Date: February 19, 2019

To: Members of the Investment Committee
California Public Employees' Retirement System (CalPERS)

From: Pension Consulting Alliance, LLC (PCA)

RE: Real Estate Performance as of December 31, 2018

PCA received and reviewed Wilshire's Executive Summary of CalPERS' Investment Performance for the period ending December 31, 2018 as it relates to the Real Estate Portfolio. The following items should be considered in your assessment of Real Estate's performance:

Real Estate Markets:

1. Day to day volatility in public markets is not likely to abate and institutional investors will continue to increase allocations to private assets like real estate, particularly those with cash flow or the siren's call of repositioned excess cash flow, not now, but soon.
2. New, primarily unspent, equity commitments to core and non-core separate accounts and funds are estimated to have been more than $150 billion in 2018, compared to $132 billion in 2017. Since most acquisitions use 25% (core) to 75% (non-core) loan to value leverage levels, this translates to more than $300 billion of new "dry powder."
3. Estimated total real estate capital committed, but unfunded, at year end 2018 was more than $295 billion, based on publicly reported data which does not capture certain separate account allocations. Birds gotta fly, fish gotta swim, and real estate debt and equity General Partners gotta invest or give it back, which almost never happens on Earth. The wall of capital will reduce the chances of Limited Partners negotiating better terms and greater alignment. It also suggests that prices in 2019 are not likely to decline significantly in the face of so much unfulfilled demand.
4. Thus, demand for core and non-core real estate continued to be strong, despite rising interest rates during 2018 and new supply in most property types except retail.
5. As of September 30, 2018, quarterly core total returns as presented by the PREA/IPD U.S. Quarterly Property Fund Index benchmark, gross of AUM fees, generated 2.1% of which 1.0% was income.

6. Space markets continued to see innovation and disruption in uses, resulting in different demand for traditional spaces (retail/on-line, shared workspaces, other tech driven changes).
7. Occupancy levels were close to equilibrium in most submarkets for most property types, with higher rental rates being achieved.
8. Supply grew, though not as much as demand. Speculative building and lessening of borrower covenants in commercial mortgage loans increased modestly as more commercial banks and non-regulated lenders allocated more capital to real estate and away from other industries. Availability of debt and slowing of economic expansion will continue to keep rates at a very attractive level for property borrowings.
9. Retail property valuations experienced the most volatility as many shopping centers were considered to have depreciated as a result of tenant bankruptcies and uncertainty about on-line shopping trends at the expense of brick and mortar stores. Reciprocally, warehouse distribution properties appreciated ahead of inflation rates as demand by tenants and owners grew.
10. Speculative building and easier debt terms will increase over 2018 levels as de-regulation and non-regulation hit their strides. While not at harmful levels yet, "Attention must be paid" as these are hallmarks of downturns in value and demand for assets.
11. Long term investors' investment managers will devote increased attention to tenants' evolving business models and space needs in all property types and begin to target capital improvements to existing assets to attract higher rents for more modern and efficient locations.
12. Environmental, Social and Governance policies and preferences will be more forward in the investment decision and asset management processes.

CalPERS' Real Estate:

1. The Real Estate portfolio had a market value of $33.9 billion at the period ended December 31, 2018, representing 85.0% of the Real Assets program and 10.1% of the total portfolio. Including Forestland and Infrastructure, the Real Assets program currently comprises 11.8% of the total portfolio against a long term target allocation of 12% (- 0.2%), within the policy range of 8% to 18%.
2. During 2018, the Real Estate Portfolio continued its positive transformation towards a diversifying, income-oriented portion of the Real Assets Program, which provides positive cash flow to the System with which to pay benefits and a counterweight to public markets' debt and equity risks.
3. Returns are moderating both for CalPERS and the broader market. CalPERS real estate portfolio returns trailed the benchmark over all periods. Among core holdings, retail investments (regional malls and grocery anchored centers), to which CalPERS has a material overweight, showed a marked slowdown. Returns

from office and single family properties also softened. Legacy investments, particularly higher risk, international assets, continue to be a drag on performance in all measurement periods. Strong performance from industrial, multifamily and data center investments, as well as the Emerging Manager program, offset the weaker performing sectors to some degree. CalPERS' higher levels of leverage compared to the benchmark (32% vs. 21% LTV's, respectively,) also contributed to some of the underperformance.

4. As of this reporting period, the core portfolio, representing 85.7% of the real estate portfolio, produced strong returns of 8.2% for the three-year return and 12.4% for the five-year return against PREA/IPD benchmark returns of 7.8% and 9.7%, respectively. Virtually all core properties are held directly in lower cost separate accounts. These long-term strategic partnerships anchor the portfolio and provide CalPERS with both defensive and offensive opportunities. It's important to note that just three years ago, the Core portfolio represented 56.5% of the real estate portfolio, and that efforts continue to transition the portfolio away from legacy, non-strategic risks towards higher quality, stabilized assets that serve the role of the asset class.
5. The portfolio's deep diversification is serving the System as different sectors experience varying demand and supply dynamics. Across real estate markets, no property type or geographic region outperforms over the long-term, so diversification is critical.
6. The 10-year performance continues to contain a material amount of non-strategic assets and includes the results from the Great Financial Crisis. It shows underperformance of -670 basis points compared to the benchmark.

Real Estate Performance	Quarter	1 Year	3 Year	5 Year	10 Year
Real Estate Returns	-0.3%	4.0%	6.2%	9.4%	1.2%
Real Estate Policy Benchmark	1.9%	7.7%	7.8%	9.7%	7.9%
Difference	-2.2%	-3.7%	-1.6%	-0.3%	-6.7%

Compared to the benchmark performance, it should be noted that CalPERS' portfolio diverges insofar as:

a) higher leverage levels;
b) higher levels of non-stabilized assets; and
c) types of assets (e.g. Housing, Land) and locations of assets (e.g. Brazil, Russia, China) which are not part of the benchmark.

Each of these elements will provide benefits in some market periods and detriments in others. In the last year, Item a) became a small drag on performance as the benchmark reported gains attributable to marking debt to market (CalPERS does not mark debt to market), Item b) contributed some alpha to the portfolio as build-to-core assets were delivered and absorbed by the market, and Item c) continued to be negative to performance.

Leverage
At the end of this reporting period, the real estate portfolio had a loan to value ratio of 32.2% and a debt service coverage ratio of 3.0, both well within policy guidelines of <50% and >1.5, respectively. This is a reasonable amount of debt for a long-term, income-oriented portfolio that balances the competitive market for real estate investing, attractive interest rates, and moderate incremental risk. Staff continues to appropriately manage the structure, term, rate and covenants of the debt to reduce costs and risk.

Capital Deployment
For FY 2017-18, Staff approved $4.2 billion of capital commitments to existing strategic partnerships for the acquisition of new investments and $2.4 billion was deployed in acquisitions. For FY 2018-19, Staff approved $4.8 billion of capital for new investment, including $1.4 billion for investment in existing assets to maintain and/or further improve the quality of long-term hold investments. As of January 22, 2019, $2.9 billion was deployed in acquisitions. Staff is also selectively expanding existing relationships to broaden geographic footprints and/or broaden strategic mandates towards the goal of increasing high quality deal flow.

Deployment of new investment capital is expected to remain challenging due to significant capital pursuing core assets. Managers and Staff continue to demonstrate good discipline in not chasing acquisitions. With room in the real assets allocation and significant dry powder available, the program is well positioned to assess and execute on sizable off-market opportunities that may arise and/or to take advantage of any potential re-pricing in the market.

ESG Update
Major climate events continue to materially impact real estate. Last summer saw devastating fires in California and Oregon. Such events provide new evidence of material climate risks that can impact property investment portfolios such as CalPERS. Climate change related physical risks to property has become both a near term and long-term risk. The progress made to develop and implement new ESG tools in the CalPERS Real Estate portfolio, provide, in PCA's opinion, key elements for CalPERS to identify and reduce risks to the value of its real estate assets.

In addition to ongoing ESG integration efforts, staff continues to make progress on the Energy Optimization ("EO") Initiative. FY18-19 marked the third year where external managers submitted EO projects as a part of the Annual Investment Planning process with 17 proposed projects across eight managers at an expected total cost of $6.2 million with an expected annual savings of 9.2 million MWh per year or $1.0 million with a combined net present value of $19.7million.

The EO Initiative has also motivated managers to propose innovative pilot projects, including exploring onsite renewable energy opportunities, utility automation, installation of more efficient lighting, green building certifications, and others. The next phase of the project will involve evaluating opportunities for systematic implementation across the portfolio.

The CalPERS Responsible Contractor Policy (RCP) continues to enhance CalPERS' ability to engage with its Real Estate managers to monitor and address potential material human capital risks to CalPERS Real Estate portfolio. Combined, PCA believes that CalPERS' efforts to integrate ESG considerations into its Real Estate portfolio has materially augmented decision-making and portfolio management.

PCA is available to take any questions of the Investment Committee.

Respectfully,

David Glickman | Christy Fields
Managing Director | Managing Director

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