PSERS

PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM

Public Investment Memorandum

Carlyle Realty Partners IX, L.P.

Private Real Estate Commitment

William P. Stalter
Senior Portfolio Manager

Jarrett B. Richards
Intermediate Investment Professional

February 16, 2021

Executive Summary

PSERS Investment Office Professionals, together with Hamilton Lane, recommend that PSERS commit up to $200 million, plus reasonable and normal investment expenses, to Carlyle Realty Partners IX, L.P. (and/or related investment vehicles, together "the Fund", "Fund IX", or "CRP IX"). This recommendation is based on the assessment of the investment strategy and the evaluation of The Carlyle Group and its affiliates ("Carlyle" or the "Firm").

Fund Name	Carlyle Realty Partners IX, L.P.
Firm Name / General Partner	The Carlyle Group (NASDAQ: CG) / Carlyle Realty IX, L.L.C.
Target Fund Size	$6.0 billion
Recommended Commitment Amount	$200 million
Existing Relationship	Yes, PSERS has invested alongside Carlyle in their opportunistic real estate fund series, Carlyle Realty Partners III – VIII, and a European real estate fund (2007 vintage). In addition, PSERS' Private Credit and Absolute Return portfolios are invested in Carlyle-sponsored investment vehicles.
Source of Funds	Cash
Asset Class / Sub Asset Class	Private Real Estate / Opportunistic
Investment Office Oversight	Charles J. Spiller, Deputy CIO / Non-Traditional Investments William P. Stalter, Senior Portfolio Manager Jarrett B. Richards, Intermediate Investment Professional
External Consultant Oversight	Hamilton Lane

In 1997, Carlyle Realty Partners ("CRP" or "Carlyle Realty") was formed as The Carlyle Group's U.S. opportunistic real estate investing platform. Over the past 23 years, The Carlyle Group has sponsored 8 funds in the CRP series. The CRP team has deployed capital in over 800 distinct transactions. These transactions were made across 30 markets and across 14 sectors of the real estate market. In addition to the CRP opportunistic fund series, The Carlyle Group sponsors Carlyle Property Investors ("CPI"), an open-end fund targeting core-plus real estate investments in the U.S.

CRP IX, like its predecessors, will seek to produce capital appreciation by investing in demographic-driven real estate sectors where there is opportunity to grow income and lower a property's risk profile. Details on PSERS' investments in prior CRP funds are listed below. All returns are as of September 30, 2020.

Fund	Vintage	Fund Size ($M)	Net IRR	Net MoC
CRP III	2001	$ 571	32.1%	3.3x
CRP IV	2005	950	4.6%	1.4x
CRP V	2006	3,000	9.1%	1.5x
CRP VI	2011	2,340	20.2%	1.6x
CRP VII	2014	4,162	12.0%	1.4x
CRP VIII	2017	5,505	9.8%	1.1x
Total			**13.9%**	**1.7x**

In aggregate, PSERS' investments in CRP funds have generated a 13.9% net IRR and a 1.7x net MoC.

Investment Team

The Carlyle Realty investment team comprises more than 100 professionals in Washington, D.C.; New York City; Los Angeles; and San Francisco. Robert Stuckey is Head of U.S. Real Estate at Carlyle and has led the strategy since joining Carlyle in 1998. Prior to his time at Carlyle, Mr. Stuckey was the Chief Investment Officer for CarrAmerica Realty Corporation, a publicly traded REIT. Reporting to Mr. Stuckey are 20 Managing Directors who average 25 years of experience and 17 years at Carlyle. These 20 Managing Directors sit on Carlyle Realty's Investment Committee.

Carlyle Realty's Investment Committee typically meets weekly to review investment opportunities. Prospective investments are developed, analyzed, and negotiated by Carlyle investment professionals who then recommend transactions to be considered by the Investment Committee. The Investment Committee evaluates all proposed investments and makes recommendations to the chair of the Investment Committee, Mr. Stuckey, who is responsible for final Fund investment decisions.

The Carlyle Realty team is divided into three distinct functional groups to provide specific expertise throughout the lifecycle of an investment: Sourcing, Transactions, and Asset Management. The Sourcing group is engrained in the Fund's target markets (both sector and geography) to develop relationships with best-in-class operators to find off-market and attractive investment opportunities that feature a mispricing of risk or market fundamentals. The Transactions group is responsible for completing due diligence on potential acquisitions identified by the Sourcing group. The due diligence process includes site visits; market analyses; financial underwriting; physical, operational, and environmental reviews; negotiating purchase and joint venture contracts; and obtaining asset-level financing. Prior to acquisition, the Asset Management group prepares a business plan for the asset and participates in the financial underwriting. Upon acquisition, the Asset Management group is responsible for executing the business plan (including disposition) to achieve the underwritten financial performance.

Market Opportunity

COVID-19 has accelerated many trends in the way that real estate is utilized. From the explosive growth of e-commerce to the exodus from offices and dense urban areas, the pandemic has affected each property type differently. The same e-commerce tailwinds that have driven demand in the industrial market are headwinds for the retail property market. Similarly, the shift to work-from-home has decreased office demand while lifting rents for data centers and larger for-rent housing units. The pandemic has demonstrated that real estate is not a homogeneous asset class, and drivers for each sector differ. It is important to review the market for the property types in which the Fund will invest.

Multifamily: Rent growth forecasts are driven by continued growth in the Millennial and Generation Z cohorts, increasing affordability pressures, and supply deceleration in the face of moderating construction lending and COVID-19. These affordability pressures delay the shift from renting to home ownership and have pushed the U.S. multifamily occupancy rate above 96%.

Single-Family Rental: The 35-44-year-old age cohort is expected to grow two times faster than the overall U.S. population over the next decade. This is the age when, historically, many renters become buyers; however affordability and debt levels are preventing many in this age group from buying their first home. A growing population, coupled with migration trends away from city centers during COVID-19, are driving rents and occupancies for single-family rentals.

Active Adult (Age-Restricted Housing): Active Adult living targets the aging Baby Boomer demographic. This is a highly amenitized age-restricted housing product with no medical care component. The Baby Boomer generation is growing at 7 times the overall U.S. population, and the shift to Active Adult housing is just beginning as the oldest Baby Boomers are currently 75 years old. Market studies indicate 230,000 units of annual demand against 60,000 units of existing Active Adult product.

Life Science Office: Life science office serves the biotechnology community in their search for new and effective healthcare treatments. These biotech tenants are requiring more and increasingly sophisticated office and lab space to suit their research and development needs. This sector has proven resilient during the COVD-19 pandemic as biotechnology companies focused their efforts on combating the virus.

Industrial: The race to ever shorter e-commerce delivery times coupled with the onshoring of supply chains continues to drive demand for industrial warehouse space. Technological innovations to improve costs and speed of supply chains require highly advanced, modern warehouse space, justifying higher rents and the development of new industrial properties.

Investment Strategy

Fund IX, like its predecessor fund, will seek to achieve attractive risk-adjusted returns by relying on three specific fund construction principles: Diversification, Sector Selection, and Asset-Level Business Plans.

Diversification: Carlyle seeks to reduce its exposure to concentration risk by diversifying the Fund across 200-300 investments. This level of diversification minimizes idiosyncratic risk while also creating optionality at the time of exit (single asset versus portfolio dispositions). Carlyle Realty Partners VIII began investing in 2017 and, as of September 30, 2020, no single investment comprises more than 1% of Fund VIII's capital commitments, moderating the impact that any single investment can have on the overall portfolio's performance.

Sector Selection: Carlyle Realty evaluates each real estate sector's propensity to generate favorable risk-adjusted returns with respect to four key factors: degree of non-correlation to GDP, operating margins, tenant retention, and technology.

- Degree of Non-Correlation to GDP: Demand in each sector is driven either mostly by GDP growth or mostly by demographic factors, such as population growth and household formations. These demographic factors can produce demand for real estate simply out of necessity and are less dependent on economic growth. As correlation to GDP is a proxy for measuring cyclical sensitivity, systematic risk can be mitigated by constructing a portfolio of investments weighted toward demographic-driven sectors that are expected to produce more predictable demand and higher risk-adjusted returns.

- Operating Margins: When analyzing real estate risk across sectors, Carlyle considers how a sector's expense structure affects the range of possible returns in the context of operating margins, or a property's long-term profitability per dollar of income. All else being equal, Carlyle will choose to invest in sectors with higher operating margins.

- Tenant Retention: Sector-level risk adjustments must account for the average length of stay across properties. Carlyle Realty believes that a tenant's average length of stay in a property provides sufficient indication of whether the property owner's pricing power is sustainable. Longer average lengths of stay reduce average annual turnover, which limits fluctuations in asset level occupancy. Lower tenant turnover results in more consistent cash flows and more predictable returns. In essence, the length of stay creates revenue resilience. This concept is distinct from the timing of a lease expiration – a lease expiration provides the tenant with an option to leave; pricing power depends more on the probability that the tenant will naturally elect to stay even though a lease expiration may have taken place.

- Technology: The effect of technology on sector-level demand is another important consideration. Technology dynamically adjusts the types of real estate the economy requires and shifts demand across sectors even after controlling for demographic and macroeconomic factors. The growth of internet-related activity, including cloud computing and e-commerce, boosts demand for data centers and new industrial warehouses, which creates a secular source of demand growth that reduces these sectors' dependence on GDP. Conversely, technological changes may create a secular headwind to growth in certain sectors and may even make an asset functionally obsolete. For instance, technology has enabled higher propensity to work-from-home for traditional office users, which may create a persistent headwind for the office sector. During the COVID-19 crisis, this trend has only been accelerated because of widespread stay-at-home orders.

Asset-level Business Plans: While Carlyle will focus on identifying markets with favorable supply-demand conditions in hope of seeing outsized market rental growth, the Fund invests in properties with business plans that present more reliable growth that is less dependent on market conditions. These tend to be assets with below-market rents or repositioning/renovation opportunities. In addition, Carlyle Realty will apply its in-house development expertise alongside operating partners to develop properties as market conditions warrant.

These three fund construction principles, a hallmark of the Carlyle Realty Partners series of funds, are intended to mitigate the downside risk of the Fund while producing attractive net returns in an up market. In a down market, the defensive construction of the portfolio should lead to Fund outperformance compared to its opportunistic fund peers, as evidenced by Carlyle's strong relative performance during the Global Financial Crisis. This strategy is a prudent addition to the PSERS Private Real Estate portfolio.

Investment Instruments

Fund IX will hold controlling equity interests in real estate. A majority of Fund investments will involve third-party operating partners. In a typical investment alongside an operating partner, control resides with the Fund and the operating partner has a 10% stake in the investment. Should the operating partner produce returns in excess of pre-negotiated return thresholds, the operating partner may receive incentive compensation.

Portfolio Fit

The Fund will be allocated to PSERS' Private Real Estate portfolio and, more specifically, the Opportunistic strategy within this portfolio. The table below summarizes PSERS' Private Real Estate portfolio, as of September 30, 2020, inclusive of the recommended $200 million commitment to the Fund:

					Pending	Current Commitments	
Investment Type	**Market Value[1]**	**Unfunded[1]**	**Total Exposure[1]**	**%**	**March 2021**	**Total Exposure[1]**	**%**
Core	$ 908	$ 207	$ 1,115	15.4%	$ -	$ 1,115	15.0%
Value-Add	1,974	1,264	3,238	44.7%	-	3,238	43.5%
Opportunistic	2,053	836	2,889	39.9%	200	3,089	41.5%
Total	**$ 4,935**	**$ 2,306**	**$ 7,241**	**100.0%**	**$ 200**	**$ 7,441**	**100.0%**

[1] $ in millions

Carlyle Realty Partners is a high-conviction, opportunistic manager with complementary attributes to PSERS' other opportunistic manager, Brookfield. While Brookfield ($15+ billion fund size) invests in trophy properties, portfolios, and platforms across the globe, Fund IX ($6.0 billion fund size) will invest in the U.S., and the largest deal is unlikely to require more than $50 million of Fund equity. The two strategies combine to provide PSERS a best-in-class opportunistic real estate portfolio.

Investment Highlights

- Strong Sponsorship and Consistent Fund Management Team
- Investment Focus on Property Types Driven by Demographic Factors to Reduce Systematic Risk
- Diversification to Limit Concentration and Idiosyncratic Risks
- Commitment to ESG Best Practices

Investment / Risk Considerations

- The Allocator Model – Reliance on Local Operating Partners
- Development Exposure
- Sourcing and Monitoring 200-300 Investments in One Fund

PSERS Private Real Estate Performance History with Carlyle as of September 30, 2020

PSERS has committed $1.12 billion across seven Carlyle real estate vehicles and, as of September 30, 2020, has $185 million of NAV exposure to Carlyle within the Private Real Estate portfolio.

Investment (Vintage)	Commitment[2]	Contributions[2]	Distributions[2]	NAV[2]	Net IRR	Net MoC
Carlyle Europe Real Estate Partners III[1] (2007)	$ 190.4	$ 281.4	$ 213.6	$ 0.0	-6.7%	0.8x
Carlyle Realty Partners III (2000)	102.2	116.3	379.3	1.4	32.1%	3.3x
Carlyle Realty Partners IV (2005)	130.0	189.8	250.8	10.7	4.6%	1.4x
Carlyle Realty Partners V (2007)	255.8	368.9	496.6	52.1	9.1%	1.5x
Carlyle Realty Partners VI (2011)	134.2	192.7	284.8	16.1	20.2%	1.6x
Carlyle Realty Partners VII (2014)	100.0	91.8	84.9	39.5	12.0%	1.4x
Carlyle Realty Partners VIII (2017)	200.0	67.2	9.2	64.8	9.8%	1.1x
Total	**$ 1,121.8**	**$ 1,308.1**	**$ 1,719.1**	**$ 184.6**	**10.1%**	**1.5x**

[1]*PSERS liquidated this position in 2015 via secondary sale*
[2]*$ in millions*

Investment Committee Disclosure

Relationship with Hamilton Lane	Hamilton Lane represents clients with commitments to prior Carlyle funds. It is anticipated that additional Hamilton Lane clients will commit to Carlyle Realty Partners IX, L.P.
Introduction Source	PSERS has been invested in the Carlyle Really Partners series of funds since 2000 and was introduced to this opportunity via its relationship with Carlyle.
Placement Agent	In accordance with Board policy, no placement agents were used, and no payments from or on behalf of PSERS to Placement Agents shall be made in connection with securing PSERS' investment in the Fund. Any placement fees charged to the Fund in connection with securing commitments from other investors (excluding PSERS) will result in a corresponding reduction to PSERS' management fees. As confirmed by PSERS' Office of Chief Counsel on February 10, 2021, this investment complies with the Public School Employees' Retirement Board Placement Agent Policy.
PA Presence	As of September 30, 2020, Carlyle Realty has invested in 11 properties located in Pennsylvania, of which 4 have been realized.
PA Political Contributions	None Disclosed
Conflicts of Interest	PSERS is not aware of any actual or potential conflicts of interest that would be created by PSERS' investment in the Fund.
PSERS History with the Investment Manager	PSERS previously committed $2.1 billion across 14 Carlyle vehicles. PSERS currently has $379 million of NAV exposure to Carlyle across the Private Real Estate, Private Credit, and Absolute Return asset classes.
Litigation Disclosure	Carlyle receives communications from regulators and may be involved in litigation from time to time in the ordinary course of business. PSERS is not currently aware of any litigation which has or may have a material effect on Carlyle, the Fund, or any prior funds.
PSERS Allocation Implementation Committee Approval	February 16, 2021

January 19, 2021

Board of Trustees
Commonwealth of Pennsylvania
Public School Employees' Retirement System
5 North 5th Street
Harrisburg, PA 17101

Re: Carlyle Realty Partners IX, L.P.

Dear Trustees:

Carlyle Realty Partners ("Carlyle," "General Partner") is a highly experienced real estate investor with a track record dating back to 1997. Senior investment professionals at Carlyle average more than 20 years of industry experience and have established a strong reputation in the market. The General Partner has developed a deep network of local operating partners, brokers and owners, which allows for unique deal flow. Carlyle has experience acquiring a variety of property types across the U.S. by partnering with established operating partners. Investment professionals are segmented by sourcing, transaction and asset management functions with defined roles for each group. Irrespective of vertical, professionals at Carlyle are involved throughout the investment life cycle, thereby ensuring accountability and continuity in coverage. For a team of its size, the General Partner has experienced limited senior-level turnover. Carlyle has a large focus on career advancement and expanding the team's senior ranks through internal promotions, with 19 of 20 managing directors having a tenure of at least nine years at the firm. Carlyle is targeting $6 billion in commitments from limited partners for its ninth fund, Carlyle Realty Partners IX, L.P. (the "Fund"). Carlyle plans to hold a first close for June 1, 2021, and a final close within 18 months of the first close, subject to available extensions.

The Fund will seek to construct a highly diversified portfolio that will focus on demographically-driven investment themes across a variety of property types and markets exhibiting high levels of growth and tenant demand with limited supply. Carlyle intends to invest in a diversified set of U.S. geographies with a focus on areas with positive population flows including the Mid-Atlantic, Southeast and Southwest regions of the country. Asset management teams will work with operating partners in shaping and executing business plans, which may include development, renovations and lease-up activities. The General Partner leverages in-house construction expertise to underwrite and monitor construction costs. Carlyle seeks to mitigate risks associated with significant development exposure through in-house construction expertise and by pursuing rather simple pre-permitted and pre-contracted projects. Overall, Carlyle's diversified approach to portfolio construction limits the potential impact, whether positive or negative, from a single investment. The Fund will target 200 to 300 investments, and investment sizes will range from $10 million to $40 million.

Carlyle Realty Partners IX, L.P.'s investment thesis can be summarized as follows:

- Highly experienced team with broad coverage across U.S. markets and property types
- Highly diversified portfolio construction with flexibility to capitalize on market trends
- Two of Carlyle's prior funds currently rank as top quartile performers with no fund-level losses to date

Hamilton Lane's recommendation is based upon the following analytical factors and is made within the context of the Commonwealth of Pennsylvania, Public School Employees' Retirement System's ("PSERS") investment guidelines.

- Detailed due diligence, including interviews with industry peers and private real estate professionals. The initial review was completed on December 18, 2020; the on-site due diligence was conducted on January 6, 2021; the fund was approved by Hamilton Lane's Investment Committee on January 19, 2021; and the recommendation to PSERS was issued on January 19, 2021.

- Evaluation of the composition of the investment team, how they work together, compensation structure and other factors that help determine whether a group is likely to be able to replicate past successes as currently configured

- Detailed operational due diligence, including interviews with Carlyle Realty Partners' back office team to review the controls and processes surrounding the firm's finance, fund administration, tax, legal, compliance, IT, HR, and accounting functions

- Evaluation of the Fund's proposed investment strategy within the context of the current investment environment

- During 2020 and 2021, Hamilton Lane had 10 formal video and teleconference calls in addition to dozens of informal phone and email interactions with Carlyle Realty Partners. Hamilton Lane has been engaged in routine ongoing monitoring and due diligence activities concerning Carlyle Realty Partners ever since establishing a relationship with the General Partner in 2006.

- The strategy proposed for the Fund is appropriate for the private real estate partnership component of the portfolio

The individuals at Hamilton Lane who were involved in the due diligence process for the Fund are:

Scott Davies – Principal, Portland Office
Peter Udbye – Senior Associate, Portland Office
Michael Giamalis – Analyst, Bala Cynwyd Office

Based on the above, Hamilton Lane recommends that PSERS commit up to $200 million, plus reasonable normal investment expenses, to Carlyle Realty Partners IX, L.P. (and/or related investment vehicles). Hamilton Lane makes this recommendation considering the General Partner's qualifications and PSERS' overall investment guidelines.

This recommendation is given solely for the benefit of PSERS and cannot be relied upon by other investors considering an investment in the Fund since their needs, objectives, and circumstances may not be identical to those of PSERS. The scope of this recommendation is limited to the investment merits of the Fund. Hamilton Lane does not provide legal or other non-investment-related advice.

Sincerely,

Michael Koenig,
Chief Client Officer

Corina English,
Principal