

**PENNSYLVANIA SERS**



**REAL ESTATE SEMI-ANNUAL  
PERFORMANCE REVIEW – Q2 2020**

**December 1, 2020**



BOSTON | ATLANTA | CHARLOTTE | CHICAGO | DETROIT | LAS VEGAS | PORTLAND | SAN FRANCISCO

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**1. REAL ESTATE SEMI-ANNUAL  
PERFORMANCE REPORT**  
*AS OF JUNE 30, 2020*

NEPC, LLC

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# PORTFOLIO PERFORMANCE SUMMARY

## The table below displays trailing time period performance for the Pennsylvania State Employees Retirement System (“PA SERS”) Real Estate Portfolio as of June 30, 2020, along with select benchmarks

- The real estate portfolio felt the effects of the COVID-19 pandemic, generating a -2.0% return for the first half of 2020
  - This return is lower than the returns generated by core real estate (the NFI-ODCE Index) but stronger than returns generated by value-add and opportunistic real estate (the C|A Real Estate Index)
- [REDACTED]
- The Plan’s Real Estate Performance is benchmarked against the NCREIF-ODCE Index (pool of open-end core funds) and the C|A Real Estate Index (pool of closed-end value-add/opportunity funds), two of the most widely used indices for real estate benchmarking

Portfolio Performance	YTD	1 Year	3 Year	5 Year	10 Year	Inception
<b>Total Pennsylvania State Employees Retirement System</b>	<b>-2.0%</b>	<b>1.3%</b>	<b>1.8%</b>	<b>2.8%</b>	<b>8.2%</b>	<b>7.0%</b>
<b>NFI-ODCE Index<sup>1</sup></b>	<b>-1.0%</b>	<b>1.3%</b>	<b>4.7%</b>	<b>6.4%</b>	<b>9.8%</b>	<b>N/A</b>
<b>C A Non-Core Real Estate Index<sup>2</sup></b>	<b>-6.2%</b>	<b>(1.7%)</b>	<b>5.6%</b>	<b>7.2%</b>	<b>10.5%</b>	<b>N/A</b>
<b>S&amp;P 500 Index</b>	<b>-3.1%</b>	<b>7.5%</b>	<b>10.7%</b>	<b>10.7%</b>	<b>14.0%</b>	<b>N/A</b>

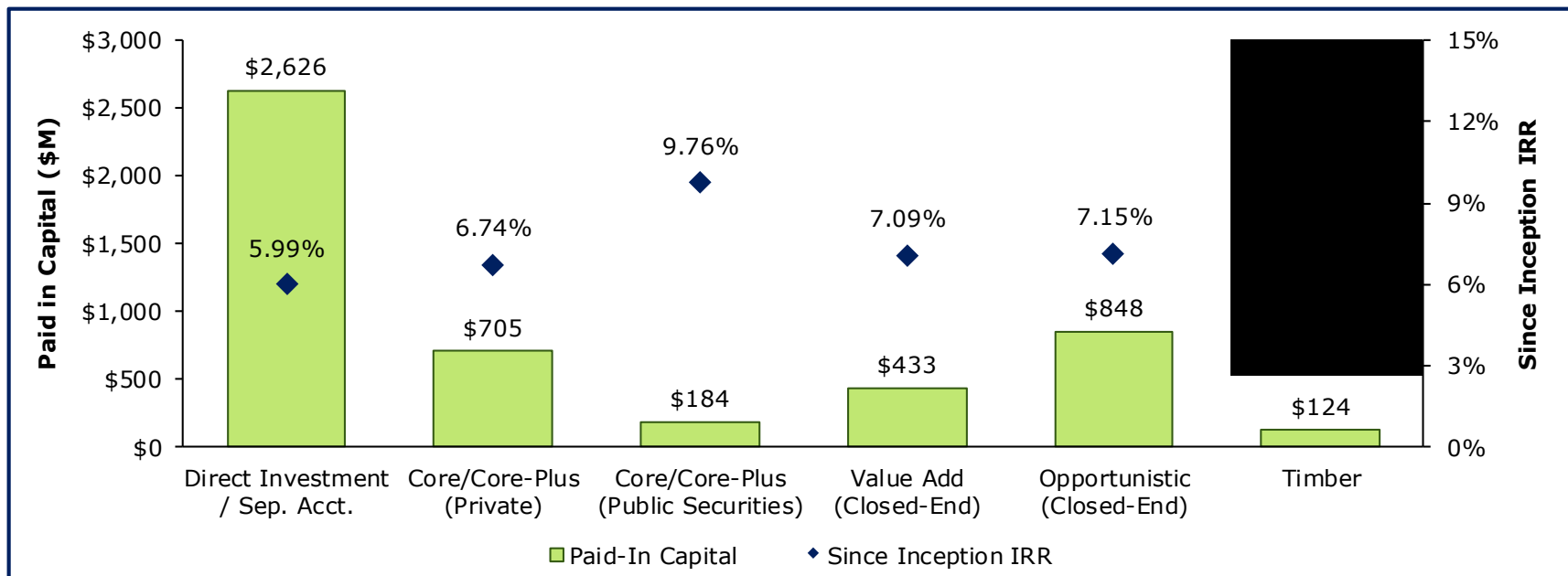
Data as of June 30, 2020. Sources include NCREIF, Thomson-One/Cambridge Associates, Manager data, and NEPC. Additional notes:

- NFI-ODCE Index represents pooled returns of open-end comingled core funds in the ODCE Index; returns shown are time-weighted, net of fees.
- Thomson-One/Cambridge Benchmark represents pooled horizon internal rate of return (IRR) calculations, net of fees, across 1,172 real estate funds (including value-add/opportunistic).
- The timing and magnitude of fund cash flows are integral to the IRR performance. Benchmark indices that are time weighted measures should not be directly compared to dollar-weighted IRR calculations. Index data is continuously updated and is therefore subject to change.
- Returns shown do not take into account risk/volatility of underlying strategies.



# PERFORMANCE BY INVESTMENT STRATEGY

In aggregate, current (active) investments in the portfolio, which are not fully liquidated, can be summarized in the following:



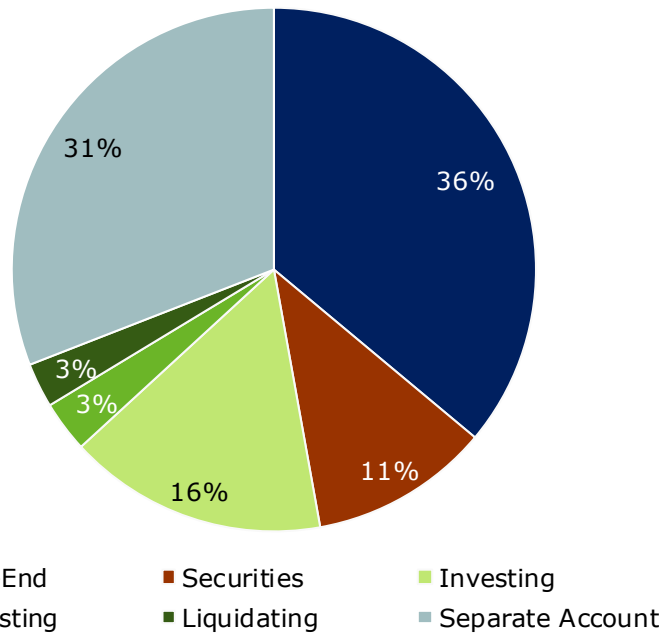
Investment Strategy	Commitment Amount	Paid-In Capital	Capital to be Funded	Cumulative Distributions	Current Valuation	Total Value	Net Gain / (Loss)	Call Ratio	DPI Ratio	TVPI Ratio	IRR (SI)
Direct Investment / Sep. Acct.	2,625,840,320	2,625,840,320	0	3,362,976,358	662,313,013	4,025,289,371	1,382,125,393	100%	1.27	1.52	5.99%
Core/Core-Plus (Private)	1,050,750,550	705,200,721	345,549,829	206,982,054	779,145,658	986,127,712	280,332,983	67%	0.29	1.40	6.74%
Core/Core-Plus (Public Securities)	183,616,773	183,616,773	0	36,168,336	239,576,501	275,744,837	92,128,064	100%	0.20	1.50	9.76%
Value Add (Closed-End)	524,414,747	433,334,745	91,080,003	372,727,757	196,968,870	569,696,627	120,149,083	83%	0.83	1.27	7.09%
Opportunistic (Closed-End)	1,167,607,237	848,291,078	319,316,160	924,525,045	276,222,341	1,200,747,386	335,546,383	73%	1.07	1.39	7.15%
Timber	124,231,969	124,231,969	0	242,667,376	-	-	-	100%	1.95	-	-
<b>Total (Active Funds)</b>	<b>5,676,461,597</b>	<b>4,920,515,606</b>	<b>755,945,991</b>	<b>5,146,046,926</b>	-	-	-	<b>87%</b>	<b>1.04</b>	-	-

Data as of June 30, 2020. Liquidated investments not shown. Returns shown do not take into account risk/volatility of underlying strategies. Please see the footnote on page 24 pertaining to the remaining "Capital to be Funded."

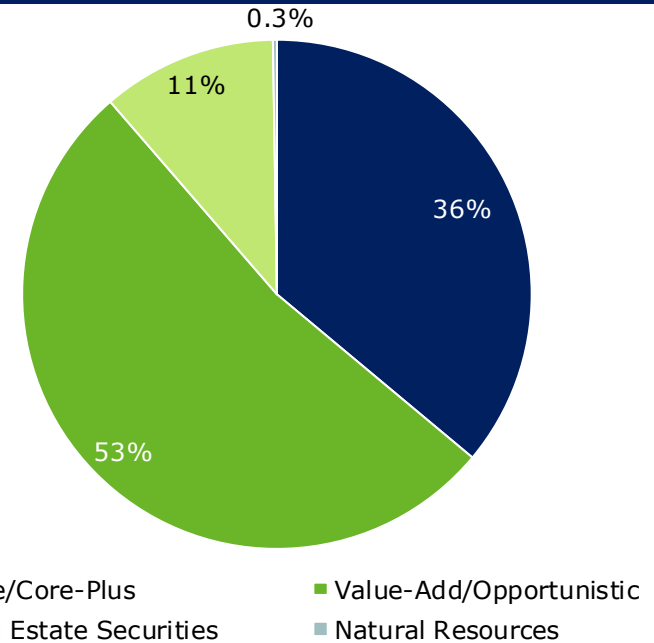


# PORTFOLIO COMPOSITION

## Allocation by Structure & Lifecycle



## Allocation by Strategy



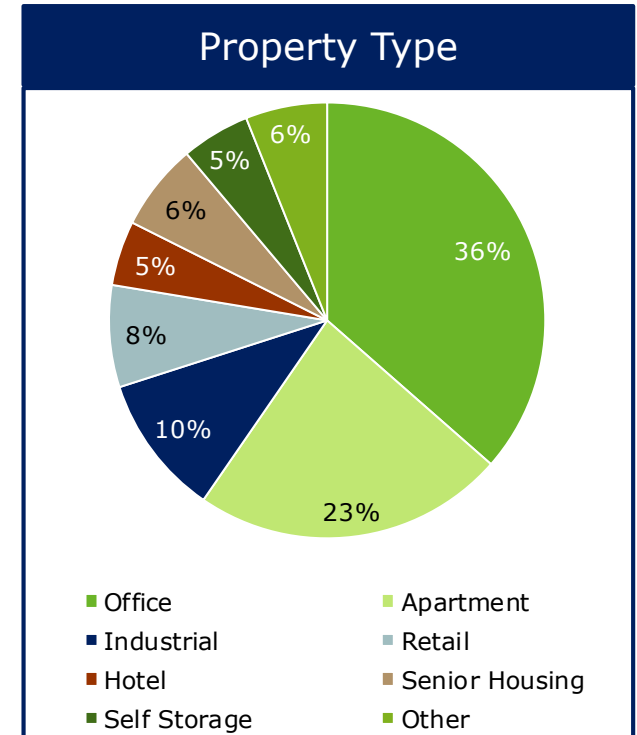
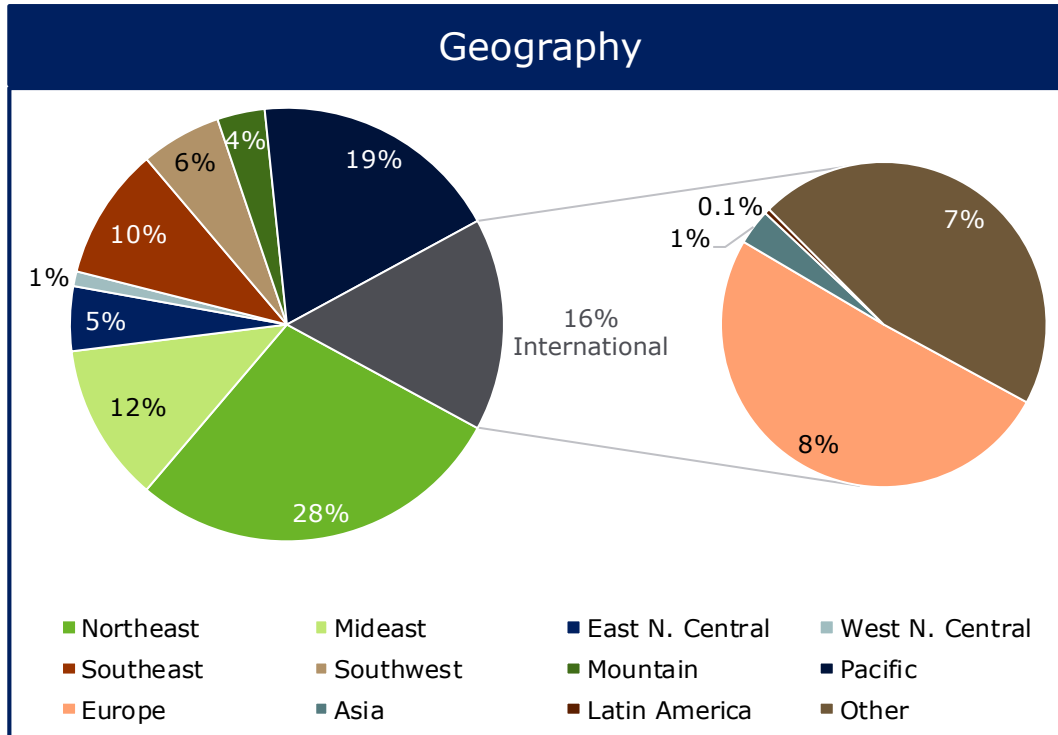
Investment Structure / Lifecycle Stage	Commitment Amount	Paid-In Capital	Capital to be Funded	Cumulative Distributions	Current Valuation	Total Value	Net Gain / (Loss)	Call Ratio	DPI Ratio	TVPI Ratio	IRR (SI)
Open-End	1,050,750,550	705,200,721	345,549,829	206,982,054	779,145,658	986,127,712	280,332,983	67%	0.29	1.40	6.74%
Securities	183,616,773	183,616,773	0	36,168,336	239,576,501	275,744,837	92,128,064	100%	0.20	1.50	9.76%
Investing	711,275,116	339,866,650	371,408,466	29,141,250	345,449,258	374,590,508	29,451,651	48%	0.08	1.09	5.50%
Harvesting	164,663,402	152,356,003	12,307,399	189,616,072	68,290,240	257,906,312	103,660,176	77%	1.23	1.67	14.32%
Liquidating	816,083,467	789,403,169	26,680,298	1,078,495,479				97%	1.32		
Separate Account	2,750,072,289	2,750,072,289	0	3,605,643,734	667,730,180	4,273,373,914	1,505,977,967	100%	1.30	1.54	5.99%
<b>Total (Active Funds)</b>	<b>5,676,461,597</b>	<b>4,920,515,605</b>	<b>755,945,992</b>	<b>5,146,046,925</b>				<b>87%</b>	<b>1.04</b>		



Data as of June 30, 2020. Returns shown do not take into account risk/volatility of underlying strategies. Please see the footnote on page 24 pertaining to the remaining "Capital to be Funded."

# PORTFOLIO DIVERSIFICATION

- **The Pennsylvania SERS real estate portfolio is broadly diversified by property type and geography within the U.S.**
- **Staff and NEPC have intentionally expanded the portfolio's international diversification in recent years**
  - 16% of the portfolio is now invested outside the US, primarily in Europe

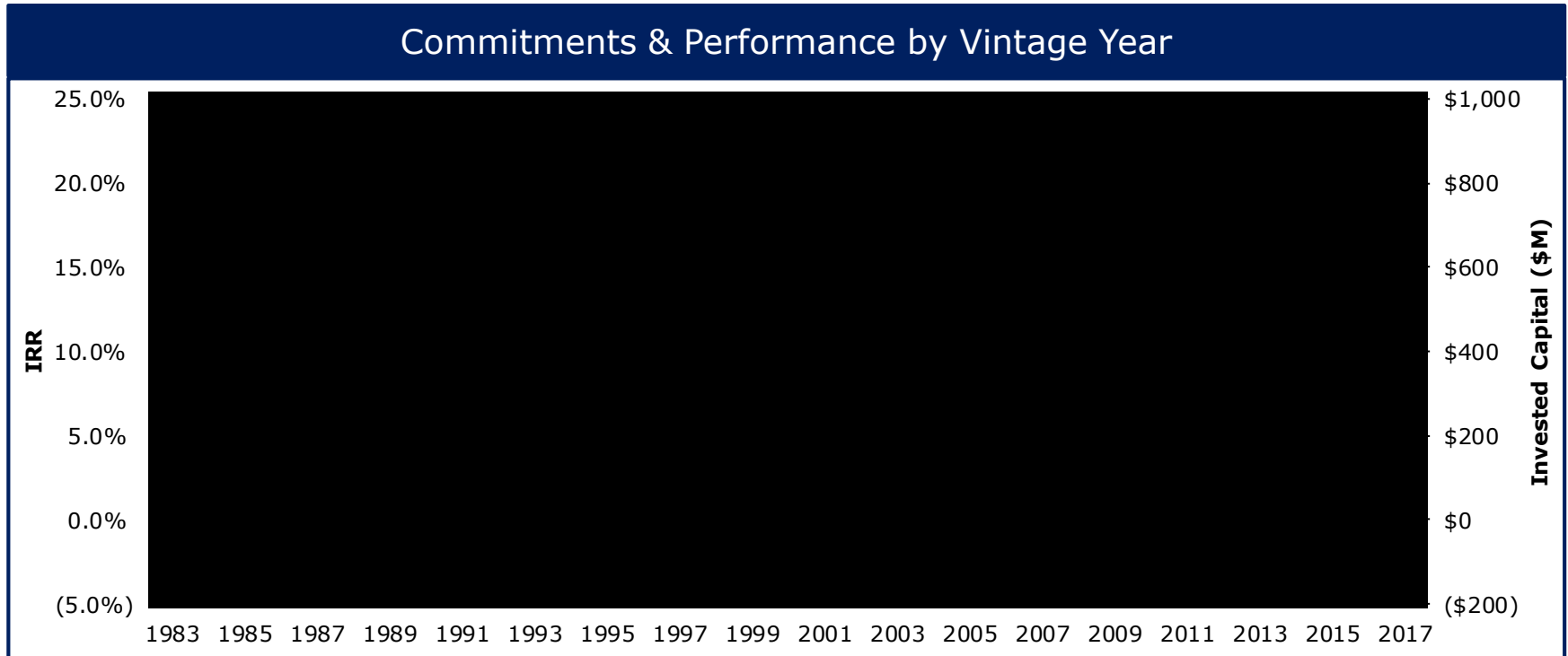


Data as of June 30, 2020. Breakouts provided by Managers.

# HISTORICAL PERFORMANCE BY VINTAGE

The following chart illustrates capital invested and inception-to-date performance by vintage year as of June 30, 2020

- Inconsistent pacing has negatively impacted portfolio performance
- Staff and NEPC are focused on maintaining a consistent investment pacing schedule to mitigate the risk of heavy capital investments in poor vintage years



Data as of June 30, 2020. Notes:

1. Vintage years 2018 and later are excluded as data is less meaningful.
2. For separate accounts, the date of initial commitment or investment is used as the vintage year.

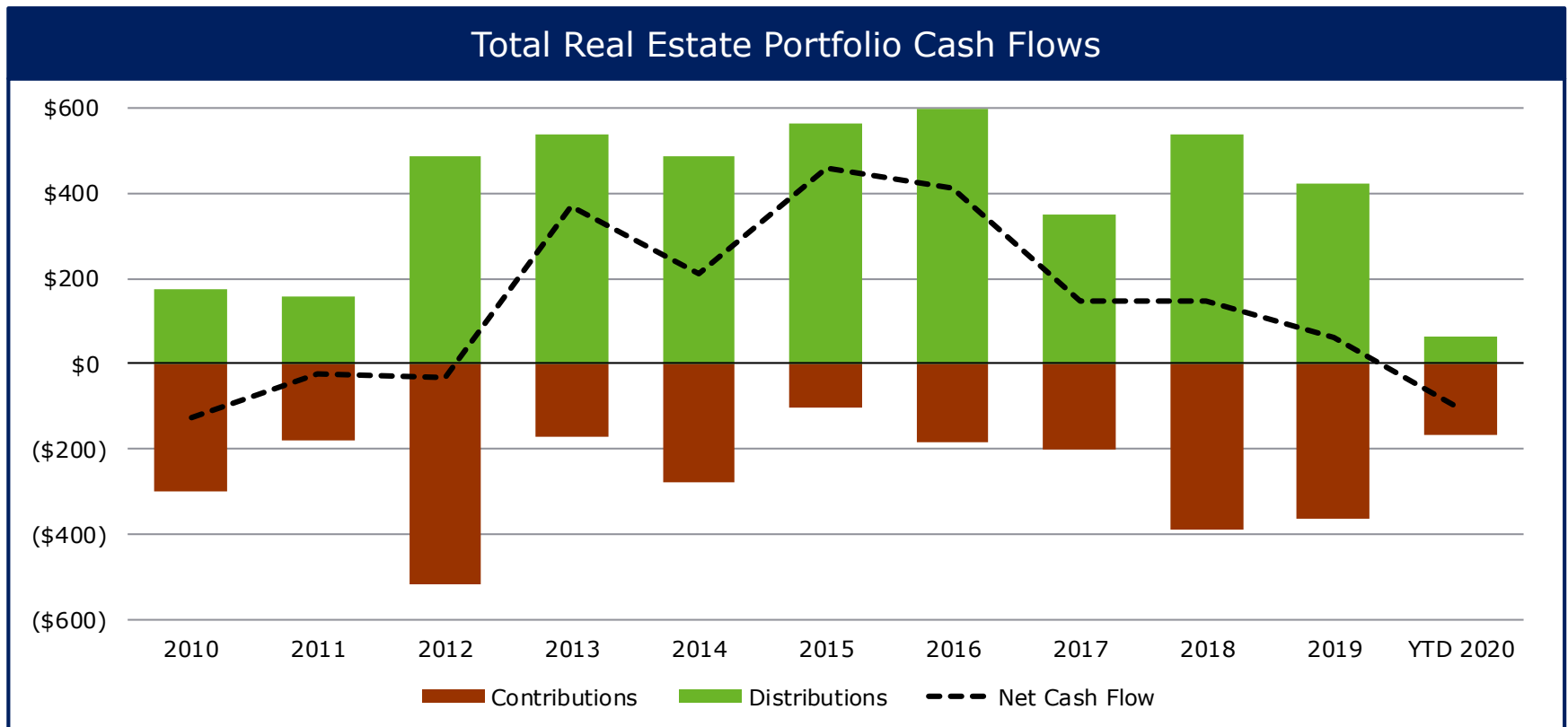




# 10-YEAR CASH FLOWS

The chart below illustrates the capital invested, distributed, and net cash flows for the real estate portfolio over the past 10 calendar years and 2020 YTD

- The portfolio was cash flow positive from 2013 through 2019
- The distribution pace has slowed in 2020 thus far, likely due to market disruptions arising from the COVID-19 pandemic



Data as of June 30, 2020. Offsetting cash flows have been excluded, such as assets that were transferred from one account to another.

## **2. REAL ESTATE PORTFOLIO CONSTRUCTION UPDATE**

NEPC, LLC

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# 2020 REAL ESTATE PORTFOLIO UPDATE

- **The real estate portfolio has had limited new investment activity to date in 2020, relative to recent years**
  - The first commitment made in 2020 was to Oak Street Real Estate Capital Fund V
  - Asset allocation changes in 2019 reduced the target allocation to real estate, thereby decreasing the expected annual commitment pace
  - Much of the activity in prior years was focused on core-plus strategies which are open-ended and therefore do not require regular annual commitments
- **NEPC and SERS Staff have been actively monitoring the existing portfolio through the uncertain market environment**
- **We believe that distress caused by the COVID-19 pandemic may lead to attractive investment opportunities**
  - Vintage years during and following recessions tend to produce strong returns
- **NEPC and Staff will continue to evaluate both re-ups with existing strategic partners and potential new relationships**
  - With well-established core/core-plus and REIT portions of the portfolio, we remain focused on value-add and opportunistic strategies
  - Exposures to core, core-plus, and REITs will also be monitored and rebalanced (as necessary)

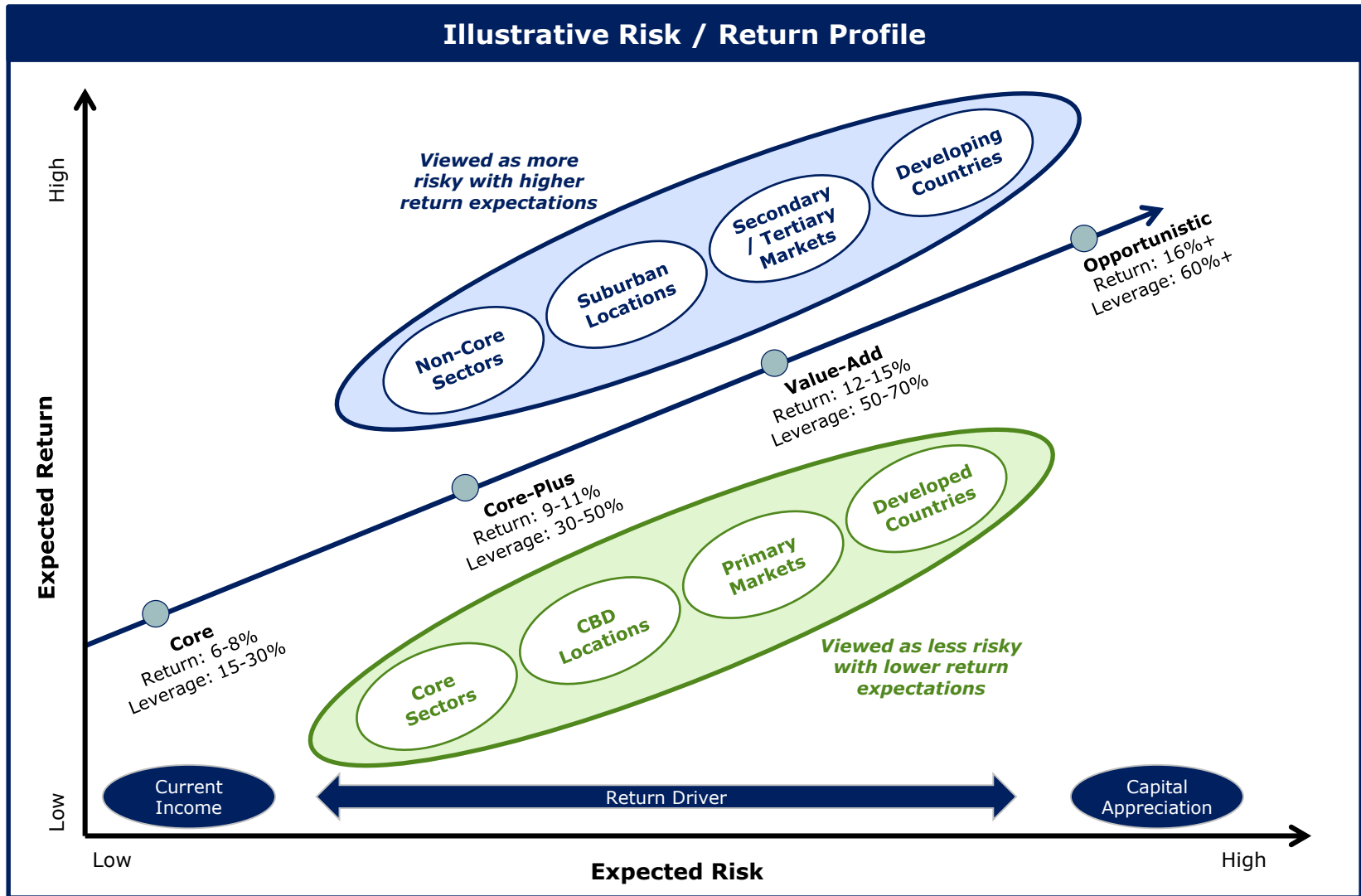
# PORTFOLIO ACTIVITY SUMMARY

Real Assets Portfolio Sub-Strategy	Core/Core Plus	Value-Add/ Opportunistic	Real Estate Securities	Real Assets (Timber, Infrastructure, etc.)
Return Profile	Income Driven	Income + Capital Appreciation	Income + Capital Markets	Various
Current Exposure (NAV) (as of 6/30/20)	36%	53%	11%	< 1%
Current Target Allocation	35% +/- 20%	55% +/- 15%	10% +/- 10%	0-20%
2020 YTD Activity	Maintained allocation Capital calls continue for recent commitments	Oak Street Real Estate Capital Fund V (\$50M)	Maintained allocation	Timber portfolio liquidation continued
<b>Anticipated 2020-21 Activity</b>	<b>Staff and NEPC will evaluate the current portfolio and consider rebalancing as necessary</b>	<b>Staff and NEPC will continue to evaluate existing strategic relationships and potential new managers</b>	<b>Maintain allocation, rebalance if necessary</b>	<b>Removed from real estate asset class; liquidation continues</b>

# SPECTRUM OF REAL ESTATE INVESTMENT STRATEGIES

	Real Estate Investment Style / Overview	Investment Strategy	Portfolio Role	Considerations
Core Strategies	<b>Core / Core-Plus</b> <ul style="list-style-type: none"> <li>Return driver: income</li> <li>Primary vehicle: open-end funds</li> <li>Historical avg. returns: 7-8% / 8%-10%</li> <li>Leverage: 15-40% / 40%-50%</li> <li>Hold period: long-term</li> </ul>	Stabilized income producing assets	<ul style="list-style-type: none"> <li>Current income</li> <li>Broad exposure to commercial real estate (asset class beta)</li> <li>Inflation protection</li> </ul>	<ul style="list-style-type: none"> <li>Vehicles are semi-liquid (entrance/exit queues)</li> <li>Limited alpha producing opportunities</li> </ul>
	<b>RE Securities</b> <ul style="list-style-type: none"> <li>Return driver: income</li> <li>Primary vehicle: REIT funds</li> <li>Historical avg. returns: 7-9%</li> <li>Leverage: 30-50%</li> <li>Hold period: long-term</li> </ul>	Stabilized income producing assets	<ul style="list-style-type: none"> <li>Current income (dividends)</li> <li>Long-term exposure to commercial real estate (beta)</li> <li>Long-term inflation protection</li> </ul>	<ul style="list-style-type: none"> <li>Volatility</li> <li>Equity correlation</li> </ul>
Non-Core Strategies	<b>Value-Add</b> <ul style="list-style-type: none"> <li>Return driver: income/appreciation</li> <li>Primary vehicle: varies</li> <li>Historical avg returns: 8-10%</li> <li>Leverage: 40-70%</li> <li>Hold period: 3-5 years</li> </ul>	Properties requiring lease-up, repositioning, renovation or rehabilitation	<ul style="list-style-type: none"> <li>Provides part current income and capital appreciation</li> <li>Some inflation protection</li> </ul>	<ul style="list-style-type: none"> <li>Vehicles are semi-liquid or illiquid</li> <li>Vintage year is important</li> <li>Higher leverage vs core</li> <li>Poor benchmarks</li> </ul>
	<b>Opportunistic</b> <ul style="list-style-type: none"> <li>Return driver: appreciation</li> <li>Primary vehicle: closed-end funds</li> <li>Historical avg. returns: 10-12%</li> <li>Leverage: 60%+</li> <li>Hold period: varies</li> </ul>	Distressed investments, recapitalizations, development, etc.	<ul style="list-style-type: none"> <li>Real estate alpha through capital appreciation with minimal current income</li> </ul>	<ul style="list-style-type: none"> <li>Vehicles are illiquid</li> <li>Vintage year is important</li> <li>High leverage</li> <li>Poor benchmarks</li> </ul>

# RELATIVE EXPECTED RISK RETURN PROFILE



**Notes:**

- Debt-related strategies can span the illustrative risk / return spectrum depending on the specific strategy
- Manager-specific risk, operations and leverage can skew expected risk / return profile



# 3. REAL ESTATE MARKET UPDATE

NEPC, LLC

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# REAL ESTATE THOUGHTS & CONSIDERATIONS

## Real Estate Thoughts

- **Asset valuations are still being adjusted to the “new normal”**
  - Negative appreciation continued in the third quarter, except for industrial
  - In the public markets, most property types remain below pre-COVID levels
- **Stress is growing in some property types**
  - Some retail and hotel/leisure assets are experiencing particularly low demand
  - Landlords and lenders have remained somewhat flexible, but that may begin to come to an end
- **Office fundamentals remain stable but future outlook uncertain**

## Real Estate Considerations

- **Private market opportunities may surface but patience is critical**
- **Remain disciplined with pacing plan commitments**
  - Economic downturns tend to produce strong vintage year performance
- **Asset quality is important, and can provide downside protection in the event of future market declines or economic stress**
  - NEPC continues to favor sectors with strong secular tailwinds (housing, industrial, data centers) that are less reliant on economic growth



# OVERVIEW

- **NEPC's 2020 real estate investment themes still hold**
  - Strategies with in-place durable cash flow have held up better
  - Demographic-driven sectors should outperform GDP-driven sectors
- **Impact on real estate portfolios will depend on sector exposures**
  - Other factors include occupancy and tenant mix
- **Asset valuations have declined, but price discovery remains limited**
  - Real estate transaction volumes remain muted, with 3<sup>rd</sup> quarter transaction volumes at ~30% of pre-COVID levels<sup>1</sup>
  - Valuations have been adjusted based on current conditions (changes in rental rates and occupancy) but market-wide assumptions have mostly been held steady
- **Several "unknowns" remain:**
  - Trajectory of economic recovery
  - Potential changing preferences among users of real estate
  - Fund flows into/out of real estate and the impact on pricing (cap rates up or down?)
- **Distress likely to create new opportunities as market evolves over coming quarters**
  - Uncertainty in the market tends to result in opportunities meaning that it should make for an attractive time to deploy new capital in private markets
  - Dry powder availability in private markets *may* limit depth of distress



1 - NCREIF Property Index reported 50 transactions in Q3 2020 vs. trailing 12-quarter average of 170 transactions.

# IMPACT ON ASSET VALUATIONS

- **Impact on real estate valuations has varied widely by property type**
  - Retail and hotel most severely impacted while apartment and industrial assets have held up better; office rent collections remain stable, but long-term demand unknown
  - The brunt of the write-downs to date occurred in the second quarter and third quarters; further valuation adjustments likely once transaction volumes pick up
- **To date, investment managers have made valuation adjustments based on what they have observed at individual assets, such as:**
  - Higher vacancy levels and extending timelines for lease-up
  - Decreasing rental growth assumptions
  - Increasing budget for late or missed rent
- **Market-wide assumptions have not yet been adjusted**
  - Capitalization rates and discount rates have largely been unchanged
  - These inputs are generally derived from comparable transactions, and very few assets have been sold
- **While income is likely to fall, lower interest rates may partially offset**
  - Cap rates and interest rates tend to be correlated; lower cap rates increase asset pricing

## 2020 YTD Unlevered Private Core Real Estate Appreciation

Apartment	-2.13%
Office	-2.16%
Industrial	3.33%
Retail	-9.11%
Hotel	-22.26%
<b>All Property Index</b>	<b>-2.65%</b>

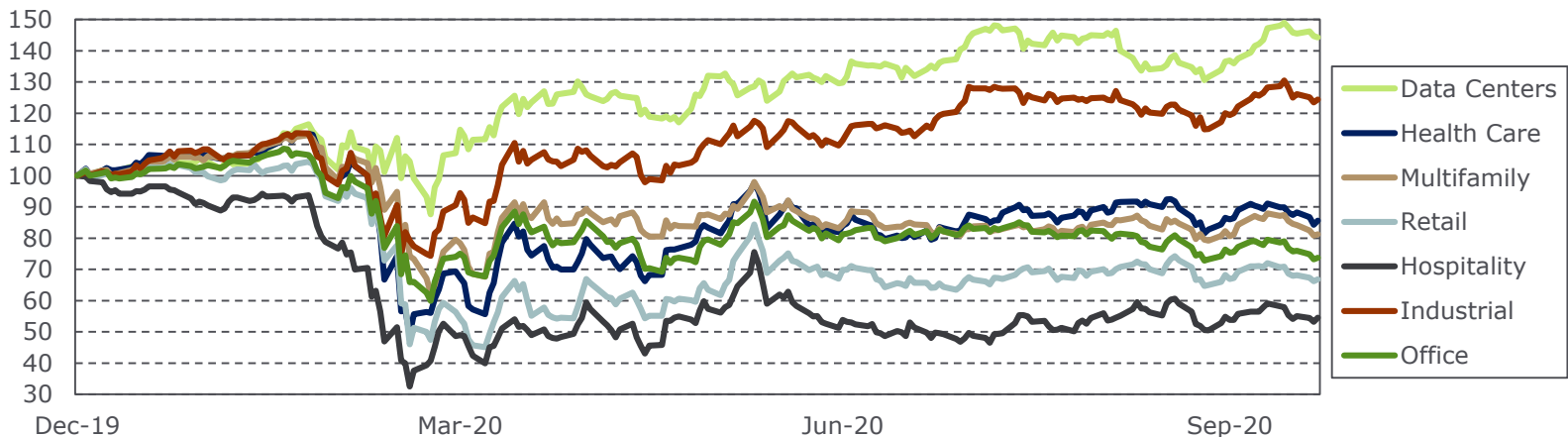


Source: NCREIF. Data as of September 30, 2020.

# PUBLIC REAL ESTATE RETURNS

- **REITs (publicly traded real estate) tend to be volatile and correlated with public equities in the short-term**
  - The short-term volatility is therefore not expected to result in comparable losses with private markets
- **There are clear winners and losers among property types, however:**
  - Hospitality and retail are the most challenged
  - Secular winners are likely to include data centers and industrial assets
  - Healthcare REITs have performed poorly, driven largely by negative sentiment on senior housing, while medical office should hold up better
  - Housing (including apartments and single family housing) should hold up reasonably well, though there may be some pressure on rents in the near-term
  - Market is pricing in lower expectations for office assets

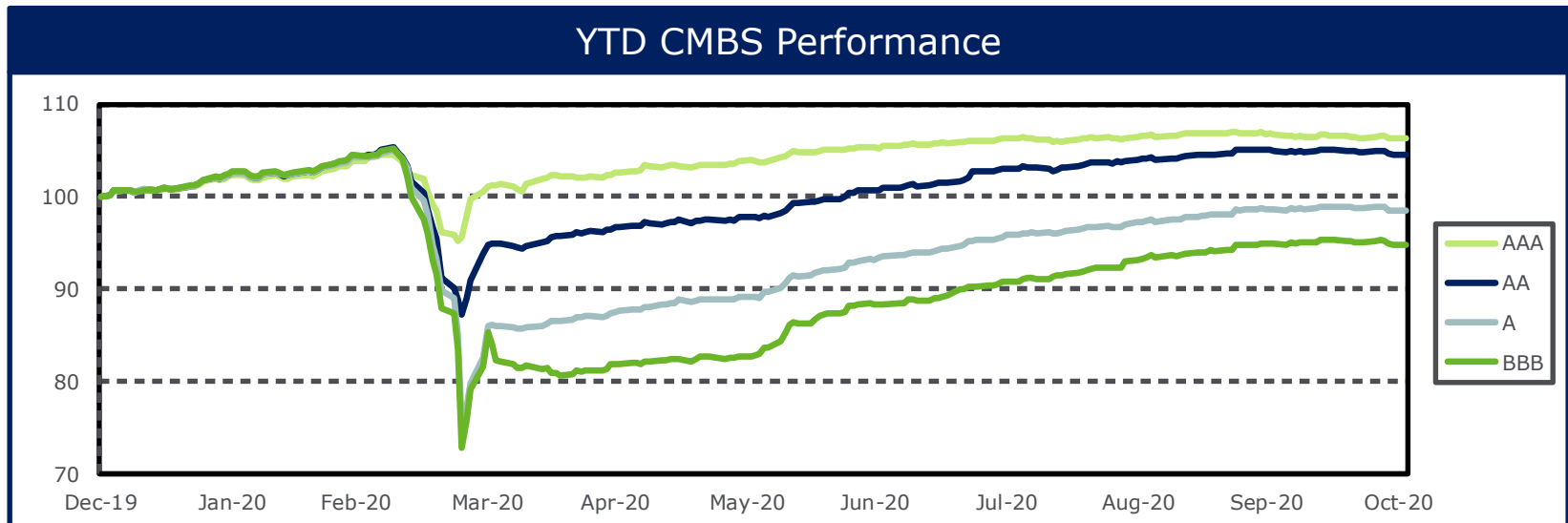
Year-to-Date REIT Property Type Dispersion



Source: Factset. Data as of October 21, 2020.

# CMBS RETURNS

- **The Federal Reserve announced in April that they would expand the Term Asset-Backed Securities Loan Facility ("TALF") to include legacy CMBS**
  - AAA-rated CMBS issued prior to March 23, 2020 are included
- **Credit quality will continue to matter; but so will property-type**
  - Senior tranches now priced at premium to par after falling during the early stages of the pandemic
  - Delinquency rates have declined since June peak
    - This partially reflects recovering cash flows but could also include an increase in rent deferrals
  - Largest 30+ day delinquencies in hotel (23.5%) and retail (11.6%) assets\*



# LOOKING FORWARD

- **Real estate recovery will depend on the trajectory of recovery for the broader economy, which will be closely correlated to path of the virus and vaccine approval/distribution**
- **Vintage years during and following recessions tend to produce strong private market fund returns**
- **Some sectors will hold up better through the pandemic; several “unknowns” remain within real estate:**
  - How will lenders work with borrowers, what does it mean for broader debt markets?
  - How much capital will flow into or out of real estate?
    - Global rates expected to remain low which is likely to stimulate flows into cash-flowing assets
  - How will preferences change among users of real estate?
    - Will more office workers work from home?
    - Will high-density urban living become less desirable?
    - Will companies increase inventory volumes on-hand in fear of supply chain disruption?
- **Attractive investment opportunities are expected to emerge**
  - Limited opportunities so far since transaction volume has mostly halted
  - Near-term opportunities may include buying existing debt or public securities
  - Banks and other lenders have shown a willingness (or in some cases have been mandated) to grant loan forbearances and to work with borrowers
  - Depending on the severity and length of economic disruption, the option of “waiting it out” may not be sustainable, resulting in more distressed transactions

**APPENDIX 1:**  
**INVESTMENT LEVEL PERFORMANCE**  
*AS OF JUNE 30, 2020*

NEPC, LLC

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# ACTIVE INVESTMENTS

Investments			Trailing Period Returns (IRR) %							
Investment Name	Vintage Year	Commitment	(QTD)	(YTD)	(1 Yr)	(3 Yrs)	(5 Yrs)	(7 Yrs)	(10 Yrs)	SI IRR
Actium SG Fund VI L.P.	2019	50,000,000	NM	NM	NM	NM	NM	NM	NM	NM
Actium SG Fund VI Pennsylvania Side-Car L.P.	2019	50,000,000	NM	NM	NM	NM	NM	NM	NM	NM
AG Asia Realty Fund, L.P.	2007	25,000,000								
Blackstone Property Partners, L.P.	2017	300,000,000	NM	NM	NM	NM	NM	NM	NM	NM
Blackstone Real Estate Partners IV, L.P.	2003	25,000,000								11.82%
Blackstone Real Estate Partners V, L.P.	2006	50,000,000								10.61%
Blackstone Real Estate Partners VI, L.P.	2007	75,000,000								12.72%
Blackstone Real Estate Partners VII, L.P.	2011	75,000,000								14.81%
Blue Moon Senior Housing II Sidecar L.P.	2019	50,000,000	NM	NM	NM	NM	NM	NM	NM	NM
Blue Moon Senior Housing II, L.P.	2019	50,000,000	NM	NM	NM	NM	NM	NM	NM	NM
BPG Investment Partnership IX, L.P.	2012	25,000,000								
BPG Investment Partnership V, L.P.	1999	25,000,000								
BPG Investment Partnership VI, L.P.	2002	25,000,000								
BPG Investment Partnership VII, L.P.	2005	25,000,000								
BPG Investment Partnership VIII, L.P.	2007	15,588,238								
C-III Recovery Fund III, L.P.	2017	100,000,000	NM	NM	NM	NM	NM	NM	NM	NM
CenterSquare Real Estate Securities	2002	183,616,773	12.10%	-15.45%	-9.55%	1.84%	3.81%	4.96%	9.32%	9.76%
Clerestory Small Cap Real Estate Fund I - TE, L.P.	2010	18,000,000								
Colony Investors VIII, L.P.	2007	22,500,000								
Forest Separate Account	1992	124,231,969								
Heitman America Real Estate Trust, L.P.	2007	100,000,000								
Heitman Separate Account	1988	813,635,039								
Henderson Park Enhanced Income Fund, SCSp	2019	300,000,000	NM	NM	NM	NM	NM	NM	NM	NM
HotelAVE Separate Account	2018	59,048,685	NM	NM	NM	NM	NM	NM	NM	NM
LaSalle Separate Account	1994	452,640,455	-6.95%	-6.94%	-5.54%	5.75%	6.13%	10.99%	13.97%	9.52%
Lasalle Takeover Account	2018	236,217,434	NM	NM	NM	NM	NM	NM	NM	NM
LEM Real Estate High-Yield Debt & Preferred Equity Fund III, L.P.	2013	25,000,000	16.41%	9.78%	22.40%	18.46%	20.27%	22.72%		23.66%
Lowe GTO Separate Account	2012	349,069,212								
Lowe Separate Account	1994	715,229,496								
Lubert-Adler Real Estate Fund VII, L.P.	2014	25,000,000	-7.34%	-13.65%	-12.97%	3.56%	4.32%			3.48%
Mesirow Financial Real Estate Value Fund III, L.P.	2018	25,000,000	NM	NM	NM	NM	NM	NM	NM	NM
Oak Street Real Estate Capital Fund IV, L.P.	2017	100,000,000	NM	NM	NM	NM	NM	NM	NM	NM
Oak Street Real Estate Capital Net Lease Property Fund, L.P.	2018	300,000,000	NM	NM	NM	NM	NM	NM	NM	NM
PLA Residential Fund III, L.P.	2008	29,654,968								
PLA Retail Fund I, L.P.	2006	25,000,000								
Rockpoint Finance Fund I, L.P.	2007	50,000,000								
Rockpoint Real Estate Fund II, L.P.	2005	35,000,000								
Rockpoint Real Estate Fund III, L.P.	2007	50,000,000								
Rockpoint Real Estate Fund V, L.P.	2015	50,000,000								



Data as of June 30, 2020.

NM - Not Meaningful

# ACTIVE INVESTMENTS (CONTINUED)

Investments			Trailing Period Returns (IRR) %							
Investment Name	Vintage Year	Commitment	(QTD)	(YTD)	(1 Yr)	(3 Yrs)	(5 Yrs)	(7 Yrs)	(10 Yrs)	SI IRR
Scout Fund I-A, L.P.	2009	75,000,000	0.43%	42.55%	42.22%	48.04%	15.52%	15.02%	16.89%	15.34%
Scout Fund II-A, L.P.	2016	30,000,000	-1.12%	-12.47%	-8.96%	5.00%				1.27%
Senior Housing Partners IV, L.P.	2011	25,000,000								
Senior Housing Partners V, L.P.	2015	50,000,000								
Senior Housing Partners VI, L.P.	2019	100,000,000	NM	NM	NM	NM	NM	NM	NM	NM
SRE Opportunity Fund III Select, L.P.	2018	50,000,000	NM	NM	NM	NM	NM	NM	NM	NM
SRE Opportunity Fund III, L.P.	2018	50,000,000	NM	NM	NM	NM	NM	NM	NM	NM
Starwood Global Opportunity Fund VII-A, L.P.	2006	35,000,000								
Starwood Global Opportunity Fund VIII, L.P.	2009	50,000,000								
Starwood Opportunity Fund VI, L.P.	2001	50,000,000								
Trumbull Property Fund, L.P.	1988	25,558,525	-2.64%	-2.41%	-1.74%	3.02%	5.00%	6.80%	8.94%	6.88%
ValStone Opportunity Fund V, LLC	2014	14,663,402	2.01%	-1.29%	10.02%	7.67%	8.61%			8.69%
Westbrook Real Estate Fund V, L.P.	2004	25,000,000	-5.75%	-4.05%	16.26%	10.14%	4.44%	26.62%	17.60%	43.56%
Westbrook Real Estate Fund VI, L.P.	2006	35,000,000	-0.24%	-0.03%	0.35%	-1.07%	-0.55%	14.11%	7.71%	0.24%
Westbrook Real Estate Fund VII, L.P.	2007	50,000,000	-0.33%	-8.42%	-13.06%	-3.25%	2.02%	7.44%	15.72%	2.47%
Westbrook Real Estate Fund VIII, L.P.	2009	50,000,000	0.38%	-13.17%	-19.54%	-3.28%	-1.10%	8.09%	10.39%	10.50%
<b>Total</b>										



Data as of June 30, 2020.

NM - Not Meaningful



# PERFORMANCE BY STRATEGY

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees <sup>1</sup>	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
<b>Core</b>												
Heitman America Real Estate Trust, L.P.	2007	\$100,000,000	\$0	\$100,000,000		\$82,172,713						
Trumbull Property Fund, L.P.	1988	\$25,558,525	\$0	\$25,558,525	\$213,175	\$114,653,528	\$29,525,358	\$144,178,886	\$118,407,186	4.45	5.59	6.88%
<b>Total Core</b>		<b>\$125,558,525</b>	<b>\$0</b>	<b>\$125,558,525</b>		<b>\$196,826,241</b>						
<b>Core Plus</b>												
Blackstone Property Partners, L.P.	2017	\$300,000,000	\$0	\$300,000,000	NM	\$1,744,007	NM	NM	NM	NM	NM	NM
Henderson Park Enhanced Income Fund, SCSp	2019	\$325,192,025	\$148,154,685	\$177,037,340	NM	\$5,948,401	NM	NM	NM	NM	NM	NM
Oak Street Real Estate Capital Net Lease Property Fund, L.P.	2018	\$300,000,000	\$197,395,143	\$102,604,857	NM	\$2,463,405	NM	NM	NM	NM	NM	NM
<b>Total Core Plus</b>		<b>\$925,192,025</b>	<b>\$345,549,829</b>	<b>\$579,642,196</b>		<b>\$10,155,813</b>						
<b>Direct Investment</b>												
Heitman Separate Account	1988	\$813,635,039	\$0	\$813,635,039		\$1,092,759,873						
HotelAVE Separate Account	2018	\$59,048,685	\$0	\$59,048,685	NM	\$20,191,396	NM	NM	NM	NM	NM	NM
LaSalle Separate Account	1994	\$452,640,455	\$0	\$452,640,455		\$778,848,456	\$170,836,919	\$949,685,375	\$493,984,342	1.71	2.08	9.52%
Lasalle Takeover Account	2018	\$236,217,434	\$0	\$236,217,434	NM	\$28,593,427	NM	NM	NM	NM	NM	NM
Lowe GTO Separate Account	2012	\$349,069,212	\$0	\$349,069,212		\$370,075,373						
Lowe Separate Account	1994	\$715,229,496	\$0	\$715,229,496		\$1,072,507,833						
<b>Total Direct Investment</b>		<b>\$2,625,840,320</b>	<b>\$0</b>	<b>\$2,625,840,320</b>		<b>\$3,362,976,358</b>						
<b>REIT</b>												
CenterSquare Real Estate Securities	2002	\$183,616,773	\$0	\$183,616,773		\$36,168,336	\$239,576,501	\$275,744,837	\$92,128,064	0.20	1.50	9.76%
<b>Total REIT</b>		<b>\$183,616,773</b>	<b>\$0</b>	<b>\$183,616,773</b>		<b>\$36,168,336</b>						
<b>Timber</b>												
Forest Separate Account	1992	\$124,231,969	\$0	\$124,231,969		\$242,667,376						
<b>Total Timber</b>		<b>\$124,231,969</b>	<b>\$0</b>	<b>\$124,231,969</b>		<b>\$242,667,376</b>						
<b>Value Add</b>												
Blue Moon Senior Housing II Sidecar L.P.	2019	\$50,000,000	\$29,039,380	\$20,960,620	NM	\$0	NM	NM	NM	NM	NM	NM
Blue Moon Senior Housing II, L.P.	2019	\$50,000,000	\$45,252,104	\$4,747,897	NM	\$0	NM	NM	NM	NM	NM	NM
BPG Investment Partnership IX, L.P.	2012	\$25,000,000	\$696,591	\$24,303,409		\$36,150,315						
BPG Investment Partnership V, L.P.	1999	\$24,136,964	\$0	\$24,136,964		\$43,947,583						
BPG Investment Partnership VI, L.P.	2002	\$24,543,712	\$0	\$24,543,712		\$41,922,808						
BPG Investment Partnership VII, L.P.	2005	\$25,000,000	\$0	\$25,000,000		\$14,088,892						
BPG Investment Partnership VIII, L.P.	2007	\$15,588,238	\$676,220	\$14,912,018		\$20,049,072						
Lubert-Adler Real Estate Fund VII, L.P.	2014	\$25,000,000	\$2,179,554	\$22,820,446	\$0	\$8,170,946	\$17,962,691	\$26,133,636	\$3,313,190	0.36	1.15	3.48%
Mesirov Financial Real Estate Value Fund III, L.P.	2018	\$25,145,833	\$6,818,708	\$18,327,125	NM	\$697,039	NM	NM	NM	NM	NM	NM
Oak Street Real Estate Capital Fund IV, L.P.	2017	\$100,000,000	\$6,417,447	\$93,582,553	NM	\$9,437,730	NM	NM	NM	NM	NM	NM
Westbrook Real Estate Fund V, L.P.	2004	\$25,000,000	\$0	\$25,000,000	\$2,247,851	\$44,485,779	\$7,491,102	\$51,976,881	\$24,729,030	1.63	1.91	43.56%
Westbrook Real Estate Fund VI, L.P.	2006	\$35,000,000	\$0	\$35,000,000	\$3,550,099	\$37,571,397	\$1,421,535	\$38,992,932	\$442,833	0.97	1.01	0.24%
Westbrook Real Estate Fund VII, L.P.	2007	\$50,000,000	\$0	\$50,000,000	\$6,158,015	\$52,787,877	\$12,304,519	\$65,092,396	\$8,934,381	0.94	1.16	2.47%
Westbrook Real Estate Fund VIII, L.P.	2009	\$50,000,000	\$0	\$50,000,000	\$4,173,612	\$63,418,319	\$8,297,621	\$71,715,940	\$17,542,328	1.17	1.32	10.50%
<b>Total Value Add</b>		<b>\$524,414,747</b>	<b>\$91,080,003</b>	<b>\$433,334,745</b>		<b>\$372,727,757</b>						

NM - Not Meaningful

Data as of June 30, 2020.

1 - Note that "Additional Fees" includes paid-in capital that does *not* reduce the unfunded commitment amount; this may include, among other items, management fees which are paid outside of the fund commitment, taxes, and closing interests paid to LPs in earlier closes. A negative number in this column indicates that SERS received (rather than paid-in) capital; a negative number is typically, though not exclusively, due to SERS receiving closing interests from LPs in later closes.



# PERFORMANCE BY STRATEGY (CONTINUED)

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees <sup>1</sup>	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
<b>Opportunistic</b>												
Activum SG Fund VI L.P.	2019	\$56,129,282	\$53,596,617	\$2,532,666	NM	\$0	NM	NM	NM	NM	NM	NM
Activum SG Fund VI Pennsylvania Side-Car L.P.	2019			\$0	NM	\$0	NM	NM	NM	NM	NM	NM
AG Asia Realty Fund, L.P.	2007	\$25,000,000	\$1,500,000	\$23,500,000		\$25,375,000				1.08		
Blackstone Real Estate Partners IV, L.P.	2003	\$25,000,000	\$0	\$25,000,000	\$0	\$40,257,893	\$313,400	\$40,571,293	\$15,571,293	1.61	1.62	11.82%
Blackstone Real Estate Partners V, L.P.	2006	\$50,000,000	\$2,087,026	\$47,912,974	\$0	\$97,046,997	\$1,462,050	\$98,509,047	\$50,596,072	2.03	2.06	10.61%
Blackstone Real Estate Partners VI, L.P.	2007	\$75,000,000	\$3,680,925	\$71,319,075	\$281,339	\$150,693,910	\$3,755,804	\$154,449,714	\$82,849,300	2.10	2.16	12.72%
Blackstone Real Estate Partners VII, L.P.	2011	\$75,000,000	\$9,431,254	\$65,568,746	\$2,003,711	\$92,762,261	\$29,645,517	\$122,407,778	\$54,835,321	1.37	1.81	14.81%
C-III Recovery Fund III, L.P.	2017	\$100,000,000	\$51,031,275	\$48,968,725	NM	\$0	NM	NM	NM	NM	NM	NM
Clerestory Small Cap Real Estate Fund I - TE, L.P.	2010	\$18,000,000	\$2,771,044	\$15,228,956		\$15,131,513						
Colony Investors VIII, L.P.	2007	\$22,500,000	\$844,200	\$21,655,800		\$7,962,017						
LEM Real Estate High-Yield Debt & Preferred Equity Fund III, L.P.	2013	\$25,000,000	\$0 <sup>2</sup>	\$25,000,000	\$0	\$47,522,717	\$34,715	\$47,557,432	\$22,557,432	1.90	1.90	23.66%
PLA Residential Fund III, L.P.	2008	\$29,654,968	\$4,946,219	\$24,708,749		\$13,444,991	\$292,233	\$13,737,224	-\$10,971,525	0.54		
PLA Retail Fund I, L.P.	2006	\$2,271,117	\$0	\$2,271,117		\$8,162,626	\$360,150	\$8,522,776	\$6,251,659	3.59		
Rockpoint Finance Fund I, L.P.	2007	\$2,527,500	\$0	\$2,527,500		\$2,315,090				0.52		
Rockpoint Real Estate Fund II, L.P.	2005	\$34,138,784	\$0	\$34,138,784		\$30,679,156				0.82		
Rockpoint Real Estate Fund III, L.P.	2007	\$50,632,887	\$4,241,165	\$46,391,722		\$67,236,003				1.33		
Rockpoint Real Estate Fund V, L.P.	2015	\$50,000,000	\$10,559,434	\$39,440,566		\$9,683,983				0.23		
Scout Fund I-A, L.P.	2009	\$75,000,000	\$0	\$75,000,000	\$0	\$117,006,454	\$920,660	\$117,927,114	\$42,927,114	1.56	1.57	15.34%
Scout Fund II-A, L.P.	2016	\$30,000,000	\$0	\$30,000,000	\$0	\$605,865	\$30,455,524	\$31,061,389	\$1,061,389	0.02	1.04	1.27%
Senior Housing Partners IV, L.P.	2011	\$22,089,297	\$1,289,781	\$20,799,516		\$37,182,609	\$682,718	\$37,865,328	\$17,065,811	1.79		
Senior Housing Partners V, L.P.	2015	\$50,000,000	\$8,862,310	\$41,137,690		\$3,216,633	\$50,029,873	\$53,246,506	\$12,108,816	0.08		
Senior Housing Partners VI, L.P.	2019	\$100,000,000	\$90,956,192	\$9,043,808	NM	\$0	NM	NM	NM	NM	NM	NM
SRE Opportunity Fund III Select, L.P.	2018	\$50,000,000	\$38,625,000	\$11,375,000	NM	\$0	NM	NM	NM	NM	NM	NM
SRE Opportunity Fund III, L.P.	2018	\$50,000,000	\$30,250,000	\$19,750,000	NM	\$5,500,000	NM	NM	NM	NM	NM	NM
Starwood Global Opportunity Fund VII-A, L.P.	2006	\$35,000,000	\$0	\$35,000,000		\$27,295,581						
Starwood Global Opportunity Fund VIII, L.P.	2009	\$50,000,000	\$4,643,719	\$45,356,281		\$68,651,170						
Starwood Opportunity Fund VI, L.P.	2001	\$50,000,000	\$0	\$50,000,000		\$51,782,742						
ValStone Opportunity Fund V, LLC	2014	\$14,663,402	\$0	\$14,663,402	\$375	\$5,009,834	\$16,306,436	\$21,316,270	\$6,652,493	0.34	1.45	8.69%
<b>Total Opportunistic</b>		<b>\$1,167,607,237</b>	<b>\$319,316,160</b>	<b>\$848,291,078</b>		<b>\$924,525,045</b>						
<b>Total</b>		<b>\$5,676,461,597</b>	<b>\$755,945,991</b>	<b>\$4,920,515,606</b>		<b>\$5,146,046,926</b>						

NM - Not Meaningful

Data as of June 30, 2020.

1 - Note that "Additional Fees" includes paid-in capital that does *not* reduce the unfunded commitment amount; this may include, among other items, management fees which are paid outside of the fund commitment, taxes, and closing interests paid to LPs in earlier closes. A negative number in this column indicates that SERS received (rather than paid-in) capital; a negative number is typically, though not exclusively, due to SERS receiving closing interests from LPs in later closes.

2 - Certain distributions from the LEM Real Estate High-Yield Debt & Preferred Equity Fund III are considered recallable. The manager has stated that it does not anticipate any of this capital to be recalled, thus the unfunded commitment shown in this report is \$0 to better reflect this expectation. In prior slides, this fund is included in the aggregated figures for the "Opportunistic (Closed-End)" investment strategy and the "Harvesting" lifecycle stage.



# **APPENDIX 2: DISCLAIMERS & DISCLOSURES**

NEPC, LLC

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# DISCLAIMER

- **Past performance is no guarantee of future results.**
- **The opinions presented herein represent the good faith views of NEPC as of the date of this report and are subject to change at any time.**
- **Information used to prepare this report was obtained directly from the investment managers or custodians, and market index data was provided by other external sources. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.**
- **This report may contain confidential or proprietary information and may not be copied or redistributed to any party not legally entitled to receive it.**

# ALTERNATIVE INVESTMENT DISCLOSURES

**In addition, it is important that investors understand the following characteristics of non-traditional investment strategies including hedge funds, real estate and private equity:**

1. Performance can be volatile and investors could lose all or a substantial portion of their investment
2. Leverage and other speculative practices may increase the risk of loss
3. Past performance may be revised due to the revaluation of investments
4. These investments can be illiquid, and investors may be subject to lock-ups or lengthy redemption terms
5. A secondary market may not be available for all funds, and any sales that occur may take place at a discount to value
6. These funds are not subject to the same regulatory requirements as registered investment vehicles
7. Managers may not be required to provide periodic pricing or valuation information to investors
8. These funds may have complex tax structures and delays in distributing important tax information
9. These funds often charge high fees
10. Investment agreements often give the manager authority to trade in securities, markets or currencies that are not within the manager's realm of expertise or contemplated investment strategy