Private Partnership: More Rigorous Up-front Analysis Could Better Secure Potential Benefits and Protect the Public Interest	2008
Government Accountability Office (GAO)	Water Infrastructure: Information on Financing, Capital Planning, and Privatization	2002
Johnson Foundation	Financing Sustainable Water Infrastructure	2012
Kearsarge	Benefits of Private Investment in Infrastructure	2010
National Conference of State Legislatures	Appendix B. State PPP Enabling Statutes for Transportation Projects as of October	2010
New Policy Institute	The Acceleration Agenda: Job Creation, Innovation and Economic Development in the 21st Century	2010
PercWater	Utilizing Public-Private Partnership for Municipal Infrastructure	2011
Prequin: Infrastructure Quarterly	Insight on the quarter from the leading provider of alternative assets data	2012
Texas Department of Transportation (TxDOT)	Comprehensive Development Agreement: I-635 Project	2009
Texas Department of Transportation (TxDOT)	RFQ for I-635 PPP project	2005
UIM	Alternative Financing Tools for Water Infrastructure	
United State Department of Transportation	INNOVATION WAVE: AN UPDATE ON THE BURGEONING PRIVATE SECTOR ROLE IN U.S. HIGHWAY AND TRANSIT INFRASTRUCTURE	2008
US Department of Transportation (USDOT)	Report to Congress on Public Private Partnerships	2004
Washington State Legislature	Public-Private Initiatives Act of 2005	2005
Wilson, Thaddeus	Testimony on Innovative Water Infrastructure Financing	2012
	Infrastructure Banks	
American Water Works Association (AWWA)	National Water Infrastructure Bank	
American Water Works Association (AWWA)	Financing Water Infrastructure: A Water Infrastructure Bank and Other Innovations	2009
California	Infrastructure Bank Code	2011
Council of State Governments	State Infrastructure Banks	2011
Federal Highway Administration (FHWA)	State Infrastructure Banks	2012
Schwartz Initiative	A National Infrastructure Bank	2011
Unknown	Analysis of Oregon's Infrastructure Bank Program	
Unknown	Matrix of different Infrastructure Banks	
Unknown	Summary of Infrastructure Bank Programs	
	Peer-reviewed Literature	

Akintoye	The allocation of risk in PPP/PFI construction projects in the UK	2005
Akintoye	Critical success factors for PPP/PFI projects in the UK construction industry	2005
Ankner	The Risks and Rewards of Private Equity in Infrastructure	2008
Aziz	Successful Delivery of Public-Private Partnerships for Infrastructure Development	2008
Bettignies	The Economics of Public-Private Partnerships	2004
Bloomfield	The Challenging Business of Long-Term Public – Private Partnerships: Reflections on Local Experience	2006
Debande	Private Financing of Transport Infrastructure	2002
Garvin	Assessing the Effectiveness of Infrastructure Public--Private Partnership Programs and Projects	2008
Greve	PPPs: The Passage of Time Permits a Sober Reflection	2009
Grimsey	Evaluating the risks of public private partnership for infrastructure projects	2000
Koppenjan	The formation of public private partnerships: lessons from nine transport infrastructure projects in the Netherlands	2005
Loosemore	Risk Allocation in the private provision of public infrastructure	2006
Mayer	Addressing Private-Sector Returns in Public–Private Highway Toll Concessions	2007
Zhang	Critical success factors for public private partnership in infrastructure development	2005

Infrastructure Needs

National Assessments

Association of Metropolitan Sewerage Agencies (AMSA)	The Cost of Clean: Meeting Water Quality Challenges in the New Millennium	1999
American Society of Civil Engineers (ASCE)	Failure to Act: The Economic Impact of Current Investment Trends in Surface Transportation Infrastructure	2011
American Water Works Association (AWWA)	Buried No Longer: Confronting America's Water Infrastructure Challenge	
American Water Works Association (AWWA)	Reinvesting in Drinking Water Infrastructure	
Aspen Institute	Sustainable Water Systems: Step One - Redefining the Nation's Infrastructure Challenge	2009

Congressional Budget Office (CBO)	Trends in Public Spending on Transportation and Water Infrastructure, 1956 to 2004	2007
US Environmental Protection Agency (EPA)	Drinking Water Infrastructure Needs Survey and Assessment	2007
National Surface Transportation Infrastructure Financing Commission	Paying Our Way: A New Framework for Transportation Finance	2009
National Surface Transportation and Revenue Study Commission	What Are the Long-Term Capital Investment Needs of the System?	
US Department of Transportation	2010 Status of the Nation's Highway, Bridges and Transit: Conditions and Performance	2010
US Environmental Protection Agency (EPA)	Presentation: Infrastructure in Context: Public Health Protection & Public Policy	
	California	
California Transportation Commission	2011 Statewide Transportation System Needs Assessment	2011
California Governor's Office	Governor's Budget Summary - Improving California's Infrastructure	2002
California Legislative Analyst's Office	A Ten year Perspective: California Infrastructure Spending	2011
Crane, David	California's Infrastructure Deficit	2008
Public Policy Institute of California	Building California’s Future: Current Conditions in Infrastructure Planning, Budgeting, and Financing	2000
Public Policy Institute of California	Making Room for the Future: Rebuilding California's Infrastructure	2003
Public Policy Institute of California	Paying for Infrastructure: California's Choices	2009
Public Policy Institute of California	Sizing up the Challenge: California's Infrastructure Needs and Tradeoffs	2005
Univ. of California - Berkeley	California Infrastructure	2007
	Oregon	
Oregon Department of Transportation (ODOT)	Funding the Oregon Transportation Plan	2005
Oregon Department of Transportation (ODOT)	Transportation Needs 2005 - 2030	2005
Oregon Economic Development Department (OEDD)	Inventory of Oregon Infrastructure Needs	2009
Oregon Metro	Assessment of Regional Infrastructure Needs	2012
Oregon Metro	Regional Infrastructure Analysis	2008
	Washington	
Association of Washington Cities (AWC)	Washington's Infrastructure Crisis	2008
Association of Washington Cities (AWC)	Washington's Invisible Backbone: Infrastructure Systems in Washington's Cities and Towns	2008

Municipal Research and Services Center of Washington (MRSC)	Washington Local Government Infrastructure Study Final Report	
Puget Sound Regional Council (PSRC)	Transportation 2040: Sustainable Financial Framework	2011
Washington Office of Financial Management (WAOFM)	Inventory and Evaluation of the State's Public Infrastructure Programs and Funds	2005
Washington Office of Financial Management (WAOFM)	Restructuring State Public Infrastructure Programs	2005
Washington Research Council	Washington's Infrastructure Needs: Plans, Funding and Gaps (parts 1 - 4)	2004
Washington State Department of Transportation (WSDOT)	Connecting Washington: Presentation on Trans. Finance	2011
	P3 Implementation Guidance	
Appleseed Foundation	Need Space? School-Facility Public-Private Partnerships: An Assessment of Alternative Financing Arrangements	2004
Bay Area Economic Forum	INVESTING IN CALIFORNIA'S INFRASTRUCTURE: How to Ensure Value for Money and Protect California's Competitive Position in the National and Global Economy	2006
Brookings Institution	Moving Forward on Public Private Partnerships: U.S. and International Experience with PPP Units	2011
Congressional Budget Office (CBO)	Using Public-Private Partnership to Carry Out Highway Projects	2012
Deloitte	Closing America's Infrastructure Gap: the Role of Public-Private Partnerships	2007
Deloitte	Partnering for value: Structuring effective public-private partnerships for infrastructure	2009
Federal Highway Administration (FHWA)	User Guidebook on Implementing Public- Private Partnerships for Transportation Infrastructure Projects in the United States	2007
Georgia Department of Transportation (GDOT)	Public-Private Partnership Guidelines	2010
International Financial Services, London	Public Private Partnerships: Delivering Better Infrastructure Services	
KPMG International	Delivering Water Infrastructure using Private Finance	2011
McGraw Hill Construction	Public Private Partnership: Accelerating Transportation Infrastructure Investment	2009
Minnesota Department of Transportation	Advancing Public Interest in Public-Private Partnership of State Highway Development	2011

Transportation Research Board	Major legal issues for highway public-private partnerships	2009
Virginia Department of Transportation (VDOT)	Public-Private Transportation Act (PPTA) Definitions	2012
Virginia Department of Transportation (VDOT)	PPTA Implementation Manual	2012
Virginia Department of Transportation (VDOT)	PPTA Office Risk Guidance Document	2011
Virginia Department of Transportation (VDOT)	Project Identification and Screening Guide	2012
Virginia Department of Transportation (VDOT)	Value for Money Guidance	2011
Water Partnership Council	Establishing Public-Private Partnership for Water and Wastewater Systems	2003

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