CalPERS
Infrastructure Investment Outreach Review:

Laying the Groundwork for Collaboration

October 15, 2012

CalPERS

Contents

CalPERS is the largest public pension fund in the U.S. with approximately $241 billion in assets, providing retirement benefits to more than 1.6 million State, public school, and local public agency employees, retirees, and their families, and health benefits to more than 1.3 million members. The average CalPERS pension is $2,332 per month. The average benefit for those who retired in the most recent fiscal year that ended June 30, 2011, is $3,065 per month.

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Executive Summary

On September 12, 2011, the Investment Committee of the California Public Employees' Retirement System ("CalPERS") Board of Administration ("Investment Committee") earmarked up to $800 million for investment in California infrastructure over a three-year time period. The primary goal of this initiative is to make investments in essential infrastructure assets that meet the risk-return objectives of CalPERS Infrastructure Program ("the Program"), while also potentially benefiting local economic development and essential community services across the state. The Investment Committee instructed staff to develop a plan for outreach to state and local governments to explore the role CalPERS and other pension systems can play in facilitating infrastructure investment in California ("the Outreach Effort").

The Outreach Effort consisted of CalPERS sponsorship of four Infrastructure Roundtables (the "Roundtables") between March and May 2012, as well as other industry networking and information sharing initiatives. The Roundtables were held at various locations across the state and were aimed to: (1) educate attendees as to the vast infrastructure needs of the State and the associated challenges and opportunities for potential pension investment in these projects; (2) inform the public regarding CalPERS infrastructure investment strategic objectives and policies; and (3) provide valuable opportunities for networking between investment staff and state, regional, and local government officials responsible for infrastructure planning, development, and financing.

The key takeaways from the Roundtable discussions include:

- There is a vast unmet need for investment in California infrastructure, including projects in transportation, water, and energy sectors. Available funding sources, including tax-exempt bonds and other state and federal programs, are not expected to be sufficient to meet the investment required to maintain existing infrastructure and to finance new development.
- Due to its large-size economy, positive demographic trends, high-quality public agencies, and recent supportive legislation, California is considered to be an attractive destination for infrastructure investment.
- There are numerous challenges to pension system investment in California infrastructure, including the availability of lower-cost, tax-exempt financing, a lack of projects which are suitable for public pension funds and other institutional investors, the absence of necessary statutory authorities in some cases, and complex regulatory processes.

- CalPERS may be an attractive partner for California public agencies, due to common interests and objectives with fellow public agencies, and due to the Program's focus on high quality long-term, direct investments.
- Modifications to policy and legislation regarding project procurement and approvals may enhance funding and investment opportunities.

While suitable opportunities for pension investment are fairly limited at the present time, CalPERS Infrastructure Program staff is now actively engaged in developing specific, in-state, opportunities for investment.

This report, which represents the final step in the Outreach Effort, includes: a summary of discussions and findings from the four Infrastructure Roundtables; a report on investment staff's involvement with various state and nationwide collaborative efforts; and information on staff's efforts to develop potential investment opportunities.

Section 1: **Introduction**

CalPERS, headquartered in Sacramento, California, provides retirement and health benefits to more than 1.6 million public employees, retirees and their families, and more than 3,000 employers. CalPERS is led by a 13-member Board of Administration ("the Board") consisting of member-elected, appointed, and ex-officio members. CalPERS has a fiduciary duty set forth in the California Constitution, requiring the Board and staff to work at all times in the best interests of its 1.6 million members. For every dollar paid in CalPERS pensions, 66 cents comes from investment earnings. It is therefore vital that the Total Fund ("the Fund") achieve appropriate risk adjusted returns from its investment strategies and that the Investment Office be responsible for managing CalPERS investment assets which approximate $241 billion.

In 2007, CalPERS established an Infrastructure Program in the Inflation Linked asset class of the Investment Office. In July 2011, the Program was transferred, along with the Real Estate and Forestland Programs, to the newly-formed Real Assets asset class, and assigned a target allocation of 2% of the Fund. Shortly thereafter, the Investment Committee approved the Infrastructure Strategic Plan and the Infrastructure Program Investment Policy.

The Infrastructure Strategic Plan emphasizes the Program's pursuit of low-risk or defensive investments, mainly in North America. The Strategic Plan also highlights the direct investment method, as a planned approach for providing control over capital deployment, direct influence on governance matters, and cost-effective investment. The direct investment approach, in conjunction with other modes of investment, is expected to enhance the Program's competitiveness and its investment returns. As of June 30, 2012, the Program has made $1.09 billion in commitments to seven investments in the domestic U.S. and globally.

The Program has a unique strategic role within the Fund, with the objective of providing:

- Steady Returns and Cash Yields – regulated and long-term-contracted revenues and returns ensure steady investment returns and cash yields;
- Defensive Growth – the essential and protected/non-competitive nature of infrastructure assets insulates returns against demand (growth) risks;
- Inflation Protection – direct and indirect inflation-linkages serve to preserve asset values over time; and
- Diversification Benefits – private infrastructure investment is expected to demonstrate low correlation to fixed income and listed equities.

The Program's benchmark is the U.S. Consumer Price Index plus 4% per annum, calculated on a monthly basis and applied over relevant time periods.

In June 2011, CalPERS engaged Meketa Investment Group, Inc. ("Meketa"), the Board's consultant for Infrastructure, to prepare a report on conditions for pension investment in California infrastructure. Meketa's report was presented to the Investment Committee on

September 12, 2011. At that meeting, the Investment Committee announced its decision to earmark up to $800 million for investment in California infrastructure, and instructed staff to develop a plan for outreach to state and local governments to explore the role CalPERS and other pension systems can play in facilitating infrastructure investment in California (Attachment 1).

In October 2011, the Investment Committee approved staff's proposed Outreach Effort (Attachment 2), which included a coordination and policy process and an investment pipeline enhancement process. Meketa assisted with the development of the Outreach Effort and drafting this Final Report. CalPERS outreach initiatives included (a) four widely-attended infrastructure roundtable meetings, (b) collaborative initiatives with various state and national agencies, and (c) one-on-one investment discussions between Infrastructure Program staff and representatives from various California public agencies.

The first of these initiatives involved organized, public roundtable discussions with a variety of constituents and industry participants, at various locations within the state. The Roundtables provided forums to facilitate open discussion on the opportunities for, and impediments to, pension system investment in infrastructure within California. More specifically, the Roundtables facilitated:

- Opportunities for experts to share information regarding project development and priorities, and their perspectives on opportunities and challenges regarding financing and investment in infrastructure;
- Access for stakeholders to information about CalPERS Infrastructure Program and investment initiatives;
- Identification of potential policy changes that could make infrastructure investments by pension systems more viable; and
- Opportunities for CalPERS to explore how it might best contribute to improve investment conditions, and increase the potential for infrastructure investment by pension systems.

The Roundtable discussions generated numerous findings related to State infrastructure investment needs, limitations on current funding sources, and impediments to pension investment due to market, legal, and project-specific considerations. A summary of the general findings from the Roundtable discussions is included in Section 2 of this report. A summary of the Roundtable discussions can be found in Section 3 of this report.

The Outreach Effort also entailed dialogue and collaboration with various stakeholder groups across the nation to exchange perspectives on, and ideas for sharing and advancing knowledge regarding infrastructure opportunities, policies, and stakeholder priorities. A summary of these initiatives is provided in Section 4 of this report.

Additionally, the Outreach Effort entailed several one-on-one investment discussions between Infrastructure Program staff and representatives of individual public sector agencies to discuss potential investment opportunities for CalPERS, including existing assets and projects in development. A description and summary of the results of these efforts is provided in Section 5.

The Outreach Effort is only one component of CalPERS infrastructure investment activities in California. The Program currently has $94 million invested in California infrastructure projects through its portfolio of commingled fund investments. CalPERS also invests in California infrastructure through other asset classes. Private Equity has more than $220 million invested in infrastructure in California. CalPERS Private Equity Fund Managers invest in privately held companies that own infrastructure assets including power generation (hydro, natural gas, wind, and solar) and transportation. Fixed Income has invested $100 million in credit enhancement for General Obligations in California. Of that, half is for California general obligation bonds which could fund a variety of projects that would include, but are not limited to, water, transportation, school construction, hospital construction, or other such voter-approved capital projects. The remaining credit enhancement is for California general obligation bonds specifically for public school construction.

Section 2: **General Findings from the Roundtable Discussions**

Presentations and discussion by participants at each of the four Roundtables generated a number of findings related to both opportunities and challenges of pension system investment in California infrastructure. Roundtable participants also helped to identify potential changes to policy and legislation that may enhance funding and investment opportunities.

Current funding sources are insufficient to meet California's infrastructure investment requirements

All infrastructure sectors have significant investment requirements related to the operations, maintenance, expansion, and replacement of existing facilities, and the development of new projects. Limited public-sector funding may represent an opportunity for investment by CalPERS and other state pension systems.

In the current low-interest rate environment, public agencies with high credit ratings and healthy budgets can still finance their infrastructure projects through tax-exempt bonds. However, if stress on public agency budgets continues to escalate, issuing such bonds may become more difficult. It was also noted that federal deficit reduction proposals may lead to the eventual elimination of the tax-exemption bond benefit.

As the risk of not obtaining traditional financing for state and local government projects grows, public agencies may need to evaluate alternative funding sources for infrastructure projects. Private institutional investment is considered to be a potential alternative. However, there are challenges associated with alternative finance for infrastructure procurement; "political champions" are needed for projects to be successful. These champions are needed to identify and support viable investable projects for which pension system investment or other alternative funding sources could be used.

Roundtable participants acknowledged that, due to the scale of the funding needs, CalPERS and other state pension systems could only provide a small part of the solution, and it was suggested that a broader systematic approach to financing California's infrastructure requirements would be beneficial. Examples of systematic approaches used in Canada and Australia were referenced; however, it was stressed that any approach would need to take into consideration California's unique political, economic, demographic, and geographic conditions.

California is an attractive destination for investment

During Roundtable discussions, participants emphasized that California is considered to be an attractive destination for infrastructure investment. In addition to the funding needs summarized in the previous section, reasons cited for the appeal of California to infrastructure investors include the large-size economy, positive demographic trends, high-quality public agencies, strong regulation, and the existence of legislation enabling Public Private Partnerships ("P3").

California's P3 law is considered to be an important tool for California transportation investment. Passed in 2009, the law allows regional transportation agencies and the California Department of Transportation ("Caltrans") to enter into an unlimited number of P3s and deletes the restrictions on the number and type of projects that may be undertaken. In addition to risk sharing and possible savings over the lifecycle of a project, the structure of P3s allow public agencies to shift rehabilitation costs to the future, to make more funds available for present-day needs. Other Roundtable findings related to the P3 law include:

- California's P3 law will sunset in 2017. It was recommended that public agencies work with the State Legislature to extend the term for which P3s are authorized.
- California's P3 law required the establishment of the Public Infrastructure Advisory Commission ("PIAC"), to identify transportation project opportunities for P3s and advise Caltrans and regional transportation agencies regarding infrastructure partnership suitability and best practices. Participants considered PIAC to be a sensible model that could be enhanced to be a more effective resource, with the renewal of the P3 law. For example, PIAC could have a dedicated funding source, and the scope of the mandate could be expanded.
- Current education and training in alternative project delivery at public agencies is limited. Participants referenced relatively inexpensive education options, including online training programs. It was noted that in the energy sector, public utilities have funded a program to provide assistance to developers of renewable energy generation.
- California does not have a standard template to assess the "return on investment" achieved by different modes of project funding and delivery. However, it was cautioned that California should not simply adopt a template from another state or country, because it may not be appropriate for California's unique conditions.
- Participants also recommended the adoption of legislation to streamline the California Transportation Commission process embedded in the P3 law.

In addition to the P3 law, which is focused on transportation projects, California Government Code 5956 allows governmental agencies to enter into P3 arrangements to build, increase, upgrade, or operate many types of fee-producing infrastructure projects, including those related to water supply, treatment, and distribution, energy or power production, waste treatment, and other projects.

CalPERS is an attractive partner for public agencies

Roundtable participants noted many of the competitive advantages that CalPERS has over other investors, including:

- A dedicated infrastructure program and resources focused on direct investment;
- Alignment of interests with the public sector, due to its status as a government agency and long-term investment approach;
- California's highly rated public agencies and high-quality infrastructure assets are a good fit with the CalPERS Infrastructure Program's strategic focus on lower-risk investments; and
- CalPERS may acquire equity interests in public projects without adversely impacting the tax-exempt issuing status of the sponsoring public agency or its project vehicle.

There are several challenges to pension fund investment in California infrastructure

Despite the recognition of the need for additional sources of investment, several impediments to infrastructure investment were discussed:

1. Use of tax-exempt bonds

The primary impediment to equity investment by pensions, across all public infrastructure sectors, is the strong access to the tax-exempt bond market enjoyed by many government agencies. The availability of tax-exempt bonds raises issues related to the comparative cost of capital of pension systems and how such capital can be used in projects funded with tax-exempt bonds.

In the current environment, with tax-exempt bond interest rates near historic lows, public agencies have access to funding at lower rates than the targeted rates of return of CalPERS and other equity investors, which are typically above 8%. Therefore, tax-exempt bonds are the lowest cost option and represent the majority of funding. For example, in the water sector, over 75% of funding for state and local water and wastewater projects consists of revenue and general obligation bonds. Larger municipal agencies and the State Water Project are highly rated (AA and higher) and have had consistently strong access to the tax-exempt market and very low borrowing rates. For high-rated agencies, such as the Department of Water Resources, and the Los Angeles Department of Water and Power (the largest public utility in the country), it was estimated that the true cost of interest on long-term, fixed rate tax-exempt bonds in the current market is 3%.

Institutional investors such as public pension systems cannot compete with tax-exempt financing on a simple cost basis (e.g., barring consideration of risks retained by the public agencies). In general, the Internal Revenue Code restricts the use of equity capital in projects that are funded using tax-exempt bonds. Proceeds from Private Activity Bonds, which are municipal securities that may be used by private entities, are one possible exception, yet their use is also subject to certain conditions and limitations.

Participants also discussed other factors related to the use of tax-exempt bonds, such as the bias in the U.S. towards the public ownership and financing of infrastructure, and tensions created by incorporating private equity into the capital structure of public infrastructure projects. There was discussion around the possibility of creating a "Public-Public Partnership" structure between state pension systems and public agencies that might address some of these concerns. It was noted U.S. public pension systems might be perceived as better-aligned and more-appropriate partners for public agencies than other private sector investors.

While larger agencies may not need alternative funding sources, smaller agencies may have more limited access to low-cost tax exempt debt or have a specific interest in transferring risks that cannot be efficiently borne by a public agency, such as project delivery or technology risks. Examples of projects in which the public might seek to transfer risk to the private sector include desalination, water treatment, and sustainability initiatives.

2. Investment Fit

A second challenge is the fit of certain projects within the framework of investment policy guidelines and strategic objectives of institutional investors, including CalPERS. For example, in the transportation sector, it was estimated that of the 2,000 state and local transportation projects identified per year, 60% require less than $5 million in funding. The majority of projects would be too small for consideration of direct investment by larger institutions with significant allocations to infrastructure.

For primary-market investments, staff discussed concerns related to the length and cost of the public auction processes used to procure investment in infrastructure. The public auction process can be both time-consuming and costly for bidders, and may require a level of "capital at risk" that is too high for a pension fund to assume. Therefore, staff expressed a preference for bilateral negotiation with public agencies about potential investment opportunities in lieu of engaging in a public bidding processes. It would be beneficial to clarify if public agencies may engage in bilateral negotiation with U.S. public pension funds, or whether it is strictly necessary for public agencies to procure investment for infrastructure exclusively through the public bidding processes.

In addition to potential uncertainty around public sector procurement processes, P3 projects typically require long and uncertain development and construction periods, which introduce additional risk to investors. P3 projects may also take several years before reaching stabilized operations allowing for cash distributions to investors.

It was noted that there are models of successful risk sharing between the private and public sector, in which private equity served as "risk capital," while pension systems could provide "take out capital" for operational lower-risk assets. Participants suggested that certain projects in a construction phase could be suitable for pension system investment so long as key risks have been identified and mitigated.

Investment staff discussed potential limitations on investment in projects where key contractual terms, such as those between concession partners in design-build contracts, have already been negotiated. Early participation in such negotiations could allow CalPERS to ensure that its interests are represented in the final structure, and to strengthen its alignment with other consortium partners.

Concerns about investment fit were also raised in the discussion of investment in energy efficiency projects. It is uncertain as to whether such assets can be suitably structured for investment by institutional infrastructure investors. There was also the opinion that such projects might be more suitable for tax-exempt bond financing, rather than pension system capital.

CalPERS state agency status, which affords it certain advantages as an institutional investor, also presents certain limitations to its ability to participate in investment in California. For example, pursuant to provisions of the Internal Revenue Code, CalPERS would risk losing its tax-exempt status in an investment if it were it to participate in a "prohibited transaction," where a transaction includes the acquisition of more than 25% of a debt obligation of a CalPERS member agency. Such a rule substantially limits opportunity for in-state investment by CalPERS.

Finally, concerns were expressed related to potential conflicts of interest and reputational risk for CalPERS, or any state pension system, as a potential direct shareholder of a public infrastructure asset in California. For example, certain investment-related decisions may result in outcomes that are unpopular, such as decisions to raise tolls on toll roads. Faced with such conflicts CalPERS may be more comfortable – in its return-seeking role – with investing in industry-facing infrastructure (e.g., energy and power, or ports and rail assets) than with investing in assets patronized and directly relied upon by the general public such as transportation and water assets.

3. Regulation

The Energy Roundtable discussed impediments to investment related to the permitting and development of power and transmission facilities in California. It was noted, for example, that in the renewable energy sector, constraints on the development of new transmission facilities are an obstacle to new development and investment. Several presentations referenced case studies of projects that took several years before receiving final approvals and licensing. Comparisons were drawn to conditions in other states where lengthy permitting processes are not an issue. Permitting challenges have resulted in high rates of project mortality. Lengthy and uncertain approval processes discourage investors who may have substantial capital at risk during the process.

There was broad discussion of the sources of permitting challenges and project delays from industry participants:

- The complexity of development in California, due to population, logistics, geographic factors, and policy, can require conservation measures and multiple permits from numerous agencies. There was consensus that the development of new facilities in other states was subject to less complex permitting requirements. This was considered relevant because investment capital is likely to seek the least risky investment opportunities.
- Compliance with California's environmental protection laws, such as the California Environmental Quality Act (CEQA), requires that project developers and investors undertake significant mitigation efforts which, in some cases, have increased project costs, delays, and uncertainty of success. Roundtable participants suggested that thoughtful and appropriate streamlining of the CEQA process could increase the investor appetite for investment in California infrastructure.

4. Other Challenges

Other challenges to pension system investment in energy infrastructure were also discussed, including the following:

- Within the current energy infrastructure industry regulatory framework, developers and investors are typically not incentivized to take on the risks associated with the implementation of new technology. A risk sharing framework between regulators and developers could incentivize investment in new technology.
- There is no centralized exchange for public authorities to circulate information on energy infrastructure projects requiring investment to potential investors. Increased information flow on infrastructure financing needs may serve to facilitate investment.*
- For projects in the renewables sector, there is limited need for equity that is not tied to tax credits. Developers already have a backlog of tax credits that need to be monetized and are looking to sell assets that allow the use of tax credits. Therefore, there is less need for investment by tax-exempt institutions which are unable to take advantage of these credits such as public pension systems.
- It is expected that tax incentives for renewables development, such as Production Tax Credits, will expire at the end of the year and will dampen developer and investor interest in the sector.
- Participants also noted inconsistencies in the Federal tax treatment of renewables projects that affect project economics. For example, property taxes are levied in full for wind projects, while solar projects qualify for property tax exemptions.

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* See Section 4 for information regarding the development of the West Coast Infrastructure Exchange, which is intended to address this issue.

Recommended changes to policy and legislation may enhance funding and investment opportunities

Several recommendations for facilitating investment in California infrastructure by pension systems were identified through the Roundtable discussions. Some of the key recommendations for potential follow up by stakeholders and other interested parties include:

1. Develop more-flexible and robust procurement methods for in-state agencies. It was recommended that alternative models of infrastructure procurement that have been utilized in other countries and states, be evaluated for their suitability in California.

2. Streamline California environmental approval requirements. Compliance with CEQA was cited as an impediment to the development of infrastructure projects in California. Roundtable participants acknowledged California's unique environmental resources and the importance of having regulation in place to protect the environment. However, project developers are discouraged by the complexity, indeterminacy, time delays and high costs associated with the approvals process. It is recommended that possible methods for streamlining CEQA and other permitting and approvals processes for critical infrastructure projects be evaluated.

3. Renew existing legislation enabling P3's in California and consider expanding its mandate. This P3 law is set to sunset on January 1, 2017. It was recommended that the law's sunset provision be extended. It was also recommended that substantive support be given for the PIAC or a similar body to assist the state with its development of standards and best practices for public infrastructure procurement.

Section 3: **Summary of the Infrastructure Roundtable Discussions**

Four Infrastructure Roundtables were held as part of the Outreach Effort. Investment Office staff worked with CalPERS External Affairs and Meketa to develop the agendas and identify participants for each of the Roundtables. Attendees included State, regional, and local government elected officials and staff, investment professionals and practitioners, CalPERS Board members and staff, academics, and labor representatives.

At each session, staff provided an overview of CalPERS Infrastructure Program, including the strategic role of infrastructure within CalPERS total fund and examples of recent investment activity. Staff also provided Infrastructure Program Term Sheets (Attachment 3); the Strategic Plan Summary (Attachment 4); Infrastructure Fact Sheet (Attachment 5); and the California Infrastructure Investment Overview report by Meketa (Attachment 6). Likewise, at each session representatives from the State Treasurer's Office presented the State's perspective on financing needs and resources, such as bonding capacity for different sectors. The agendas for each of the Roundtables may be found in Attachment 7 of this report, and a complete list of participants may be found in Attachment 8.

Roundtable 1: Overcoming Impediments to Pension Fund Investments in Infrastructure

The first Roundtable was held at CalPERS headquarters in Sacramento on March 5, 2012, and was moderated by David Altshuler of Meketa. Approximately 50 people were in attendance, including representatives from across CalPERS (the Board of Administration, Executive Office, and Investment Office staff), public agencies, industry experts, and labor unions.

The agenda was designed to lay the groundwork for the subsequent Roundtables through a discussion of key considerations for pension system investment in infrastructure. Topics covered during this session included the suitability of infrastructure projects for investment, balancing interests of public and private stakeholders, current sources of infrastructure financing, pension system investment objectives and considerations, and the priorities and limitations of government agencies in procuring infrastructure funding.

Roundtable 2: Transportation

The second Roundtable, on transportation, was held in San Francisco on April 5, 2012. It was moderated by Richard G. Little, the Director of the Keston Institute for Public Finance and Infrastructure at the University of Southern California. Approximately 55 people were in attendance.

In California, there is legislation in place to enable third-party investment in transportation, as well as a track record of private-sector involvement in transportation investment. Therefore, the discussion focused on specific transportation investment needs from the state and agency perspective, completed transactions, and future projects that could potentially be considered for pension investment. Representatives from Caltrans, San Francisco County Transportation Authority, Orange County Transportation Authority, Los Angeles Metropolitan Transportation Authority, San Diego Association of Governments, and the Metropolitan Transportation Commission/Bay Area Toll Authority, led discussions on the current funding sources and needs at their respective agencies. The Roundtable also included presentations on legal considerations related to investment by public pensions in public infrastructure, and the legal and statutory frameworks for enabling P3s in California.

According to roundtable participants, sources of funding for transportation infrastructure in the current environment are diminishing. For example gas tax receipts, the primary source of state transportation funding, are down significantly and this shortfall is expected to contribute to an estimated $200 billion funding gap over the next decade. For the preservation of the current transportation system, and expanding and managing the state's transportation network over time, it is understood that Caltrans has only less than half its actual funding needs. State resources, including debt capacity, will not be able to meet all of California's transportation funding needs.

While the needs are significant, many aspects of transportation project development present challenges for pension investment, including long development times, a complex entitlement process, litigation risk, uncertainty of completion, and a limited track record of private investment participation.

Roundtable 3: Water

The third Roundtable, on water, was held in Los Angeles on April 23, 2012 and was moderated by Tony Oliveira, a former CalPERS Board Member and currently a Professor at the University of California, Merced. Approximately 43 people were in attendance.

The discussion at the Water Roundtable was oriented towards mutual education between State and local agencies, and CalPERS staff on funding needs and investment objectives. Representatives from the Department of Water Resources, Association of California Water Agencies, Metropolitan Water District of Southern California, Los Angeles Department of Water and Power, East Bay Municipal Utility District, and the Kings River Conservation District led discussions on water investment needs, including ongoing operations, maintenance, and upgrading of existing facilities, and the development of large-scale projects such as the Delta Conveyance Project. In addition, legal and finance experts presented on tax-exempt bond financing and potential structures to enable the use of private capital.

Historically, private investment in water infrastructure has been very limited, due primarily to the strong access to the tax-exempt debt market enjoyed among water agencies. However, according to estimates from the State Treasurer's Office, State resources including debt capacity will not be sufficient to meet all statewide water needs. According to State Treasurer's Office estimates, $186 billion in state water infrastructure investment is required over the next decade. Most investment needs are focused on improving the reliability of the current system, rather than on population growth, as much of California's critical water infrastructure is over 70 years old. It was noted that while the larger water agencies are highly rated and have strong access to the tax-exempt bond market, new borrowing will require that agencies raise rates to water contractors (users) in order to meet debt service obligations. Rate increases for users have historically been difficult to implement.

The following water infrastructure projects were discussed at the Roundtable:

- Repair, replacement, and rehabilitation projects focusing on upgrading aging infrastructure, supply diversification, and loss mitigation;
- Improving the reliability of the State's water resources;
- Water and wastewater treatment – both capacity building and to improve compliance with regulation;
- Water conservation, recycling and reclamation efforts projects;
- Developing local water supplies to manage potential rate increases, increase cost effectiveness, and buffer volatility in the supply from the State Water Project; and major projects, such as the Bay Delta Conveyance, that will require significant capital investment (estimates are between $17 and $20 billion) over decades.

For many of these projects, such as revenue-generating projects or large-scale projects with long lead times, there may be potential to structure opportunities for pension investment, to the extent that tax-exempt bond or federal funding for these projects is unavailable or insufficient.

Roundtable 4: Energy

The fourth Roundtable, on energy, was held in San Diego on May 24, 2012, and was also moderated by Mr. Oliveira. Approximately 54 people were in attendance.

Since most energy facilities are already privately owned and operated, the agenda for the Energy Roundtable consisted of a series of presentations by private sector developers and sponsors of conventional and renewable generation and transmission projects in the U.S. regarding their experiences in California. Representatives from the California Energy Commission, the State's primary energy policy, planning, and licensing agency, led a discussion on the state energy perspective, and two of California's public utilities (San Diego Gas & Electric and Southern California Edison) led discussions on energy priorities and current projects within California. In addition, several private companies with significant experience developing energy facilities in California led discussions, which focused on many of the appealing fundamentals of the California energy market, and on some of the regulatory and environmental challenges facing new development in the state.

The pipeline of energy infrastructure projects in California is estimated to be between $50 and $100 billion and is driven by the following developments and trends:

- Forecasted demand growth continues to increase, driven by demographic trends;
- The California Renewable Energy Resources Act (Senate Bill X 1-2) increased the state Renewable Portfolio Standard (RPS), which requires California utilities to source 33% of power from renewable sources by 2020. This requires the development of, and investment in, renewable energy generation and transmission facilities. Solar power generation capacity is expected to grow by 900 megawatts between 2012 and 2016; and
- The need for both reliable and continuous base load generation sources, including natural gas, and new transmission facilities, is expected to grow to accommodate the increasing use of intermittent renewable energy sources in the state's power mix.

There is much opportunity for institutional investors including pension funds to finance energy investment needs within the state. Highly-rated electric utilities typically enter into long-term power purchase agreements with both renewable energy and natural gas generation facilities, which provide project investors with revenue certainty and reduced risks associated with project development and asset utilization.

Section 4: **Additional Outreach and Discussions**

In addition to the four Roundtable events described above, CalPERS staff met with other representatives, agencies, and organizations to inform them of CalPERS interest in infrastructure investment, and to learn about these stakeholders' perspectives on, and experiences regarding infrastructure investment, within California and across the nation.

California Outreach

Staff held conversations specifically focused on investment in California infrastructure with staff from the Governor's and Legislative Offices. Staff presented Infrastructure Program information to the California Council of Governments; held a special meeting with Chambers of Commerce from across the state; and convened a special workshop at the Port of Long Beach regarding port-related investment opportunities. Staff met with state, regional, and local public agency officials and staff to discuss potential opportunities for pension system investment and their infrastructure needs.

Staff also participated in the creation of the new West Coast Infrastructure Exchange ("the Exchange"). As originally envisioned the Exchange will become an organization focused on ongoing efforts to build a nimble, new vehicle to promote financing of 21st century infrastructure investments along the West Coast and facilitate partnerships with infrastructure innovators in other regions. Once formally launched, the Exchange will serve as a non-profit regional network offering a range of value-added services that support regional-scale infrastructure investment and alignment among key stakeholders in California, Oregon and Washington. It is envisioned that the Exchange will be a center of expertise and a gateway to national and international investors for eligible infrastructure projects. While the Exchange will connect interested investors with potential investments, the vast bulk of deal-development efforts will happen at the state level, given each state's unique differences in agency and statutory structure, the nature of project management and the role of local jurisdictions.

California leadership in the Exchange has been provided by the California State Treasurer's Office and CalPERS. CalPERS staff's role has been to provide information related to the institutional investor's perspective on infrastructure investment. In its start-up phase, the Exchange is operating with a three-state interim management team, with fiscal sponsorship by the Oregon State Treasury.

The draft mission statement is as follows:

> *The Exchange 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.*

National Outreach

In addition to California outreach, staff held discussions with interested individuals and organizations regarding pension system investment in infrastructure across the country. These discussions included federal agency staff from the Environmental Protection Agency and Department of Treasury; and state treasurer's offices across the country.

Staff met with professional and stakeholder organizations including the Urban Land Institute, the Clinton Global Initiative, the Center for American Progress, American Federation of Labor and Congress of Industrial Organizations, American Federation of Teachers, and the Service Employees International Union. From these conversations staff has a better understanding of the interest and importance that stakeholder organizations place on the ancillary benefits that may result from pension system investment in infrastructure. Specifically, stakeholder groups articulated the need for strong economic growth to power investment returns for public pension systems, and the ability of pension systems to contribute to economic growth through investment strategies that result in job creation.

Section 5: **Development of Investment Opportunities**

CalPERS Infrastructure Outreach initiative has served as an effective program for the development of contacts between CalPERS staff and key public sector staff responsible for infrastructure projects. Aside from conducting the aforementioned CalPERS Roundtables, and other public discussions which provided unique and valuable opportunities for staff and interested parties to network and share information, CalPERS Infrastructure Program staff conducted numerous one-on-one meetings with public sector bodies throughout the state.

Investment Office staff met with representatives of individual public sector bodies to discuss potential investment opportunities for CalPERS, including existing assets and projects in development. At these meetings, staff provided details as to the Infrastructure Program investment objectives and criteria, suggested projects and potential investment structures that it is interested in exploring with the public bodies, and emphasized potential advantages for these public bodies in working with CalPERS.

Through its outreach efforts, staff has sought to identify and develop investment opportunities in the following infrastructure sectors: transportation, ports, water, and energy and power. The results to date from early investigations and dialogue with key players in each of these sectors are as follows:

- *Transportation*
  Staff has developed a pipeline of transportation-related investment "prospects" and staff will continue to discuss with the relevant public agencies as the agencies work though the projects' planning phases. These prospects include agency projects requiring substantial capital investment aimed at improving transportation efficiency and/or expanding capacity. Staff is also interested in exploring the potential for investment participation in certain brownfield assets held by public agencies.

- *Ports*
  Staff gained new insights regarding opportunities and risks associated with potential partnering with terminal operators and port authorities. Generally speaking, staff considers most ports-related opportunities to be at the higher-risk end of the infrastructure risk-return continuum. Port assets tend to be sensitive to economic activity and to competition from rival goods delivery routes and have a high degree of dependency on downstream goods-movement systems and facilities. Although no prospects are presently identified, CalPERS staff will continue to dialogue with entities involved in California's ports sector.

- *Water*
  Given the public water agencies' generally strong financial credit ratings and their ready and abundant access to tax-exempt financing, opportunities for CalPERS to invest directly in the agencies' projects are few. However, there may be opportunities for

CalPERS to provide credit support to municipal issuers through its credit enhancement program. Staff believes that opportunities for CalPERS Infrastructure Program are most likely to arise outside of the major public agencies, in connection with independent standalone projects in areas such as wastewater treatment, recycling, and water desalination.

- *Energy & Power*
  California's energy and power sector has an active investment market with a variety of opportunities for private institutional investment. Staff has considered several opportunities and has participated in competitive processes to acquire power-related assets. Staff expects to continue to see opportunities as it has ongoing dialogue with various entities in the sector, including investor-owned utilities, independent power producers, and other institutional investors.

An important factor potentially limiting opportunities for investment by CalPERS Infrastructure Program in public infrastructure is the availability of low-cost, subsidized financing (e.g., grant funding; Transportation and Infrastructure Finance and Innovation Act ("TIFIA") funding; tax exempt debt issuance). Nonetheless, staff believes that public sector agencies may be interested in considering alternatives in addition to subsidized sources of financing as the agencies' infrastructure renewal and expansion needs increase, and their ability to access traditional subsidized financing sources becomes increasingly strained. Additionally, staff believes that over time the agencies may re-examine their estimates of the real lifecycle risks and costs of owning certain types of infrastructure investments and may seek to share these risks with investment partners such as public pension funds.

CalPERS Infrastructure staff has presented public sector agencies with its perspective on the benefits of partnering with CalPERS. Such benefits include: CalPERS can provide a competitive source of long-term capital, in addition to subsidized capital sources; the ability of CalPERS to have financial participation without adversely affecting agencies' ability to access tax exempt financing; and the common interests and objectives that CalPERS and the agencies share as state public bodies.

In cases where public sector agencies have indicated potential interest in considering alternative financing sources, staff has encouraged the public agencies to consider working on a bilateral basis with CalPERS, including conducting discussions in the early stages of project financial planning. Staff's strong preference is to work bilaterally toward agreements rather than to participate in costly and uncertain competitive bid auction processes.

Overall, CalPERS staff is making progress with developing in-state infrastructure opportunities for investment. As noted above, staff is actively pursuing transactions in the energy and power sector. In other areas, in particular the transportation sector, staff expects prospective opportunities to materialize gradually as the public sponsors address project planning and approval requirements.

Conclusion

CalPERS Infrastructure Outreach Effort established introductions and a continuing dialogue between staff and leaders throughout state and local government on the potential for pension system investment in infrastructure. The Outreach Effort was successful in large measure due to the commitment of the participants in preparing for and attending the Roundtables. CalPERS is very grateful to the many people who attended and contributed to the Outreach Effort.

The Roundtables provided a forum to raise issues and lay the groundwork for potential collaboration in the future. In summary, key opportunities identified for pension system investment include:

- Vast unmet needs for investment in California infrastructure, for which available funding sources are not expected to be sufficient;
- California's strong fundamentals, which make it an attractive destination for infrastructure investment; and
- CalPERS and other pension systems are attractive potential partners for California public agencies.

Roundtable participants identified current challenges to pension systems infrastructure investment in California, including:

- The availability of lower-cost, tax-exempt financing for many infrastructure projects;
- The lack of a good fit between certain infrastructure projects and the framework of investment policies and strategic objectives of institutional investors; and
- Issues related to project development including complex regulations and other timelines.

While suitable opportunities for pension investment are still fairly limited at the present time, CalPERS Infrastructure Program staff is now actively engaged in developing specific in-state opportunities for investment.

Several recommendations regarding policy and legislative changes to facilitate investment in California infrastructure by pension systems were identified at the Roundtables. Some of the key recommendations for potential follow up by stakeholders and other interested parties include initiatives to:

- Develop more-flexible procurement methods for in-state agencies;
- Streamline California environmental approval requirements; and
- Renew existing legislation enabling Public Private Partnerships in California and consider expanding its mandate.

Policy and legislative developments that provide greater flexibility in procurement and financing alternatives could help to generate opportunities for investment from public pensions and other institutional sources. In the meantime, CalPERS Infrastructure staff will continue to engage with public sector agencies to discuss the potential for partnering in new and existing projects.

Attachment 1

Agenda Item 7c September 12, 2011, Infrastructure Investment in California

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Agenda Item 7c

September 12, 2011

TO: MEMBERS OF THE INVESTMENT COMMITTEE

I. SUBJECT: Infrastructure Investment in California

II. PROGRAM: Infrastructure

III. RECOMMENDATION: Information

IV. ANALYSIS:

At the presentation of staff's Infrastructure Strategic Plan (strategy) to the Investment Committee (Committee) in April 2011, Committee members indicated an interest in the subject of investment in infrastructure in California and accordingly, investment opportunities for CalPERS. To provide the Committee with information and an opportunity to discuss this subject, staff requested that the Board's Infrastructure Consultant, Meketa Investment Group (Meketa), prepare a report on California infrastructure investment. Meketa's presentation is provided as Attachment 1.

Meketa's report provides an assessment of the state of the infrastructure investment environment within California, noting the growing need for institutional investment to support public infrastructure, pointing out several conditions that have hindered such investment to date, and offering preliminary thoughts as to approaches that are needed and avenues that may be available to stimulate increased interest from institutional investors, including CalPERS. Given the sizable capital needs of California's state and local governments to support essential public infrastructure, governments will need to expand institutional funding sources beyond the tax exempt bond market, and attract substantial and sustained interest from broader and deeper pools of institutional capital.

Under the current government structure in the State of California, the process for identifying assets suitable for private sector partnering is complex and lengthy, with decision-making fragmented amongst various state agencies, authorities and local governments. In order to create a sustainable and efficient structure to meet California's long-term infrastructure funding needs, State government, working with expert advisors, should undertake the following initiatives: (1) establish clear objectives and policies around public infrastructure financing. Key

Note: The Meketa presentation referenced in this item can be found in Attachment 6 of the Report.

Members of the Investment Committee
September 12, 2011
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policies would address, among other things, issues such as revenue sources and approaches to partnering with private capital; (2) conduct a comprehensive, state-wide review of infrastructure needs; and (3) develop a streamlined and efficient process for identifying and reviewing assets across state and local agencies and sectors that have realizable value, or are otherwise suitable for procurement through partnerships with the private sector. Where appropriate, CalPERS should participate in these efforts.

Irrespective of current or future forms of the government's policy and framework, CalPERS has put in place the necessary foundation for the Infrastructure Program (Program) to initiate, review and invest in California-based infrastructure opportunities. Staff believes that in the near term, the vast majority of attractive, investible opportunities will continue to emanate from privately held and publicly listed investor-owned companies and organizations. Investment types which fall into this category and which are representative of the Program's current investment pipeline include power generation facilities, energy pipelines and storage, electric transmission, and utilities (energy and water).

Investment opportunities are reviewed by staff in the context of the Program's capital allocation, investment policy and strategy. The current target allocation is 2.0% of the Total Fund (three-year target of c. $5.0 billion). Within the allocation, Infrastructure policy targets U.S. investment of 40% to 80% (c. $2.0 to $4.0 billion). Based on the policy, the Infrastructure strategy is a blueprint for investment execution, focusing on risk analysis and suitable portfolio construction. Pursuant to this, staff recommends an investment allocation for California of up to 20% of the U.S. portion of the Program. This would serve to provide a significant focus on California whilst maintaining geographic diversification in the portfolio and mitigating undue geographic concentration risk. The following table outlines the Program's targeted and maximum investment amounts based on the current allocation, policy and strategy:

Infrastructure Portfolio: 3-Year Time Horizon ($ millions)	Portfolio Target	Portfolio Maximum
U.S.	3,000	4,000
*California	600	800
**No. of CA Transactions	2-4	2-5
* CA at 20% of U.S. portfolio target and maximum		
** Assumes average transaction size of $150 - 300 million, consistent with Strategic Plan		

Staff is keen to explore with public sector agencies, districts and authorities across the U.S., and particularly within California, opportunities which meet the Program's investment requirements. These requirements are outlined in

Members of the Investment Committee
September 12, 2011
Page 3 of 3

Attachments 2 and 3 to this Item and are consistent with the approved strategy and policy, and the institutional market.

V. STRATEGIC PLAN:

This item supports the following strategic goals:

Goal VIII: Manage the risk and volatility of assets and liabilities to ensure sufficient funds are available, first to pay benefits and second, to minimize and stabilize contributions.
Goal IX: Achieve long-term, sustainable risk adjusted returns.

VI. RESULTS/COSTS:

There are no costs associated with this item.

TODD LAPENNA
Portfolio Manager
Infrastructure Program

RANDALL MULLAN
Senior Portfolio Manager
Infrastructure Program

TED ELIOPOULOS
Senior Investment Officer
Real Assets

JANINE GUILLOT
Chief Operating Investment Officer

JOSEPH A. DEAR
Chief Investment Officer

Note: The attachments referenced on this page can be found in Attachment 3 of the Report.

Attachment 2

Agenda Item 7 October 17, 2011, Infrastructure Investment in California — State and Local Government Outreach Plan

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Agenda Item 7

October 17, 2011

TO: MEMBERS OF THE INVESTMENT COMMITTEE

I. SUBJECT: Infrastructure Investment in California – State and Local Government Outreach Plan

II. PROGRAM: Real Assets - Infrastructure Program

III. RECOMMENDATION: Information – Update regarding Outreach Effort for California Infrastructure Investment

IV. ANALYSIS:

In April 2011, the Investment Committee approved the Infrastructure Program strategy for approximately $5 billion of investment capital. On September 12, 2011, the Investment Committee directed staff, among other things, to:

- Target investment of up to $800 million in California infrastructure over a three year period; and
- Develop a plan for outreach to state and local governments to explore what role CalPERS and other U.S. pension systems can play to facilitate infrastructure investment in California.

Staff was requested to return to the Committee in October with its outreach plan including identification of staff and resource needs.

This Agenda Item provides staff's plan to outreach to state and local government entities regarding investment in California infrastructure (the "Outreach Effort"). The Outreach Effort is designed to address two overarching objectives of the Committee's Motion:

1) Coordination and Policy Process. Conduct a broad array of discussions to increase the potential for investment in California infrastructure by CalPERS and other pension systems with whom CalPERS may partner; and

2) Investment Pipeline Process. Enhance the current infrastructure investment pipeline and execute investments in California-based infrastructure businesses and projects.

Approach to Outreach

The Coordination and Policy Process will entail: a) multi-party, roundtable workshop meetings and open engagement on pertinent policy and legislative initiatives. This process will:

- Provide opportunities for stakeholders to share information regarding project delivery and service goals, and perspectives on opportunities and challenges;
- Provide stakeholders with information about CalPERS investment programs and initiatives;
- Identify policy changes that could make infrastructure investments by pension plans more viable; and
- Provide opportunities to explore how CalPERS may best contribute to improve the conditions, and increase the potential for infrastructure investment by pension funds.

The Investment Pipeline Process will be one-on-one, private meetings to explore potential opportunities for investment by CalPERS. The one-on-one meetings between CalPERS Infrastructure investment staff and key State and local agencies will serve to:

- Increase mutual awareness between CalPERS and government agencies of mandates, goals, initiatives and projects;
- Strengthen the investment staff's network of contacts for California infrastructure investment; and
- Potentially stimulate development of a pipeline of suitable opportunities for investment.

Implementation and Reporting

Staff proposes to undertake the following activities in connection with its Outreach Effort:

1. <u>Coordination and Policy Process: Real Assets staff in collaboration with External Affairs staff will</u>:

   a) Within six months, organize and lead two to four roundtable workshops on California Infrastructure, involving representatives from a selection of major public sector agencies, pension systems, and advisors with expertise on public infrastructure policy, financing and procurement;

   b) Document and report to the Investment Committee key findings and recommendations arising from the workshops;

   c) Openly engage with key stakeholders and market participants to discuss public policy and legislative initiatives pertinent to infrastructure investment in California; and

2. <u>Investment Pipeline Process: Infrastructure Program staff will:</u>

   a) Within six months, engage in one-on-one meetings with at least one dozen key State and local government agencies to explore opportunities for investment;

   b) Provide to the Investment Committee a confidential report regarding potential investment opportunities arising from the one-on-one meetings; and

   c) Pursue suitable opportunities for investment on an ongoing basis.

In addition to the aforementioned outreach activities, earlier this month staff participated in two important industry events: 1) the roundtable workshop, *California Infrastructure – A Path to Economic Recovery and Jobs*, held by the California Foundation on the Environment and the Economy on October 10-11, 2011; and 2) the *USDA Investment Roundtable* to discuss infrastructure investment in rural America, held by the United States Department of Agriculture in New York on October 6, 2011.

Staff anticipates that there will be abundant opportunities for dialogue with public sector officials and pension investors regarding domestic infrastructure investment. Staff welcomes such opportunities for dialogue, but nonetheless will be judicious as it pertains to expenditures of time, effort and cost.

<u>Staff Resource Requirements</u>

The Infrastructure Program is presently staffed below levels prescribed within the Infrastructure Strategic Pan (April 2011), which did not incorporate consideration of any demands related to the Outreach Effort. Staff intended to request the additional resources identified in the Infrastructure Strategic Plan for the 12/13 budget year. In light of the increased emphasis on investment in California infrastructure, staff now plans to accelerate this resource request. Staff will request two planned investment staff positions plus one administrative position for the Infrastructure team through the CalPERS mid-year budget approval process.

Aside from Infrastructure Program resources, the Chief Investment Officer has given direction for recruitment of a Senior Portfolio Manager dedicated to providing broad leadership and coordination for key cross-asset-class initiatives, including California investment. Laurie Weir, Portfolio Manager, Real Assets has been asked to fulfill this role on an interim basis. This position can be funded from within the existing Investment Office budget. Staff intends to request through CalPERS mid-year budget process the approval of:

- One additional Investment Officer III position to report to the SPM. This position will be focused generally on California related investments and initiatives across the total fund; and will focus specifically on work associated with the Coordination and Policy Process related to investment in California infrastructure.

CONCLUSION

Staff proposes a dual-track Outreach Effort which involves, a), multi-party roundtable workshops and open engagement to explore potential roles for CalPERS and other pension systems in facilitating infrastructure investment in California, and b), one-on-one investment meetings focused on exploring investment opportunities with key State and local agencies.

To support staff’s immediate efforts and its ongoing efforts to maintain an intensive focus on investment in California, while continuing to support the broader management and growth requirements of the Infrastructure Program, staff will pursue approval for accelerated recruitment of Infrastructure staff resources and one additional resource to support the Coordination and Policy Process effort.

V. RISKS:

There are no risks associated with this information item.

VI. STRATEGIC PLAN:

This item supports the following strategic goals:

- Goal VIII: Manage the risk and volatility of assets and liabilities to ensure sufficient funds are available, first to pay benefits and second, to minimize and stabilize contributions.
- Goal IX: Achieve long-term, sustainable risk adjusted returns.

VII. RESULTS/COSTS:

Costs associated with this initiative are anticipated to be roughly $80,000 to mainly cover staff travel costs and costs associated with hosted roundtable events, plus approximately $140,000 of personnel cost (including benefits) for an additional resource to support the Coordination and Policy Process efforts. The estimate excludes expenses related to additional Infrastructure investment staff resources, because these costs were part of the Infrastructure strategic plan and would have been incurred regardless of this initiative.

Members of the Investment Committee
October 17, 2011
Page 6 of 6

LAURIE WEIR
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Real Assets, Real Estate

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Chief Operating Investment Officer

Joseph A. Dear
JOSEPH A. DEAR
Chief Investment Officer

Attachment 3

Term Sheets

DEBT TERM SHEET

Target Investments:	Defensive assets or Defensive Plus assets as described in CalPERS Infrastructure Strategic Plan. Essential assets with monopoly characteristics under proven regulation or with acceptable long term contractual regimes.
Asset Types:	Roads, bridges, tunnels, rail, airports, ports, natural-gas fired power generation, renewable power generation, electric transmission, energy midstream (pipelines, oil & gas storage, LNG), electric and gas utilities, water pipelines, water and waste water utilities, desalination facilities, essential communications systems and social infrastructure.
Eligible Investments:	Stable, long-lived, cash generating assets with high levels of execution certainty, consisting of: • Availability-based Public-to-Private Partnerships ("P3") (subject to revenue and cash flow certainty under commercially acceptable appropriations schemes and suitable financial strength of procuring authority); • Brownfield Toll/User-Fee based P3 (subject to acceptable volume history and forecast; acceptable toll/user fee regime); • Contracted electric transmission, power generation, energy midstream, water and waste (subject to acceptable contract terms and counterparty credit quality); • Regulated utilities: electric, gas, integrated, water, waste water, communications/cable (subject to acceptable regulatory regimes)
Greenfield Assets:	No development/entitlement risk (all key permits, approvals, required contracts, easements etc. are in place). Minimal construction risk, mitigations consisting of, but not limited to, acceptable Engineering Procurement Construction and/or Design Build Agreements with market based liability caps, liquidated damages, bonding and liquidity/security enhancement.
Operating Agreements:	Where applicable, acceptable long-term Operations & Maintenance Agreements from suitable parties with market based terms including termination provisions, liquidated damages etc.
Debt Structures:	Taxable senior secured floating rate loans or notes or subordinated floating rate loans or notes.
Reference Index:	Monthly/quarterly U.S. CPI or U.S. LIBOR.

Floors; OID:	Reference Index floors and original issue discount where applicable.
Spread:	Minimum 4.00% over U.S. CPI or equivalent over U.S. LIBOR. To be determined on a transaction by transaction basis.
Tenor:	5-20 years, subject to market terms at the time of issuance.
Amortization:	Partially amortizing subject to market terms, contract tenors and required covenants.
Covenants:	Market based and consisting of but not limited to minimum debt service coverage ratios, maximum debt to capital ratios, maximum debt-to-ebitda ratios etc.
Required Security:	Senior secured - pledge of all assets, revenues and/or contracts as applicable. Subordinated - to be determined investment to investment.
CalPERS Target Investment Size:	$150 - $300 million per transaction.
CalPERS Maximum Investment:	CalPERS maximum investment to be determined transaction by transaction depending on total size of offering, number of syndicate members, legislative restrictions (if any) and Internal Revenue Code (IRC) restrictions including applicable portions of IRC section 503 (IRC section which outlines transactions prohibited for tax exempt entities and governmental plans).
Credit Quality:	BB/Ba2 or higher credit rating from one or more of the major credit rating agencies.
Due Diligence:	Commercial due diligence consisting of legal, technical/engineering, environmental, pricing, volume, regulation, financial (including detailed financial models), tax, accounting, insurance, forecast market conditions etc.

EQUITY TERM SHEET

Target Investments:	Defensive or Defensive Plus assets as described in CalPERS Infrastructure Strategic Plan. Essential assets with monopoly characteristics under proven regulation or with acceptable long term contractual regimes.
Asset Types:	Roads, bridges, tunnels, rail, airports, ports, natural-gas fired power generation, renewable power generation, electric transmission, energy midstream (pipelines, oil & gas storage, LNG), electric and gas utilities, water pipelines, water and waste water utilities, desalination facilities, essential communications systems and social infrastructure.
Eligible Investments:	Stable, long-lived, cash generating assets with high levels of execution certainty, consisting of: • Availability-based Public-to-Private Partnerships ("P3") (subject to revenue and cash flow certainty under commercially acceptable appropriations schemes and suitable financial strength of procuring authority); • Brownfield Toll/User-Fee based P3 (subject to acceptable volume history and forecast; acceptable toll/user fee regime); • Contracted electric transmission, power generation, energy midstream, water and waste (subject to acceptable contract terms and counterparty credit quality); • Regulated utilities: electric, gas, integrated, water, waste water, communications/cable (subject to acceptable regulatory regimes)
Greenfield Assets:	No development/entitlement risk (all key permits, approvals, required contracts, easements etc are in place). Minimal construction risk, mitigations consisting of, but not limited to, acceptable Engineering Procurement Construction and/or Design Build Agreements with market based liability caps, liquidated damages, bonding and liquidity/security enhancement.
Operating Agreements:	Where applicable, acceptable long-term Operations & Maintenance Agreements from suitable parties with market based terms including termination provisions, liquidated damages etc.
Investment Structures:	Direct investments in the form of preferred or common equity through commercial structures and legal forms (LLCs, C Corps, other).
Leverage:	Debt in the capital structure required to have a minimum BBB- or Baa3 credit rating from one or more acceptable, major credit rating

	agencies. All leverage to be non-recourse to CalPERS.
Cash Yield:	Targeted average annual cash yields dependent upon nature of the investment. Strong preference for investments with higher cash yields and those which provide cash dividends in all stages of the investment.
Net Real Equity Return Requirements:	Common Equity Minimum 4.0 – 8.0% in US Dollars. Return requirements adjusted for risk, tenor, and subject to acceptable inflation protection and/or linkage. Preferred Equity To be determined on investment by investment basis.
CalPERS Target Investment Size:	$150 - $300 million per transaction.
Partners:	CalPERS' partners to consist of experienced and reputable firms/enterprises of significant financial size and strength with like-minded goals and objectives with respect to the asset/investment.
Ownership & Governance:	CalPERS seeks to make investments which provide significant minority investment stakes and significant shareholder rights. Governance and shareholder terms TBD with respect to each investment and consistent with the size of CalPERS' stake and the nature of the investment/asset.
Exit Rights:	No restrictions on CalPERS exit.
Due Diligence:	Commercial due diligence consisting of legal, technical/engineering, environmental, pricing, volume, regulation, financial (including detailed financial models), tax, accounting, insurance, forecast market conditions etc.

Attachment 4

Infrastructure Strategic Plan Summary

Infrastructure Strategic Plan Summary

Randall Mullan, Senior Portfolio Manager
Infrastructure & Forestland Group

September 2011

CalPERS | Investment Office
Inflation Linked Asset Class

Investment Plan Highlights

- Program target size set at 2.0% of CalPERS' Total Fund (c. $5.0 billion)

- Low-risk focus, matched to the Program's *Benchmark* and *Strategic Role:*
  - At least 90% invested in 'Defensive' and 'Defensive Plus' risk-return categories;
    - Steady income and cash yields;
    - Modest downside risk;
    - Inflation protection
  - US-centric: 40% to 80% invested in the US

- Investment approach emphasizes:
  - Long-term holds;
  - Investment size preference: minimum $150 million;
  - In-house discretion over capital deployment, asset selection and liquidity;
  - Significant minority stakes;
  - Invest with strong, reputable and like-minded partners.

CalPERS | Investment Office
Inflation Linked Asset Class

Strategic Role of Infrastructure

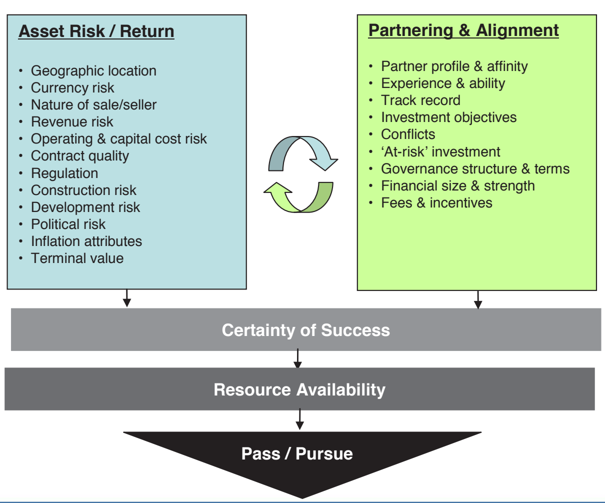
- The Program's **Strategic Role** was defined through CalPERS' Asset Allocation Review process. It was determined that Infrastructure investments can play a unique, strategic role within the total fund by providing:
  - **Steady Returns and Cash Yields** – regulated and/or contracted revenues and operating costs provide investment return certainty and stability;
  - **Defensive Growth** – the essential and protected/non-competitive nature of infrastructure assets insulates returns against price, demand and growth risks;
  - **Inflation Protection** – the presence of direct and indirect inflation-linkages serve to preserve real asset values over time; and
  - **Diversification Benefits** – private infrastructure is anticipated to demonstrate low correlation to fixed income and listed equities.

Program Benchmark:

Rolling 5-year U.S. CPI + 400 bps

Investment Screening

- Search for high-quality, suitable opportunities, with a high probability of successful completion.



Asset-level Risk/Return

- The Program's asset-level risk-return framework is tailored around the unique, inherent defensive qualities of essential infrastructure.
- Based on detailed analysis of idiosyncratic return and risk factors, opportunities are classified within an asset-level risk/return spectrum with the following three categories:

  'Defensive'
  - downside-protected or resilient / low risk

  'Defensive Plus'
  - downside-protected or resilient / moderate risk

  'Extended'
  - less protection or resiliency / higher risk

Qualities of 'Defensive' Infrastructure

- Essential assets and services
- GDP-resilient / demand-inelastic / pricing certainty
- Minimal competition / strong entry barriers / monopolistic or long-term-contracted businesses
- Stable revenues and returns / rate-regulated, or long-term-contracted revenues
- Low operating risk / allowed cost recovery
- Inflation linkages / protection
- Strong credit quality off-takers or payers
- Cash-generative businesses
- Long-lived tangible assets
- Low obsolescence risk
- Low / no development risk
- Low / no currency risk

Risk/Return Framework

- The risk/return framework incorporates pertinent asset-level risk and return factors for Infrastructure investments

Investment Risks / Return Drivers	DEFENSIVE	DEFENSIVE PLUS	EXTENDED	
Price Risk	Low Regulated revenues/earnings or long term, high quality contracts	Low - Moderate Less certain price regulation and/or additional contract risk	Moderate - High Assets/businesses subject to higher degrees of price competition	Revenue
Demand/Volume Risk	Highly predictable demand/ very low volume/user risk. High inelasticity	Moderate-to-highly predictable Demand/low volume or user risk Moderate inelasticity	Low demand predictability/high volume or user risk Higher level of elasticity	
Inflation	High degree of long term inflation protection	Moderate-to-high degree of long term inflation protection	Price and demand risks result in lower long term inflation protection	
Operating Costs	Predictable amounts often with regulatory pass-through or long-term contracts	Predictable amounts often with regulatory pass-through or long-term contracts	Can be less predictable due to lack of regulatory pass-through or ability to contract	Costs
Capital Expenditure	Predictable timing and amount. Often an addition to rate base under utility regulation	Predictable timing and amount. Often an addition to rate base under utility regulation.	Timing and amount can be less predictable due to exposure to competition or need to grow.	
Asset Value	Predictable/stable asset value driven by rate-base or long-term contracted cash flows	Same as Defensive with low-to-moderate reliance on terminal value ("TV")	Asset value less predictable/stable due to less certain cash flows & greater reliance on growth & TV	Balance Sheet
Efficient Debt Levels/ Credit Quality	(45 – 90%) Investment Grade	(30 – 75%) BB or better	(0 – 40%) BB or better	
Engineering & Construction	Proven engineering/technology; Low construction risk	Proven engineering/technology; Low construction risk	May involve less proven engineering/technology and/or moderate construction risk	Other & Non-Financial
	Valuation			
	Partners/Alignment/Governance			
	Currency/FX, Regulatory, Legal, Political			

Low ← Risk/Return/Growth → High

Portfolio Design Parameters

Portfolio Allocation			
Investment Risk/Type	Range	Target	Minimum Real Return Targets
Defensive	25% - 75%	50%	4.0% - 5.0%
Defensive Plus	25% - 65%	45%	5.0% - 8.0%
Extended	0% - 10%	5%	8.0% +
Listed (Sub-Allocation)	0% - 10%	5%	4.0% - 8.0%

Geographic Allocation		
Location	Range	Target
USA	40% - 80%	60%
Developed OECD (ex US)	20% – 50%	35%
Less Developed Markets	0% - 10%	5%

Leverage	
Portfolio Average	≤ 65%
Discrete Equity Investment	Where > 50% → minimum credit quality of BBB- or equivalent
Debt Securities	≥ BB or equivalent

Currency & Interest Rate Risk
Hedging of foreign exchange and interest rate risk where applicable

CalPERS | Investment Office
Inflation Linked Asset Class

Attachment 5

Infrastructure Fact Sheet

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FACT SHEET

CalPERS Infrastructure Program

In 2007 CalPERS initiated an infrastructure investment pilot program designed to invest in projects and businesses involved in key infrastructure sectors including the transportation, water, communications, and energy and power sectors.

In 2011 CalPERS established a new Investment Policy, capital allocation, and Strategic Plan for its Infrastructure Program. Additionally, consistent with the new framework for the Program CalPERS Board approved targeting up to $800 million for investments in California infrastructure over three years.

ROLE OF INFRASTRUCTURE INVESTMENTS

Designed to invest to capitalize on the inherent defensive nature of essential infrastructure assets, CalPERS Infrastructure Program has a unique, strategic role within CalPERS total fund. That role is to provide steady returns and cash yields, inflation protection, and investment diversification for the total fund.

CURRENT CALPERS INFRASTRUCTURE PROGRAM AT-A-GLANCE

(AS AT 6/30/2012)

Commitments:	$1.09 billion
Net Asset Value (NAV):	$1 billion
NAV - U.S. Investments (ex. CA):	$395 million
NAV - CA Investments:	$94 million in state
Investment Return:	19 percent IRR (since inception as of 3/31/2012)

PROGRAM INVESTMENT FOCUS

The Program invests in both public and private infrastructure involving roads, bridges, tunnels, rail, seaports, airports, power generation, power transmission, oil and gas pipelines and storage, electric and gas utilities, and water and wastewater facilities.

PROGRAM INVESTMENT TARGETS

Total Program Size:	• Targeted to increase to 2 percent of CalPERS total fund, equating to approximately $5 billion
Individual Investment Size:	• $150 million or greater investment from CalPERS
Geographic Focus:	• US Target Range: 40-80 percent (up to c. $4 billion) • California Target: 20 percent of US (up to c. $800 million)
Risk-Return Profile:	• "Defensive" Infrastructure – 50% target - Minimal competition; reliable revenues; low operating risk; moderate inflation protection; cash generating; and minimal downside risk • "Defensive Plus" Infrastructure – 45% target - Significant defensive qualities, although with a greater degree of risk associated with factors such as competition, user patronage, regulation, contracts, construction, capital expenditure, growth and terminal value • "Extended" Infrastructure – 5% target - Infrastructure businesses subject to significant risk associated with some of the following elements: competition; merchant business; growth; construction; development; technology; operating costs; pricing; capital expenditure; terminal value; commodity prices; legal/political/regulatory regime; and currency

Attachment 6

California Infrastructure Investment Overview, Meketa Investment Group

CALIFORNIA INFRASTRUCTURE INVESTMENT OVERVIEW

August 2011

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This document provides an overview and preliminary assessment of opportunities for investment by public pension funds in California infrastructure. In the first section, we review the current Investment Policy and strategic objectives of CalPERS' Infrastructure Program, which set forth the risk, return, and diversification criteria that guide the Program's investment activity. Although these guidelines are specific to CalPERS, they share many criteria and objectives with infrastructure investment programs at other public pension funds. Following a brief background of infrastructure investment in California, the next sections consider the current limitations to investment in public and private infrastructure. The final section suggests avenues that may be explored and pursued in order to generate opportunities for increased partnership between CalPERS and California's public agencies in infrastructure investment.

Our preliminary conclusions are as follows:

- Public ownership and operations of infrastructure and the reliance on public financing sources for infrastructure development, have restricted investment participation in public infrastructure by third-party institutional investors, including public pension funds.
- Opportunities to invest in private infrastructure, on the other hand, are relatively abundant, as there are fewer impediments to investment. Yet certain regulatory conditions have limited the scale of such investment to date.
- California has been a leader in drafting legislation to promote private participation in infrastructure investment. However, in order to attract institutional investment, state and local governments must be able to create investible opportunities and credible/reliable transaction processes.
- To the extent that governmental entities are prepared for dialogue around specific investible opportunities there is potential for cooperation between public pension funds, state agencies, and local governments to invest in California infrastructure.

This document is an initial attempt at identifying the current challenges to investing in California infrastructure, and avenues for exploring possible partnership between public pension funds and government agencies on infrastructure investment. It is hoped that this overview will help improve the effectiveness of any dialogue between public pension funds and state and local governments regarding areas of potential partnership.

Introduction

Introduction

Over the past year, the two largest public pension funds in California, CalPERS and CalSTRS, have either announced new allocations to infrastructure, or increased existing ones. Together, these multi-billion dollar commitments to infrastructure signal a recognition of the strategic role that infrastructure investments can play in a pension portfolio.

These commitments to the infrastructure asset class come at a time when California's fiscal challenges have left local, regional, and state agencies with fewer resources available to finance the ongoing maintenance and operation of existing infrastructure and the construction of new facilities. While many public pension funds, including CalPERS, have an interest in making good investments in California infrastructure, there are still several barriers to such investment.

The purpose of this document is to provide an overview of the current challenges to pension fund investment in California infrastructure within the context of institutional investment policies and strategic objectives. We also identify avenues that may be explored in order to increase opportunities for partnership between pension funds and the public sector. The Appendix contains case studies of recent transactions that illustrate both some of the opportunities for infrastructure investment in California, as well as relevant investment considerations.

Infrastructure Investment Program Highlights

There is a wide risk and return spectrum for infrastructure investments, ranging from low-risk, low-volatility assets, to more opportunistic investments that face greater market, development, political, legal, or other risks.

As they relate to potential investment in California infrastructure, the key considerations for CalPERS Infrastructure Program include:

- **Appropriate risk/return** - The CalPERS Infrastructure Program targets defensive investments with the following characteristics:
  - Stable revenues and returns; rate-regulated or long-term contracted
  - Low development and operating risk
  - Cash-generative; typically established, operational assets
  - Minimal downside risk
- **Alignment with Sponsors and Partners** – This includes appropriate risk sharing, strong governance, financial strength, and shared objectives.
- **Transactibility** – Established and efficient bidding and procurement processes with a high likelihood of transaction completion, are critical for public pension programs that must manage the deployment of time and limited resources in the pursuit of investment opportunities.

Background:
Infrastructure Investment in California

Quantifying the California Infrastructure Gap

- The demand for infrastructure investment is significant, yet studies utilize different definitions of infrastructure and different methods for calculating infrastructure needs.
  - Many definitions include projects which may not be "investible" (e.g., public housing)
  - Estimates may not include ongoing maintenance and operating costs
  - Estimates may not take into account both California's recent underinvestment in its infrastructure, and expected population growth:
    - 2010: 37 million
    - 2020: 42 to 48 million

Infrastructure Sectors	
Transportation	Roads, Bridges, Tunnels, Mass Transit, Parking, Airports, Seaports, and Rail
Energy	Oil, Natural Gas, Liquid Pipelines and Storage Gas Distribution
Power	Transmission Distribution Generation (including Renewables)
Water	Water Storage, Transportation, Distribution, Treatment, Wastewater Collection, and Processing
Waste	Waste Collection, Transportation, Landfills, and Processing
Communications	Towers and Networks
Social	Building Facilities (Health, Education, Justice, and Military)

Estimated Size of California Investment Requirement

Capital Required ($ billion)	Period (years)	Source
424 – 530	10	Bay Area Council Economic Institute (2010)
500	20	Little Hoover Commission (2010)
111.3	10	California Department of Finance (2008)

Sources: California Department of Finance (2003); Public Policy Institute of California (2011)

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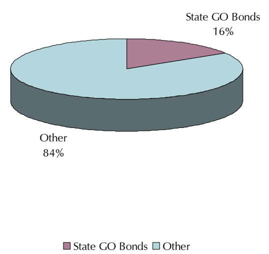
Background:
Infrastructure Investment in California

California relies on numerous public sources to finance its infrastructure, primarily bonds (General Obligation ("GO") and Revenue Bonds).

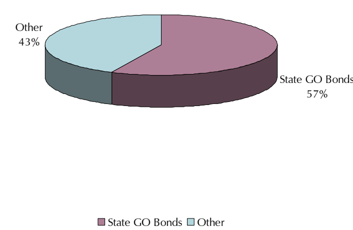
It is estimated that the state's reliance on bonds for capital spending has increased significantly over the past 30 years.

Example: GO Bond Issuance

Capital Spending 1978



Capital Spending 2009



Source: Little Hoover Commission (2010); Public Policy Institute of California (2009)

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Background:
Infrastructure Investment in California

Other public sources used to finance infrastructure in California include:

- State General Fund
- Special Funds (mainly for transportation)
- Federal Highway Trust Fund
- Development Impact Fees
- Gasoline Tax

User fee-based finance

- Tolling has been used on a limited number of roads
  - SR 91 Express
  - SR 125
  - SR 241
  - I-15 Express
- Most utilities charge user fees
  - Electricity and Gas
  - Water
  - Waste

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Background:
Infrastructure Investment in California

Bonding has been the preferred mechanism for financing infrastructure, for several reasons

Benefits of the Use of Bond Financing for Infrastructure	Comment
Approval Process	State GO Bonds require only a majority approval by voters (Bonds issued by local authorities require supermajority).
Suitability for Large Capital Projects	Long-term borrowing enables public agencies to finance large capital projects that would not be possible to pay for up front. And, since infrastructure projects are designed to serve multiple generations, it makes sense that the debt obligations are paid down over longer periods.
Tax Advantage	Due to their tax-exempt status, bonds may be economically advantageous compared to taxable funding sources.
Suitability for Projects without Revenues	Since interest and principal are paid from the General Fund, GO Bonds may be used to fund projects that do not have a dedicated revenue stream.

Source: Public Policy Institute of California

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Background:
Infrastructure Investment in California

Despite the benefits of bonds, the use of borrowing to finance infrastructure also has limitations

Limitations on the Use of Bond Financing for Infrastructure	Comment
Debt Burden	GO bond issuance has increased debt service paid by the General Fund, at a time when state revenue collections have been impacted by the recession and housing market collapse. Borrowing for infrastructure has also impacted California's credit rating, and limits future use of General Fund resources. And, the debt service obligations of the General Fund are typically decoupled from the cost of delivery of the service.
Restrictions	Most tax-exempt bonds impose restrictions on the participation of non-government parties ("bad use").
Limited Use of Proceeds	Tax exemptions add to the affordability of bonding, yet bonds typically do not include the costs of ongoing maintenance and upkeep, which, over the life of the asset, often exceed up front construction costs. The California Department of Transportation estimates $6 billion in annual maintenance costs for the state's highway system, despite a budget of $1.5 billion.
Tax Disadvantage	Tax exemptions may limit the competitiveness of the private sector. The National Research Council estimated an effective interest rate premium of 20 to 40 percent relative to publicly debt.
Adequacy of Revenue Streams	For revenue bonds, the source of revenues against which claims are made may, over time, either be insufficient to cover costs or take away from other uses (e.g., maintenance).

Source: Little Hoover Commission (2010); Keston Institute (2006)

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Challenges to Pension Fund Investment in Public Infrastructure

While California is in need of alternative sources of financing to meet its public infrastructure needs, currently there are numerous challenges to private institutional investment. In California, and in other states, the majority of infrastructure assets are publicly owned, operated, and/or maintained, which may limit the suitability of third-party institutional investment.

Sectors	Ownership
Ports	Publicly owned and operated
Airports	Publicly owned and operated
Roads	Publicly owned Private: AB 680 (1989), permitting up to 4 private toll road projects SB X2 4 (2009), permitting an unlimited number of PPPs through 2017
Energy	Publicly Owned Utilities Investor Owned Utilities (Regulated)
Water	Publicly Owned Utilities Investor Owned Utilities (Regulated)

Key Challenges:

1. Restrictions on public financing sources
2. Lack of dedicated revenue streams
3. Uncertainty around the public procurement process
4. Other considerations

1. Financing sources may impose restrictions on investment – As noted in the previous section, public financing sources, such as tax-exempt bonds and federal grants, have restricted the use of third-party investment.

   - Example: Airports - As publicly-owned assets, airports utilize different sources for financing operations, maintenance, and improvements
     - Tax-Exempt Bonds
     - Airport Improvement Program ("AIP") Funds – Federal Grants
     - Passenger Facility Charges ("PFC")
     - Airline investment
   - Access to certain sources of funding creates restrictions on private investment
     - Tax-Exempt Bonds: A "Bad Use" provision applies to tax-exempt bonds.
     - Airport Improvement Program: According to the Reason Foundation, "The Federal Airport Improvement Program imposes economic regulation on U.S. airports in exchange for annual grant funding. Those regulations preclude airport privatization, because they require all "airport revenues" - including proceeds from a lease or sale - to be reinvested in the airport (or airport system) that generates them. That means a city, county or state that wishes to lease or sell its airport would receive zero financial benefits from so doing. The regulations also prohibit any airport operator (including an investor-owned airport company) from taking any profits off the airport, which means such a company would have no incentive to acquire a U.S. airport."

Source: Jacobs Consultancy (2007); Reason Foundation (2011)

The Federal Aviation Administration ("FAA") Reauthorization Act (1996) created the Airport Privatization Pilot Program, which authorizes the use of Public Private Partnerships for up to five airports. Key conditions of the program include:

- A "rate of return" to be assessed as an incentive for private investors
- Approval by the FAA and 65% of airlines servicing the airport required for privatization

Despite authorization, no U.S. airports have been privatized under the Pilot Program

- In 2009, the City of Chicago failed to privatize Midway Airport
- In 2010, an application to privatize Luis Munoz Marin International Airport (San Juan, Puerto Rico) received preliminary FAA approval; this may be the first airport to be privatized under the Pilot Program

2. Many infrastructure sectors lack dedicated sources of revenue – Typically, infrastructure facilities lacking a dedicated revenue stream (e.g., user fees) to pay a return to investors would not be suitable for private investment, such as K-12 schools, prisons, police stations, and freeways. In certain cases, public agencies have recognized the cost of constructing, operating, and maintaining infrastructure assets, and have identified public or private financing sources to support the life-cycle costs of an infrastructure project.

Source	Comment	Example
Toll	California began utilizing tolls in 1989, with the passage of Assembly Bill 680 ("AB 680"), which granted the California Department of Transportation ("CalTrans") legislative authority to contract with the private sector to develop, build, operate, and maintain up to four roads. Two tolled facilities were authorized under AB 680.	SR 91 Express Lanes (1995) SR 125 Toll Road (2003)
Availability Payment	Appropriations of public funds to pay the private sector in exchange for making an asset "available" to the public ("Availability Payments"). In contrast to tolls, availability payments do not represent a new source of funding for infrastructure, but rather are a means for the public sector to pay the private sector for the cost of development, construction, operations, and maintenance of an asset over a long period.	Long Beach Courthouse Redevelopment Project (2010) - (Authorized under Senate Bill 77) Presidio Parkway (2010) - (Authorized under Senate Bill 2X 4)

Despite early attempts at infrastructure privatization in California, the track record has been limited.

- Even if there is a possibility of creating a revenue stream to pay for the development, maintenance, and operation of an infrastructure asset, such as user fees, political will is required to do so.
- With few exceptions, legislative initiatives have been focused primarily on road transport.
- Tolling arrangements, which were used in earlier road projects, required private investors to assume traffic risk. The bankruptcy of SR 125 is one example of the risks associated with traffic volumes.
- Availability payment structures insulate investors from traffic risk, yet they typically require the annual appropriation of public funds by state agencies. The appropriation of public funds to pay private developers and operators for multiple decades is still relatively uncommon in the U.S.
- Practically all projects approved under various California legislation to enable PPPs are greenfield projects, requiring investors to assume development and construction risk, and are not cash generative until reaching an operational stage.

3. Uncertainty around the procurement process – To engage with the private sector, the public sector must manage a transparent, efficient, and consistent process for offering contracts or concessions. In other countries with successful PPP programs, centers of excellence have been established to provide information, guidelines, and advisory support on PPPs to public and private sectors. In California, the Public Infrastructure Advisory Commission ("PIAC"), authorized by Senate Bill X2 4, was created to assist state and local transportation agencies in the evaluation of PPPs. To date, PIAC's mandate is still limited and public-sector processes generally have not followed a standardized process.

- Many projects had very long development times
  - Plans to make improvements to Doyle Drive began in the 1970s; the Environmental Assessment was initiated in 2000 and certified in 2008. The project reached financial close in 2010.
  - The new segment of SR 125 was adopted by Caltrans in 2000, and the final environmental permits were received in 2001. The road opened in 2007.
- Other public processes failed to advance beyond initial RFI stage
  - In November 2008, the City of Los Angeles began discussions on privatizing parking garages, following the privatization of parking meters by the City of Chicago. The City of Los Angeles issued an RFQ in February 2010 for a possible concession of publicly-owned parking garages. The city anticipated short-listing bidders in mid-March 2010, releasing the bid documents in May 2010 and closing the concession in July 2010. No further steps have been taken.
  - Los Angeles World Airports ("LAWA") solicited Expressions of Interest for a long-term concession to manage and operate Ontario Airport, with a due date of February 28, 2011. No further steps have been announced.

4. Other considerations

- Decision making in California is decentralized. There is no centralized, systematic framework for state, regional, or local agencies, legislative bodies, or other authorities to offer long-term operating concessions and contracts with private parties to manage and operate public infrastructure.
- Most recent PPPs have significant construction components. Greenfield projects are necessary, yet they expose investors to development risk, and they are not structured to provide cash yield until the projects are in operation.
- Greenfield PPP structures typically consist more of debt that equity; minimal equity requirements may not be suitable for larger investment programs.

Presidio Parkway	Capital Structure ($ millions)
Equity	**45**
Private Activity Bonds	150
TIFIA	150

Long Beach Courthouse	Capital Structure ($ millions)
Equity	**49**
Bank Debt	442

Private Infrastructure Investment Options

Many of the current challenges to investment in public infrastructure do not apply to infrastructure assets in private ownership. In California, privately owned and operated infrastructure consists primarily of assets in the energy, water, and communications sectors. As with public infrastructure, private infrastructure assets provide essential services to communities and businesses.

Sectors	Ownership
Electric Utilities	Public: Municipal Owned Utilities Private: Investor Owned Utilities (Regulated)
Generation	Private
Transmission	Private
Water Utilities	Public: Municipal Owned Utilities Private: Investor Owned Utilities (Regulated)
Communications	Private

There are several key differences between public and privately owned infrastructure

Areas	Public	Private
Procurement	Public process	Private process
Revenue Sources	Tolling, utilization-based, availability	Regulated; long-term contracts
Development	PPPs introduce development and construction risk	Private infrastructure may consist of brownfield assets or new development
Financing	Often utilize public-sector financing	Use of private capital
Equity Requirements	Limited equity requirements for many PPPs	Deal sizes vary but often require substantial equity

There are typically more brownfield opportunities in the private infrastructure space
Example: California electric distribution and generation asset sale (2011)

- **Seller**: NV Energy
- **Buyer**: Liberty Energy-California Pacific Electric Company
- **Process**: Commercial
- **Rationale**: NV Energy said it was selling its California assets in order to concentrate on its business in the State of Nevada, where it serves approximately 97 percent of all electric customers in the state.

State initiatives have created opportunities for private infrastructure investment in California.

Renewable Portfolio Standard ("RPS") - California has one of the most ambitious RPS in the country. State utilities are required to procure electricity from approved renewable sources. In contrast to public infrastructure sectors, investors enter into long-term Power Purchase Agreements ("PPAs") with electric utilities, which typically provide a fixed price for the generation and transmission of renewable energy.

Deadline	Electricity from Renewable Sources (%)
2013	20
2016	25
2020	33

Utility	Current Use of Renewables (%)
Pacific Gas & Electric	17.7
Southern California Edison	19.4
San Diego Gas & Electric	11.9

Despite several investor-friendly features of the RPS program, there are still challenges to investment in California.

Challenges	Comment
California Environmental Quality Act ("CEQA")	CEQA is a state law requiring state and local agencies to identify and reduce, if feasible, the significant, negative environmental impacts of land use decisions. Inability to receive CEQA approvals has led to the delay of many infrastructure projects. In particular, an Environmental Impact Report (EIR) from CEQA requires that all significant impacts be mitigated or over-ridden. It has been recommended that an exceptions process is created to enable energy investment. There have also been charges that certain interest groups have exerted influence over the approvals process.
Development Risks	In addition to hurdles related to CEQA, California has other environmental and development challenges. California Independent System Operator ("ISO") – California ISO requires sponsors to make up front financial commitments in order to reserve a space in the interconnection queue. As a result, many projects have been suspended or terminated due to up front cost requirements and delays. Power Purchase Agreement ("PPA") Negotiation - Executed PPAs are necessary to obtain approval and financing for energy projects. However, the process of negotiating PPAs has been impacted by ongoing regulatory and policy changes, which has made it difficult for developers to plan and budget projects.

Source: Manatt, Phelps, & Phillips (2011)

Restrictions on the development of electric generation and transmission in California have contributed to the termination of a number of projects, or projects being developed out of state to meet California's RPS.

Status of RPS PPAs (2002-2011)	Number of Projects
Rejected/cancelled	40
Operational	93
In Progress	135
Total Projects	268
Total Terminated	**14.9%**

Year	PPAs (#)	In State (%)
2002	13	100
2003	7	100
2004	3	100
2005	12	100
2006	6	100
2007	15	**93**
2008	30	**80**
2009	37	**46**
2010	62	**81**
2011	43	**86**

Source: California Department of Energy (2011)

Potential Opportunities

We expect that public pension funds will have ample opportunity to invest in private infrastructure within California, and will do so successfully.

We expect that it will be more challenging for public pension funds to invest in infrastructure that is currently in public sector hands. Despite challenges, we believe potential opportunities may be generated through consideration and exploration of the following:

State agency status – Public pension funds are classified as state agencies, which may provide them with opportunities to partner with the public sector on infrastructure investment without impacting the use of public financing sources. The potential advantages offered by state agency status should be explored further.

Municipal home rule – California is one of 12 states with "Broad Home Rule." Home rule municipalities have greater legal authority to conduct their own affairs without interference from state legislatures, including the negotiation of PPPs. Home rule could enable bi-lateral negotiation between public pension funds and local state agencies regarding potential infrastructure investment.

Brownfield and secondary opportunities – Although state PPP programs have targeted greenfield projects, there may be opportunities for the sale of operational public infrastructure assets to public pension funds. And, over the longer term, we expect to see a market of operational PPP projects that might be suitable for pension fund investment.

Programs from other countries offer examples of state support for private infrastructure investment, as well as issues raised by engagement with private investors.

Queensland Asset Sale Program

In 2010, as part of a broader deficit reduction program, the government of Queensland, Australia, sold five state-owned assets utilizing several different processes.

Opportunity: The asset sales raised approximately A$12 billion.

Considerations: The sale of Queensland Motorways was executed through the off-market transfer to Queensland Investment Corporation ("QIC"), the state pension fund.

Asset	Proceeds (A$ billion)	Mode of Sale
Port of Brisbane	2.3	99-year lease to consortium of private equity funds
Queensland Motorways	3.1	Transfer to state pension fund
Queensland Rail	4.6	Public market sale
Abbot Point Coal Terminal	1.8	99-year lease to industry operator
Forestry Plantations Queensland	0.6	99-year lease to private equity fund

Ontario / Green Energy Investment Agreement ("GEIA")

In 2010, the Government of Ontario, Canada signed the GEIA with Samsung C&T and Korea Electric Power Company, providing incentives to build facilities that manufacture renewable energy components. If manufacturing goals are met, Samsung C&T will receive assistance from certain provincial agencies in siting, permitting, and interconnecting the projects, and 20-year power purchase agreements with the Ontario Power Authority on terms similar to the provincial Feed-In-Tariff ("FIT") Program.

Opportunity: The provincial government streamlined the approvals process to support renewables development, which incentivized private investment in generation and transmission infrastructure.

Considerations: The agreement has come under fire by certain political parties, arguing that no single corporation should be granted special terms, and that the costs associated with the agreement are not defensible.

Conclusion

In summary, this document identifies several conditions that have impacted institutional investment in California Infrastructure:

- Many infrastructure assets are still in public ownership and operation, and thus have not been readied or structured to accommodate private investment. In addition, the use of public sector financing sources has limited the role of third-party investment and private participation.
- Protracted bidding and procurement processes have reduced the predictability and certainty of transacting.
- Legislative initiatives have enabled PPP projects to finance new infrastructure development and construction. While such projects are of importance to the state, they may not meet the risk/return criteria, or the investment policy requirements of public pension funds, such as CalPERS.
- Private infrastructure sectors, including certain utility and energy projects, have been more suitable for institutional investment. Transactions in private infrastructure sectors have typically followed a commercial process, and involve the sale of companies with established operating histories. However, the process for obtaining environmental and development approvals has impacted the predictability and certainty of transacting.

Despite these challenges, there are areas of potential opportunity worthy of consideration:

- Working with appropriate, expert advisors, public agencies may be able to assess and develop investible opportunities around existing operational assets currently under public ownership, and equip themselves for fruitful discussions around such opportunities with institutional investors such as CalPERS.
- The greater legal authority granted to municipalities in California under Broad Home Rule status may allow for local and regional authorities to negotiate and work directly with potential investors such as CalPERS.
- State agency status may provide public pension funds such as CalPERS with an advantage for partnering with the public sector, by providing the ability to partner without generating an adverse impact on existing public financing sources.

Case Studies

Case Study: Wastewater PPP

Project	Santa Paula Wastewater Treatment Facility
Background	Santa Paula's original wastewater facility was built in 1939 and needed to be replaced in order to comply with current state requirements. The city faced more than $8 million dollars in compliance-related fines from the State. The Water Quality Control Board agreed that if the city could come into compliance by December 15, 2010, the Board would waive the accumulated fines.
Structure	A Design-Build-Operate-Finance concession between a public agency and private investors. The project was contracted under California Government Code 5956, which authorizes local governmental agencies to use design-build to construct fee producing infrastructure facilities, particularly water supply, treatment, and distribution. In May 2008, the City Council awarded a 30 year design-build-operate-finance (DBOF) concession to Santa Paula Water, LLC, a joint venture entity owned by Alinda Capital Partners LLC and PERC Water. Under the concession, Santa Paula Water LLC is paid a service fee that is expected to increase by 3% each year for 30 years.
Opportunities	Provided a private capital solution to a municipality in non-compliance of environmental laws. Given California's growing population and perennial shortage of water, recycling is something much of the state will need to consider to meet water needs.
Challenges	**The DBOF structure requires investors to assume development and construction risk, and will not produce cash yield until the project is operational.**

Case Study: Availability Road

Project	Presidio Parkway
Background	The project consists of the existing south access road to the Golden Gate Bridge, known as Doyle Drive or Route 101. Originally built in 1936, Doyle Drive was deemed structurally and seismically deficient according to present standards.
Structure	The San Francisco County Transit Authority entered into a 33 year Design Build Finance Operate and Maintain concession with Golden Link Concessionaire, LLC, a consortium led by Hochtief PPP Solutions North America and Meridiam Infrastructure North America. Users would not be assessed tolls, and availability payments would be made primarily from the State Highway Account.
Opportunities	Presidio Parkway is the first PPP project to be developed under SB 2X 4. The transaction utilizes a large component of TIFIA funding. Under the availability payment structure, investors do not assume traffic risk.
Challenges	**As with other PPPs, Presidio Parkway has a 3 year construction period, during which the project will not be distributing yield to investors, and requires that investors assume development and construction risk. And, while investors do not assume traffic risk under the availability payment structure, they nevertheless assume the risk that the public agency will appropriate funds agreed upon in the concession agreement.**

Case Study: Renewable Energy Generation

Project	Terra-Gen / Alta Wind
Background	Terra-Gen is a renewable energy company with approximately 830 megawatts ("MW") of operating power plants across geothermal, wind, and solar technologies, as well as a development pipeline of over 15,000 MW. To date, all operations have been primarily focused on California. In 2009, Global Infrastructure Partners ("GIP") acquired a 40% of Terra-Gen for approximately $556mm. Terra-Gen acquired the Alta project from Allco Finance Group for $325 million plus $65 million of wind turbine progress payments. The project is located approximately 100 miles from Los Angeles in the Tehachapi region of California, where a significant portion of the Company's existing wind assets are in operation. The Alta Wind Energy Center is expected to provide up to 3,000 MW of renewable generating capacity. When completed, Alta is expected to be the largest wind power project in the United States.
Structure	Terra-Gen has a Power Purchase Agreement ("PPA") with Southern California Edison ("SCE") under which 1,550 MW of future development is contracted, with contract prices adjusting for changes in turbine capital costs, interest rates and California's incentive pricing regime for renewable power. Importantly, Terra-Gen has over 2,900 MW of reservations for committed transmission capacity on new transmission facilities that are currently being built by SCE.
Opportunities	The bulk of Terra-Gen's capacity is located in California, a market with high power prices, demanding Renewable Portfolio Standard ("RPS") requirements (33% of total electricity production by 2020) and a generally difficult development and permitting environment, which enhances the scarcity and value of a renewable energy platform.
Challenges	**For California utilities to meet the state's mandated 33% RPS by 2020, multiple large scale facilities such as Alta Wind will need to be developed. Current environmental, development, and permitting challenges, however, have resulted in the delay or termination of many such projects.**

Case Study: Natural Gas Pipeline

Project	Ruby Pipeline
Background	Ruby is an approximately 675-mile FERC Regulated natural gas pipeline to be constructed, owned and operated in a joint venture between Global Infrastructure Partners ("GIP") and El Paso Corporation. When completed, Ruby will transport natural gas from the growing Rocky Mountain supply region to the U.S. West Coast markets.
Structure	GIP has committed to invest up to $700 million in this joint venture with El Paso, which is the largest owner and operator of interstate natural gas pipelines in the U.S. Once Ruby is operational, GIP and El Paso will own and operate the pipeline on a 50/50 basis. Currently, 73% of capacity is contracted (10-15 yrs).
Opportunities	The macro environment is favorable, because production in Western Canada, which is the biggest supplier to the Western US, is down, while Canadian demand is up - conditions that should support additional supply from the Rockies, and through Ruby. There is also an increasing shift from coal to gas in California and Canada, which should create more demand for gas production and gas pipelines.
Challenges	**California is the primary market which Ruby pipeline will serve. However, the developers decided to not to build the pipeline in California, due to concerns that development challenges and environmental approvals would prolong the development process.**

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An Overview of Local Government General Obligation Bond Issuance Trends, California Debt & Investment Advisory Commission, 2008

Paying for Infrastructure: California's Choices, Public Policy Institute of California ,2009

Proposed Work Plan for 2011, Public Infrastructure Advisory Commission, 2011

PPPs and Municipal Home Rule, Allen & Overy 2009

The State of California Debt Affordability Report, State Treasurer's Office, 2009

What Is Really Causing Renewable Project Failures in California?, Manatt, Phelps & Phillips, 2011

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Attachment 7

Infrastructure Roundtable Agendas

CalPERS Infrastructure Investment Roundtable

Overcoming Impediments for Pension Fund Investments in Infrastructure

Monday, March 5, 2012
9:30 a.m. to 3:00 p.m.

CalPERS Headquarters
400 Q Street
Room 1140
Sacramento, California

Agenda

9:30 – 9:45 a.m.	Welcome Anne Stausboll, *Chief Executive Officer, CalPERS* Bill Lockyer, *State Treasurer* Joe Dear, *Chief Investment Officer, CalPERS*
9:45 – 10:00 a.m.	Introductions and Overview of Roundtable Goals Laurie Weir David Altshuler
10:00 – 10:45 a.m.	Private Investment in Public Infrastructure Participants
10:45 – 11:00 a.m.	Break
11:00 – 11:45 a.m.	Financing Infrastructure Participants
11:45 a.m. – 12:30 p.m.	Lunch Provided
12:30 – 1:15 p.m.	Pension Investment Requirements Participants
1:15 – 1:30 p.m.	Break
1:30 – 2:15 p.m.	Public Authorities and Procurement Participants
2:15 – 2:45 p.m.	Wrap/Outline Next Steps David Altshuler Laurie Weir
2:45 -3:00 p.m.	Thank you Laurie Weir

CalPERS Infrastructure Investment Roundtable: *Transportation*

Thursday, April 5, 2012
9:30 a.m. to 2:45 p.m.

The Fairmont San Francisco
950 Mason Street
San Francisco, California

Agenda

9:30 – 9:45 a.m.	Welcome, Agenda, Introductions Anne Stausboll, *CalPERS* Priya Mathur, *CalPERS* Laurie Weir, *CalPERS* Richard Little, *Price School of Public Policy, University of Southern California*
9:45 – 9:55 a.m.	CalPERS Infrastructure Investment Randall Mullan, *CalPERS* Todd Lapenna, *CalPERS*
10:00 – 10:45 a.m.	CalPERS Infrastructure Transaction Examples Richard Little Randall Mullan Todd Lapenna
10:15 – 10:35 a.m.	Transportation Needs and Funding – The State Perspective Richard Little Kome Ajise, *Caltrans* Steve Coony, *State Treasurer's Office* Erica Martinez, *Office of Assembly Speaker John A. Perez*
10:35 – 10:50 a.m.	Potential Investment Structures for CalPERS Richard Little John Pirog, *Hawkins Delafield & Wood LLP*
10:50 – 11:00 a.m.	Break
11:00 – 11:45 a.m.	Investment Challenges and Solutions Richard Little Geoff Yarema, *Nossaman LLP* Paul Ryan, *J.P. Morgan Securities, LLC* Jose Luis Moscovich, *San Francisco County Transportation Authority*
11:45 a.m. – 12:30 p.m.	Lunch

12:30 – 1:45 p.m.	Regional Agencies' Projects and Approaches to Financing Richard Little Kenneth Phipps, *Orange County Transportation Authority* Mike Schneider, *Infraconsult, LLC for Los Angeles Metropolitan Transportation Authority* Marney Cox, *San Diego Association of Governments* Brian Mayhew, *Metropolitan Transportation Commission/Bay Area Toll Authority* Andrew Fremier, *Metropolitan Transportation Commission/Bay Area Toll Authority*
1:45 – 2:00 p.m.	Break
2:00 -2:30 p.m.	Potential Roles for CalPERS Richard Little
2:30 -2:45 p.m.	Wrap-up and Thank You Richard Little Laurie Weir

CalPERS Infrastructure Investment Roundtable: *Water*

Monday, April 23, 2012
10:30 a.m.

Crowne Plaza Hotel
5985 W. Century Blvd
Los Angeles, CA 90045

Agenda

10:30 - 10:45 a.m.	**Welcome, Agenda, Introductions** Joe Dear, *CalPERS* Henry Jones, *CalPERS* Laurie Weir, *CalPERS* Tony Oliveira, *Professor Economics/Public Policy*
10:45 - 11:05 a.m.	**Water Needs and Funding – The State Perspective** Tony Oliveira Steve Coony, *State Treasurer's Office* Perla Netto-Brown, *California Department of Water Resources* Richard Sanchez, *California Department of Water Resources* John Rossi, *Association of California Water Agencies and California Special Districts Association*
11:05 a.m. - 12:15 p.m.	**Regional Agencies' Projects and Approaches to Financing** Tony Oliveira Gary Breaux, *Metropolitan Water District of Southern California* Philip Leiber, *Los Angeles Department of Water and Power* Eric Sandler, *East Bay Municipal Utility District* David Orth, *Kings River Conservation District*
12:15 - 1:00 p.m.	Lunch
1:00 - 1:35 p.m.	**Investment Challenges and Solutions** Tony Oliveira Doug Montague, *Montague deRose* Allan Marks, *Milbank*
1:35 p.m. - 1:45 p.m	**CalPERS Infrastructure Investment Program** Tony Oliveira Randall Mullan, *CalPERS* Todd Lapenna, *CalPERS*
1:45 - 2:05 p.m.	**Potential Roles for CalPERS** Tony Oliveira Laurie Weir
2:05 - 2:25 p.m.	**Wrap-up and Thank you** Tony Oliveira Laurie Weir

CalPERS Infrastructure Investment Roundtable: *Energy*

Thursday, May 24, 2012
10:00 a.m. to 2:45 p.m.

Sheraton San Diego Hotel and Marina
1590 Harbor Island Drive
San Diego, California

Agenda

10:30 – 10:45 a.m.	Welcome, Agenda, Introductions Anne Stausboll, *CalPERS* George Diehr, *CalPERS* John Chiang, *State Controller* Laurie Weir, *CalPERS* Tony Oliveira, *Professor Economics/Public Policy*
10:45 – 11:05 a.m.	CalPERS Investment Overview: Infrastructure Investment Program Tony Oliveira Randall Mullan, *CalPERS* Todd Lapenna, *CalPERS* Sarah Corr, *CalPERS*
11:05 a.m. – 12:05 p.m.	Energy Projects: Investment Challenges and Successes in California Tony Oliveira Ed Feo, *Seaward Road Capital* Mike O'Sullivan, *NextEra Energy Inc.* Alex Makler, *Calpine*
12:05 – 12:50 p.m.	Lunch
12:50 – 1:10 p.m.	Energy Projects: Investment Challenges and Successes in California (continued) Tony Oliveira Steve Doyon, *Terra-Gen* Ed Stern, *PowerBridge LLC*
1:10 – 2:10 p.m.	Energy Needs and Funding: The State and Utilities Perspective Tony Oliveira Robert Weisenmiller, *California Energy Commission* Patrick Lee, *San Diego Gas & Electric* Stuart Hemphill, *Southern California Edison*
2:10 – 2:25 p.m.	Potential Roles for CalPERS Tony Oliveira Laurie Weir, *CalPERS*
2:25 - 2:45 p.m.	Wrap-up and Thank You

Attachment 8

Participant List

Infrastructure Roundtable Attendees	
Name	**Affiliation**
Aijise, Kome	California Department of Transportation
Ailman, Chris	CalSTRS
Altshuler, David	Meketa Investment Group
Ardhaldjian, Raffy	City of Los Angeles
Beatty, Greg	DPA
Beeson, Dave	Orange County Employee Retirement System
Bernstein, Sarah	Pension Consulting Alliance, INC.
Bettencourt, Rocel	Senate Republican Caucus
Billimoria, Farhad	CalPERS Investment Office
Blackledge, Scot	CalPERS, GOVA
Bloom, Ron	Lazard Freres & Co., LLC
Bonner, Dale	Cal-INFRA Advisors, Inc.
Bourgart, Jim	Parsons Brinckerhoff
Boykin, Grant	State Treasurer's Office
Breaux, Gary	Metropolitan Water District of Southern CA
Brown, Danny	CalPERS Division Chief
Burcar, Lisa Marie	Professional Engineers in California Government
Burford, Mary Ann	CalPERS Executive Office
Burnett, Alex	JP Morgan
Carlson, Mike	JP Morgan
Carol, Dan	State of Oregon - Office of Governor John Kitzhaber
Casarez, Ken	LiUNA
Chambers, Judy	Pension Consulting Alliance, INC.
Chiang, John	California State Controller
Coony, Steve	Office of State Treasurer
Corr, Sarah	CalPERS Investment Office
Costigan, Richard	CalPERS Board of Administration
Cox, Marney	San Diego Association of Government
Crandall, Steve	CalPERS, ITBS
Cullison, Randy	Tenaska Capital
Cunningham, Michelle	CalSTRS
Dear, Joe	CalPERS Chief Investment Officer
Diehr, George	CalPERS Board of Administration
Doyon, Steve	Terra-Gen Power LLC
Dunn, Lucy	Orange County Business Council
Eliopoulos, Ted	CalPERS Investment Office
Ellis, Chris	CalSTRS
Enderton, Laura	CalPERS, Office of Stakeholder Relations
Evans, Linda	CalPERS Strategic Event MGMT
Feo, Ed	Seaward Road Capital
Fickett, Kent	Ramco Generating
Flocks, Sara	California Labor Federation

Fox, William	N/A
Freeman, David	Water and Energy Expert
Fremier, Andrew	MTC
Friedman, Steven	Huntington Capital
Galli, Barbara	CalPERS Strategic Event MGMT
Garvey, Jane	Meridiam Infrastructure
Gilloti, Rachel	Clean Energy Fund (in place of Paul Frankel)
Glazier, Robert	CalPERS Deputy Executive Officer, External Affairs
Guillot, Janine	CalPERS Investment Office
Hemphill, Stuart	Southern California Edison Company
Hendricks, Bracken	Center for American Progress
Houlberg, John	JP Morgan
Hutson, Erin	LiUNA
Jacobson, Kern	Infra Consult LLC
Jacobson, Rob	Irvine Ranch Water District
Jelincic, JJ	CalPERS Board of Administration
Jenkins, Bryant	Sperry Capital
Jones, Henry	CalPERS Board of Administration
Keiley, Harry	CalSTRS
Kelly, Liam	KPMG
Kemmerer, John	Environmental Protection Agency
Kennedy, John	Orange County Water District
Kennedy, Susan	Health Benefits Exchange
Kimport, David	Nossaman Law Firm
Kulis, Mike	San Diego Airports
Lapenna, Todd	CalPERS Investment Office
Larouche, Elisse	Montague DeRose and Associates, LLC
Lieber, Phil	Los Angeles Department of Water and Power
Link, Gary	Senate Republican Caucus
Little, Richard	AICP - Sol Price School of Public Policy, USC
Liu, Peter	Clean Energy Advantage Partners / CA Clean Energy Fund
Llyod, Barbara	KPMG
Lockyer, Bill	State Treasurer
Luchetti, Peter	Table Rock Capital
Makler, Alex	Calpine
Marks, Allan	Milbank
Martin, Andrew	UBS Global Asset Management
Martinez, Erica	Officer of Assembly Speaker Perez
Martling, Jim	Sperry Capital
Mathur, Priya	CalPERS Board of Administration
Matson, Megan	Table Rock Capital
Mayhew, Brian	Bay Area Transportation Authority
McAllister, Andrew	California Energy Commission
McCourt, Stephen	Meketa Investment Group

McGuire, Terry	CalPERS Board of Administration
Milliron, Pam	State Treasurer's Office
Moly, Rohimah	State Treasurer's Office
Montague, Douglas	Montague DeRose and Associates, LLC
Moscovich, Jose Luis	San Francisco County Transportation Agency
Mullan, Randall	CalPERS Investment Office
Mullen, Mike	Centerpoint
Murphy, Dennak	SEIU Capital Stewardship Program Lead
Murray, John W. Jr.	Metropolitan Water District of Southern CA
Netto-Brown, Perla	Department of Water Resources
Oliveira, Tony	Professor of Economics, Public Policy
Ordonez, Ernie	LiUNA
Oros, Mickey	Altergy Systems
Orr, Ryan	Stanford University
Orth, David	Kings River Conservation District
O'Sullivan, Mike	Nextera Energy, Inc.
Pacheco, Brad	CalPERS Office of Public Affairs
Palfreyman, Justin	Lazard Freres & Co., LLC
Park, Eileen	CalPERS Investment Office
Partridge, William	SunTech
Phipps, Ken	OCTA
Picker, Mike	Office of Governor Jerry Brown
Pirog, John	Hawkins Delafield & Wood LLP
Poree, Jenny	Montague DeRose and Associates, LLC
Randall, Charles	IBEW
Randolph, Sean	Bay Area Council
Reed, Jeffrey	SoCalGas
Rossi, John	Western Municipal Water District
Ryan, Paul	JP Morgan
Saer, John	GI Partners - Centerpoint Industrial/Infrastructure
Sanchez, Richard	Department of Water Resources
Sandler, Eric	East Bay Municipal Utility District
Sawers, Alistair	Parsons Brinckerhoff
Schaefer, Matt	Nextera Energy, Inc.
Schneider, Michael	Infra Consult LLC
Schwartz, Howard	CalPERS Board of Administration
Scow, Adam	Food and Water Watch
Seneviratne, Diloshini	CalSTRS
Shanahan, Alan	AFSCME
Shea, Steve	Office of Senate President Pro Tem Darrell Steinberg
Silvers, Damon	ALF-CIO
Smith, Shelley Ilene	Grayshell Consulting
Stausboll, Ann	CalPERS Chief Executive Officer
Stern, Ed	Powerbridge LLC

Tamminen, Terry	Seventh Generation Advisors
Tilmont, David	IBEW
Tomasyan, Glenn	SunTech
Trevino, Theresia	Riverside County Transportation Commission
Velez, Izakk	LiUNA
Weir, Laurie	CalPERS Investment Office
Williams, Felicia	Edison Mission Energy
Williams, Karen	Carroll Community Investments, LLC
Woo, Susan	BATA
Yarema, Geoff	Nossaman Law Firm

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