

**MercedCERA RETIREMENT BOARD INVESTMENT MEETING AGENDA  
THURSDAY, JANUARY 28, 2021  
MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
3199 M STREET, MERCED, CA 95348**

**Important Notice Regarding SARS-COV-2**

**Based on guidance from the California Department of Public Health and the California Governor's Office, in order to minimize the spread of the SARS-COV-2 virus, MercedCERA's building will be closed to the public during MercedCERA Board meetings. Members of the MercedCERA Board will participate in this meeting offsite via conference call. Members of the public may listen to the meeting and offer public comment telephonically by calling into the telephone number provided above and entering the stated conference code. If you have any issues participating in the meeting telephonically or require reasonable accommodation for your participation, please contact MercedCERA staff at 209-726-2724.**

**Please turn your cell phone or other electronic device to non-audible mode.**

**CALL TO ORDER: 8:15 A.M.**

- ROLL CALL.
- APPROVAL OF MINUTES – January 14, 2020

**PUBLIC COMMENT**

Members of the public may comment on any item under the Board's jurisdiction. Matters presented under this item will not be discussed or acted upon by the Board at this time. For agenda items, the public may make comments at the time the item comes up for Board consideration. Persons addressing the Board will be limited to a maximum of five (5) minutes in total. Please state your name for the record.

**CLOSED SESSION**

As provided in the Ralph M. Brown Act, Government Code sections 54950 et seq., the Board may meet in closed session with members of its staff, county employees and its attorneys. These sessions are not open to the public and may not be attended by members of the public. The matters the Board will meet on in closed session are identified below. Any public reports of action taken in the closed session will be made in accordance with Government Code sections 54957.1.

**(1) CONFERENCE WITH LEGAL COUNSEL - EXISTING LITIGATION**

(Govt. Code § 54956.9(d)(1))

Name of Case: AFSCME Local 2703, et al. v. MCERA, et al., Cal. Supreme Court  
Case No. S247095.

**(2) DISCUSSION AND POSSIBLE ACTION REGARDING INVESTMENTS IN RECOMMENDED FUNDS, ROLL CALL VOTE REQUIRED.**

(Govt. Code § 54956.81)

1. Discussion and possible action to adopt the recommendation regarding one Fund/Manager – Cliffwater.

## **RETURN TO OPEN SESSION**

Report on any action taken in closed session.

## **REGULAR CALENDAR**

### **BOARD ACTION<sup>1</sup>/DISCUSSION**

Pursuant to Govt. Code § 31594 and MercedCERA's Investment Objectives & Policy Statement due diligence analysis requirement:

1. Discussion and possible action to adopt final employer and employee contribution rates as of June 30, 2020 - Cheiron.
2. Discussion and possible action on Cliffwater LLC presentation regarding survey of public state pension plans – Cliffwater.
3. Discussion and possible action on December performance and any possible action on any managers and/or funds – Meketa Group.
4. Discussion and possible action to adopt the proposed 2021 Educational Investment Calendar and Asset Allocation dates for MercedCERA as recommended by the Investment Subcommittee – Staff.
5. Review calendar of any training sessions and authorize expenditures for Trustees and Plan Administrator. Pursuant to Govt. Code § 31522.8 and MercedCERA's Trustees Education and Training Policy requirements. Examples of upcoming training and educational sessions:
  - CALAPRS General Assembly, March 8-9, 2021 (Virtual Conference).
  - CALAPRS Trustee Roundtable, May 28, 2021 (Virtual Conference).

## **INFORMATION ONLY**

### **MercedCERA Upcoming Board Meetings:**

Please note: The MercedCERA Board Meeting and/or Education Day times and dates may be changed in accordance with the Ralph M. Brown Act by the MercedCERA Board as required.

- February 11, 2021
- February 25, 2021

## **ADJOURNMENT**

All supporting documentation is available for public review in the office of the Merced County Employees' Retirement Association, 3199 M Street, Merced, California, 95348 during regular business hours, 8:00 a.m. – 5:00 p.m., Monday through Friday.

**The Agenda is available online at [www.co.merced.ca.us/retirement](http://www.co.merced.ca.us/retirement)**

Any material related to an item on this Agenda submitted to the Merced County Employees' Retirement Association, after distribution of the Agenda packet is available for public inspection in the office of the Merced County Employees' Retirement Association.

Persons who require accommodation for a disability in order to review an agenda, or to participate in a meeting of the Merced County Employees' Retirement Association per the American Disabilities

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<sup>1</sup> "Action" means that the Board may dispose of any item by any action, including but not limited to the following acts: approve, disapprove, authorize, modify, defer, table, take no action, or receive and file.

Act (ADA), may obtain assistance by requesting such accommodation in writing addressed to Merced County Employees' Association, 3199 M Street, Merced, CA 95348 or telephonically by calling (209) 726-2724. Any such request for accommodation should be made at least 48 hours prior to the scheduled meeting for which assistance is requested.

**MercedCERA RETIREMENT BOARD ADMINISTRATIVE MEETING  
AGENDA MINUTES  
THURSDAY, JANUARY 14, 2021  
MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
TELEPHONE NUMBER: 1-310-372-7549, CONFERENCE CODE: 975839**

**CALL TO ORDER: 8:15 A.M.**

**Board Members Present:** Ryan Paskin, Scott Johnston, Al Peterson, Scott Silveira, David Ness, Kalisa Rochester, Karen Adams and Janey Cabral. **Counsel:** Jeff Grant. **Staff:** Kristen Santos, Martha Sanchez, Mark Harman, Ninebra Maryoonani, Sheri Villagrana, Brenda Mojica and Alexis Curry.

APPROVAL OF MINUTES – December 10, 2020

**The MercedCERA Board voted via roll call vote to approve the December 10, 2020 Minutes.**

**Cabral/ Peterson U/A (8-0)**

**PUBLIC COMMENT**

No Comments.

**CONSENT CALENDAR**

Consent matters are expected to be routine and may be acted upon, without discussion, as one unit. If an item is taken off the Consent Calendar for discussion, it will be heard as the last item(s) of the Board Action/Discussion as appropriate.

**RETIREMENTS:** Pursuant to Govt. Code § 31663.25 or § 31672

All items of earnable compensation for service or disability retirements listed below are in compliance with the pay code schedule approved by the Board of Retirement. The retirement is authorized; however, administrative adjustments may be necessary to alter the amount due to: audit, late arrival of data, court order, etc.

a. Levey, Barbara	Assessor	35 Yrs. Svc.	Eff.12/19/ 2020
b. Cabrera, Alicia	H.S.A	15 Yrs. Svc.	Eff. 01/05/2021
c. Floyd, Dennis	County Counsel	10 Yrs. Svc.	Eff. 12/18/2020
d. Craig, Elaine	Workforce Investment	7 Yrs. Svc.	Eff. 12/31/2020
e. Valdez, Maria	Court Operations	31 Yrs. Svc.	Eff. 01/02/2021
f. Turner, Edna	Behavioral Health	20 Yrs. Svc.	Eff. 12/31/2020
g. Caplener, Nancy	Library	21 Yrs. Svc.	Eff.01/02/2021
h. McCoy, Dwayne	Probation	32 Yrs. Svc.	Eff. 01/02/2021
i. Riggs, Monica	H.S.A	34 Yrs. Svc.	Eff. 01/03/2021
j. Brinsfield, Glenda	Hospital	4 Yrs. Svc.	Eff. 12/12/2020
k. Salles, Elizabeth	Behavioral Health	19 Yrs. Svc.	Eff. 01/02/2021
l. Schechter, Jeanne	Court Operations	5 Yrs. Svc.	Eff. 01/05/2021
m. Garcia, Alicia	Recorder	12 Yrs. Svc.	Eff: 12/31/2020
n. Kucius, Kathy	Behavioral Health	22 Yrs. Svc.	Eff: 01/02/2021
o. Moss, Tammy	Health Admin.	8 Yrs. Svc.	Eff. 12/27/2020
p. Rochester, James	Prob. Juvenile	14 Yrs Svc.	Eff. 12/30/2020

YTD fiscal year 2020/2021 retirees: 46  
YTD fiscal year 2019/2020 retirees: 104  
YTD fiscal year 2018/2019 retirees: 103

**REFUND OF SERVICE PURCHASE:** None

**DEATH BENEFIT:** None

**MONTHLY & QUARTERLY BUDGET REPORT:** Submitted

**The MercedCERA Board voted via roll call vote to approve the consent calendar as presented.**

**Silveira/ Johnston (7-0), Trustee Rochester abstained from voting.**

### **BOARD ACTION<sup>1</sup>/DISCUSSION**

1. Discussion and possible action to adopt annual audit and MercedCERA Comprehensive Annual Financial Report (CAFR) – Brown Armstrong and Staff.  
**The MercedCERA Board voted via roll call vote to approve the motion to adopt the Brown Armstrong Annual Audit and MercedCERA Comprehensive Annual Financial Report (CAFR).**  
**Adams/Ness U/A (8-0)**
2. Discussion and possible action to adopt election timeline for Seats 2 (General Seat), 7 (Safety Seat) and 8A (Retired Alternate Seat) – Staff.  
**The MercedCERA Board voted via roll call vote to adopt the election timeline and authorize the Merced County Registrar of Voters to conduct the elections for MercedCERA Board Seat 2 (General Seat), Seat 7 (Safety Seat), and Seat 8A (Retired Alternate Seat).**  
**Adams/Cabral U/A (8-0)**
3. Review calendar of any training sessions and authorize expenditures for Trustees and Plan Administrator. Pursuant to Govt. Code § 31522.8 and MercedCERA’s Trustees Education and Training Policy requirements. Examples of upcoming training and educational sessions:
  - CALAPRS Administrators Round Table, February 11, 2021 (virtual roundtable)
  - CALAPRS General Assembly, March 8-9, 2021 (virtual conference).

**No action taken.**

### **INFORMATION ONLY**

**No Information.**

### **ADJOURNMENT**

The meeting adjourned at 8:47AM

Respectfully submitted,

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Ryan Paskin, Chair

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<sup>1</sup> “Action” means that the Board may dispose of any item by any action, including but not limited to the following acts: approve, disapprove, authorize, modify, defer, table, take no action, or receive and file.

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Al Peterson, Secretary

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Date

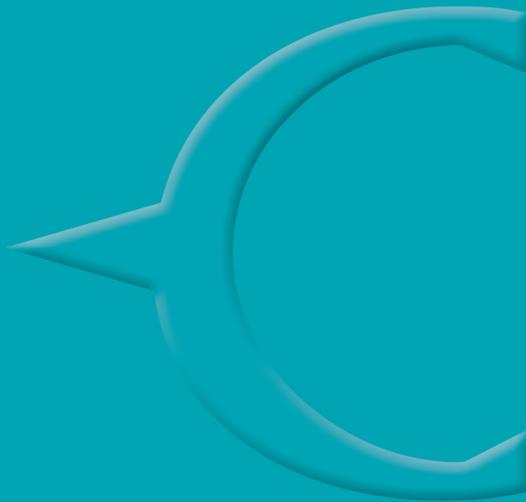
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**The Agenda is available online at [www.co.merced.ca.us/retirement](http://www.co.merced.ca.us/retirement)**

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# Item 1



## **Merced County Employees' Retirement Association**

### **Actuarial Valuation Report as of June 30, 2020**

**Produced by Cheiron**

**January 2021**

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January 21, 2021

Retirement Board of Merced  
County Employees' Retirement Association  
3199 M Street  
Merced, CA 95348

Dear Members of the Board:

At your request, we have conducted an actuarial valuation of the Merced County Employees' Retirement Association (MCERA, the Fund, the Plan) as of June 30, 2020. This report contains information on the Plan's assets, liabilities, and discloses employer and employee contribution levels. Your attention is called to the Foreword in which we refer to the general approach employed in the preparation of this report.

The purpose of this report is to present the results of the annual actuarial valuation of MCERA. This report is for the use of the Retirement Board of MCERA and its auditors in preparing financial reports in accordance with applicable law and accounting requirements. Any other user of this report is not an intended user and is considered a third party.

This report was prepared for the Retirement Board of MCERA for the purposes described herein and for the use by the Plan auditor in completing an audit related to the matters herein. Other users of this valuation report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to such other users.

This report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board as well as applicable laws and regulations. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys and our firm does not provide any legal services or advice.

Sincerely,  
Cheiron



Graham A. Schmidt, ASA, FCA, MAAA, EA  
Consulting Actuary



Anne D. Harper, FSA, MAAA, EA  
Principal Consulting Actuary

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**FOREWORD**

Cheiron has performed the actuarial valuation of the Merced County Employees' Retirement Association as of June 30, 2020. The valuation is organized as follows:

- In Section I, the **Executive Summary**, we describe the purpose of an actuarial valuation, summarize the key results found in this valuation, and disclose important trends.
- The **Main Body** of the report presents details on the Plan's
  - Section II – Identification and Assessment of Risks
  - Section III – Assets
  - Section VI – Liabilities
  - Section V – Contributions
  - Section VI – Comprehensive Annual Financial Reporting Information
- In the **Appendices** we conclude our report with detailed information describing plan membership (Appendix A), actuarial assumptions and methods employed in the valuation (Appendix B), a summary of pertinent plan provisions (Appendix C), tables containing member contribution rates (Appendix D), and a glossary of key actuarial terms (Appendix E).

Future results may differ significantly from the current results presented in this valuation report due to such factors as the following: plan experience differing from that anticipated by the assumptions; changes in assumptions; and changes in plan provisions or applicable law. Subsequent to the valuation date, the California State Supreme Court issued a decision that may affect benefits paid to some current and future retirees. The impact of this decision on these members is not yet known, and therefore will be reflected in a future valuation report.

In preparing our report, we relied on information (some oral and written) supplied by the MCERA staff. This information includes, but is not limited to, plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23.

Cheiron utilizes ProVal, an actuarial valuation application leased from Winklevoss Technologies (WinTech) to calculate liabilities and project benefit payments. We have relied on WinTech as the developer of ProVal. We have a basic understanding of ProVal and have used ProVal in accordance with its original intended purpose. We have not identified any material inconsistencies in assumptions or output of ProVal that would affect this valuation.

Deterministic projections in this valuation report were developed using P-scan, a proprietary tool used to illustrate the impact of changes in assumptions, methods, plan provisions, or actual experience (particularly investment experience) on the future financial status of the System. P-scan uses standard roll-forward techniques that implicitly assume a stable active population. Because P-scan does not automatically capture how changes in one variable affect all other variables, some scenarios may not be consistent.

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**FOREWORD**

Stochastic projections in this valuation report were developed using R-scan, our proprietary tool for assessing the probability of different outcomes based on a range of potential investment returns. We relied on Cheiron colleagues for the development of the model. The stochastic projections of investment returns assume that each future year's investment return is independent from all other years and is identically distributed according to a lognormal distribution. The standard deviation used in the stochastic projection of investment returns was provided by the System's investment consultant.

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**SECTION I – EXECUTIVE SUMMARY**

The primary purpose of the actuarial valuation and this report is to measure, describe, and identify the following as of the valuation date:

- The financial condition of the Plan,
- Past and expected trends in the financial progress of the Plan,
- Employer and employee contribution rates for Fiscal Year 2022,
- An assessment and disclosure of key risks, and
- Information required by the GFOA for the Comprehensive Annual Financial Report.

In the balance of this Executive Summary, we present (A) the basis upon which this year's valuation was completed, (B) the key findings of this valuation including a summary of all key financial results, (C) an examination of the historical trends, and (D) the projected financial outlook for the Plan.

**A. Valuation Basis**

This valuation determines the employer contributions for the fiscal year ending June 30, 2022. The Plan's funding policy is to collect contributions from the employers and employees equal to the sum of:

- The normal cost under the Entry Age Normal Cost Method,
- Amortization of the Unfunded Actuarial Liability, and
- The Plan's expected administrative expenses.

The Unfunded Actuarial Liability payment is determined as the amount needed to fund the outstanding Unfunded Actuarial Liability (UAL).

- Effective with the June 30, 2013 valuation, the UAL as of June 30, 2013 is amortized over a closed 16-year period. Effective with the June 30, 2019 valuation, 15% of the outstanding balance as of June 30, 2019 of the June 30, 2013 UAL amortization base is carved out as a separate base and amortized over a closed 14-year period as a level percentage of payroll. The remaining 85% is amortized over a closed 14-year period, with 10 years of level payments as a percentage of payroll, and a four-year ramp down at the end of the period.
- Effective with the June 30, 2014 valuation, any new sources of UAL due to actuarial gains and losses or method changes are amortized over a closed 24-year period, with a five-year ramp up period at the beginning of the period, a four-year ramp down at the end of the period, and 15 years of level payments as a percentage of payroll between the ramping periods.
- Assumption changes will be amortized over a closed 22-year period, with a three-year ramp up period, two-year ramp down period, and 17 years of level payments as a percentage of payroll.

This amortization method is similar to a traditional five- or three-year asset smoothing and a 20-year amortization period with level payments as a percentage of payroll. The Board also adopted a policy to replace the smoothed Actuarial Value of Assets with the Market Value of Assets for

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**SECTION I – EXECUTIVE SUMMARY**

valuation purposes. These amortization and funding policies in conjunction are a type of policy known as direct rate smoothing.

Experience studies are performed every three years. This valuation was performed on the basis of the economic and demographic assumptions and methods that were determined in the Actuarial Experience Study dated February 2020. A summary of the assumptions and methods used in the current valuation is shown in Appendix B.

This valuation was prepared based on the Plan provisions shown in Appendix C. Employee contribution rates are shown in Appendix D. The rates for PEPRA members will be recomputed each year to be one-half of the total normal cost rate.

**B. Key Findings of this Valuation**

The following discussion summarizes the key results of the June 30, 2020 valuation and how they compare to the results from the June 30, 2019 valuation.

**Summary of Key Valuation Results**

Table I-1 summarizes the key results of the valuation with respect to assets, liabilities, and contributions.

<b>Table I-1</b>		
<b>Merced County Employees' Retirement Association</b>		
<b>Summary of Key Valuation Results</b>		
(in millions)		
<b>Valuation Date</b>	<b>June 30, 2020</b>	<b>June 30, 2019</b>
<b>Fiscal Year End</b>	<b>2022</b>	<b>2021</b>
Actuarial Liability	\$ 1,412.9	\$ 1,370.2
Market Value of Assets	919.8	866.5
Unfunded Actuarial Liability	\$ 493.1	\$ 503.7
Funded Ratio	65.1%	63.2%
Net Employer Contribution Rate	46.51%	45.72%

More discussion of the factors that affected these results can be found in the remainder of this section, but some key points are as follows:

- The employer contribution rate increased from 45.72% to 46.51%. The original FY 2022 contribution rate in the June 30, 2019 valuation report was 51.25%, but this was revised

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**SECTION I – EXECUTIVE SUMMARY**

to 45.72% after an action taken by the Board to modify the Plan’s amortization policy at their September 10, 2020 meeting.

- The Unfunded Actuarial Liability (UAL) is the excess of the Plan’s Actuarial Liability over the Market Value of Assets. The Plan’s UAL decreased from \$503.7 million to \$493.1 million. This decrease in UAL was primarily due to the contributions made to the Plan, as well as the removal of the Final Average Compensation load to account for the recent Supreme Court decision.
- The Plan’s funded ratio, the ratio of market assets over Actuarial Liability, increased from 63.2% last year to 65.1% as of June 30, 2020.

**Plan Membership**

Table I-2 summarizes Plan membership as of June 30, 2020 and June 30, 2019. More detailed membership statistics are shown in Appendix A.

<b>Table I-2 Membership Total</b>					
<b>Item</b>	<b>June 30, 2020</b>		<b>June 30, 2019</b>		<b>% Change</b>
Actives	2,149		2,177		-1.3%
Deferred Members	1,009		942		7.1%
Retired Members	2,433		2,373		2.5%
Total Members	5,591		5,492		1.8%
Active Member Payroll	\$	143,991,660	\$	142,328,413	1.2%
Average Pay per Active	67,004		65,378		2.5%

Some key points are as follows:

- Total Plan membership increased by 1.8%, mostly driven by the increase in deferred members, in particular non-vested members who have left their contributions on account. The active membership count decreased by 1.3%, deferred membership increased by 7.1%, and retired membership increased by 2.5%.
- The pay figures reflect the annualized rate as of June 30, plus expected increases for the upcoming year. Total payroll increased by 1.2% compared to the assumed payroll growth of 2.75%, while the average pay per active member increased by 2.5%.

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**SECTION I – EXECUTIVE SUMMARY**

**Components of UAL Change between June 30, 2019 and June 30, 2020**

Table I-3 is a detailed reconciliation of the components that affected the UAL between June 30, 2019 and June 30, 2020.

<b>Table I-3 Change in Unfunded Actuarial Liability</b>	
<b>Experience</b>	<b>in millions</b>
Unfunded actuarial liability, 6/30/2019	\$ 503.7
Expected change in unfunded actuarial liability	\$ (15.1)
Unfunded increase due to investment loss	3.3
Unfunded decrease due to contributions more than expected	(0.9)
Unfunded increase due to liability loss	9.7
Unfunded decrease due to assumption changes	(7.7)
Total change in unfunded actuarial liability	<u>(10.6)</u>
Unfunded actuarial liability, 6/30/2020	\$ 493.1

The Plan's UAL decreased from \$503.7 million as of June 30, 2019 to \$493.1 million as of June 30, 2020. As shown above, the largest contributing factors were UAL contributions which paid off \$15.1 million of principal on the UAL and assumption change gains of \$7.7 million. Contributions were more than expected decreasing the UAL by \$0.9 million. There were losses on Actuarial Liabilities of \$ 9.7 million, most of which was from cost-of-living adjustments for Tier 1 retirees that were higher than assumed. There were investment losses of \$3.3 million.

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**SECTION I – EXECUTIVE SUMMARY**

**Employer Contribution Reconciliation**

Table I-4 is a detailed reconciliation between the Fiscal Year 2021 and Fiscal Year 2022 employer contribution rates, in total and by component.

Table I-4 Employer Contribution Reconciliation				
Item	Total	Normal Cost	Amortization	Expenses
FYE 2021 Net Employer Contribution Rate (Preliminary)	51.25%	10.07%	39.76%	1.42%
Impact of Amortization Change	-5.53%	0.00%	-5.51%	-0.02%
FYE 2021 Net Employer Contribution Rate (Final)	45.72%	10.07%	34.25%	1.40%
Expected Change due to phase-in	0.77%	0.00%	0.77%	0.00%
Change due to investment loss	0.04%	0.00%	0.04%	0.00%
Change due to contributions more than expected	-0.01%	0.00%	-0.01%	0.00%
Change due to PEPRA new hires	-0.41%	-0.41%	0.00%	0.00%
Change due to liability changes	0.04%	-0.07%	0.11%	0.00%
Change due to effect of payroll on amort / expense	0.57%	0.00%	0.54%	0.03%
Change due to change in assumptions	-0.21%	-0.07%	-0.14%	0.00%
Total change	0.79%	-0.55%	1.31%	0.03%
FYE 2022 Net Employer Contribution Rate	46.51%	9.52%	35.56%	1.43%

The employer contribution rate decreased from 51.25% for Fiscal Year 2021 in the original valuation report to 46.51% for Fiscal Year 2022:

- A change in the amortization policy adopted at the September 10, 2020 Board meeting reduced the Fiscal Year 2021 contribution rate from 51.25% to 45.72% of pay.
- The phase-in of the net UAL experience from the last four years due to the direct rate smoothing method (based on net gains in FYE 2017 and FYE 2018, and net losses in FYE 2016 and FYE 2019, including assumption changes) increased the contribution rate by 0.77% this year. The expected phase-in for the next valuation (2021) from previous years' gains and losses is 0.19%, and the impacts of the prior bases on UAL rates are expected to be generally offsetting for the following few years, as shown in the projections later in this report.
- Future increases in the UAL rates (as a result of phasing in prior losses) are expected to be partially offset by reductions in the employer normal cost rates, as more PEPRA members enter the system. For the current valuation, the replacement of legacy members by PEPRA members decreased the employer normal cost rate by about 0.41% of pay.
- The investment loss for the current fiscal year increased the current year contribution rate by 0.04% of pay. The assets of the Plan returned 6.62% (net of investment expenses) on a market basis, which is lower than the assumed rate of 7.00%. The amortization payment

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**SECTION I – EXECUTIVE SUMMARY**

for the current year investment losses will continue to be phased-in over the next four years.

- A lower than expected increase in the projected payroll increased the employer contribution rate by 0.57% of pay, since it results in the Plan's UAL and administrative expenses being spread over a lower-than-anticipated payroll base.
- Contributions were slightly more than expected and decreased the employer contribution rate by 0.01% of pay, due to the 12-month delay in the implementation of the contribution rates and the recent decline in the actuarial cost.
- Demographic experience resulted in a net increase in cost of about 0.04% of pay, based on a 0.11% increase in the UAL amortization payment rate, offset by a 0.07% reduction in employer normal cost rates within tiers. As with the investment losses, the changes in the UAL payment for demographic experience will continue to be phased-in over the next four years.
- The assumption changes from the removal of the Final Average Compensation load decreased the employers' contribution rate by 0.21% of pay, 0.07% of which represented a decrease in the employer normal cost rate and 0.14% of which was for changes in the UAL amortization payment. The UAL payments associated with the \$7.7 million decrease in liability resulting from the new assumption will continue to be phased-in over the next two years.

MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
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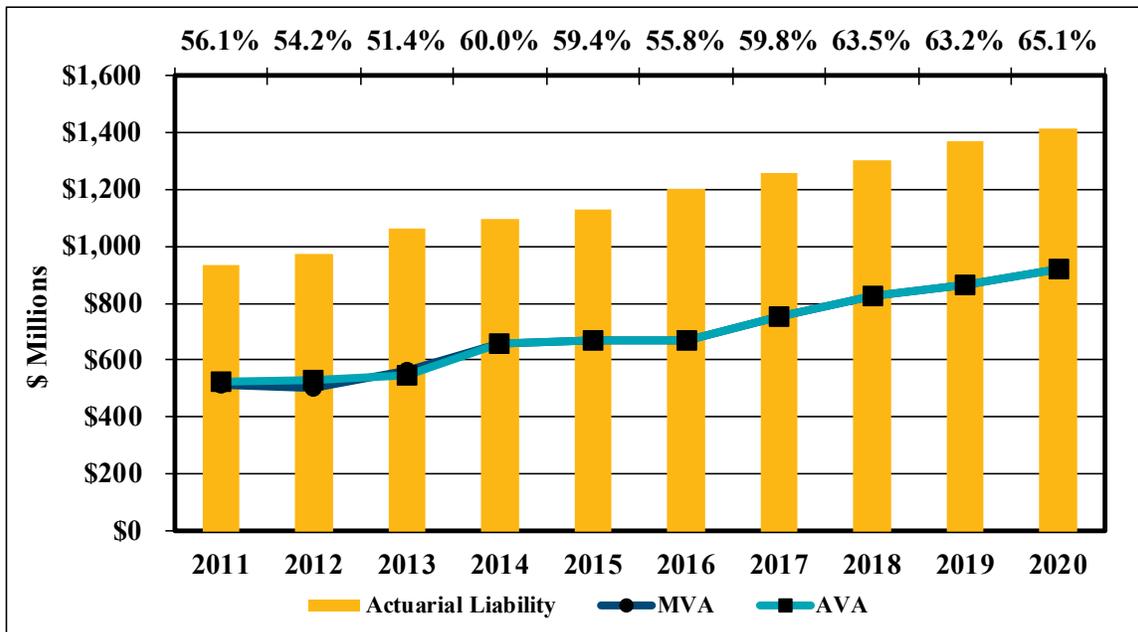
SECTION I – EXECUTIVE SUMMARY

C. Historical Trends

Despite the fact that for most retirement plans the greatest attention is given to the current valuation results and in particular, the size of the current Unfunded Actuarial Liability and the employer contribution, it is important to remember that each valuation is merely a snapshot in the long-term progress of a pension fund. It is more important to judge a current year's valuation result relative to historical trends, as well as trends expected into the future.

Assets and Liabilities

The following chart compares the Market Value of Assets (MVA) and Actuarial Value of Assets (AVA) to the Actuarial Liabilities. The percentage shown at the top of each bar is the ratio of the Actuarial Value of Assets to the Actuarial Liability (the funded ratio). Beginning June 30, 2014, the Actuarial Value of Assets is equal to the market value, and thus the funded ratios shown in 2014 and after are based on the Market Value of Assets. The funded ratio has increased from 56.1% in 2011 to 65.1% as of June 30, 2020.



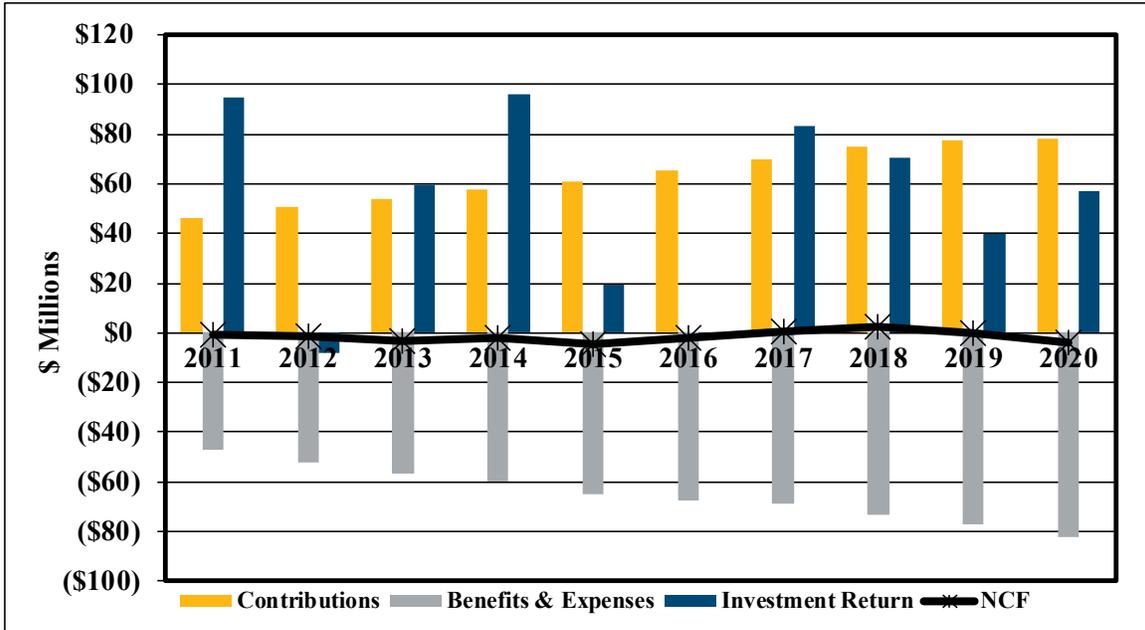
The extraordinary asset loss of 2008 adversely affected the funded ratio from 2011 to 2013. The 2014 funded ratio increased as a result of asset and liability gains in 2014, and as a result of resetting the Actuarial Value of Assets to the market value. The 2016 funded ratio decreased as a result of investment losses and assumption changes. The 2017 and 2018 funded ratios increased as a result of investment gains and contributions by the members and employers. The 2019 funded ratio remained relatively flat, with investment losses and assumption changes offsetting the progress expected due to contributions. The 2020 funded ratio increased as a result of assumption changes and contributions.

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**SECTION I – EXECUTIVE SUMMARY**

**Cash Flows**

The chart shows the Plan’s cash flow (contributions less benefit payments). This is a critical measure, as it reflects the ability to have funds available to meet benefit payments without having to make difficult investment decisions, especially during volatile markets.



In the chart above, the contributions, outflows (benefit payments and expenses), and investment returns are shown as bars and the Plan’s net cash flow (NCF) is shown as a black line. The NCF, which is equal to contributions less benefits and expenses, has been close to zero for the entire period shown. A plan in a significantly negative cash flow position magnifies the losses during a market decline hindering the Plan in its ability to absorb market fluctuations; however, this is not currently the case for MCERA.

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**Contributions**

The chart below shows the historical member and employer contribution rates. The steady increase in the employer contribution rate from 40.05% to 50.09% during 2011-2013 is a result of the 2008-2009 investment losses that were recognized over a five-year period. Since 2013, the employer contribution rate has remained relatively stable. There was a decrease in 2019 mostly due to an adjustment to the amortization of the 2013 UAL base.

With the implementation of PEPRA in 2013, the employee rates have gradually decreased since the contribution rates for PEPRA members are generally lower than the Non-PEPRA member rates. There was a slight increase in 2016 as projected mortality improvements increased. There was an increase in 2019 due to assumption changes Member contributions declined slightly in 2020 due to the removal of the Final Average Compensation load for some members as a result of the State Supreme Court decision.



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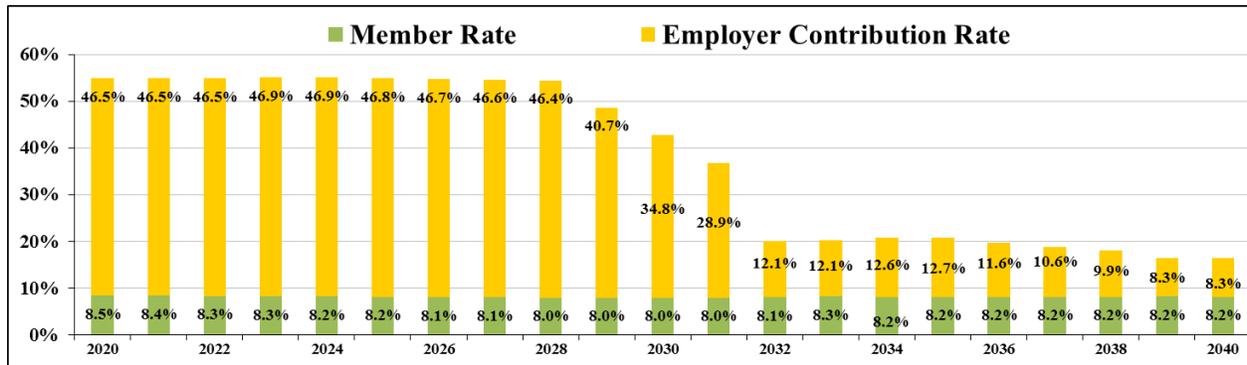
**D. Future Expected Financial Trends**

The analysis of projected financial trends is perhaps the most important component of this valuation. In this section, we present our assessment of the implications of the June 30, 2020 valuation results in terms of contributions and benefit security (assets compared to liabilities). All the projections in this section are based on the current interest rate assumption of 7.00%. We have assumed increases in future pensionable payroll of 2.75% per year.

**Contribution Projections:**

The following graph shows the expected employer and member contribution rates based on actually achieving the 7.00% assumption each year for the next 20 years, which is clearly impossible.

**Projection of Employer and Member Contributions, 7.00% return each year**



The graph above shows employer contributions peaking at 46.9% in the June 30, 2024 valuation (for Fiscal Year 2026), decreasing very slightly in the subsequent years, and then dropping off significantly from 2028 to 2032 as the amortization of the 2013 UAL is phased out.

Note that the graph above does not forecast any actuarial gains or losses. Even relatively modest losses relative to the 7.00% assumed return could push the employer contribution rate higher in the next few years.

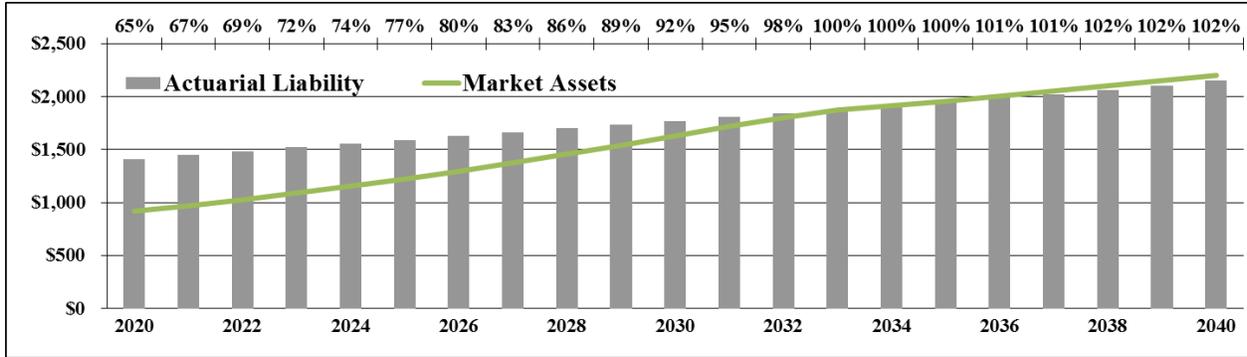
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**Asset and Liability Projections:**

The graph shows the projection of assets and liabilities assuming that assets will earn the 7.00% assumption each year during the projection period. The percentages along the top of the graph represent the funded ratio or status of the System.

**Projection of Assets and Liabilities, 7.00% return each year**



The graph shows that the projected funded status increases over the next 20 years to 102%, assuming the actuarial assumptions are achieved. However, as noted on the previous page, it is the actual return on plan assets that will determine the future funded status and contribution rates.

## SECTION II – DISCLOSURE RELATED TO RISK

Actuarial valuations are based on a set of assumptions about future economic and demographic experience. These assumptions represent a reasonable estimate of future experience, but actual future experience will undoubtedly be different and may vary significantly. Actuarial Standard of Practice 51, effective with the 2019 valuation, requires actuaries to identify and assess risks that “may reasonably be anticipated to significantly affect the plan’s future financial condition.” This section of the report is intended to identify the primary risks to the Plan, provide some background information about those risks, and provide an assessment of those risks.

### Identification of Risks

A fundamental risk to a pension plan is that the contributions needed to pay the benefits become unaffordable. While MCERA cannot determine on its own what contribution level is unaffordable, we can project expected contribution rates and illustrate the potential impact of key sources of risk on those contribution rates so the employers can assess affordability. While there are a number of factors that could lead to contribution amounts becoming unaffordable, we believe the primary risks are:

- Investment risk,
- Assumption change risk, and
- Contribution risk.

Other risks that we have not identified may also turn out to be important.

*Investment Risk* is the potential for investment returns to be different than expected. Lower investment returns than anticipated will increase the unfunded actuarial liability necessitating higher contributions in the future unless there are other gains that offset these investment losses. The potential volatility of future investment returns is determined by the Plan’s asset allocation and the affordability of the investment risk is determined by the amount of assets invested relative to the size of the plan sponsors or other contribution base.

*Assumption change risk* is the potential for the environment to change such that future valuation assumptions are different than the current assumptions. For example, declines in interest rates over the last three decades resulted in higher investment returns for fixed income investments, but lower expected future returns necessitating either a change in investment policy, a reduction in discount rate, or some combination of the two. Assumption change risk is an extension of the other risks identified, but rather than capturing the risk as it is experienced, it captures the cost of recognizing a change in environment when the current assumption is no longer reasonable.

*Contribution risk* is the potential for actual future contributions to deviate from expected future contributions. There are different sources of contribution risk such as the sponsor failing to make contributions in accordance with the funding policy or the contribution requirement becoming such a financial strain on the sponsor as a result of material changes in the contribution base (e.g., covered employees, covered payroll) that affects the amount of contributions the Plan can collect.

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The chart below shows the components contributing to the Unfunded Actuarial Liability (UAL) from June 30, 2010 through June 30, 2020. Over the last 10 years, the UAL has increased by approximately \$72 million. The investment losses (gold bar) of \$127 million on the actuarial value of assets (AVA), assumptions changes (purple bar) of \$46 million, and liability losses (gray bar) of \$13 million are the primary sources in the UAL growth. Contributions in excess of the “tread water” level (red bar) of \$66 million and method changes (green bar) of \$48 million have decreased the UAL since June 30, 2010.

**Chart II-1**

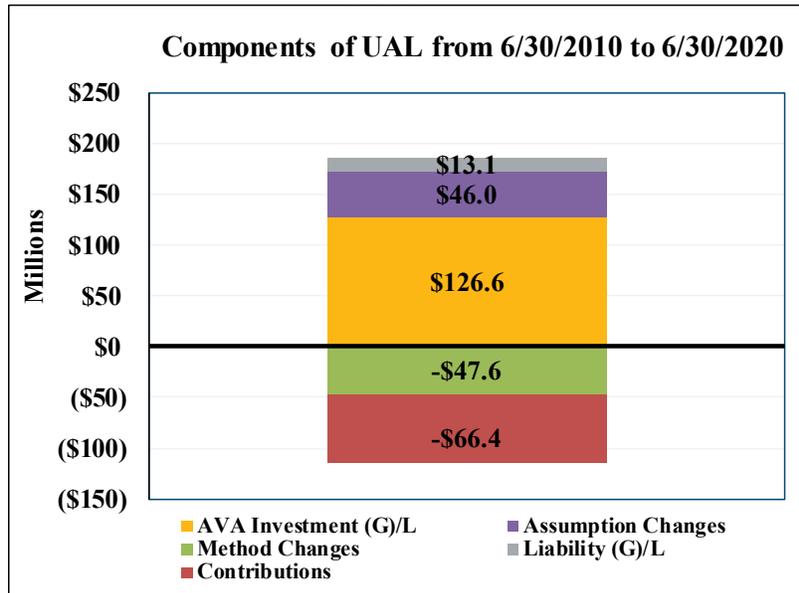
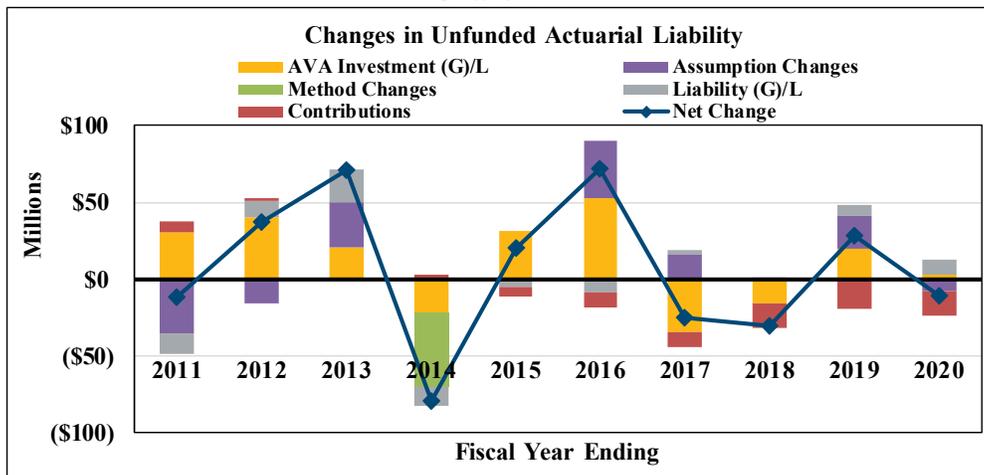


Chart II-2 below details the annual sources of the UAL change (colored bars) for the plan years ending June 30. The net UAL change for each year is represented by the blue diamonds.

**Chart II-2**



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**SECTION II – DISCLOSURE RELATED TO RISK**

Table II-1 below numerically summarized the changes in the UAL for each year by source over the last 10 years.

**Table II-1**

FYE	Unfunded Actuarial Liability (UAL) Change by Source					Total UAL Change
	Investment Experience	Liability Experience	Assumption Changes	Method Changes	Contributions	
<b>2011</b>	\$31.0	(\$13.8)	(\$34.8)	\$0.0	\$6.4	(\$11.3)
<b>2012</b>	40.1	11.4	(16.1)	0.0	1.6	36.9
<b>2013</b>	20.7	20.9	29.7	0.0	(0.2)	71.2
<b>2014</b>	(22.1)	(12.5)	0.0	(47.6)	3.0	(79.1)
<b>2015</b>	31.5	(5.1)	0.0	0.0	(6.5)	19.9
<b>2016</b>	52.4	(8.3)	38.1	0.0	(9.9)	72.3
<b>2017</b>	(34.5)	2.7	16.0	0.0	(9.4)	(25.2)
<b>2018</b>	(16.0)	1.2	0.0	0.0	(15.9)	(30.7)
<b>2019</b>	20.2	7.0	20.7	0.0	(19.5)	28.4
<b>2020</b>	3.3	9.7	(7.7)	0.0	(15.9)	(10.6)
<b>Total</b>	<b>\$126.6</b>	<b>\$13.1</b>	<b>\$46.0</b>	<b>(\$47.6)</b>	<b>(\$66.4)</b>	<b>\$71.8</b>

On an actuarial value basis, the average annual geometric return over the 10-year period is 5.4% and has resulted in investment losses on the AVA in seven of the last 10 years, increasing the UAL. The recent gains in 2017 and 2018 are still being phased-in under the direct rate smoothing amortization method.

Over the same time period, the assumed rate of return decreased from 7.75% to 7.00%. It is important to note that these changes simply reflect a downward revision to the estimate of future investment earnings and ultimately costs will be determined by actual investment earnings.

The impact of all assumption changes is represented by the purple bars in the earlier charts and also includes decreases in mortality rates projected in the future which had a significant impact on the measurement of the UAL.

The method change in 2014 represents the impact of changing amortization and asset valuation methods to the direct smoothing method, which set the actuarial value of assets equal to the market value of assets.

Each year the UAL is expected to increase for benefits earned in the current year (the normal cost), administrative expenses, and interest on the UAL. This expected increase is referred to as the tread water level. The difference between actual contributions and the tread water level are shown by the red bars. If contributions are greater than the tread water level, the UAL is expected to decrease. Conversely, if contributions are less than the tread water level, the UAL is expected to increase. The amortization policy (as well as the contribution-timing lag) can impact

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**SECTION II – DISCLOSURE RELATED TO RISK**

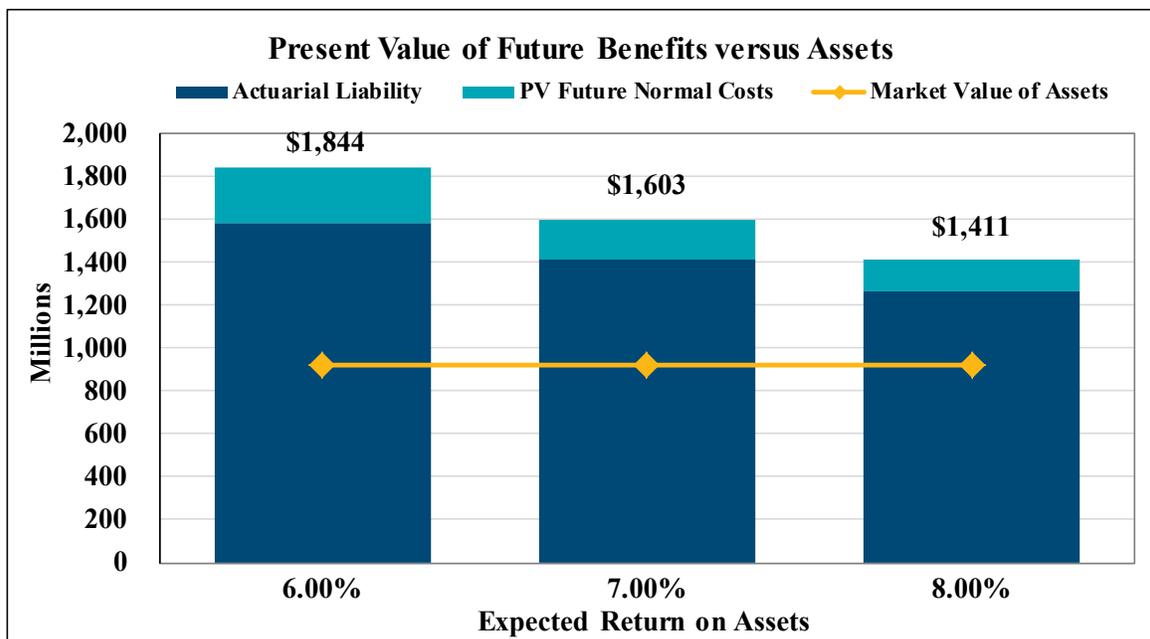
whether or not the contributions exceed the tread water level. The Board changed the amortization policy in 2014 to amortize new sources of actuarial gains and losses or method changes over a 24-year period, with a five-year ramp up period at the beginning of the period, and a four-year ramp down at the end of the period, and 15 years of level payments as a percentage of payroll. Assumption changes are amortized over a closed 22-year period, with a three-year ramp up period, two-year ramp down period, and 17 years of level payments as a percentage of payroll. Contributions have been above the tread water level since 2015.

Effective with the June 30, 2019 valuation, changes were made to the amortization policy that reduced the current contribution level by extending the amortization schedule for the remaining 2013 UAL. However, even with these changes contributions are still significantly above the tread water level. The single period equivalent amortization period – i.e., the length of time required to amortize the overall UAL as a level percentage of payroll based on the total current amortization payment – is approximately 12 years.

**Assessing Costs and Risks**

**Sensitivity to Investment Returns**

The chart below compares assets to the present value of all projected future benefits discounted at the current expected rate of return and at discount rates 100 basis points above and below the expected rate of return. The present value of future benefits is shown as a bar with the portion attributable to past service in dark blue (Actuarial Liability) and the portion attributable to future service in teal (Present Value of Future Normal Costs). The Market Value of Assets is shown by the gold line.



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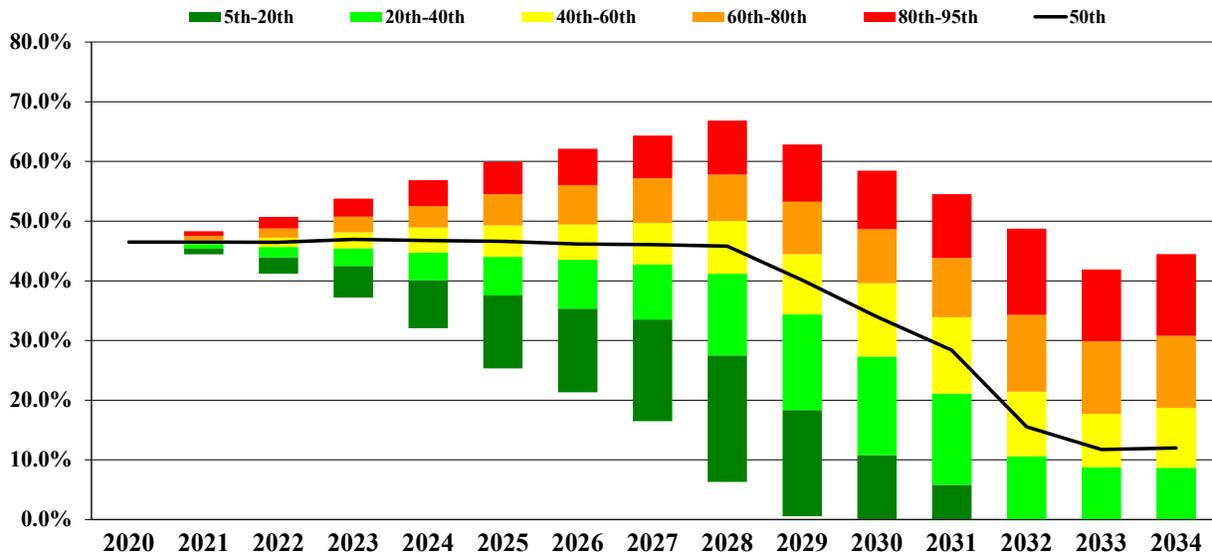
**SECTION II – DISCLOSURE RELATED TO RISK**

If investments return 7.00% annually, the Plan would need approximately \$1.6 billion in assets today to pay all projected benefits compared to current assets of \$0.9 billion. If investment returns are only 6.00%, the Plan would need approximately \$1.8 billion in assets today, and if investment returns are 8.00%, the Plan would need approximately \$1.4 billion in assets today.

**Sensitivity to Investment Returns - Stochastic Projections**

Stochastic projections serve to show the range of probable outcomes of various measurements. The graphs below and on the following page show the projected range of the employer contribution rate and the funded ratio on an actuarial value of assets basis. The range in both scenarios is driven by the volatility of investment returns (assumed to be based on a 12.4% standard deviation of annual returns, as indicated in Meketa's prior capital market assumptions).

**Stochastic Projection of Employer Contributions as a Percent of Pay  
Plan Sponsor Contribution Rate**

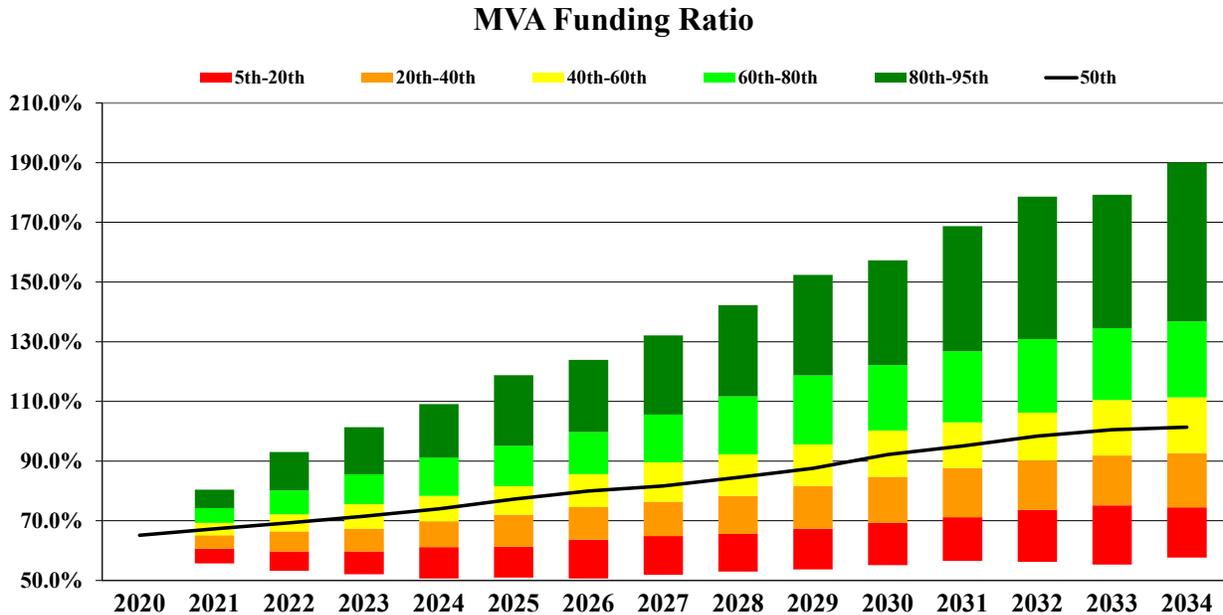


The stochastic projection of employer contributions as a percent of pay shows the probable range of future contribution rates. The baseline contribution rate (black line), which is based on the median of the simulations using an average return of 7.00%, aligns closely with the projections discussed in subsection D of the Executive Summary of this report. In the most pessimistic scenario shown, the 95<sup>th</sup> percentile, the projected employer contribution rate is almost 67% of pay in 2028. Conversely, the most optimistic scenario shown, the 5<sup>th</sup> percentile, the projected employer contribution rate declines to 0% in 2030. We note that these projections allow the employer contribution to drop below the normal cost only if the Plan becomes extremely overfunded (above 120%), as required under PEPRA.

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Stochastic Projection of Funded Ratio on a Market Value of Assets Basis



The graph above shows the projection of the funded ratio based on the market value of assets. While the baseline-funded ratio (black line) is projected to be approximately 101% at the end of the 15-year period shown here, there is a wide range of potential outcomes. Good investment returns have the likelihood of bringing the funded ratio well over 100%. Due to the current funding policy of the Plan, even in scenarios with unfavorable investment returns, the Plan is projected to remain over 50% funded as long as the actuarially determined contributions continue to be made.

**Contribution Risk**

While investment returns are typically the dominant factor in volatility, contribution rates can also be sensitive to future salary increases and the hiring of new members. When member payroll growth stagnates or even declines, the dollar level of contributions made to the Plan also stagnate or decline since contributions are based on payroll levels, though this will generally only present a funding issue if there is an extended pattern of payroll reductions.

There is also a risk of the contribution rate increasing even higher when payroll decreases since the Plan’s funding policy amortizes the UAL as a level percentage of pay. This means that the UAL payments increase at the assumed payroll growth rate of 2.75%, so that the payment is expected to remain constant as a percentage of payroll. If payroll growth is less than the expected 2.75% or there is a decline in payroll, the UAL payments are spread over a smaller payroll base and the contribution rate as a percentage of pay increases, potentially making the Plan less affordable for a sponsor with a declining payroll and/or revenue base.

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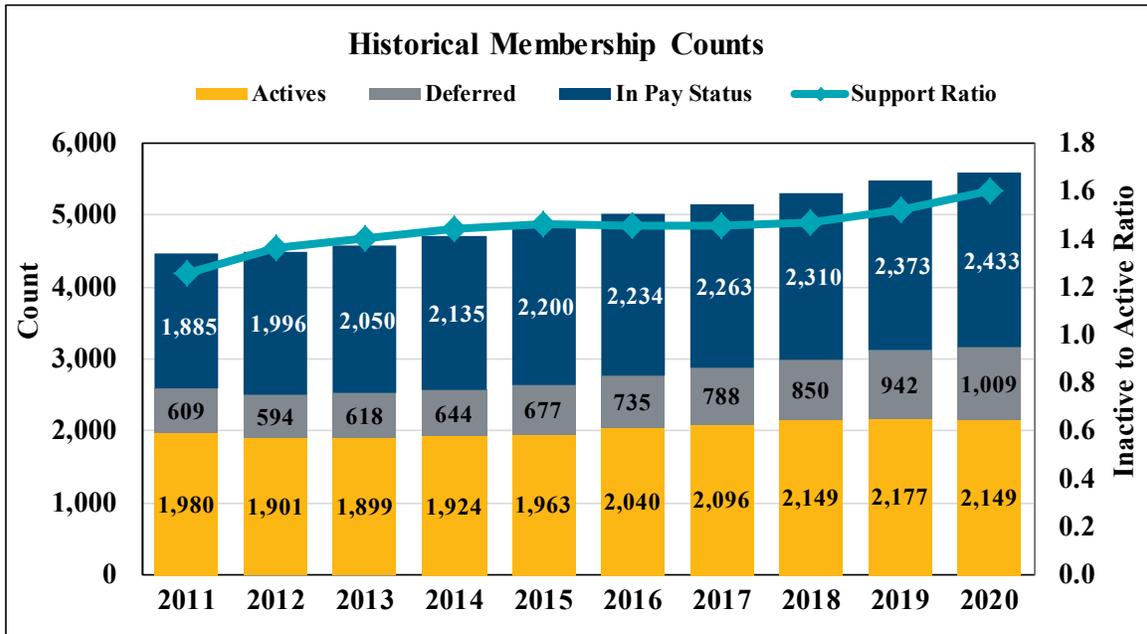
**Plan Maturity Measures**

The future financial condition of a mature pension plan is more sensitive to each of the risks identified above than a less mature plan. It is important to understand the maturity of the Plan and how the maturity has changed over time.

Plan maturity can be measured in a variety of ways, but they all get at one basic dynamic - the larger the plan is compared to the contribution or revenue base that supports it; the more sensitive the plan will be to risk. The measures below have been selected as the most important in understanding the primary risks identified for the Plan.

**Inactives per Active (Support Ratio)**

One simple measure of plan maturity is the ratio of the number of inactive members (those receiving benefits or those entitled to a deferred benefit) to the number of active members. The Support Ratio is expected to increase gradually as a plan matures. The chart below shows the growth in the Support Ratio from 2011 to 2020 as the number of retirees increased relative to the number of actives.



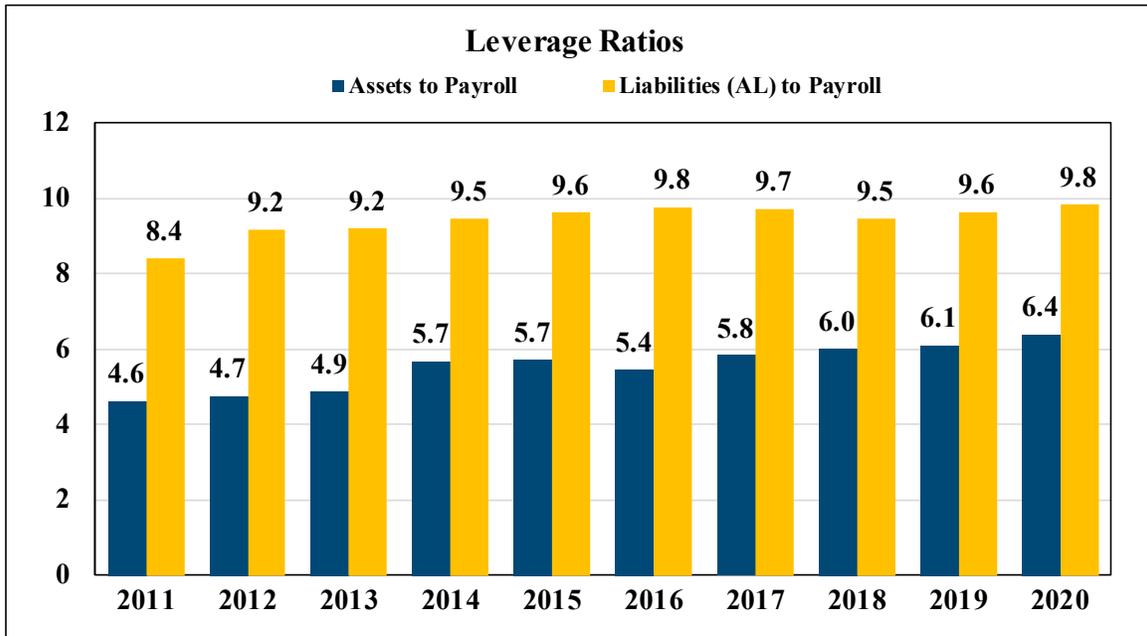
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SECTION II – DISCLOSURE RELATED TO RISK

Leverage Ratios

Leverage or volatility ratios measure the size of the plan compared to its revenue base more directly. The asset leverage ratio is simply the Market Value of Assets to active member payroll and indicates the sensitivity of the Plan to investment returns. The liability leverage ratio is the Plan's Actuarial Liability to active member payroll and indicates the sensitivity of the Plan to assumption changes or demographic experience.

The following chart shows the historical leverage ratios of the Plan. Both leverage ratios have gradually increased since 2011, but the asset to payroll ratio still lags well behind the liability to payroll ratio, due to the low funded status of the Plan. We expect these ratios to converge over time as the Plan becomes better funded. Therefore, the Plan is likely to become more sensitive to market variation in the future than it is today.



To appreciate the impact of the ratio of assets to payroll on contributions rates, consider the situation for a new plan with almost no assets. Even if the assets suffer a bad year of investment returns, the impact on the contribution rate is nil, because the assets are so small.

On the other hand, consider the situation for MCERA. Suppose MCERA's assets lose 10% of their value in a year. Since they were assumed to earn 7.00%, there is an actuarial loss of 17.00% of plan assets. Based on the current ratio of assets to payroll (64%), that means the loss in assets is about 108.8% of active payroll (64% of the 17.00% loss). There is only one source of funding to make up for this loss: contributions. Consequently, barring future offsetting investment gains, the employers must make up the asset loss in future contributions. In this example of a one-year loss of 10%, this shortfall will eventually require an additional amortization payment of

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**SECTION II – DISCLOSURE RELATED TO RISK**

approximately 8.5% payroll once fully phased-in, if amortized over the Plan's 24-year schedule for gains and losses.

**More Detailed Assessment**

While a more detailed assessment is always valuable to enhance the understanding of the risks identified above, we believe the scenarios illustrated above cover the primary risks facing the Plan at this time. We would be happy to provide the Board with a more in-depth analysis at their request.

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SECTION III – ASSETS

Pension Plan assets play a key role in the financial operation of the Plan and in the decisions the Board may make with respect to future deployment of those assets. The level of assets, the allocation of assets among asset classes, and the methodology used to measure assets will likely impact benefit levels, employer contributions, and the ultimate security of participants' benefits.

In this section, we present detailed information on Plan assets including:

- **Disclosure** of Plan assets as of June 30, 2019 and June 30, 2020,
- Statement of the **changes** in market values during the year,
- Comparison of the actual and expected investment performance during the year, and
- Historical **investment performance**.

As of June 30, 2014, an Actuarial Value of Assets distinct from the Market Value of Assets, is no longer used in the calculations of the Unfunded Actuarial Liability or funded status due to the implementation of the new funding policy adopted by the Board on January 22, 2015. This policy change was made in conjunction with 24-year (22-year for assumption changes) layered amortization of any unexpected changes in the Unfunded Actuarial Liability starting with the June 30, 2014 valuation. The calculation of the Actuarial Value of Assets is no longer shown in the valuation report, except to show the history of returns on the actuarial assets in Table III-3.

Also in prior valuations, a distinction was made between actuarial assets and valuation assets, with the latter reduced for non-valuation reserves, such as the Contingency Reserve. Since there are no such reserves as of June 30, 2019 and June 30, 2020, the two asset values are equal, and throughout this report we have used the term Market Value of Assets exclusively, except to show the history of returns on the valuation assets in Table III-3.

**Disclosure**

The market value represents “snapshot” or “cash out” values that provide the principal basis for measuring financial performance from one year to the next.

Table III-1 on the next page discloses and compares each asset value as of June 30, 2019 and June 30, 2020.

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**SECTION III – ASSETS**

<b>Table III-1 Statement of Assets at Market Value</b>		
<b>Assets</b>	<b>June 30, 2020</b>	<b>June 30, 2019</b>
<b>Cash and Short-Term Investments:</b>		
Cash invested with Merced County Treasurer	\$ 907,845	\$ 5,357,275
Cash invested with Northern Trust	11,231,143	12,994,323
Other cash and cash equivalents with Northern Trust	<u>2,308,322</u>	<u>714,829</u>
Total Cash and Short-Term Investments	\$ 14,447,310	\$ 19,066,427
<b>Receivables:</b>		
Bond interest	\$ 529,862	\$ 695,557
Dividends	34,419	66,725
Contributions	2,168,291	1,614,362
Distributions	353,594	479,675
Securities sold	0	960,340
Other	<u>0</u>	<u>61,370</u>
Total Receivables	\$ 3,086,166	\$ 3,878,029
<b>Investments at Market Value:</b>		
U.S. government and agency obligations	\$ 28,695,023	\$ 31,156,159
Domestic fixed income	175,144,685	176,798,283
Common stocks (domestic)	40,961,881	36,017,951
Common stocks (index funds)	210,531,937	196,606,512
Common stocks (international)	198,737,366	88,893,320
Common stocks (international index funds)	0	86,579,292
Real estate	58,809,046	59,849,041
Alternative investments	<u>188,281,578</u>	<u>169,514,879</u>
Total Investments at Market Value	\$ 901,161,516	\$ 845,415,437
<b>Other Assets:</b>		
Prepaid expense	\$ 112,555	\$ 22,598
Capital assets, net of accumulated depreciation of \$1,368,129 and \$1,110,948 respectively	<u>1,725,284</u>	<u>1,630,517</u>
<b>Total Assets</b>	<b>920,532,831</b>	<b>870,013,008</b>
<b>Liabilities</b>		
Accounts payable	\$ 610,263	\$ 625,964
Securities purchased	22,093	877,676
Unclaimed contributions	85,403	85,403
Capital Calls	<u>0</u>	<u>1,920,681</u>
<b>Total Liabilities</b>	<b>717,759</b>	<b>3,509,724</b>
<b>Market Value of Assets</b>	<b>\$ 919,815,072</b>	<b>\$ 866,503,284</b>

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**SECTION III – ASSETS**

**Changes in Market Value**

The components of asset change are:

- Contributions (employer and employee)
- Benefit payments
- Expenses (investment and administrative)
- Investment income (realized and unrealized)

Table III-2 shows the components of change in the Market Value of Assets during 2019 and 2020.

<b>Table III-2 Changes in Market Values</b>		
	<b>Fiscal Year ending June 30, 2020</b>	<b>Fiscal Year ending June 30, 2019</b>
<b>Additions</b>		
Contributions:		
Employer	\$ 67,413,475	\$ 66,586,464
Plan members	10,796,855	10,695,680
<b>Total Contributions</b>	<b>\$ 78,210,330</b>	<b>\$ 77,282,144</b>
Investment Income/(Loss) from Investment Activities:		
Net appreciation/(depreciation) in fair value of investments	\$ 50,658,752	\$ 33,767,403
Investment income	9,412,121	9,130,417
Other revenue	85,459	85,689
Less investment expenses	(2,924,315)	(3,254,559)
<b>Total Investment Income/(Loss) from Investment Activities</b>	<b>\$ 57,232,017</b>	<b>\$ 39,728,950</b>
<b>Total Additions</b>	<b>135,442,347</b>	<b>117,011,094</b>
<b>Deductions</b>		
Benefits paid	\$ 78,755,515	\$ 74,238,692
Refunds of contributions	910,147	571,983
Administrative expense	2,253,113	2,271,779
Actuarial expense	211,784	79,326
<b>Total Deductions</b>	<b>82,130,559</b>	<b>77,161,780</b>
Net Increase/(Decrease)	\$ 53,311,788	\$ 39,849,314
Market Value of Assets, Beginning of Year	866,503,284	826,653,970
<b>Market Value of Assets, End of Year</b>	<b>\$ 919,815,072</b>	<b>\$ 866,503,284</b>

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**SECTION III – ASSETS**

**Investment Performance**

The following table shows the development of the asset gain/(loss) and investment return.

<b>Table III-3 Development of Asset Return</b>	
Market Value of Assets, Beginning of Year	\$ 866,503,284
Contributions	78,210,330
Benefit Paid and Refunds of Contributions	(79,665,662)
Administrative Expense	(2,464,897)
Expected Investment Earnings (7.00%)	60,520,342
Expected Market Value of Assets, End of Year	\$ 923,103,397
Investment Gain / (Loss)	(3,288,325)
Market Value of Assets, End of Year	\$919,815,072
Actual Investment Earnings	\$ 57,232,017
Return	6.62%

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
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**SECTION III – ASSETS**

The table below shows the historical annual asset returns on a market value and actuarial value basis, as well in the increase in the Consumer Price Index (CPI) since 1995. Beginning June 30, 2014, the Actuarial Value of Assets is equal to the Market Value of Assets, so the net returns are the same for FY 2015 onwards.

<b>Table III-4 Net Return on Assets vs. Increase in Consumer Price Index</b>			
<b>Year Ended June 30</b>	<b>Net Return at Market Value</b>	<b>Net Return at Actuarial Value</b>	<b>Increase in Consumer Price Index<sup>1</sup></b>
2000	9.1%	11.5%	3.7%
2001	-3.6%	8.6%	3.2%
2002	-5.6%	4.9%	1.1%
2003	4.6%	3.3%	2.1%
2004	12.6%	3.3%	3.3%
2005	8.7%	2.5%	2.5%
2006	7.6%	4.7%	4.3%
2007	16.3%	8.9%	2.7%
2008	-6.7%	1.2%	5.0%
2009	-22.1%	-4.9%	-1.4%
2010	12.7%	7.0%	1.1%
2011	22.6%	2.6%	3.6%
2012	-1.6%	0.6%	1.7%
2013	11.8%	3.8%	1.8%
2014	17.1%	11.8%	2.1%
2015	2.9%	2.9%	0.1%
2016	-0.1%	-0.1%	1.0%
2017	12.4%	12.4%	1.6%
2018	9.4%	9.4%	2.9%
2019	4.8%	4.8%	1.6%
2020	6.6%	6.6%	0.6%
<b>15-Year Compound Average</b>	<b>5.7%</b>	<b>4.7%</b>	<b>1.9%</b>
<b>10-Year Compound Average</b>	<b>8.4%</b>	<b>5.4%</b>	<b>1.7%</b>
<b>5-Year Compound Average</b>	<b>6.5%</b>	<b>6.5%</b>	<b>1.5%</b>

<sup>1</sup> Based on All Urban Consumers - U.S. City Average, June indices.

MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
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SECTION IV – LIABILITIES

In this section, we present detailed information on Plan liabilities including:

- **Disclosure** of Plan liabilities at June 30, 2019 and June 30, 2020, and
- Plan liabilities by **tier** as of June 30, 2020.

**Disclosure**

Several types of liabilities are calculated and presented in this report. Each type is distinguished by the people ultimately using the figures and the purpose for which they are using them. Note that these liabilities are not applicable for settlement purposes, including the purchase of annuities and the payment of lump sums.

- **Present Value of Future Benefits:** Used for measuring all future Plan obligations, represents the amount of money needed today to fully fund all benefits of the Plan both earned as of the valuation date and those to be earned in the future by current plan participants, under the current Plan provisions.
- **Actuarial Liability:** Used for funding calculations, this liability is calculated taking the Present Value of Future Benefits and subtracting the present value of future Member Contributions and future employer normal costs under an acceptable actuarial funding method. The method used for this Plan is called the **Entry Age Normal** (EAN) funding method.
- **Unfunded Actuarial Liability:** The excess of the Actuarial Liability over the Market Value of Assets.

Table IV-1 on the following page discloses each of these liabilities for the current and prior valuations.

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**SECTION IV – LIABILITIES**

<b>Table IV-1</b>		
<b>Present Value of Future Benefits and Actuarial Liability</b>		
(in thousands)		
<b>Item</b>	<b>June 30, 2020</b>	<b>June 30, 2019</b>
<b>Present Value of Future Benefits</b>		
Actives	\$ 553,151	\$ 573,917
Deferred Members	63,370	56,231
Retirees	859,841	808,862
Disabled	70,601	68,686
Beneficiaries	55,629	55,360
<b>Total MCERA</b>	<u>\$ 1,602,592</u>	<u>\$ 1,563,057</u>
<b>Actuarial Liability</b>		
Total Present Value of Benefits	\$ 1,602,592	\$ 1,563,057
Present Value of Future Normal Costs		
Employer Portion	97,040	99,555
Employee Portion	92,670	93,307
<b>Actuarial Liability</b>	<u>\$ 1,412,881</u>	<u>\$ 1,370,195</u>
Market Value of Assets	\$ 919,815	\$ 866,503
<b>Unfunded Actuarial Liability/(Surplus)</b>	<u>\$ 493,066</u>	<u>\$ 503,692</u>

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
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**SECTION IV – LIABILITIES**

Table IV-2 discloses the liabilities of the Plan as of June 30, 2020, split by tier.

Table IV-2 Liabilities by Group as of June 30, 2020 (in thousands)											
Present Value of Future Benefits	General					Safety					All Total
	Tier 1	Tier 2	Tier 3	Tier 4	Total	Tier 1	Tier 2	Tier 3	Tier 4	Total	
Actives	\$ 54,611	\$ 279,177	\$ 11,224	\$ 92,511	\$ 437,523	\$ 14,343	\$ 74,784	\$ 1,184	\$ 25,317	\$ 115,627	\$ 553,151
Deferred Members	11,802	38,616	400	1,596	52,415	961	9,561	102	332	10,955	63,370
Retirees	603,701	111,300	130	361	715,491	135,429	8,921	0	0	144,350	859,841
Disabled	17,085	7,384	0	0	24,469	35,699	10,433	0	0	46,132	70,601
Beneficiaries	33,342	3,358	0	40	36,740	18,118	771	0	0	18,889	55,629
<b>Total</b>	<b>\$ 720,541</b>	<b>\$ 439,835</b>	<b>\$ 11,754</b>	<b>\$ 94,508</b>	<b>\$ 1,266,638</b>	<b>\$ 204,550</b>	<b>\$ 104,469</b>	<b>\$ 1,285</b>	<b>\$ 25,649</b>	<b>\$ 335,953</b>	<b>\$ 1,602,592</b>
<b>Actuarial Liability</b>											
Actives	\$ 49,655	\$ 208,347	\$ 3,784	\$ 25,771	\$ 287,557	\$ 13,523	\$ 55,565	\$ 394	\$ 6,400	\$ 75,883	\$ 363,440
Deferred Members	11,802	38,616	400	1,596	52,415	961	9,561	102	332	10,955	63,370
Retirees	603,701	111,300	130	361	715,491	135,429	8,921	0	0	144,350	859,841
Disabled	17,085	7,384	0	0	24,469	35,699	10,433	0	0	46,132	70,601
Beneficiaries	33,342	3,358	0	40	36,740	18,118	771	0	0	18,889	55,629
<b>Total</b>	<b>\$ 715,586</b>	<b>\$ 369,005</b>	<b>\$ 4,315</b>	<b>\$ 27,767</b>	<b>\$ 1,116,672</b>	<b>\$ 203,731</b>	<b>\$ 85,251</b>	<b>\$ 495</b>	<b>\$ 6,732</b>	<b>\$ 296,209</b>	<b>\$ 1,412,881</b>

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
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**SECTION V – CONTRIBUTIONS**

In the process of evaluating the financial condition of any pension plan, the actuary analyzes the assets and liabilities to determine what level (if any) of contributions is needed to properly maintain the funding status of the Plan. Typically, the actuarial process will use a funding technique that will result in a pattern of contributions that are both stable and predictable.

For this Plan, the actuarial funding method used to determine the normal cost and the Unfunded Actuarial Liability is the **Entry Age Normal (EAN) Cost Method**. There are three primary components to the total contribution: the **normal cost rate** (employee and employer), the **Unfunded Actuarial Liability rate (UAL rate)**, and the **administrative expense rate**.

The normal cost rate is determined in the following steps. First, an individual normal cost rate is determined by taking the value, as of entry age into the Plan, of each member's projected future benefits. This value is then divided by the value, also at entry age, of the member's expected future salary producing a normal cost rate that should remain relatively constant over a member's career.

The total normal cost is computed by adding the expected dollar amount of each active member's normal cost for the current year - known as the Individual Entry Age Method. The total normal cost is adjusted with interest to the middle of the year, to reflect the fact that the normal cost contributions are paid throughout the year as member payroll payments are made. Finally, the total normal cost rate, calculated by dividing the total normal cost by expected payroll of the closed group, is reduced by the member contribution rate to produce the employer normal cost rate.

Starting with the June 30, 2014 valuation, the Unfunded Actuarial Liability (UAL) is the difference between the EAN Actuarial Liability and the Market Value of Assets. The Unfunded Actuarial Liability payment is determined as the amount needed to fund the outstanding Unfunded Actuarial Liability as of June 30, 2013 over a closed period of 16 years (with years remaining as of the current valuation), as a level percentage of pay. Any subsequent unexpected change in the Unfunded Actuarial Liability after June 30, 2013 is amortized over 24 years (22 years for assumption changes) that includes a five-year phase-in/four-year phase-out (three-year phase-in/two-year phase-out for assumption changes) of the payments/credits for each annual layer. Effective with the June 30, 2019 valuation, 15% of the outstanding balance as of June 30, 2019 of the June 30, 2013 UAL amortization base is carved out as a separate base and amortized over a closed 14-year period as a level percentage of payroll. The remaining 85% is amortized over a closed 14-year period, with 10 years of level payments as a percentage of payroll, and a four-year ramp down at the end of the period.

The administrative expenses are assumed to be \$2.4 million for the current Plan year, and are expected to increase by the inflation rate in future years. The administrative expenses are split between the employees and employers based on each group's share of the normal cost and UAL rates.

MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
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SECTION V – CONTRIBUTIONS

The table below and on the next page present the employer contribution rates for the Plan for this valuation.

	June 30, 2020	June 30, 2019
1. Total Normal Cost Rate	17.74%	18.46%
2. Member Contribution Rate <sup>1</sup>	<u>8.22%</u>	<u>8.39%</u>
3. Employer Normal Cost Rate (1-2)	9.52%	10.07%
4. UAL Amortization Rate	35.56%	34.25%
5. Administrative Expense Rate	1.43%	1.40%
6. Net Employer Contribution Rate (3+4+5)	46.51%	45.72%

<sup>1</sup> Not including member's share of administrative expenses.

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
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**SECTION V – CONTRIBUTIONS**

Table V-2 FYE 2022 Net Employer Contribution Rate by Group											
County	General					Safety					All
	Tier 1	Tier 2	Tier 3	Tier 4	Total	Tier 1	Tier 2	Tier 3	Tier 4	Total	Total
1. Total Normal Cost Rate	25.76%	19.57%	15.76%	13.41%	16.78%	32.04%	23.38%	23.14%	20.64%	22.54%	17.74%
2. Member Contribution Rate <sup>1</sup>	<u>11.81%</u>	<u>9.10%</u>	<u>6.37%</u>	<u>6.70%</u>	<u>7.97%</u>	<u>10.22%</u>	<u>8.84%</u>	<u>8.52%</u>	<u>10.32%</u>	<u>9.49%</u>	<u>8.22%</u>
3. Employer Normal Cost Rate (1-2)	13.95%	10.47%	9.39%	6.71%	8.81%	21.82%	14.54%	14.62%	10.32%	13.05%	9.52%
4. UAL Amortization Rate	33.83%	33.83%	33.83%	33.83%	33.83%	44.07%	44.07%	44.07%	44.07%	44.07%	35.56%
5. Administrative Expense Rate	<u>1.51%</u>	<u>1.40%</u>	<u>1.37%</u>	<u>1.29%</u>	<u>1.35%</u>	<u>2.09%</u>	<u>1.86%</u>	<u>1.86%</u>	<u>1.72%</u>	<u>1.81%</u>	<u>1.43%</u>
<b>6. Net Employer Contribution Rate (3+4+5)</b>	<b>49.29%</b>	<b>45.70%</b>	<b>44.59%</b>	<b>41.83%</b>	<b>43.99%</b>	<b>67.98%</b>	<b>60.47%</b>	<b>60.55%</b>	<b>56.11%</b>	<b>58.93%</b>	<b>46.51%</b>

<sup>1</sup> Not including member's share of administrative expenses.

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
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**SECTION V – CONTRIBUTIONS**

The assets of the Plan are allocated between the General and Safety groups based on their share of the liability for non-active members. If the assets of the Plan exceed the liabilities of the non-active members, the remaining assets are allocated between the General and Safety groups based on their share of the liabilities for active members.

<b>Table V-3 Allocation of the June 30, 2020 UAL and Development of UAL Amortization Rates for FYE 2022</b>			
	<b>General</b>	<b>Safety</b>	<b>Total</b>
1. Market Value of Assets			\$ 919,815,072
2. Inactive Actuarial Liability	829,115,063	220,326,198	1,049,441,261
3. Allocation of Assets for Inactives	79.01%	20.99%	100.00%
4. Total Assets for Inactives	726,703,399	193,111,673	<u>919,815,072</u>
5. Net Assets for Distribution (4 - 2 not less than zero)			\$ 0
6. Active Actuarial Liability	\$ 287,557,436	\$ 75,882,676	\$ 363,440,112
7. Allocation of Remaining Assets	79.12%	20.88%	100.00%
8. Total Assets for Actives (7 x 5)	0	0	0
9. Market Value of Assets (4 + 8)	\$ 726,703,399	\$ 193,111,673	\$ 919,815,072
10. Total Actuarial Liability	1,116,672,499	296,208,874	1,412,881,373
<b>11. Unfunded Actuarial Liability (UAL) (10 - 9)</b>	<b>\$ 389,969,100</b>	<b>\$ 103,097,201</b>	<b>\$ 493,066,301</b>
12. UAL Amortization (see table V-4)	40,474,673	10,730,864	51,205,537
13. Total Payroll	119,640,071	24,351,589	143,991,660
<b>14. UAL Amortization Rate (12 divided by 13)</b>	<b>33.83%</b>	<b>44.07%</b>	<b>35.56%</b>

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
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**SECTION V – CONTRIBUTIONS**

Table V-4 presents the calculation of the UAL payments for the System.

Table V-4 Development of Amortization Payment For the June 30, 2020 Actuarial Valuation									
Type of Base	Date Established	Initial Amount	Initial Amortization Years	June 30, 2020 Outstanding Balance	Remaining Amortization Years	Current Phase In/Out Percentage	Amortization Amount	% of Pay	% of Pay After Phase-In
1. Initial UAL - extended	6/30/2019	\$ 367,575,087	14	\$ 352,636,862	13	100%	\$ 40,396,887	28.06%	28.06%
2. Initial UAL - carve out	6/30/2019	64,866,192	14	63,040,250	13	100%	6,324,058	4.39%	4.39%
3. (Gain)/Loss Base	6/30/2014	(71,384,203)	24	(79,196,701)	18	100%	(6,831,608)	-4.74%	-4.74%
4. (Gain)/Loss Base	6/30/2015	34,000,650	24	38,128,984	19	100%	3,151,424	2.19%	2.19%
5. (Gain)/Loss Base	6/30/2016	47,466,429	24	53,594,836	20	100%	4,258,582	2.96%	2.96%
6. (Gain)/Loss Assumption	6/30/2016	38,112,827	22	39,774,548	18	100%	3,283,799	2.28%	2.28%
7. (Gain)/Loss Base	6/30/2017	(29,098,191)	24	(32,625,197)	21	80%	(2,029,774)	-1.41%	-1.76%
8. (Gain)/Loss Assumption	6/30/2017	15,960,129	22	16,845,476	19	100%	1,337,155	0.93%	0.93%
9. (Gain)/Loss Base	6/30/2018	(14,219,151)	24	(15,573,767)	22	60%	(722,795)	-0.50%	-0.84%
10. (Gain)/Loss Base	6/30/2019	28,753,231	24	30,289,544	23	40%	946,463	0.66%	1.64%
11. (Gain)/Loss Assumption	6/30/2019	20,714,918	22	21,615,039	21	67%	1,092,502	0.76%	1.14%
12. (Gain)/Loss Base	6/30/2020	12,189,143	21	12,189,143	24	20%	195,244	0.14%	0.68%
13. (Gain)/Loss Assumption	6/30/2020	(7,652,716)	21	<u>(7,652,716)</u>	22	33%	<u>(196,401)</u>	<u>-0.14%</u>	<u>-0.41%</u>
<b>Total</b>				\$ 493,066,301			\$ 51,205,537	35.56%	36.51%

The single period equivalent amortization period – i.e., the length of time required to amortize the overall UAL as a level percentage of payroll based on the total current amortization payment – is approximately 12 years.

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**SECTION VI – COMPREHENSIVE ANNUAL FINANCIAL  
REPORTING INFORMATION**

The Governmental Accounting Standards Board (GASB) adopted Statement Nos. 67 and 68, replacing GASB Statement Nos. 25 and 27. GASB 67 is effective for periods beginning after June 15, 2013 (first effective for the fiscal year ending June 30, 2014 for the Plan) and GASB 68 is effective for fiscal years beginning after June 15, 2014 (first effective for the fiscal year ending June 30, 2015 for the Employer). The disclosures needed to satisfy the GASB requirements can be found in the MCERA GASB 67/68 Report as of June 30, 2020.

In accordance with Governmental Finance Officers Association (GFOA) and their recommended checklist for Comprehensive Annual Financial Reports (CAFRSs), we continue to prepare the following disclosures:

*Analysis of Financial Experience*

This schedule shows the history of gains or losses arising from investment and liability sources, as well as non-recurring items.

*Schedule of Funded Liabilities by Type*

The schedule of funded liabilities by type (formerly referred to as the solvency test) shows the portion of Actuarial Liabilities for active member contributions, inactive members, and the employer financed portion of the active members that are covered by the Actuarial Value of Assets.

*Actuarial Balance Sheet*

The actuarial balance sheet shows the components of the Actuarial Liabilities of the Plan and the actuarial assets that are intended to satisfy those liabilities.

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
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**SECTION VI – COMPREHENSIVE ANNUAL FINANCIAL REPORTING INFORMATION**

Table VI-1  
Analysis of Financial Experience  
Gain (or Loss) in Actuarial Liability During Years Ended June 30  
Resulting from Differences Between Assumed Experience  
and Actual Experience  
(in thousands)

Type of Activity	Gain (or Loss) for Year Ending June 30									
	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Investment Income and Expenses	\$ (3,288)	\$ (20,208)	\$ 15,963	\$ 34,498	\$ (52,420)	\$ (31,459)	\$ 22,058	\$ (20,749)	\$ (40,054)	\$ (30,955)
Combined Liability Experience	<u>(9,654)</u>	<u>(7,038)</u>	<u>(1,158)</u>	<u>(2,720)</u>	<u>8,327</u>	<u>5,096</u>	<u>12,533</u>	<u>(4,199)</u>	<u>(11,401)</u>	<u>13,824</u>
Gain (or Loss) During Year from Financial Experience	\$ (12,942)	\$ (27,246)	\$ 14,805	\$ 31,778	\$ (44,093)	\$ (26,363)	\$ 34,591	\$ (24,948)	\$ (51,455)	\$ (17,131)
Non-Recurring Gain (or Loss) Items	<u>8,408</u>	<u>(22,230)</u>	<u>(576)</u>	<u>(18,639)</u>	<u>(41,488)</u>	<u>(7,636)</u>	<u>36,803</u>	<u>(49,294)</u>	<u>16,069</u>	<u>12,918</u>
Composite Gain (or Loss) During Year	\$ (4,534)	\$ (49,476)	\$ 14,229	\$ 13,139	\$ (85,581)	\$ (33,999)	\$ 71,394	\$ (74,242)	\$ (35,386)	\$ (4,213)

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
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**SECTION VI – COMPREHENSIVE ANNUAL FINANCIAL  
REPORTING INFORMATION**

<b>Table VI-2</b>								
<b>Schedule of Funded Liabilities by Type</b>								
(dollars in thousands)								
Valuation Date	(A)	(B)	(C)				Portion of Actuarial Liabilities Covered by Reported Assets	
	Active Member Contributions	Retirees And Beneficiaries	Remaining Active Members' Liabilities <sup>1</sup>	Reported Assets <sup>2</sup>	(A)	(B)	(C)	
2020 <sup>4</sup>	\$ 84,767	\$ 986,071	\$ 342,043	\$ 919,815	100%	85%	0%	
2019 <sup>3</sup>	86,356	932,909	350,930	866,503	100%	84%	0%	
2018	86,585	871,095	344,239	826,654	100%	85%	0%	
2017	85,150	834,643	339,909	753,769	100%	80%	0%	
2016 <sup>3</sup>	81,880	804,658	314,657	670,016	100%	73%	0%	
2015	78,078	765,738	287,365	672,319	100%	78%	0%	
2014	75,582	739,428	281,231	657,325	100%	79%	0%	
2013 <sup>3</sup>	73,311	694,137	297,850	547,264	100%	68%	0%	
2012 <sup>4</sup>	66,407	632,319	276,882	528,728	100%	73%	0%	
2011 <sup>5</sup>	65,723	558,483	309,711	523,980	100%	82%	0%	

<sup>1</sup> Includes deferred members.

<sup>2</sup> Actuarial Value of Assets. As of June 30, 2014, the Market Value of Assets is used.

<sup>3</sup> Reflects revised economic and demographic assumptions.

<sup>4</sup> Reflects revised demographic assumptions.

<sup>5</sup> Reflects revised EAN methodology and economic assumptions.

<b>Table VI-3</b>	
<b>Actuarial Balance Sheet as of June 30, 2020</b>	
<b>Assets</b>	
1. Market value of assets	\$ 919,815,072
2. Present value of future contributions by members	92,670,469
3. Present value of future employer contributions for normal cost	97,040,076
4. Present value of other future employer contributions (UAL)	493,066,301
<b>5. Total actuarial assets</b>	<b>\$ 1,602,591,918</b>
<b>Liabilities</b>	
6. Present value of retirement allowances payable to retired/disabled members and their survivors	\$ 986,071,300
7. Present value of service retirement allowances payable to presently active members and their survivors	464,281,033
8. Present value of allowances payable to current and future vested terminated and their survivors	113,401,247
9. Present value of disability retirement allowances payable to presently active members and their survivors	26,689,301
10. Present value of death benefits payable on behalf of presently active members	4,561,374
11. Present value of members' contributions to be returned upon withdrawal	7,587,663
12. Special Reserves	-
<b>13. Total actuarial liabilities</b>	<b>\$ 1,602,591,918</b>

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
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**APPENDIX A – MEMBERSHIP INFORMATION**

<b>Summary of Participant Data (By Group) As of June 30, 2020</b>			
	<b>General</b>	<b>Safety</b>	<b>Total</b>
<b>Active Participants</b>			
Number	1,828	321	2,149
Average Age	43.22	38.36	42.49
Average Service	9.55	9.89	9.60
Average Pay	\$61,442	\$71,595	\$62,959
<b>Service Retired</b>			
Number	1,707	215	1,922
Average Age	71.06	65.73	70.46
Average Annual Total Benefit	\$34,920	\$49,646	\$36,567
<b>Beneficiaries &amp; QDROs</b>			
Number	253	68	321
Average Age	75.53	71.64	74.71
Average Annual Total Benefit	\$16,649	\$27,917	\$19,036
<b>Duty Disabled</b>			
Number	51	91	142
Average Age	68.39	62.61	64.69
Average Annual Total Benefit	\$27,880	\$35,164	\$32,548
<b>Non-Duty Disabled</b>			
Number	45	3	48
Average Age	69.67	65.72	69.42
Average Annual Total Benefit	\$16,515	\$23,083	\$16,925
<b>Total Receiving Benefits</b>			
Number	2,056	377	2,433
Average Age	71.51	66.05	70.66
Average Annual Total Benefit	\$32,094	\$42,020	\$33,632
<b>Terminated Vested</b>			
Number	317	51	368
Average Age	48.83	42.21	47.91
Average Service	18.49	16.17	18.17
<b>Transfers</b>			
Number	185	50	235
Average Age	50.99	44.34	49.57
Average Service	18.77	17.38	18.47
<b>Funds on Account</b>			
Number	355	51	406
Average Age	39.52	32.35	38.57
Average Service	1.52	1.37	1.48
<b>Total Deferred</b>			
Number	857	152	1,009
Average Age	45.44	39.60	44.54
Average Service	11.52	11.60	11.53

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**APPENDIX A – MEMBERSHIP INFORMATION**

<b>Summary of Participant Data (General) As of June 30, 2020</b>					
	<b>General Tier 1</b>	<b>General Tier 2</b>	<b>General Tier 3</b>	<b>General Tier 4</b>	<b>General Total</b>
<b>Active Participants</b>					
Number	59	737	63	969	1,828
Average Age	57.04	48.95	43.26	38.01	43.22
Average Service	27.04	16.20	12.31	3.24	9.55
Average Pay	\$90,483	\$67,346	\$83,317	\$53,761	\$61,442
<b>Service Retired</b>					
Number	1,252	446	5	4	1,707
Average Age	72.49	67.13	62.94	70.12	71.06
Average Annual Total Benefit	\$39,575	\$22,460	1,974	8,419	\$34,920
<b>Beneficiaries &amp; QDROs</b>					
Number	219	33	0	1	253
Average Age	77.57	62.32	N/A	64.40	75.53
Average Annual Total Benefit	\$17,747	\$9,759	N/A	\$3,573	\$16,649
<b>Duty Disabled</b>					
Number	33	18	0	0	51
Average Age	73.12	59.72	N/A	N/A	68.39
Average Annual Total Benefit	\$29,086	\$25,670	N/A	N/A	\$27,880
<b>Non-Duty Disabled</b>					
Number	31	14	0	0	45
Average Age	73.83	60.45	N/A	N/A	69.67
Average Annual Total Benefit	\$18,647	\$11,794	N/A	N/A	\$16,515
<b>Total Receiving Benefits</b>					
Number	1,535	511	5	5	2,056
Average Age	73.26	66.37	62.94	68.98	71.51
Average Annual Total Benefit	\$35,813	\$21,461	1,974	7,450	\$32,094
<b>Terminated Vested</b>					
Number	41	236	18	22	317
Average Age	59.73	47.86	44.31	42.57	48.83
Average Service	32.60	17.29	14.98	7.98	18.49
<b>Transfers</b>					
Number	30	142	0	13	185
Average Age	58.12	50.73	N/A	37.33	50.99
Average Service	29.56	17.86	N/A	3.77	18.77
<b>Funds on Account</b>					
Number	4	70	10	271	355
Average Age	62.98	46.43	38.49	37.43	39.52
Average Service	4.00	2.27	3.17	1.23	1.52
<b>Total Deferred</b>					
Number	75	448	28	306	857
Average Age	59.26	48.55	42.24	37.79	45.44
Average Service	29.86	15.12	10.76	1.82	11.52

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**APPENDIX A – MEMBERSHIP INFORMATION**

Summary of Participant Data (Safety) As of June 30, 2020					
	Safety Tier 1	Safety Tier 2	Safety Tier 3	Safety Tier 4	Safety Total
<b>Active Participants</b>					
Number	10	154	6	151	321
Average Age	54.27	43.48	37.83	32.09	38.36
Average Service	24.96	15.44	11.08	3.18	9.89
Average Pay	\$118,565	\$78,895	\$71,447	\$61,046	\$71,595
<b>Service Retired</b>					
Number	190	25	0	0	215
Average Age	66.62	58.99	N/A	N/A	65.73
Average Annual Total Benefit	\$52,311	\$29,385	N/A	N/A	\$49,646
<b>Beneficiaries &amp; QDROs</b>					
Number	65	3	0	0	68
Average Age	72.66	49.52	N/A	N/A	71.64
Average Annual Total Benefit	\$28,301	\$19,589	N/A	N/A	\$27,917
<b>Duty Disabled</b>					
Number	63	28	0	0	91
Average Age	67.53	51.55	N/A	N/A	62.61
Average Annual Total Benefit	\$38,598	\$27,438	N/A	N/A	\$35,164
<b>Non-Duty Disabled</b>					
Number	2	1	0	0	3
Average Age	62.19	72.78	N/A	N/A	65.72
Average Annual Total Benefit	\$25,046	\$19,156	N/A	N/A	\$23,083
<b>Total Receiving Benefits</b>					
Number	320	57	0	0	377
Average Age	68.00	55.08	N/A	N/A	66.05
Average Annual Total Benefit	\$44,564	\$27,733	N/A	N/A	\$42,020
<b>Terminated Vested</b>					
Number	2	46	2	1	51
Average Age	59.60	41.78	39.81	31.98	42.21
Average Service	23.22	16.08	12.60	13.42	16.17
<b>Transfers</b>					
Number	5	42	0	3	50
Average Age	51.16	44.10	N/A	36.38	44.34
Average Service	24.13	17.43	N/A	5.38	17.38
<b>Funds on Account</b>					
Number	0	7	1	43	51
Average Age	N/A	42.33	31.73	30.74	32.35
Average Service	N/A	1.58	0.09	1.36	1.37
<b>Total Deferred</b>					
Number	7	95	3	47	152
Average Age	53.57	42.84	37.12	31.12	39.60
Average Service	23.87	15.61	8.43	1.88	11.60

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**APPENDIX A – MEMBERSHIP INFORMATION**

	Change in Plan Membership: Total								Total
	Actives	Transfers	Non-Vested Terminations	Vested Terminations	Non-Duty Disabled	Duty Disabled	Retired	Beneficiaries & QDROs	
<b>July 1, 2019</b>	<b>2,177</b>	<b>246</b>	<b>357</b>	<b>339</b>	<b>46</b>	<b>142</b>	<b>1,863</b>	<b>322</b>	<b>5,492</b>
New Entrants	238	0	21	0	0	0	0	0	259
Rehires	8	(1)	(5)	(2)	0	0	0	0	0
Duty Disabilities	(4)	0	0	0	0	4	0	0	0
Non-Duty Disabilities	(2)	0	0	0	2	0	0	0	0
Retirements	(73)	(11)	0	(15)	0	0	99	0	0
Dual Service Retirements	0	(4)	0	(2)	0	0	0	0	(6)
Vested Terminations	(50)	(1)	0	51	0	0	0	0	0
Transfers	(6)	6	0	0	0	0	0	0	0
Non-Vested Terminations with Funds on Account	(70)	0	70	0	0	0	0	0	0
Withdrawals Paid	(68)	(1)	(34)	(8)	0	0	0	0	(111)
Died, With Beneficiary	0	0	0	0	(1)	(2)	(12)	15	0
Died, Without Beneficiary	(1)	(1)	0	0	0	(3)	(27)	(1)	(33)
Beneficiary Deaths	0	0	0	0	0	0	0	(20)	(20)
Domestic Relations Orders	0	0	0	0	0	0	0	4	4
Data Corrections	0	2	(3)	5	1	1	(1)	1	6
<b>July 1, 2020</b>	<b>2,149</b>	<b>235</b>	<b>406</b>	<b>368</b>	<b>48</b>	<b>142</b>	<b>1,922</b>	<b>321</b>	<b>5,591</b>

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**APPENDIX A – MEMBERSHIP INFORMATION**

	Change in Plan Membership: General								Total
	Actives	Transfers	Non-Vested Terminations	Vested Terminations	Non-Duty Disabled	Duty Disabled	Retired	Beneficiaries & QDROs	
<b>July 1, 2019</b>	<b>1,861</b>	<b>192</b>	<b>314</b>	<b>292</b>	<b>43</b>	<b>53</b>	<b>1,658</b>	<b>254</b>	<b>4,667</b>
New Entrants	203	0	17	0	0	0	0	0	220
Rehires	7	0	(5)	(2)	0	0	0	0	0
Duty Disabilities	(1)	0	0	0	0	1	0	0	0
Non-Duty Disabilities	(2)	0	0	0	2	0	0	0	0
Retirements	(64)	(9)	0	(14)	0	0	87	0	0
Dual Service Retirements	0	(3)	0	(2)	0	0	0	0	(5)
Vested Terminations	(44)	(1)	0	45	0	0	0	0	0
Transfers	(6)	6	0	0	0	0	0	0	0
Non-Vested Terminations with Funds on Account	(65)	0	65	0	0	0	0	0	0
Withdrawals Paid	(60)	(1)	(33)	(7)	0	0	0	0	(101)
Died, With Beneficiary	0	0	0	0	(1)	(2)	(11)	14	0
Died, Without Beneficiary	(1)	(1)	0	0	0	(2)	(26)	0	(30)
Beneficiary Deaths	0	0	0	0	0	0	0	(19)	(19)
Domestic Relations Orders	0	0	0	0	0	0	0	3	3
Data Corrections	0	2	(3)	5	1	1	(1)	1	6
<b>July 1, 2020</b>	<b>1,828</b>	<b>185</b>	<b>355</b>	<b>317</b>	<b>45</b>	<b>51</b>	<b>1,707</b>	<b>253</b>	<b>4,741</b>

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**APPENDIX A – MEMBERSHIP INFORMATION**

Change in Plan Membership: Safety									
	Actives	Transfers	Non-Vested Terminations	Vested Terminations	Non-Duty Disabled	Duty Disabled	Retired	Beneficiaries & QDROs	Total
<b>July 1, 2019</b>	<b>316</b>	<b>54</b>	<b>43</b>	<b>47</b>	<b>3</b>	<b>89</b>	<b>205</b>	<b>68</b>	<b>825</b>
New Entrants	35	0	4	0	0	0	0	0	39
Rehires	1	(1)	0	0	0	0	0	0	0
Duty Disabilities	(3)	0	0	0	0	3	0	0	0
Non-Duty Disabilities	0	0	0	0	0	0	0	0	0
Retirements	(9)	(2)	0	(1)	0	0	12	0	0
Dual Service Retirements	0	(1)	0	0	0	0	0	0	(1)
Vested Terminations	(6)	0	0	6	0	0	0	0	0
Transfers	0	0	0	0	0	0	0	0	0
Non-Vested Terminations with Funds on Account	(5)	0	5	0	0	0	0	0	0
Withdrawals Paid	(8)	0	(1)	(1)	0	0	0	0	(10)
Died, With Beneficiary	0	0	0	0	0	0	(1)	1	0
Died, Without Beneficiary	0	0	0	0	0	(1)	(1)	(1)	(3)
Beneficiary Deaths	0	0	0	0	0	0	0	(1)	(1)
Domestic Relations Orders	0	0	0	0	0	0	0	1	1
Data Corrections	0	0	0	0	0	0	0	0	0
<b>July 1, 2020</b>	<b>321</b>	<b>50</b>	<b>51</b>	<b>51</b>	<b>3</b>	<b>91</b>	<b>215</b>	<b>68</b>	<b>850</b>

MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020

APPENDIX A – MEMBERSHIP INFORMATION

Valuation at Year End	Plan Type	Active Member Data by Plan		Average Annual Salary	Average Salary Increase
		Member Count	Annual Payroll		
2011	General	1,659	\$94,976,978	\$57,250	3.02%
	Safety	321	\$19,768,859	\$61,585	3.20%
	<b>Total</b>	<b>1,980</b>	<b>\$114,745,837</b>	<b>\$57,952</b>	<b>3.05%</b>
2012	General	1,596	\$90,706,280	\$56,834	-0.73%
	Safety	305	\$19,145,091	\$62,771	1.93%
	<b>Total</b>	<b>1,901</b>	<b>\$109,851,371</b>	<b>\$57,786</b>	<b>-0.29%</b>
2013	General	1,604	\$91,737,348	\$57,193	0.63%
	Safety	295	\$18,699,145	\$63,387	0.98%
	<b>Total</b>	<b>1,899</b>	<b>\$110,436,493</b>	<b>\$58,155</b>	<b>0.64%</b>
2014	General	1,624	\$91,704,083	\$56,468	-1.27%
	Safety	300	\$18,620,870	\$62,070	-2.08%
	<b>Total</b>	<b>1,924</b>	<b>\$110,324,953</b>	<b>\$57,341</b>	<b>-1.40%</b>
2015	General	1,664	\$93,938,857	\$56,454	-0.03%
	Safety	298	\$18,397,233	\$61,736	-0.54%
	<b>Total</b>	<b>1,962</b>	<b>\$112,336,090</b>	<b>\$57,256</b>	<b>-0.15%</b>
2016	General	1,729	\$97,337,917	\$56,297	-0.28%
	Safety	311	\$19,394,922	\$62,363	1.02%
	<b>Total</b>	<b>2,040</b>	<b>\$116,732,839</b>	<b>\$57,222</b>	<b>-0.06%</b>
2017	General	1,783	\$102,498,328	\$57,486	2.11%
	Safety	313	\$20,136,322	\$64,333	3.16%
	<b>Total</b>	<b>2,096</b>	<b>\$122,634,651</b>	<b>\$58,509</b>	<b>2.25%</b>
2018	General	1,827	\$108,067,248	\$59,150	2.89%
	Safety	322	\$22,018,174	\$68,379	6.29%
	<b>Total</b>	<b>2,149</b>	<b>\$130,085,423</b>	<b>\$60,533</b>	<b>3.46%</b>
2019	General	1,861	\$111,267,187	\$59,789	1.08%
	Safety	316	\$22,498,224	\$71,197	4.12%
	<b>Total</b>	<b>2,177</b>	<b>\$133,765,412</b>	<b>\$61,445</b>	<b>1.51%</b>
2020	General	1,828	\$112,315,867	\$61,442	2.76%
	Safety	321	\$22,982,055	\$71,595	0.56%
	<b>Total</b>	<b>2,149</b>	<b>\$135,297,921</b>	<b>\$62,959</b>	<b>2.46%</b>

Payroll figures represent active members' annualized pay rates on June 30.

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**APPENDIX A – MEMBERSHIP INFORMATION**

Fiscal Year	Beginning of Year	Added During Year	Retirees and Beneficiaries Added to and Removed from Retiree Payroll				End of Year	Annual Retirement Payroll (in 000s)	Total Allowance Percentage Increase	Average Annual Allowance	Average Allowance Percentage Increase
			Allowances Added	Removed During Year	Allowances Removed						
2005	1,441	109	2,445,000	49	450,000	1,501	24,867,000	9.16%	16,567	4.80%	
2006	1,477	98	2,007,000	53	785,000	1,522	27,297,000	9.77%	16,836	1.62%	
2007	1,521	136	4,419,000	38	560,000	1,619	31,823,000	16.58%	17,947	6.60%	
2008	1,620	105	2,757,000	67	902,000	1,658	34,603,000	8.74%	19,644	9.46%	
2009	1,658	105	3,402,523	52	812,828	1,711	37,747,525	9.09%	22,062	12.31%	
2010	1,711	171	6,097,956	56	981,465	1,826	43,653,374	15.65%	23,907	8.36%	
2011	1,826	103	2,627,234	44	781,283	1,885	46,116,686	5.64%	24,465	2.34%	
2012	1,885	175	6,484,652	64	960,185	1,996	52,887,845	14.68%	26,497	8.31%	
2013	1,996	103	3,028,612	49	855,980	2,050	56,048,022	5.98%	27,340	3.18%	
2014	2,050	116	3,950,045	31	590,636	2,135	60,297,112	7.58%	28,242	3.30%	
2015	2,135	100	2,508,828	35	720,242	2,200	63,254,229	4.90%	28,752	1.80%	
2016	2,200	68	1,716,361	34	946,189	2,234	65,505,679	3.56%	29,322	1.98%	
2017	2,234	85	2,282,779	56	1,022,708	2,263	68,476,111	4.53%	30,259	3.20%	
2018	2,263	120	3,617,034	73	1,671,956	2,310	72,002,829	5.15%	31,170	3.01%	
2019	2,310	141	4,908,365	78	1,805,138	2,373	76,948,959	6.87%	32,427	4.03%	
2020	2,373	126	4,589,556	66	1,555,353	2,433	81,827,236	6.34%	33,632	3.72%	

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**APPENDIX A – MEMBERSHIP INFORMATION**

**GENERAL**

**Count**

Age	Service										Total	
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up		
Under 20	0	0	0	0	0	0	0	0	0	0	0	0
20 to 25	11	9	0	0	0	0	0	0	0	0	0	20
25 to 29	62	99	16	0	0	0	0	0	0	0	0	177
30 to 34	38	138	83	13	0	0	0	0	0	0	0	272
35 to 39	35	110	84	69	22	2	0	0	0	0	0	322
40 to 44	18	78	58	62	54	17	0	0	0	0	0	287
45 to 49	7	53	42	53	40	42	6	2	0	0	0	245
50 to 54	8	29	23	30	38	43	19	4	1	0	0	195
55 to 59	9	11	18	31	42	26	18	9	1	0	0	165
60 to 64	4	10	21	15	29	22	8	3	2	0	0	114
65 to 69	2	0	7	5	6	3	3	0	1	0	0	27
70 & up	0	0	1	0	1	1	0	1	0	0	0	4
<b>Total</b>	<b>194</b>	<b>537</b>	<b>353</b>	<b>278</b>	<b>232</b>	<b>156</b>	<b>54</b>	<b>19</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>1,828</b>

**Average Compensation**

Age	Service										Total	
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up		
Under 20	0	0	0	0	0	0	0	0	0	0	0	0
20 to 25	43,584	40,209	0	0	0	0	0	0	0	0	0	42,065
25 to 29	43,952	46,868	52,463	0	0	0	0	0	0	0	0	46,352
30 to 34	44,969	50,123	62,717	59,278	0	0	0	0	0	0	0	53,683
35 to 39	50,224	51,248	59,298	69,485	69,720	80,458	0	0	0	0	0	58,588
40 to 44	48,274	56,691	63,580	70,828	73,669	68,935	0	0	0	0	0	64,529
45 to 49	39,197	55,486	67,053	79,246	67,348	66,718	76,002	59,893	0	0	0	66,544
50 to 54	57,717	62,927	68,062	65,720	63,770	79,984	79,000	138,053	139,522	0	0	71,174
55 to 59	77,013	63,781	68,878	68,413	64,068	70,326	62,191	79,756	65,830	0	0	67,744
60 to 64	28,720	57,743	64,822	76,694	62,043	69,561	86,991	98,147	55,763	0	0	66,978
65 to 69	118,716	0	101,828	74,631	54,162	69,384	48,769	0	92,764	0	0	77,614
70 & up	0	0	37,855	0	52,134	46,060	0	56,106	0	0	0	48,039
<b>Total</b>	<b>48,050</b>	<b>52,184</b>	<b>63,589</b>	<b>71,124</b>	<b>66,794</b>	<b>71,713</b>	<b>72,568</b>	<b>91,598</b>	<b>81,928</b>	<b>0</b>	<b>0</b>	<b>61,442</b>

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**APPENDIX A – MEMBERSHIP INFORMATION**

**SAFETY**

**Count**

Age	Service										Total	
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up		
Under 20	0	0	0	0	0	0	0	0	0	0	0	0
20 to 25	12	6	0	0	0	0	0	0	0	0	0	18
25 to 29	10	34	8	0	0	0	0	0	0	0	0	52
30 to 34	3	22	18	7	0	0	0	0	0	0	0	50
35 to 39	4	14	12	34	8	0	0	0	0	0	0	72
40 to 44	0	5	2	20	22	4	0	1	0	0	0	54
45 to 49	1	5	3	8	10	8	0	1	0	0	0	36
50 to 54	1	0	2	2	7	9	3	0	0	0	0	24
55 to 59	0	2	1	2	1	2	1	2	0	0	0	11
60 to 64	0	1	1	1	0	0	0	0	0	0	1	4
65 to 69	0	0	0	0	0	0	0	0	0	0	0	0
70 & up	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>31</b>	<b>89</b>	<b>47</b>	<b>74</b>	<b>48</b>	<b>23</b>	<b>4</b>	<b>4</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>321</b>

**Average Compensation**

Age	Service										Total	
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up		
Under 20	0	0	0	0	0	0	0	0	0	0	0	0
20 to 25	48,968	46,594	0	0	0	0	0	0	0	0	0	48,177
25 to 29	42,831	58,439	68,739	0	0	0	0	0	0	0	0	57,022
30 to 34	45,843	69,692	65,883	83,614	0	0	0	0	0	0	0	68,839
35 to 39	42,078	60,655	69,914	82,262	72,865	0	0	0	0	0	0	72,726
40 to 44	0	69,406	86,940	74,263	76,838	124,571	0	83,782	0	0	0	79,234
45 to 49	76,035	73,519	68,780	79,549	75,908	94,917	0	166,350	0	0	0	82,531
50 to 54	83,782	0	75,454	63,499	69,671	78,659	87,782	0	0	0	0	75,861
55 to 59	0	98,387	60,052	62,835	64,222	74,437	105,202	82,486	0	0	0	78,706
60 to 64	0	114,946	136,294	63,018	0	0	0	0	0	221,002	0	133,815
65 to 69	0	0	0	0	0	0	0	0	0	0	0	0
70 & up	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>47,793</b>	<b>63,767</b>	<b>70,260</b>	<b>78,642</b>	<b>74,674</b>	<b>91,932</b>	<b>92,137</b>	<b>103,776</b>	<b>0</b>	<b>221,002</b>	<b>0</b>	<b>71,595</b>

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**APPENDIX A – MEMBERSHIP INFORMATION**

Current Age	Service Retired Benefits					
	General		Safety		Total	
	Number	Annual Average Benefit	Number	Annual Average Benefit	Number	Annual Average Benefit
0-24	0	\$0	0	\$0	0	\$0
25-29	0	\$0	0	\$0	0	\$0
30-34	0	\$0	0	\$0	0	\$0
35-39	0	\$0	0	\$0	0	\$0
40-44	0	\$0	1	\$38,588	1	\$38,588
45-49	0	\$0	4	\$50,701	4	\$50,701
50-54	18	\$32,643	20	\$64,018	38	\$49,157
55-59	132	\$35,011	38	\$54,762	170	\$39,426
60-64	281	\$36,761	41	\$46,573	322	\$38,011
65-69	386	\$38,833	36	\$48,281	422	\$39,639
70-74	380	\$38,377	43	\$46,218	423	\$39,174
75-79	262	\$30,955	18	\$44,630	280	\$31,834
80-84	127	\$27,596	9	\$43,816	136	\$28,669
85-89	87	\$23,825	3	\$49,765	90	\$24,689
90-94	21	\$27,502	2	\$44,543	23	\$28,984
95+	13	\$17,826	0	\$0	13	\$17,826
<b>All Ages</b>	<b>1,707</b>	<b>\$34,920</b>	<b>215</b>	<b>\$49,646</b>	<b>1,922</b>	<b>\$36,567</b>

Current Age	Duty Disabled Benefits					
	General		Safety		Total	
	Number	Annual Average Benefit	Number	Annual Average Benefit	Number	Annual Average Benefit
0-24	0	\$0	0	\$0	0	\$0
25-29	0	\$0	0	\$0	0	\$0
30-34	1	\$26,458	0	\$0	1	\$26,458
35-39	0	\$0	2	\$31,553	2	\$31,553
40-44	1	\$27,030	7	\$21,285	8	\$22,003
45-49	1	\$46,746	9	\$32,619	10	\$34,031
50-54	2	\$26,602	3	\$56,950	5	\$44,811
55-59	4	\$41,686	14	\$42,855	18	\$42,595
60-64	8	\$25,237	10	\$22,324	18	\$23,619
65-69	8	\$24,051	19	\$31,140	27	\$29,039
70-74	12	\$29,028	13	\$47,678	25	\$38,726
75-79	9	\$27,942	9	\$35,555	18	\$31,748
80-84	1	\$18,828	5	\$33,754	6	\$31,266
85-89	2	\$18,776	0	\$0	2	\$18,776
90-94	2	\$25,608	0	\$0	2	\$25,608
95+	0	\$0	0	\$0	0	\$0
<b>All Ages</b>	<b>51</b>	<b>\$27,880</b>	<b>91</b>	<b>\$35,164</b>	<b>142</b>	<b>\$32,548</b>

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
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**APPENDIX A – MEMBERSHIP INFORMATION**

Current Age	Non-Duty Disabled Benefits					
	<u>General</u>		<u>Safety</u>		<u>Total</u>	
	Number	Annual Average Benefit	Number	Annual Average Benefit	Number	Annual Average Benefit
0-24	0	\$0	0	\$0	0	\$0
25-20	0	\$0	0	\$0	0	\$0
30-34	0	\$0	0	\$0	0	\$0
35-39	1	\$14,887	0	\$0	1	\$14,887
40-44	0	\$0	0	\$0	0	\$0
45-49	3	\$12,204	0	\$0	3	\$12,204
50-54	2	\$13,482	1	\$31,473	3	\$19,479
55-59	3	\$23,495	0	\$0	3	\$23,495
60-64	5	\$16,292	0	\$0	5	\$16,292
65-69	8	\$16,685	0	\$0	8	\$16,685
70-74	6	\$15,990	2	\$18,888	8	\$16,715
75-79	7	\$14,409	0	\$0	7	\$14,409
80-84	6	\$20,507	0	\$0	6	\$20,507
85-89	3	\$19,257	0	\$0	3	\$19,257
90-94	1	\$1,663	0	\$0	1	\$1,663
95+	0	\$0	0	\$0	0	\$0
<b>All Ages</b>	<b>45</b>	<b>\$16,515</b>	<b>3</b>	<b>\$23,083</b>	<b>48</b>	<b>\$16,925</b>

Current Age	Surviving Beneficiary & QDRO Benefits					
	<u>General</u>		<u>Safety</u>		<u>Total</u>	
	Number	Annual Average Benefit	Number	Annual Average Benefit	Number	Annual Average Benefit
0-24	1	\$14,577	0	\$0	1	\$14,577
25-29	0	\$0	0	\$0	0	\$0
30-34	1	\$1,473	0	\$0	1	\$1,473
35-39	1	\$12,809	1	\$36,028	2	\$24,419
40-44	2	\$25,901	1	\$47,100	3	\$32,967
45-49	5	\$3,419	1	\$8,311	6	\$4,234
50-54	4	\$10,486	1	\$12,826	5	\$10,954
55-59	17	\$10,275	9	\$10,613	26	\$10,392
60-64	21	\$15,243	5	\$23,290	26	\$16,791
65-69	22	\$15,608	6	\$36,787	28	\$20,147
70-74	37	\$19,648	19	\$32,748	56	\$24,093
75-79	33	\$19,182	9	\$31,005	42	\$21,715
80-84	51	\$14,515	8	\$24,289	59	\$15,841
85-89	32	\$20,260	7	\$33,951	39	\$22,717
90-94	16	\$22,702	1	\$28,167	17	\$23,023
95+	10	\$12,257	0	\$0	10	\$12,257
<b>All Ages</b>	<b>253</b>	<b>\$16,649</b>	<b>68</b>	<b>\$27,917</b>	<b>321</b>	<b>\$19,036</b>

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**APPENDIX B – STATEMENT OF CURRENT ACTUARIAL  
ASSUMPTIONS AND METHODS**

The assumptions and methods used in the actuarial valuation reflect the results of an experience study performed by Cheiron covering the period from July 1, 2016 through June 30, 2019 and adopted by the Board at their December 12, 2019 meeting. More details on the rationale for the demographic and economic assumptions can be found in the experience analysis dated February 2020.

**A. Actuarial Assumptions**

**1. Rate of Return**

Assets are assumed to earn 7.00% net of investment expenses.

**2. Administrative Expenses**

Administrative expenses are assumed to be \$2.428 million for the next year to be allocated between the employer and employees based on each group's share of the non-expense related contributions. Administrative expenses in future years are expected to increase with the Consumer Price Index (CPI).

**3. Cost of Living**

The cost of living as measured by the Consumer Price Index (CPI) will increase at the rate of 2.50% per year.

**4. Post Retirement COLA**

Benefits are assumed to increase after retirement at the rate of 2.40% per year for Tier 1 members.

**5. Increases in Pay**

Wage inflation component: 2.75%

Additional longevity and promotion component:

Years of Service	General	Safety	Years of Service	General	Safety
0	7.00%	8.50%	11	2.50%	1.00%
1	6.50%	7.50%	12	2.25%	1.00%
2	6.00%	6.50%	13	2.00%	1.00%
3	5.50%	5.50%	14	1.85%	1.00%
4	5.00%	4.50%	15	1.70%	1.00%
5	4.50%	3.50%	16	1.55%	1.00%
6	4.00%	3.00%	17	1.40%	1.00%
7	3.50%	2.50%	18	1.25%	1.00%
8	3.25%	2.00%	19	1.10%	1.00%
9	3.00%	1.50%	20+	1.00%	1.00%
10	2.75%	1.00%			

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**APPENDIX B – STATEMENT OF CURRENT ACTUARIAL  
ASSUMPTIONS AND METHODS**

**6. Final Average Compensation Load**

None

**7. Family Composition**

55% of female General members, 75% of male General members and 85% of Safety members are assumed to be married at retirement. Male members are assumed to be three years older than their spouses are and female members are assumed to be two years younger than their spouses are.

**8. Rates of Mortality**

Mortality rates for actives, retirees, disabled members, beneficiaries, terminated vesteds, and reciprocal transfers are based on the sex-distinct employee and annuitant mortality tables as described below. Future mortality improvements are reflected by applying the SOA MP-2019 projection scale on a generational basis from the base year of 2009 for the CalPERS tables and the base year of 2010 for the Below Median Safety member Pub-2010 tables.

Category	Base Mortality Table	
	General	Safety
Healthy Annuitant	CalPERS 2009 Healthy Annuitant Mortality Table	1.05 times the 2010 Public Safety Below Median Mortality Table for Healthy Retirees
Duty Disabled Annuitants	CalPERS 2009 Industrial Disability Mortality Table	CalPERS 2009 Industrial Disability Mortality Table
Non-Duty Disabled Annuitant	CalPERS 2009 Non-Industrial Disability Mortality Table	CalPERS 2009 Non-Industrial Disability Mortality Table
Active Employees	CalPERS 2009 Non-Industrial Employees Mortality Table	2010 Public Safety Below Median Mortality Table for Healthy Employees
Actives, Line of Duty (Safety only)	N/A	CalPERS 2009 Industrial Employees Mortality Table

For determining mortality rates for future disabled members, 50% of future General disabilities are assumed to be duty-related and 50% are assumed to be non-duty related. 100% of future Safety disabilities are assumed to be duty-related.

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**APPENDIX B – STATEMENT OF CURRENT ACTUARIAL  
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**9. Rates of Termination**

Sample rates of termination<sup>1</sup> are shown in the following table.

Years of Service	General Male	General Female	Safety
0	20.0%	20.0%	21.0%
5	8.2%	8.2%	6.5%
10	4.5%	4.5%	4.75%
15	4.5%	3.0%	3.5%
20	4.5%	3.0%	0.0%
25	4.5%	3.0%	0.0%
30	0.0%	0.0%	0.0%

<sup>1</sup> Termination rates do not apply once a member is eligible for retirement.

There are three types of terminations: withdrawals, reciprocal transfers, and vested terminations. Rates of withdrawal apply to active Members who terminate their employment and withdraw their member contributions, forfeiting entitlement to future Plan benefits. Rates of reciprocal transfer are for members who leave their member contributions on deposit and engage in employment covered by a pension plan with a reciprocal relationship with MCERA. Finally, rates of vested termination apply to active Members who terminate their employment and leave their member contributions on deposit with the Plan.

The table below shows the percentages of total terminations falling into these categories.

	Years of Service						
	General				Safety		
	0 – 4	5 – 9	10-14	15+	0 – 4	5-9	10+
Withdrawals	92.5%	30.0%	20.0%	5.0%	92.5%	25.0%	15.0%
Transfers	7.5%	35.0%	40.0%	47.5%	7.5%	50.0%	56.7%
Vested Terminations	0.0%	35.0%	40.0%	47.5%	0.0%	25.0%	28.3%

Vested terminated General Members are assumed to begin receiving benefits at age 60; Vested terminated Safety Members are assumed to begin receiving benefits at age 51. Future reciprocal transfer General members are assumed to begin receiving benefits at age 61; future reciprocal transfer Safety members are assumed to begin receiving benefits at age 57. Current reciprocal transfer members are assumed to begin receiving benefits based on the probabilities of retirement applied to the active members.

Future reciprocal transfers' pay growth is assumed to be 3.75% while employed by a reciprocal employer. Current reciprocal transfers' pay growth is assumed to increase according to the assumptions applied to the active members until the assumed retirement age.

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**APPENDIX B – STATEMENT OF CURRENT ACTUARIAL  
ASSUMPTIONS AND METHODS**

**10. Rates of Retirement**

Rates of retirement are based on age and service according to the following table.

General			Safety		
Years of Service			Years of Service		
Age	10 – 29	30+	Age	10 – 19	20+
50	10.00%	20.00%	40	0.00%	1.50%
51	10.00%	20.00%	41	0.00%	1.50%
52	10.00%	20.00%	42	0.00%	1.50%
53	10.00%	20.00%	43	0.00%	1.50%
54	10.00%	20.00%	44	0.00%	1.50%
55	10.00%	25.00%	45	0.00%	1.50%
56	10.00%	25.00%	46	0.00%	5.00%
57	10.00%	30.00%	47	0.00%	10.00%
58	15.00%	35.00%	48	0.00%	15.00%
59	20.00%	35.00%	49	0.00%	20.00%
60	20.00%	35.00%	50	15.00%	20.00%
61	20.00%	35.00%	51	7.50%	20.00%
62	20.00%	35.00%	52	7.50%	20.00%
63	20.00%	35.00%	53	7.50%	20.00%
64	20.00%	35.00%	54	20.00%	20.00%
65	35.00%	35.00%	55	30.00%	30.00%
66	35.00%	35.00%	56	30.00%	30.00%
67	35.00%	35.00%	57	30.00%	30.00%
68	35.00%	35.00%	58	30.00%	30.00%
69	35.00%	35.00%	59	30.00%	30.00%
70+	100.00%	100.00%	60	100.00%	100.00%

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**APPENDIX B – STATEMENT OF CURRENT ACTUARIAL  
ASSUMPTIONS AND METHODS**

**11. Rates of Disability**

Sample disability rates of active participants are provided in the table.

Age	General		Safety	
	Service-Connected	Non-Service-Connected <sup>1</sup>	Service-Connected	Non-Service-Connected <sup>1</sup>
20	0.0165%	0.0165%	0.0000%	0.0050%
25	0.0165%	0.0165%	0.0825%	0.0050%
30	0.0190%	0.0190%	0.2380%	0.0100%
35	0.0390%	0.0390%	0.3940%	0.0150%
40	0.0806%	0.0806%	0.5500%	0.0200%
45	0.1447%	0.1447%	0.7060%	0.0250%
50	0.1829%	0.1829%	0.9230%	0.0400%
55	0.1442%	0.1442%	2.3925%	0.0650%
60	0.1196%	0.1196%	3.0120%	0.1000%
65	0.1196%	0.1196%	3.6385%	0.1000%

<sup>1</sup> Rates are applied once members have at least five years of service.

**12. Member Contribution Balance Crediting Rate**

5.00% (2.00% less than the assumed rate of return of 7.00%).

**13. Changes Since Last Valuation**

The Final Average Compensation Load was removed to account for the California State Supreme Court Decision removing pay elements, previously included under the Ventura Settlement, from pensionable compensation.

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**APPENDIX B – STATEMENT OF CURRENT ACTUARIAL  
ASSUMPTIONS AND METHODS**

**B. Actuarial Methods**

**1. Actuarial Funding Method**

The Entry Age Normal actuarial funding method was used for active employees, whereby the normal cost is computed as the level annual percentage of pay required to fund the retirement benefits between each Member's date of hire and assumed retirement. The Actuarial Liability is the difference between the Present Value of Future Benefits and the Present Value of Future Normal Cost. The Unfunded Actuarial Liability is the difference between the Actuarial Liability and the Actuarial Value of Assets.

The UAL (or Surplus Funding) is amortized as a percentage of the projected salaries of present and future members of MCERA.

- Effective with the June 30, 2013 valuation, the UAL as of June 30, 2013 is amortized over a closed 16-year period. Effective with the June 30, 2019 valuation, 15% of the outstanding balance as of June 30, 2019 of the June 30, 2013 UAL amortization base is carved out as a separate base and amortized over a closed 14-year period as a level percentage of payroll. The remaining 85% is amortized over a closed 14-year period, with 10 years of level payments as a percentage of payroll, and a four-year ramp down at the end of the period.
- Effective with the June 30, 2014 valuation, any new sources of UAL due to actuarial gains and losses or method changes is amortized over a closed 24-year period, with five-year ramp up period at the beginning of the period, a four-year ramp down at the end of the period, and 15 years of level payments as a percentage of payroll.
- Assumption changes will be amortized over a closed 22-year period, with a three-year ramp up period, two-year ramp down period, and 17 years of level payments as a percentage of payroll. This method is a type of direct rate smoothing method.

**2. Asset Valuation Method**

As of June 30, 2014, the Market Value of Assets is used to determine the System's UAL.

**3. Changes Since Last Valuation**

The change in the amortization policy to carve out and re-amortize a portion of the 2013 UAL was made at a Board meeting on September 10, 2020, after the original June 30, 2019 actuarial valuation report was adopted in February 2020.

MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020

APPENDIX C – SUMMARY OF PLAN PROVISIONS

**A. Definitions**

**Compensation:** Compensation means the cash remuneration for services paid by the employer. It includes base pay and certain differential, incentive, and special pay allowances defined by the Board of Retirement. Overtime is excluded, with the exception of overtime paid under the Fair Labor Standards Act that is regular and recurring.

PEPRA: For members joining the Plan on and after January 1, 2013 (Tier 4 Members), only pensionable compensation up to the Social Security Taxable Wage Base (\$113,700 for 2013) will count for computing Plan benefits and employee contributions and employer contributions for those participating in Social Security. For those not participating in Social Security, the compensation cap is 120% of the Taxable Wage Base (\$136,440 for 2013.) In future years, the cap on pensionable compensation will increase with the increase in the CPI-U, rather than the increase in the Taxable Wage Base. In addition, it is possible that some sources of compensation, such as any payments deemed to be terminal or special pays, may be excluded from benefit and contribution computations for Tier 4 Members.

**Credited Service:** In general, Credited Service is earned for the period during which Member Contributions are paid. One year of service credit is earned for each 2,080 hours worked (not including overtime), not to exceed one year of service per year.

Temporary service for which the Member was not credited, or service for which the Member withdrew his or her Member Contributions, may be purchased by paying or repaying the Member Contributions with interest. The categories of services for which credit may be purchased are listed below:

**Prior Part-Time Service:** If a Member worked for an employer within the Association on a part-time or 'extra help' basis before his membership in the Retirement Association, the Member may buyback this service.

**Intermittent Part-Time Service.**

**Prior Full-Time Service:** Member may buyback full-time service that may have been cashed out upon termination.

**Leave of Absence (Including Absence with State Disability or Worker's Compensation):** No unpaid leave of absence can be bought back except for absence due to medical reasons up to one year.

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**APPENDIX C – SUMMARY OF PLAN PROVISIONS**

**Public Service:** Members may purchase service credit for prior service in the following public agencies: Federal Civil Service, Military Service, and some public employers in California. This service is only eligible for purchase when the Board of Supervisors opens the window for purchase.

**Military Time:** Members who resign or obtain a leave of absence to enter the military may purchase service credit for the period of military service. Members must re-enter employment within one year of terminating military service to be eligible to purchase service.

At retirement, Members have the option to convert 100% of sick leave time into retirement years of service credit. Unrepresented Management and Unit 7 will instead have some or all of their sick leave contributed to the Post Employment Health Plan.

**Final**

**Compensation:** For Tier 1 Members, Final Compensation means the highest average Compensation earned during any 26 consecutive pay periods of the Member's employment. For Tier 2 and Tier 3 Members, Final Compensation means the highest average Compensation earned during any 78 consecutive pay periods of the Member's employment.

In the prior valuation, the following compensation was included in the Final Compensation computation for some members:

- Loyalty Bonus
- Up to 160 hours of vacation payoff
- Sick Leave sold back during 25<sup>th</sup> pay period
- Vacation sold back during 25<sup>th</sup> pay period (management only)

The vacation payoff amounts were not included in the Final Compensation computation for members of Tier 3R (Courts Tier 2R) or Tier 4.

Subsequent to the valuation date, the California State Supreme Court issued a decision that will result in the removal these pay elements from Final Compensation for all members.

For Tier 4 Members, highest average Compensation will be based on the highest 36 consecutive months of the Member's employment.

**General Member:** Any Member who is not a Safety Member is a General Member.

**Public Service:** During designated periods of time authorized by the County Board of Supervisors, Members may elect to purchase Public Service for time spent while employed in another recognized public agency. The public agency must have a reciprocal agreement with the Plan or be one of several

MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
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APPENDIX C – SUMMARY OF PLAN PROVISIONS

specified municipalities, counties, special districts, or State and Federal agencies. Public Service cannot be purchased if it is used for eligibility for another pension.

The cost to purchase Public Service is twice the Member Contributions and interest applicable for the period of time purchased. Public Service is used to compute benefits but does not count toward eligibility for benefits or vesting.

Safety Member: Any sworn Member engaged in law enforcement or as a probation officer is a Safety Member.

**B. Membership**

Eligibility: All full-time and variable-shift permanent employees of Merced County and other participating employers become Members on their first date of service. Membership is mandatory; only elected officials and those entering employment at age 60 or older who are not reciprocal members of another system may choose not to participate.

PEPRA: A New Member is any Member joining the Plan for the first time on or after January 1, 2013. Employees who transfer from and are eligible for reciprocity with another public employer will not be Tier 4 Members if their service in the reciprocal system was under a pre-PEPRA tier. Employees who were Members of MCERA prior to January 1, 2013, experienced a break in service of more than six months, and then were re-employed by a *different* MCERA-participating employer on or after January 1, 2013 will be considered Tier 4 Members for all subsequent service.

Member

Contributions: Each Member contributes a percentage of Compensation to the Plan through a pre-tax payroll deduction. The percentage contributed depends on the Member's age upon joining the Plan. Complete Rates are shown in Appendix D.

Members covered by Social Security have their contributions reduced by one-third on the first \$161.54 of biweekly Compensation. General Members who joined the Plan prior to March 7, 1973, and who have earned 30 years of Credited Service do not contribute; Safety Members do not contribute after earning 30 years of Credited Service.

PEPRA: Tier 4 Members must contribute half of the normal cost of the Plan. Contributions for these Members will be based on the Normal Cost associated with their benefits; General and Safety members will pay different Rates.

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Tier 4 Members will pay a single contribution rate, not a rate based on entry age. All Tier 4 Members are expected to continue contributing after earning 30 years of service.

Interest is credited semi-annually to each Member's accumulated contributions. The crediting rate is set by the Board, and will fluctuate between zero and two percent less than the assumed rate of return (currently 7.00% – 2.00% = 5.00%), based in part on the investment earnings during that period.

**C. Service Retirement**

Eligibility: Tier 1 General Members are eligible to retire at age 50 if they have earned 10 years of Credited Service. Tier 1 General Members hired prior to December 31, 1978, may retire upon reaching age 65 with no service requirement.

Tier 2 and Tier 3 General Members are eligible to retire at age 55 if they have earned 10 years of Credited Service or upon reaching age 70 with no service requirement.

Alternatively, all Tier 1, 2, and 3 General Members are eligible to retire at any age after having earned 30 years of Credited Service, or upon reaching age 70 with no service requirement.

Safety Members are eligible to retire at age 50 if they have earned 10 years of Credited Service. Alternatively, Safety Members are eligible to retire at any age after having earned 20 years of Credited Service, or upon reaching age 70 with no service requirement. All Tier 1, 2, and 3 Safety Members hired prior to December 31, 1978, may retire upon reaching age 65 with no service requirement.

PEPRA: Tier 4 General Members are eligible to retire upon attaining age 52 and completing five or more years of service. Tier 4 Safety Members are eligible to retire upon attaining age 50 and completing five or more years of service. Tier 4 Members are eligible to retire, regardless of service, after attaining age 70.

Benefit Amount: The Service Retirement Benefit payable to the Member is equal to the Member's Final Compensation multiplied by credited service, the benefit factor from Table 1, and the age factor from Table 2 corresponding to the Member's code section. The appropriate code sections for each group are listed in Table 1. For General Members in the Merced County Cemetery District and those in Deferred Inactive Reciprocity status prior to March 15, 2005, benefits are calculated using the formula in Government Code Section 31676.11 or 31676.1.

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For Tiers 1, 2, and 3, the percentage of Final Compensation may not exceed 100%. For those members integrated with Social Security, Retirement Benefits based on the first \$350 of monthly Final Average Compensation are reduced by one-third.

**Table 1:**

Group	Open or Closed	FAP	Max COLA	Code Section	Description	Top Retirement Factor Age	Benefit Factor
General Tier 1	Closed	1	3	31676.17	3% at 60	60	2.00%
General Tier 2	Closed*	3	0	31676.17	3% at 60	60	2.00%
General Tier 2 (Cemetery)	Closed*	3	0	31676.11	2% at 58 1/2	65	1.67%
General Tier 3	Closed*	3	0	31676.1	2.43% at 65	65	1.67%
General Tier 4	Open	3	0	7522.20(a)	PEPRA	67	1.00%
Safety Tier 1	Closed	1	3	31664.1	3% at 50	50	3.00%
Safety Tier 2	Closed	3	0	31664.1	3% at 50	50	3.00%
Safety Tier 3	Closed*	3	0	31664	2% at 50	55	2.00%
Safety Tier 4	Open	3	0	7522.25(d)	PEPRA	57	1.00%

\* Open for reciprocal members.

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**Table 2:**

Age	General 3% @ 60 CERL: 31676.17	General 2% @ 58 1/2 CERL: 31676.11	General 2.43% @ 65 CERL: 31676.1	General PEPRA GC: 7522.20(a)	Safety 3% @ 50 CERL: 31664.1	Safety 2% @ 50 CERL: 31664	Safety PEPRA GC: 7522.25(d)
41	N/A	N/A	N/A	N/A	0.6258	0.6258	N/A
42	N/A	N/A	N/A	N/A	0.6625	0.6625	N/A
43	N/A	N/A	N/A	N/A	0.7004	0.7004	N/A
44	N/A	N/A	N/A	N/A	0.7397	0.7397	N/A
45	N/A	N/A	N/A	N/A	0.7805	0.7805	N/A
46	N/A	N/A	N/A	N/A	0.8226	0.8226	N/A
47	N/A	N/A	N/A	N/A	0.8678	0.8678	N/A
48	N/A	N/A	N/A	N/A	0.9085	0.9085	N/A
49	N/A	N/A	N/A	N/A	0.9522	0.9522	N/A
50	1.0000	0.7454	0.7091	N/A	1.0000	1.0000	2.0000
51	1.0500	0.7882	0.7457	N/A	1.0000	1.0516	2.1000
52	1.1000	0.8346	0.7816	1.0000	1.0000	1.1078	2.2000
53	1.1500	0.8850	0.8181	1.1000	1.0000	1.1692	2.3000
54	1.2000	0.9399	0.8556	1.2000	1.0000	1.2366	2.4000
55	1.2500	1.0000	0.8954	1.3000	1.0000	1.3099	2.5000
56	1.3000	1.0447	0.9382	1.4000	1.0000	1.3099	2.6000
57	1.3500	1.1048	0.9846	1.5000	1.0000	1.3099	2.7000
58	1.4000	1.1686	1.0350	1.6000	1.0000	1.3099	2.7000
59	1.4500	1.2365	1.0899	1.7000	1.0000	1.3099	2.7000
60	1.5000	1.3093	1.1500	1.8000	1.0000	1.3099	2.7000
61	1.5000	1.3608	1.1947	1.9000	1.0000	1.3099	2.7000
62	1.5000	1.4123	1.2548	2.0000	1.0000	1.3099	2.7000
63	1.5000	1.4638	1.3186	2.1000	1.0000	1.3099	2.7000
64	1.5000	1.5153	1.3865	2.2000	1.0000	1.3099	2.7000
65	1.5000	1.5668	1.4593	2.3000	1.0000	1.3099	2.7000
66	1.5000	1.5668	1.4593	2.4000	1.0000	1.3099	2.7000
67	1.5000	1.5668	1.4593	2.5000	1.0000	1.3099	2.7000

Form of Benefit: The Service Retirement Benefit will be paid monthly beginning at retirement and for the life of the Member. If the member selects the unmodified benefit form, in the event of the Member's death 60% of the benefit will continue for the life of the Member's eligible spouse, domestic partner, or to the age of majority of dependent minor children if there is no eligible spouse or domestic partner. To be eligible to receive this benefit, a surviving spouse or domestic partner must be married or state-registered at least one year prior to retirement. In the event there is no eligible surviving spouse, domestic partner, or minor children, any unpaid remainder of the Member's accumulated contributions will be paid to the Member's designated beneficiary.

Actuarially equivalent optional benefit forms are also available.

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Annually on April 1, Tier 1 benefits are increased to reflect increases in the CPI for the San Francisco Bay Area. Annual increases may not exceed 3%, but CPI increases in excess of 3% are “banked” and used for future increases when the CPI increases by less than 3%.

A lump sum benefit of \$3,000 will be payable upon the death of a retired member.

**D. Service-Connected Disability**

**Eligibility:** Members are eligible for Service-Connected Disability Retirement benefits at any age if they are permanently disabled as a result of injuries or illness sustained in the line of duty.

**Benefit Amount:** The Service-Connected Disability Retirement Benefit payable to Members is equal to the greater of 50% of their Final Compensation or – if the Member is eligible at disability for a Service Retirement Benefit – the Service Retirement Benefit accrued on the date of disability.

Members who return to work at a different position with lower pay may receive a Supplemental Disability Allowance that, when added to their new pay, may bring the Member’s total income up to the current pay for his or her position at the time of disability. The Supplemental Disability Allowance may not exceed the Service-Connected Disability Retirement benefit.

**Form of Benefit:** The Service-Connected Disability Retirement Benefit will be paid monthly beginning at the effective date of disability retirement and for the life of the Member; in the event of the Member’s death, 100% of the benefit will continue for the life of the Member’s eligible spouse, domestic partner, or to the age of majority of dependent minor children if there is no eligible spouse or domestic partner. In the event there is no eligible surviving spouse, domestic partner, or minor children, any unpaid remainder of the Member’s accumulated contributions will be paid to the Member’s designated beneficiary.

Actuarially equivalent optional benefit forms are also available.

Annually on April 1, Tier 1 benefits are increased to reflect increases in the CPI for the San Francisco Bay Area. Annual increases may not exceed 3%, but CPI increases in excess of 3% are “banked” and used for future increases when the CPI increases by less than 3%.

A lump sum benefit of \$3,000 will be payable upon the death of a retired member.

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**E. Non Service-Connected Disability**

Eligibility: Members are eligible for Non Service-Connected Disability Retirement benefits if they are permanently disabled at any age after earning five years of Credited Service or after becoming eligible for a deferred vested benefit.

Benefit Amount: The Non Service-Connected Disability Retirement Benefit payable to General Members is equal to the greatest of:

- 1.5% of Final Compensation at disability multiplied by years of Credited Service at disability,
- 1.5% of Final Compensation at disability multiplied by years of Credited Service projected to age 65, but not to exceed one-third of Final Compensation, or
- If the Member is eligible at disability for a Service Retirement Benefit, the Service Retirement Benefit accrued on the date of disability.

The Non Service-Connected Disability Retirement Benefit payable to Safety Members is equal to the greatest of:

- 1.8% of Final Compensation at disability multiplied by years of Credited Service at disability,
- 1.8% of Final Compensation at disability multiplied by years of Credited Service projected to age 55, but not to exceed one-third of Final Compensation, or
- If the Member is eligible at disability for a Service Retirement Benefit, the Service Retirement Benefit accrued on the date of disability.

Members who return to work at a different position with lower pay may receive a Supplemental Disability Allowance that, when added to their new pay, may bring the Member's total income up to the current pay for his or her position at the time of disability. The Supplemental Disability Allowance may not exceed the Non Service-Connected Disability Retirement benefit.

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**Form of Benefit:** The Non Service-Connected Disability Retirement Benefit will be paid monthly beginning at the effective date of disability retirement, and for the life of the Member; in the event of the Member's death, 60% of the benefit will continue for the life of the Member's eligible spouse, domestic partner, or to the age of majority of dependent minor children if there is no spouse. In the event there is no eligible surviving spouse, domestic partner, or minor children, any unpaid remainder of the Member's accumulated contributions will be paid to the Member's designated beneficiary.

Actuarially equivalent optional benefit forms are also available.

Annually on April 1, Tier 1 benefits are increased to reflect increases in the CPI for the San Francisco Bay Area. Annual increases may not exceed 3%, but CPI increases in excess of 3% are "banked" and used for future increases when the CPI increases by less than 3%.

A lump sum benefit of \$3,000 will be payable upon the death of a retired member.

**F. Service-Connected Death**

**Eligibility:** A Member's survivors are eligible to receive Service-Connected Death benefits if the Member's death resulted from injury or illness sustained in connection with the Member's duties.

**Benefit Amount:** The Service-Connected Death benefit payable to an eligible surviving spouse, domestic partner, or minor children will be 50% of the Member's Final Compensation.

Furthermore, for Safety Members only, there will be an additional lump sum benefit of 12 months of pay at the time of death. An additional benefit of 25% of the above basic benefit will be paid for the first minor child, 15% for the second, and 10% for the third.

**Form of Benefit:** The Service-Connected Death Benefit will be paid monthly beginning at the Member's death and for the life of the eligible surviving spouse, domestic partner, or to the age of majority of dependent minor children if there is no eligible surviving spouse or domestic partner.

Annually on April 1, Tier 1 benefits are increased to reflect increases in the CPI for the San Francisco Bay Area. Annual increases may not exceed 3%, but CPI increases in excess of 3% are "banked" and used for future increases when the CPI increases by less than 3%.

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**G. Non Service-Connected Death**

Eligibility: A Member's survivors are eligible to receive Non Service-Connected Death benefits if the Member's death arose from causes unrelated to the Member's duties.

Benefit Amount: In the event the Member had earned fewer than five years of Credited Service and has no or insufficient reciprocity service from another system, the Non Service-Connected Death benefit will be a refund of the Member's accumulated contributions with interest plus a payment of one month of Final Compensation for each year of Credited Service, not to exceed six months.

In the event the Member had earned five or more years of Credited Service, the Non Service-Connected Death benefit payable to an eligible surviving spouse, domestic partner, or minor children will be 60% of the amount the Member would have received as a Non Service-Connected Disability Retirement Benefit on the date of death.

Form of Benefit: For Members who had earned fewer than five years of Credited Service at death, the benefit will be paid as a lump sum.

For Members with five or more years of Credited Service, the Non Service-Connected Death Benefit will be paid monthly beginning at the Member's death and for the life of the eligible surviving spouse, domestic partner, or to the age of majority of dependent minor children if there is no eligible spouse or domestic partner.

Annually on April 1, Tier 1 benefits are increased to reflect increases in the CPI for the San Francisco Bay Area. Annual increases may not exceed 3%, but CPI increases in excess of 3% are "banked" and used for future increases when the CPI increases by less than 3%.

**H. Withdrawal Benefit**

Eligibility: A Member is eligible for a Withdrawal Benefit upon termination of employment.

Benefit Amount: The Withdrawal Benefit is a refund of the Member's accumulated Contributions with interest. Upon receipt of the Withdrawal Benefit, the Member forfeits all Credited Service.

Form of Benefit: The Withdrawal Benefit is paid in a lump sum upon election by the Member.

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**I. Deferred Vested Benefit**

**Eligibility:** A Member is eligible for a Deferred Vested Benefit upon termination of employment after earning five years of Credited Service, including reciprocity service from another system. The Member must leave his or her Member Contributions with interest on deposit with the Plan.

**Benefit Amount:** The Deferred Vested Benefit is computed in the same manner as the Service Retirement Benefit, but it is based on Credited Service and Final Compensation on the date of termination.

**Form of Benefit:** The Deferred Vested Benefit will be paid monthly beginning at retirement and for the life of the Member; in the event of the Member's death, 60% of the benefit will continue for the life of the Member's eligible surviving spouse, domestic partner, or to the age of majority of dependent minor children if there is no eligible surviving spouse or domestic partner. In the event there is no eligible surviving spouse, domestic partner, or minor children, any unpaid remainder of the Member's accumulated contributions will be paid to the Member's designated beneficiary.

Actuarially equivalent optional benefit forms are also available.

Annually on April 1, Tier 1 benefits are increased to reflect increases in the CPI for the San Francisco Bay Area. Annual increases may not exceed 3%, but CPI increases in excess of 3% are "banked" and used for future increases when the CPI increases by less than 3%.

A lump sum benefit of \$3,000 will be payable upon the death of a retired member.

**J. Reciprocal Benefit**

**Eligibility:** A Member is eligible for a Reciprocal Benefit upon termination of employment and entry, within a specified period of time, into another retirement system recognized as a reciprocal system by the Plan. In addition, the Member must leave his or her Member Contributions with interest on deposit with the Plan.

**Benefit Amount:** The Reciprocal Benefit is computed in the same manner as the Service Retirement Benefit, but it is based on Credited Service on the date of termination and Final Compensation on the date of retirement; Final Compensation is based on the highest of the Compensation earned under this Plan or the reciprocal plan.

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Form of Benefit: The Reciprocal Benefit will be paid monthly beginning at retirement and for the life of the Member; in the event of the Member's death, 60% of the benefit will continue for the life of the Member's eligible surviving spouse, domestic partner, or to the age of majority of dependent minor children if there is no eligible surviving spouse or domestic partner. In the event there is no eligible surviving spouse, domestic partner, or minor children, any unpaid remainder of the Member's accumulated contributions will be paid to the Member's designated beneficiary.

Actuarially equivalent optional benefit forms are also available.

Annually on April 1, Tier 1 benefits are increased to reflect increases in the CPI for the San Francisco Bay Area. Annual increases may not exceed 3%, but CPI increases in excess of 3% are "banked" and used for future increases when the CPI increases by less than 3%.

A lump sum benefit may be payable upon the death of a retired Member by the last system under which the Member's service was covered.

**K. Changes Since Last Valuation**

Subsequent to the valuation date, the California State Supreme Court issued a decision that affects pay elements that may be included in Final Compensation for all members. As a result, the tiers that were previously created to mirror the current legacy tiers with the exception of excluding these pay elements are no longer needed and have been combined with the current legacy tiers.

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**APPENDIX D – MEMBER CONTRIBUTION RATES**

## **Contribution Rates**

Employee contribution rates vary by member Group and Tier. For some non-PEPRA members, the rates were updated since the issuance of the original valuation report in February 2020, to exclude the additional final average compensation load as a result of a California State Supreme Court decision. For PEPRA members, the rates were also re-computed, in accordance with the requirement that employees pay half of the total normal cost rate from the actuarial valuation. Rates for all members were updated to reflect a change in the administrative expense load (from 2.9% to 3.2%).

### Non-PEPRA Members

- The basic rates are determined based on Government Code Section 31621.8 for General Tier 1 and Tier 2 members (31621.1 for Tier 2 members under benefit section 31676.11), 31621 for General Tier 3 members, and Section 31639.25 for Safety members. The COLA Rates for members in Tier 1 are determined based on 50% of the normal cost associated with the expected COLA benefits, including joint and survivor benefits, determined for each individual entry age.
- The rates are determined based on an interest rate of 7.00% per annum, an average salary increase of 2.75% per year (plus service-based increases for merit/longevity) and the healthy annuitant mortality tables used in the most recent valuation, projected using Projection Scale MP-2019 to 2041. The rates are blended based on a male/female weighting of 30% male / 70% female for General members, and 70% male / 30% female for Safety members.
- Effective with the June 30, 2013 valuation, an administrative expense load was added to the rates. The expense load added is currently 3.2%. This load was determined to account for the employees' share of the assumed administrative expense assumption, assuming the employer and employees would share administrative expenses in proportion to their overall share of the contributions. The load produces an average increase in the employee rates of approximately 0.26% of payroll.
- Effective August 13, 2020, the rates were updated to exclude the additional final average compensation load.

### PEPRA Members

- Employee contribution rates are equal to half of the total normal cost rate from the actuarial valuation, determined separately for General and Safety. Due to the passage of SB13, contribution rates for PEPRA members are not rounded, and will be recomputed each year.
- An administrative expenses load of 3.2% was applied to the PEPRA rates.

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**APPENDIX D – MEMBER CONTRIBUTION RATES**

**Current Year Contribution Rates (General Non-PEPRA):**

Entry Age	Basic		Tier 1 COLA		Total		Tier 2 Basic		Tier 3 Basic	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
16	5.17%	7.75%	1.41%	2.13%	6.58%	9.88%	4.98%	7.47%	3.57%	5.36%
17	5.17%	7.75%	1.41%	2.13%	6.58%	9.88%	4.98%	7.47%	3.57%	5.36%
18	5.17%	7.75%	1.41%	2.13%	6.58%	9.88%	4.98%	7.47%	3.57%	5.36%
19	5.17%	7.75%	1.41%	2.13%	6.58%	9.88%	4.98%	7.47%	3.57%	5.36%
20	5.17%	7.75%	1.41%	2.13%	6.58%	9.88%	4.98%	7.47%	3.57%	5.36%
21	5.27%	7.91%	1.46%	2.19%	6.73%	10.10%	5.09%	7.63%	3.64%	5.46%
22	5.38%	8.07%	1.51%	2.26%	6.89%	10.33%	5.18%	7.77%	3.72%	5.57%
23	5.48%	8.23%	1.56%	2.33%	7.04%	10.56%	5.29%	7.94%	3.79%	5.68%
24	5.59%	8.39%	1.60%	2.40%	7.19%	10.79%	5.40%	8.09%	3.86%	5.79%
25	5.71%	8.57%	1.65%	2.48%	7.36%	11.05%	5.50%	8.26%	3.94%	5.91%
26	5.83%	8.74%	1.70%	2.55%	7.53%	11.29%	5.61%	8.42%	4.01%	6.03%
27	5.94%	8.92%	1.74%	2.62%	7.68%	11.54%	5.73%	8.60%	4.10%	6.15%
28	6.07%	9.10%	1.79%	2.68%	7.86%	11.78%	5.85%	8.77%	4.18%	6.27%
29	6.19%	9.29%	1.83%	2.75%	8.02%	12.04%	5.98%	8.96%	4.26%	6.40%
30	6.33%	9.48%	1.88%	2.82%	8.21%	12.30%	6.10%	9.14%	4.34%	6.52%
31	6.46%	9.69%	1.92%	2.88%	8.38%	12.57%	6.22%	9.34%	4.44%	6.66%
32	6.59%	9.90%	1.97%	2.95%	8.56%	12.85%	6.36%	9.54%	4.53%	6.79%
33	6.74%	10.11%	2.01%	3.02%	8.75%	13.13%	6.49%	9.74%	4.62%	6.94%
34	6.89%	10.34%	2.06%	3.10%	8.95%	13.44%	6.64%	9.95%	4.72%	7.08%
35	7.05%	10.57%	2.12%	3.17%	9.17%	13.74%	6.77%	10.15%	4.82%	7.22%
36	7.19%	10.78%	2.18%	3.26%	9.37%	14.04%	6.90%	10.35%	4.92%	7.38%
37	7.34%	11.00%	2.23%	3.34%	9.57%	14.34%	7.03%	10.55%	5.03%	7.54%
38	7.47%	11.21%	2.29%	3.44%	9.76%	14.65%	7.15%	10.73%	5.14%	7.71%
39	7.61%	11.41%	2.34%	3.52%	9.95%	14.93%	7.28%	10.91%	5.24%	7.86%
40	7.74%	11.61%	2.40%	3.61%	10.14%	15.22%	7.39%	11.08%	5.36%	8.03%
41	7.87%	11.81%	2.44%	3.65%	10.31%	15.46%	7.49%	11.24%	5.46%	8.18%
42	8.00%	11.99%	2.47%	3.69%	10.47%	15.68%	7.59%	11.38%	5.56%	8.34%
43	8.10%	12.16%	2.49%	3.73%	10.59%	15.89%	7.68%	11.52%	5.66%	8.48%
44	8.20%	12.30%	2.50%	3.75%	10.70%	16.05%	7.75%	11.63%	5.75%	8.63%
45	8.29%	12.44%	2.51%	3.76%	10.80%	16.20%	7.81%	11.72%	5.84%	8.76%
46	8.37%	12.56%	2.51%	3.77%	10.88%	16.33%	7.87%	11.81%	5.92%	8.89%
47	8.44%	12.66%	2.52%	3.78%	10.96%	16.44%	7.91%	11.86%	6.00%	9.00%
48	8.49%	12.73%	2.51%	3.77%	11.00%	16.50%	7.92%	11.87%	6.07%	9.10%
49	8.51%	12.77%	2.49%	3.74%	11.00%	16.51%	7.89%	11.84%	6.13%	9.20%
50	8.50%	12.76%	2.45%	3.67%	10.95%	16.43%	7.85%	11.78%	6.18%	9.27%
51	8.47%	12.70%	2.40%	3.60%	10.87%	16.30%	7.78%	11.67%	6.22%	9.33%
52	8.41%	12.61%	2.36%	3.54%	10.77%	16.15%	7.69%	11.54%	6.24%	9.37%
53	8.32%	12.48%	2.31%	3.47%	10.63%	15.95%	7.59%	11.42%	6.25%	9.38%
54	8.20%	12.31%	2.26%	3.40%	10.46%	15.71%	7.49%	11.31%	6.24%	9.36%
55	8.13%	12.20%	2.22%	3.32%	10.35%	15.52%	7.40%	11.20%	6.20%	9.31%
56	8.06%	12.08%	2.14%	3.20%	10.20%	15.28%	7.31%	11.08%	6.15%	9.23%
57	7.97%	11.95%	2.06%	3.10%	10.03%	15.05%	7.22%	10.95%	6.08%	9.12%
58	7.88%	11.83%	1.99%	2.99%	9.87%	14.82%	7.13%	10.83%	6.28%	9.42%
59+	7.79%	11.68%	1.95%	2.92%	9.74%	14.60%	7.04%	10.71%	6.49%	9.73%



**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**APPENDIX D – MEMBER CONTRIBUTION RATES**

**Current Year Contribution Rates (Safety Non-PEPRA):**

Entry Age	Tier 1						Tier 2 & 3	
	Basic		COLA		Total		Basic	
	First \$350	Over \$350						
20	5.51%	8.27%	2.18%	3.27%	7.69%	11.54%	5.31%	7.98%
21	5.61%	8.42%	2.24%	3.35%	7.85%	11.77%	5.42%	8.12%
22	5.73%	8.59%	2.30%	3.45%	8.03%	12.04%	5.52%	8.28%
23	5.83%	8.75%	2.36%	3.55%	8.19%	12.30%	5.62%	8.43%
24	5.94%	8.92%	2.43%	3.64%	8.37%	12.56%	5.73%	8.60%
25	6.06%	9.08%	2.49%	3.74%	8.55%	12.82%	5.84%	8.76%
26	6.17%	9.26%	2.55%	3.83%	8.72%	13.09%	5.95%	8.93%
27	6.28%	9.43%	2.61%	3.91%	8.89%	13.34%	6.06%	9.09%
28	6.41%	9.62%	2.66%	3.99%	9.07%	13.61%	6.18%	9.27%
29	6.53%	9.80%	2.69%	4.05%	9.22%	13.85%	6.31%	9.45%
30	6.67%	10.00%	2.71%	4.07%	9.38%	14.07%	6.43%	9.64%
31	6.80%	10.20%	2.77%	4.15%	9.57%	14.35%	6.55%	9.82%
32	6.94%	10.40%	2.81%	4.21%	9.75%	14.61%	6.68%	10.02%
33	7.07%	10.61%	2.85%	4.27%	9.92%	14.88%	6.82%	10.23%
34	7.22%	10.84%	2.90%	4.36%	10.12%	15.20%	6.97%	10.44%
35	7.38%	11.06%	2.98%	4.47%	10.36%	15.53%	7.11%	10.66%
36	7.54%	11.31%	3.05%	4.58%	10.59%	15.89%	7.27%	10.90%
37	7.71%	11.56%	3.14%	4.71%	10.85%	16.27%	7.43%	11.15%
38	7.89%	11.84%	3.23%	4.84%	11.12%	16.68%	7.60%	11.39%
39	8.09%	12.14%	3.31%	4.96%	11.40%	17.10%	7.75%	11.62%
40	8.27%	12.40%	3.40%	5.10%	11.67%	17.50%	7.88%	11.83%
41	8.42%	12.63%	3.42%	5.12%	11.84%	17.75%	8.00%	11.99%
42	8.56%	12.84%	3.47%	5.20%	12.03%	18.04%	8.08%	12.13%
43	8.67%	13.00%	3.52%	5.28%	12.19%	18.28%	8.14%	12.21%
44	8.76%	13.15%	3.59%	5.39%	12.35%	18.54%	8.15%	12.23%
45	8.80%	13.21%	3.62%	5.44%	12.42%	18.65%	8.12%	12.18%
46	8.79%	13.19%	3.65%	5.48%	12.44%	18.67%	8.04%	12.05%
47	8.72%	13.09%	3.69%	5.54%	12.41%	18.63%	7.89%	11.85%
48	8.60%	12.90%	3.76%	5.63%	12.36%	18.53%	8.16%	12.24%
49+	8.43%	12.64%	3.85%	5.78%	12.28%	18.42%	8.43%	12.64%

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**APPENDIX D – MEMBER CONTRIBUTION RATES**

**Prior Year Contribution Rates (General Non-PEPRA) prior to August 13, 2020:**

Entry Age	Basic		Tier 1 COLA		Total		Tier 2 Basic		Tier 2R (Courts) Basic		Tier 3 Basic		Tier 3R Basic	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
16	5.44%	8.16%	1.47%	2.20%	6.91%	10.36%	5.04%	7.56%	4.97%	7.45%	3.61%	5.42%	3.56%	5.34%
17	5.44%	8.16%	1.47%	2.20%	6.91%	10.36%	5.04%	7.56%	4.97%	7.45%	3.61%	5.42%	3.56%	5.34%
18	5.44%	8.16%	1.47%	2.20%	6.91%	10.36%	5.04%	7.56%	4.97%	7.45%	3.61%	5.42%	3.56%	5.34%
19	5.44%	8.16%	1.47%	2.20%	6.91%	10.36%	5.04%	7.56%	4.97%	7.45%	3.61%	5.42%	3.56%	5.34%
20	5.44%	8.16%	1.47%	2.20%	6.91%	10.36%	5.04%	7.56%	4.97%	7.45%	3.61%	5.42%	3.56%	5.34%
21	5.54%	8.31%	1.51%	2.27%	7.05%	10.58%	5.14%	7.71%	5.07%	7.60%	3.68%	5.52%	3.63%	5.44%
22	5.66%	8.49%	1.56%	2.35%	7.22%	10.84%	5.25%	7.87%	5.16%	7.75%	3.75%	5.64%	3.70%	5.55%
23	5.77%	8.65%	1.61%	2.42%	7.38%	11.07%	5.35%	8.02%	5.28%	7.91%	3.84%	5.75%	3.77%	5.66%
24	5.88%	8.83%	1.66%	2.49%	7.54%	11.32%	5.46%	8.19%	5.38%	8.06%	3.91%	5.86%	3.85%	5.77%
25	6.00%	9.00%	1.72%	2.57%	7.72%	11.57%	5.56%	8.35%	5.48%	8.23%	3.98%	5.98%	3.93%	5.89%
26	6.12%	9.19%	1.76%	2.64%	7.88%	11.83%	5.68%	8.52%	5.60%	8.39%	4.06%	6.10%	4.00%	6.01%
27	6.24%	9.37%	1.81%	2.72%	8.05%	12.09%	5.79%	8.69%	5.71%	8.57%	4.15%	6.22%	4.08%	6.13%
28	6.38%	9.57%	1.86%	2.79%	8.24%	12.36%	5.91%	8.88%	5.83%	8.74%	4.23%	6.35%	4.17%	6.25%
29	6.51%	9.77%	1.90%	2.86%	8.41%	12.63%	6.04%	9.06%	5.96%	8.93%	4.31%	6.47%	4.25%	6.38%
30	6.66%	9.98%	1.95%	2.93%	8.61%	12.91%	6.16%	9.25%	6.08%	9.11%	4.40%	6.60%	4.33%	6.50%
31	6.79%	10.18%	2.00%	2.99%	8.79%	13.17%	6.30%	9.44%	6.20%	9.31%	4.49%	6.74%	4.42%	6.63%
32	6.94%	10.41%	2.05%	3.08%	8.99%	13.49%	6.43%	9.65%	6.34%	9.50%	4.58%	6.87%	4.52%	6.77%
33	7.09%	10.64%	2.10%	3.15%	9.19%	13.79%	6.57%	9.85%	6.47%	9.71%	4.68%	7.02%	4.61%	6.91%
34	7.25%	10.87%	2.15%	3.23%	9.40%	14.10%	6.72%	10.07%	6.61%	9.92%	4.77%	7.16%	4.70%	7.06%
35	7.41%	11.11%	2.20%	3.30%	9.61%	14.41%	6.85%	10.28%	6.75%	10.12%	4.88%	7.31%	4.80%	7.20%
36	7.56%	11.34%	2.26%	3.39%	9.82%	14.73%	6.98%	10.47%	6.88%	10.32%	4.98%	7.47%	4.91%	7.35%
37	7.70%	11.56%	2.32%	3.49%	10.02%	15.05%	7.11%	10.67%	7.00%	10.51%	5.09%	7.63%	5.01%	7.52%
38	7.86%	11.79%	2.39%	3.58%	10.25%	15.37%	7.23%	10.85%	7.13%	10.70%	5.19%	7.80%	5.12%	7.68%
39	8.00%	12.00%	2.45%	3.67%	10.45%	15.67%	7.35%	11.04%	7.25%	10.87%	5.31%	7.96%	5.23%	7.84%
40	8.14%	12.21%	2.52%	3.77%	10.66%	15.98%	7.48%	11.21%	7.36%	11.05%	5.42%	8.13%	5.34%	8.00%
41	8.28%	12.42%	2.54%	3.82%	10.82%	16.24%	7.58%	11.37%	7.47%	11.20%	5.52%	8.28%	5.44%	8.16%
42	8.40%	12.61%	2.57%	3.86%	10.97%	16.47%	7.68%	11.52%	7.56%	11.35%	5.63%	8.43%	5.54%	8.31%
43	8.52%	12.78%	2.59%	3.89%	11.11%	16.67%	7.77%	11.64%	7.65%	11.48%	5.72%	8.58%	5.64%	8.46%
44	8.63%	12.94%	2.60%	3.91%	11.23%	16.85%	7.85%	11.77%	7.72%	11.59%	5.81%	8.72%	5.73%	8.60%
45	8.71%	13.07%	2.62%	3.93%	11.33%	17.00%	7.91%	11.86%	7.79%	11.68%	5.91%	8.87%	5.82%	8.73%
46	8.80%	13.21%	2.62%	3.93%	11.42%	17.14%	7.96%	11.94%	7.85%	11.77%	6.00%	8.99%	5.90%	8.86%
47	8.88%	13.32%	2.62%	3.94%	11.50%	17.26%	7.99%	11.99%	7.88%	11.82%	6.07%	9.10%	5.98%	8.97%
48	8.93%	13.39%	2.62%	3.93%	11.55%	17.32%	8.00%	12.00%	7.89%	11.83%	6.14%	9.21%	6.05%	9.07%
49	8.95%	13.42%	2.60%	3.90%	11.55%	17.32%	7.98%	11.97%	7.87%	11.80%	6.20%	9.30%	6.11%	9.16%
50	8.94%	13.41%	2.55%	3.83%	11.49%	17.24%	7.94%	11.91%	7.83%	11.74%	6.25%	9.38%	6.16%	9.24%
51	8.90%	13.35%	2.50%	3.75%	11.40%	17.10%	7.87%	11.81%	7.76%	11.63%	6.30%	9.44%	6.20%	9.30%
52	8.84%	13.26%	2.46%	3.68%	11.30%	16.94%	7.79%	11.67%	7.66%	11.50%	6.33%	9.48%	6.22%	9.34%
53	8.75%	13.12%	2.41%	3.61%	11.16%	16.73%	8.03%	12.06%	7.92%	11.88%	6.33%	9.48%	6.23%	9.35%
54	8.63%	12.95%	2.36%	3.54%	10.99%	16.49%	8.30%	12.46%	8.18%	12.27%	6.31%	9.46%	6.22%	9.33%
55	8.55%	12.83%	2.30%	3.46%	10.85%	16.29%	8.23%	12.34%	8.11%	12.16%	6.27%	9.41%	6.18%	9.28%
56	8.47%	12.70%	2.22%	3.33%	10.69%	16.03%	8.15%	12.22%	8.03%	12.04%	6.22%	9.34%	6.13%	9.20%
57	8.38%	12.57%	2.15%	3.22%	10.53%	15.79%	8.06%	12.10%	7.94%	11.91%	6.15%	9.23%	6.06%	9.09%
58	8.29%	12.44%	2.08%	3.12%	10.37%	15.56%	7.97%	11.96%	7.86%	11.79%	6.36%	9.54%	6.26%	9.39%
59+	8.19%	12.28%	2.03%	3.03%	10.22%	15.31%	7.88%	11.82%	7.77%	11.64%	6.56%	9.84%	6.47%	9.70%



**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**APPENDIX D – MEMBER CONTRIBUTION RATES**

**Prior Year Contribution Rates (General Non-PEPRA) effective August 13, 2020:**

Entry Age	Basic		Tier 1 COLA		Total		Tier 2 & 2R (Courts)		Tier 3 & 3R	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
16	5.15%	7.72%	1.41%	2.12%	6.56%	9.84%	4.97%	7.45%	3.56%	5.34%
17	5.15%	7.72%	1.41%	2.12%	6.56%	9.84%	4.97%	7.45%	3.56%	5.34%
18	5.15%	7.72%	1.41%	2.12%	6.56%	9.84%	4.97%	7.45%	3.56%	5.34%
19	5.15%	7.72%	1.41%	2.12%	6.56%	9.84%	4.97%	7.45%	3.56%	5.34%
20	5.15%	7.72%	1.41%	2.12%	6.56%	9.84%	4.97%	7.45%	3.56%	5.34%
21	5.26%	7.88%	1.45%	2.18%	6.71%	10.06%	5.07%	7.60%	3.63%	5.44%
22	5.36%	8.04%	1.50%	2.25%	6.86%	10.29%	5.16%	7.75%	3.70%	5.55%
23	5.46%	8.20%	1.55%	2.32%	7.01%	10.52%	5.28%	7.91%	3.77%	5.66%
24	5.58%	8.36%	1.59%	2.40%	7.17%	10.76%	5.38%	8.06%	3.85%	5.77%
25	5.69%	8.54%	1.65%	2.47%	7.34%	11.01%	5.48%	8.23%	3.93%	5.89%
26	5.81%	8.71%	1.70%	2.54%	7.51%	11.25%	5.60%	8.39%	4.00%	6.01%
27	5.92%	8.89%	1.74%	2.61%	7.66%	11.50%	5.71%	8.57%	4.08%	6.13%
28	6.05%	9.07%	1.78%	2.67%	7.83%	11.74%	5.83%	8.74%	4.17%	6.25%
29	6.17%	9.26%	1.82%	2.74%	7.99%	12.00%	5.96%	8.93%	4.25%	6.38%
30	6.31%	9.45%	1.87%	2.81%	8.18%	12.26%	6.08%	9.11%	4.33%	6.50%
31	6.44%	9.66%	1.91%	2.87%	8.35%	12.53%	6.20%	9.31%	4.42%	6.63%
32	6.57%	9.86%	1.96%	2.94%	8.53%	12.80%	6.34%	9.50%	4.52%	6.77%
33	6.72%	10.08%	2.01%	3.01%	8.73%	13.09%	6.47%	9.71%	4.61%	6.91%
34	6.87%	10.31%	2.06%	3.09%	8.93%	13.40%	6.61%	9.92%	4.70%	7.06%
35	7.03%	10.53%	2.11%	3.16%	9.14%	13.69%	6.75%	10.12%	4.80%	7.20%
36	7.17%	10.75%	2.17%	3.25%	9.34%	14.00%	6.88%	10.32%	4.91%	7.35%
37	7.31%	10.96%	2.22%	3.33%	9.53%	14.29%	7.00%	10.51%	5.01%	7.52%
38	7.45%	11.17%	2.28%	3.43%	9.73%	14.60%	7.13%	10.70%	5.12%	7.68%
39	7.58%	11.38%	2.33%	3.51%	9.91%	14.89%	7.25%	10.87%	5.23%	7.84%
40	7.71%	11.57%	2.40%	3.60%	10.11%	15.17%	7.36%	11.05%	5.34%	8.00%
41	7.85%	11.77%	2.43%	3.64%	10.28%	15.41%	7.47%	11.20%	5.44%	8.16%
42	7.97%	11.95%	2.46%	3.68%	10.43%	15.63%	7.56%	11.35%	5.54%	8.31%
43	8.07%	12.12%	2.48%	3.71%	10.55%	15.83%	7.65%	11.48%	5.64%	8.46%
44	8.18%	12.26%	2.49%	3.73%	10.67%	15.99%	7.72%	11.59%	5.73%	8.60%
45	8.26%	12.39%	2.50%	3.74%	10.76%	16.13%	7.79%	11.68%	5.82%	8.73%
46	8.34%	12.52%	2.50%	3.75%	10.84%	16.27%	7.85%	11.77%	5.90%	8.86%
47	8.41%	12.62%	2.51%	3.76%	10.92%	16.38%	7.88%	11.82%	5.98%	8.97%
48	8.47%	12.69%	2.50%	3.75%	10.97%	16.44%	7.89%	11.83%	6.05%	9.07%
49	8.49%	12.72%	2.48%	3.72%	10.97%	16.44%	7.87%	11.80%	6.11%	9.16%
50	8.48%	12.71%	2.44%	3.66%	10.92%	16.37%	7.83%	11.74%	6.16%	9.24%
51	8.44%	12.66%	2.40%	3.59%	10.84%	16.25%	7.76%	11.63%	6.20%	9.30%
52	8.38%	12.57%	2.36%	3.53%	10.74%	16.10%	7.66%	11.50%	6.22%	9.34%
53	8.29%	12.44%	2.30%	3.46%	10.59%	15.90%	7.92%	11.88%	6.23%	9.35%
54	8.18%	12.27%	2.25%	3.38%	10.43%	15.65%	8.18%	12.27%	6.22%	9.33%
55	8.11%	12.16%	2.21%	3.31%	10.32%	15.47%	8.11%	12.16%	6.18%	9.28%
56	8.03%	12.04%	2.13%	3.19%	10.16%	15.23%	8.03%	12.04%	6.13%	9.20%
57	7.94%	11.91%	2.06%	3.09%	10.00%	15.00%	7.94%	11.91%	6.06%	9.09%
58	7.86%	11.79%	1.99%	2.98%	9.85%	14.77%	7.86%	11.79%	6.26%	9.39%
59+	7.77%	11.64%	1.94%	2.91%	9.71%	14.55%	7.77%	11.64%	6.47%	9.70%



**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**APPENDIX D – MEMBER CONTRIBUTION RATES**

**Prior Year Contribution Rates (Safety Non-PEPRA) prior to August 13, 2020:**

Entry Age	Basic		Tier 1 COLA		Total		Tiers 2 and 3 Basic		Tier 3R Basic	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
20	5.94%	8.90%	2.30%	3.46%	8.24%	12.36%	5.38%	8.06%	5.30%	7.95%
21	6.05%	9.07%	2.37%	3.55%	8.42%	12.62%	5.48%	8.22%	5.40%	8.10%
22	6.16%	9.24%	2.44%	3.65%	8.60%	12.89%	5.59%	8.37%	5.50%	8.25%
23	6.27%	9.41%	2.50%	3.74%	8.77%	13.15%	5.69%	8.53%	5.61%	8.40%
24	6.40%	9.60%	2.56%	3.85%	8.96%	13.45%	5.79%	8.69%	5.71%	8.57%
25	6.52%	9.78%	2.62%	3.94%	9.14%	13.72%	5.90%	8.86%	5.82%	8.73%
26	6.64%	9.97%	2.68%	4.03%	9.32%	14.00%	6.02%	9.03%	5.94%	8.90%
27	6.77%	10.15%	2.75%	4.12%	9.52%	14.27%	6.14%	9.21%	6.04%	9.06%
28	6.90%	10.35%	2.80%	4.20%	9.70%	14.55%	6.25%	9.38%	6.16%	9.24%
29	7.04%	10.55%	2.83%	4.25%	9.87%	14.80%	6.38%	9.57%	6.28%	9.42%
30	7.17%	10.76%	2.85%	4.27%	10.02%	15.03%	6.50%	9.75%	6.41%	9.61%
31	7.31%	10.98%	2.90%	4.35%	10.21%	15.33%	6.63%	9.95%	6.53%	9.79%
32	7.46%	11.19%	2.94%	4.41%	10.40%	15.60%	6.76%	10.14%	6.66%	9.99%
33	7.62%	11.43%	2.99%	4.48%	10.61%	15.91%	6.90%	10.35%	6.80%	10.19%
34	7.78%	11.66%	3.04%	4.57%	10.82%	16.23%	7.05%	10.56%	6.94%	10.41%
35	7.94%	11.91%	3.13%	4.69%	11.07%	16.60%	7.19%	10.79%	7.09%	10.63%
36	8.12%	12.17%	3.21%	4.81%	11.33%	16.98%	7.35%	11.03%	7.24%	10.86%
37	8.30%	12.45%	3.30%	4.95%	11.60%	17.40%	7.52%	11.27%	7.41%	11.11%
38	8.50%	12.74%	3.38%	5.08%	11.88%	17.82%	7.68%	11.53%	7.57%	11.36%
39	8.71%	13.06%	3.48%	5.22%	12.19%	18.28%	7.84%	11.76%	7.72%	11.58%
40	8.90%	13.35%	3.57%	5.36%	12.47%	18.71%	7.97%	11.96%	7.86%	11.79%
41	9.06%	13.60%	3.58%	5.37%	12.64%	18.97%	8.08%	12.13%	7.97%	11.95%
42	9.21%	13.81%	3.63%	5.44%	12.84%	19.25%	8.18%	12.26%	8.05%	12.09%
43	9.33%	14.00%	3.69%	5.53%	13.02%	19.53%	8.24%	12.35%	8.12%	12.17%
44	9.43%	14.15%	3.75%	5.63%	13.18%	19.78%	8.25%	12.37%	8.13%	12.19%
45	9.47%	14.22%	3.79%	5.68%	13.26%	19.90%	8.22%	12.32%	8.10%	12.14%
46	9.46%	14.19%	3.81%	5.71%	13.27%	19.90%	8.13%	12.19%	8.01%	12.01%
47	9.39%	14.08%	3.84%	5.76%	13.23%	19.84%	7.99%	11.99%	7.87%	11.81%
48	9.26%	13.89%	3.90%	5.85%	13.16%	19.74%	8.25%	12.37%	8.14%	12.20%
49+	9.07%	13.61%	3.99%	5.99%	13.06%	19.60%	8.53%	12.79%	8.40%	12.60%

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**APPENDIX D – MEMBER CONTRIBUTION RATES**

**Prior Year Contribution Rates (Safety Non-PEPRA) effective August 13, 2020:**

Entry Age	Basic		Tier 1 COLA		Total		Tier 2, 3 & 3R Basic	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
20	5.49%	8.24%	2.17%	3.26%	7.66%	11.50%	5.30%	7.95%
21	5.60%	8.39%	2.23%	3.34%	7.83%	11.73%	5.40%	8.10%
22	5.71%	8.56%	2.29%	3.44%	8.00%	12.00%	5.50%	8.25%
23	5.81%	8.72%	2.36%	3.54%	8.17%	12.26%	5.61%	8.40%
24	5.92%	8.89%	2.42%	3.63%	8.34%	12.52%	5.71%	8.57%
25	6.04%	9.05%	2.48%	3.72%	8.52%	12.77%	5.82%	8.73%
26	6.15%	9.23%	2.54%	3.82%	8.69%	13.05%	5.94%	8.90%
27	6.26%	9.40%	2.60%	3.90%	8.86%	13.30%	6.04%	9.06%
28	6.39%	9.59%	2.65%	3.98%	9.04%	13.57%	6.16%	9.24%
29	6.51%	9.77%	2.68%	4.03%	9.19%	13.80%	6.28%	9.42%
30	6.64%	9.97%	2.71%	4.05%	9.35%	14.02%	6.41%	9.61%
31	6.78%	10.16%	2.76%	4.13%	9.54%	14.29%	6.53%	9.79%
32	6.91%	10.37%	2.80%	4.20%	9.71%	14.57%	6.66%	9.99%
33	7.05%	10.57%	2.84%	4.26%	9.89%	14.83%	6.80%	10.19%
34	7.20%	10.80%	2.89%	4.34%	10.09%	15.14%	6.94%	10.41%
35	7.35%	11.03%	2.97%	4.45%	10.32%	15.48%	7.09%	10.63%
36	7.52%	11.27%	3.04%	4.57%	10.56%	15.84%	7.24%	10.86%
37	7.68%	11.52%	3.13%	4.69%	10.81%	16.21%	7.41%	11.11%
38	7.87%	11.80%	3.22%	4.82%	11.09%	16.62%	7.57%	11.36%
39	8.06%	12.10%	3.30%	4.95%	11.36%	17.05%	7.72%	11.58%
40	8.24%	12.36%	3.38%	5.08%	11.62%	17.44%	7.86%	11.79%
41	8.39%	12.59%	3.40%	5.10%	11.79%	17.69%	7.97%	11.95%
42	8.53%	12.80%	3.46%	5.18%	11.99%	17.98%	8.05%	12.09%
43	8.64%	12.96%	3.51%	5.27%	12.15%	18.23%	8.12%	12.17%
44	8.73%	13.10%	3.58%	5.37%	12.31%	18.47%	8.13%	12.19%
45	8.77%	13.17%	3.61%	5.42%	12.38%	18.59%	8.10%	12.14%
46	8.76%	13.15%	3.64%	5.46%	12.40%	18.61%	8.01%	12.01%
47	8.69%	13.04%	3.68%	5.52%	12.37%	18.56%	7.87%	11.81%
48	8.57%	12.86%	3.74%	5.62%	12.31%	18.48%	8.14%	12.20%
49+	8.40%	12.60%	3.84%	5.76%	12.24%	18.36%	8.40%	12.60%

**MERCED COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2020**

**APPENDIX D – MEMBER CONTRIBUTION RATES**

**Current Year Contribution Rates (PEPRA):**

PEPRA Rates		
	General	Safety
	6.91%	10.65%
Assumptions:		
Interest	7.00%	
Salary	2019 Valuation Scale (service-based, includes inflation at 2.5%)	
Mortality	CalPERS 2009 / PubS(B) 2010 tables, projected with MP-2019	
Other	Same as June 30, 2019 valuation (see Appendix B)	

**Prior Year Contribution Rates (PEPRA):**

PEPRA Rates		
	General	Safety
	6.92%	10.68%
Assumptions:		
Interest	7.00%	
Salary	2019 Valuation Scale (service-based, includes inflation at 2.5%)	
Mortality	CalPERS 2009 / PubS(B) 2010 tables, projected with MP-2019	
Other	Same as June 30, 2019 valuation (see Appendix B)	

## APPENDIX E – GLOSSARY

### 1. Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs such as mortality, withdrawal, disability, retirement, changes in compensation, and rates of investment return.

### 2. Actuarial Cost Method

A procedure for determining the Actuarial Present Value of Pension Plan Benefits and expenses and for developing an allocation of such value to each year of service, usually in the form of a normal cost and an Actuarial Liability.

### 3. Actuarial Gain (Loss)

The difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

### 4. Actuarial Liability

The portion of the Actuarial Present Value of Projected Benefits which will not be paid by future normal costs. It represents the value of the past normal costs with interest to the valuation date.

### 5. Actuarial Present Value (Present Value)

The value as of a given date of a future amount or series of payments. The actuarial present value discounts the payments to the given date at the assumed investment return and includes the probability of the payment being made.

### 6. Actuarial Valuation

The determination, as of a specified date, of the normal cost, Actuarial Liability, Actuarial Value of Assets, and related actuarial present values for a pension plan.

### 7. Actuarial Value of Assets

The value of cash, investments, and other property belonging to a pension plan as used by the actuary for the purpose of an actuarial valuation. The purpose of an Actuarial Value of Assets is to smooth out fluctuations in market values. No longer applicable as of the June 30, 2014 actuarial valuation.

**APPENDIX E – GLOSSARY**

**8. Actuarially Equivalent**

Of equal actuarial present value, determined as of a given date, with each value based on the same set of actuarial assumptions.

**9. Amortization Payment**

The portion of the pension plan contribution that is designed to pay interest and principal on the Unfunded Actuarial Liability in order to pay for that liability in a given number of years.

**10. Entry Age Normal Actuarial Cost Method**

A method under which the Actuarial Present Value of the Projected Benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit ages.

**11. Funded Ratio**

The ratio of the Market Value of Assets to the Actuarial Liabilities.

**12. Normal Cost**

That portion of the Actuarial Present Value of Pension Plan Benefits and expenses, which is allocated to a valuation year by the actuarial cost method.

**13. Projected Benefits**

Those pension plan benefit amounts which are expected to be paid in the future under a particular set of actuarial assumptions, taking into account such items as increases in future compensation and service credits.

**14. Unfunded Actuarial Liability**

The excess of the Actuarial Liability over the Market Value of Assets.



*Classic Values, Innovative Advice*



Los Angeles • New York

## State Pension Performance & Asset Allocation

Merced County Employees' Retirement Association

*January 28, 2021*

## Data

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### 66 pension systems

- Multiple plans with same trustee board treated as one system

### \$2.9 trillion in assets

- Approximately one-half of all public pensions

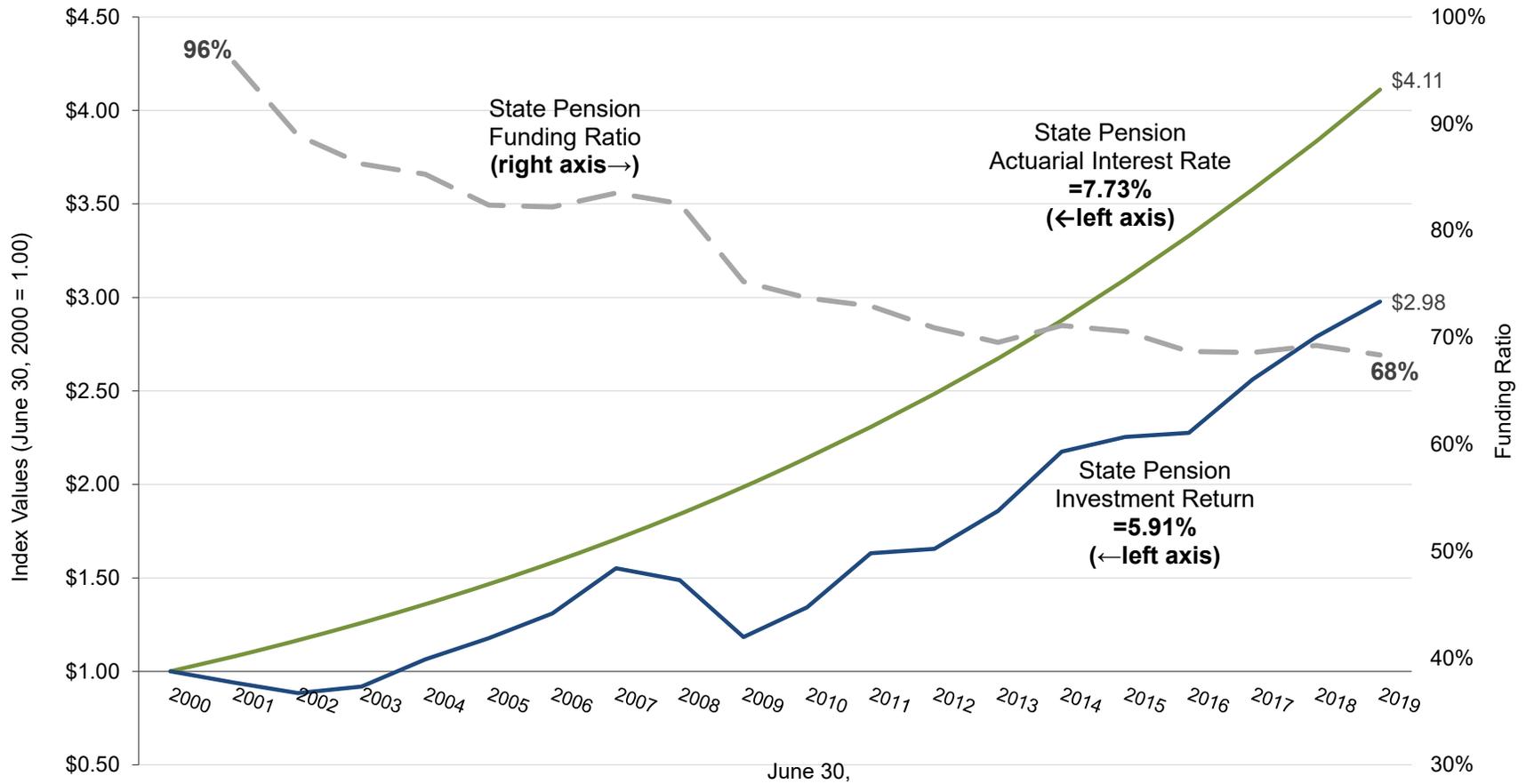
### \$4.3 trillion in liabilities

Evaluates nineteen June fiscal years

Pension system CAFRs as of June 30, 2019

Fee disclosure inconsistency

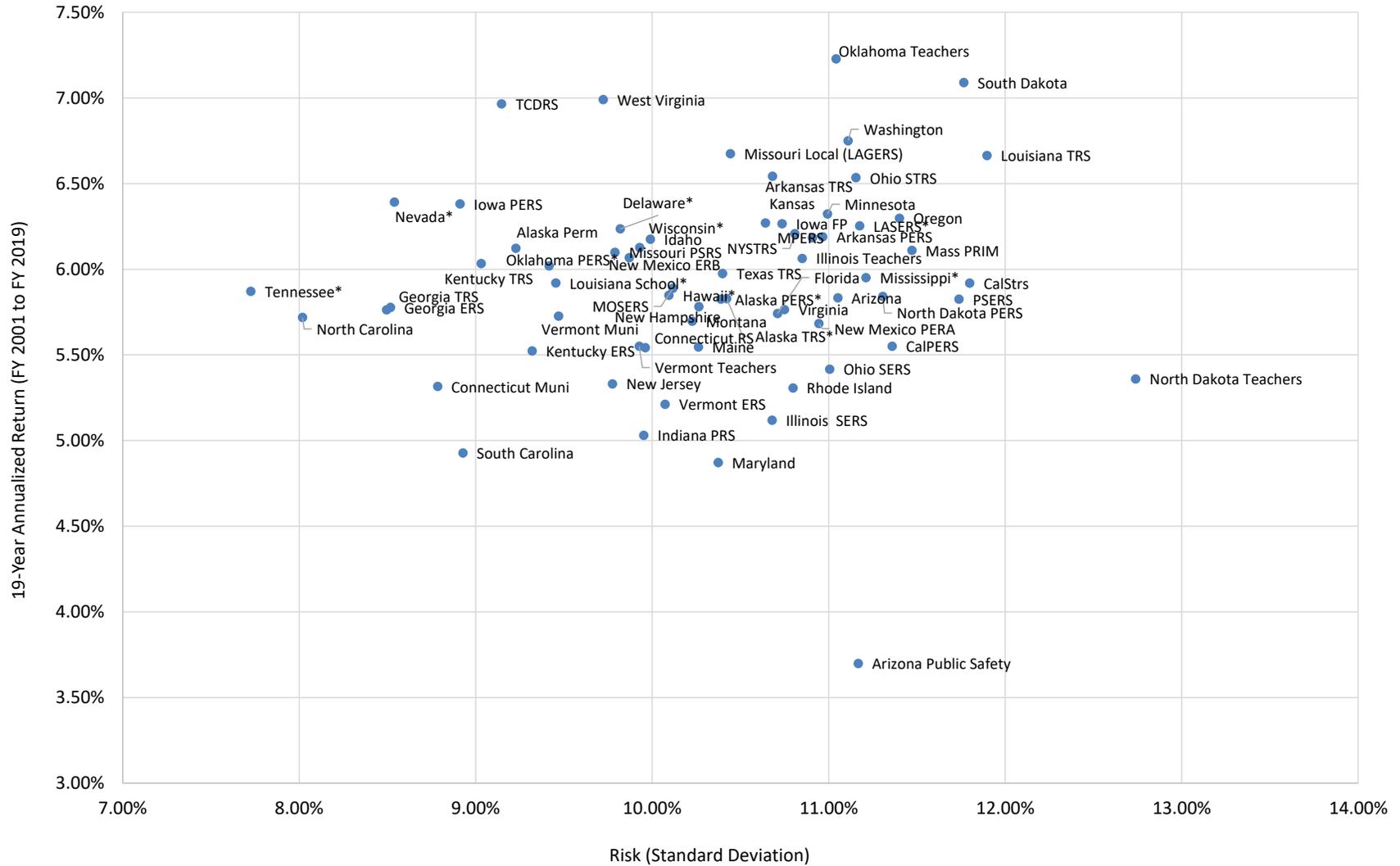
# Pension Funding



Source: State Retirement System CAFRs, Cliffwater LLC calculations

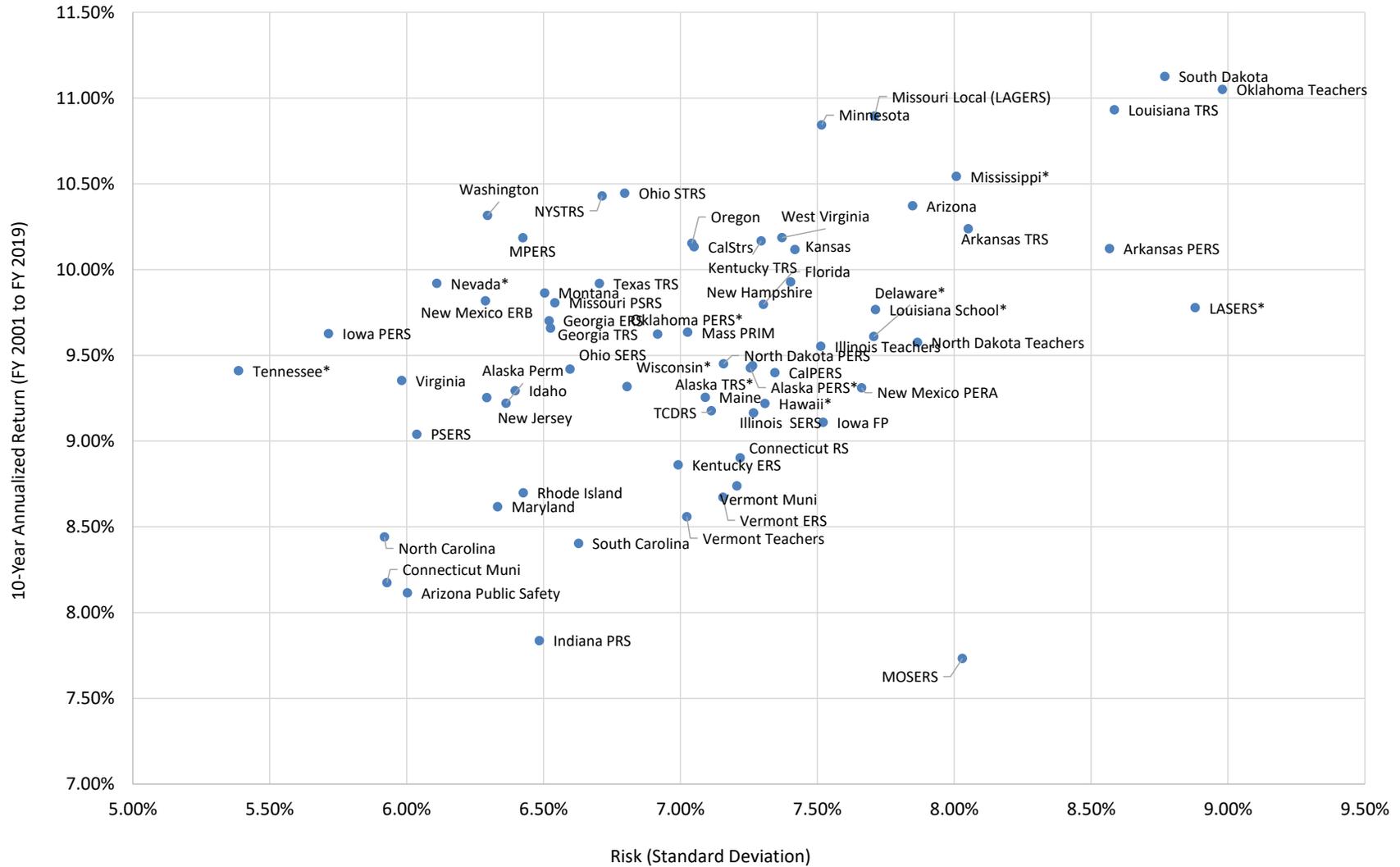
➤ Pension funding has declined over the past 19 years

# State Pension Return and Risk: 19 Fiscal Years ending June 2019



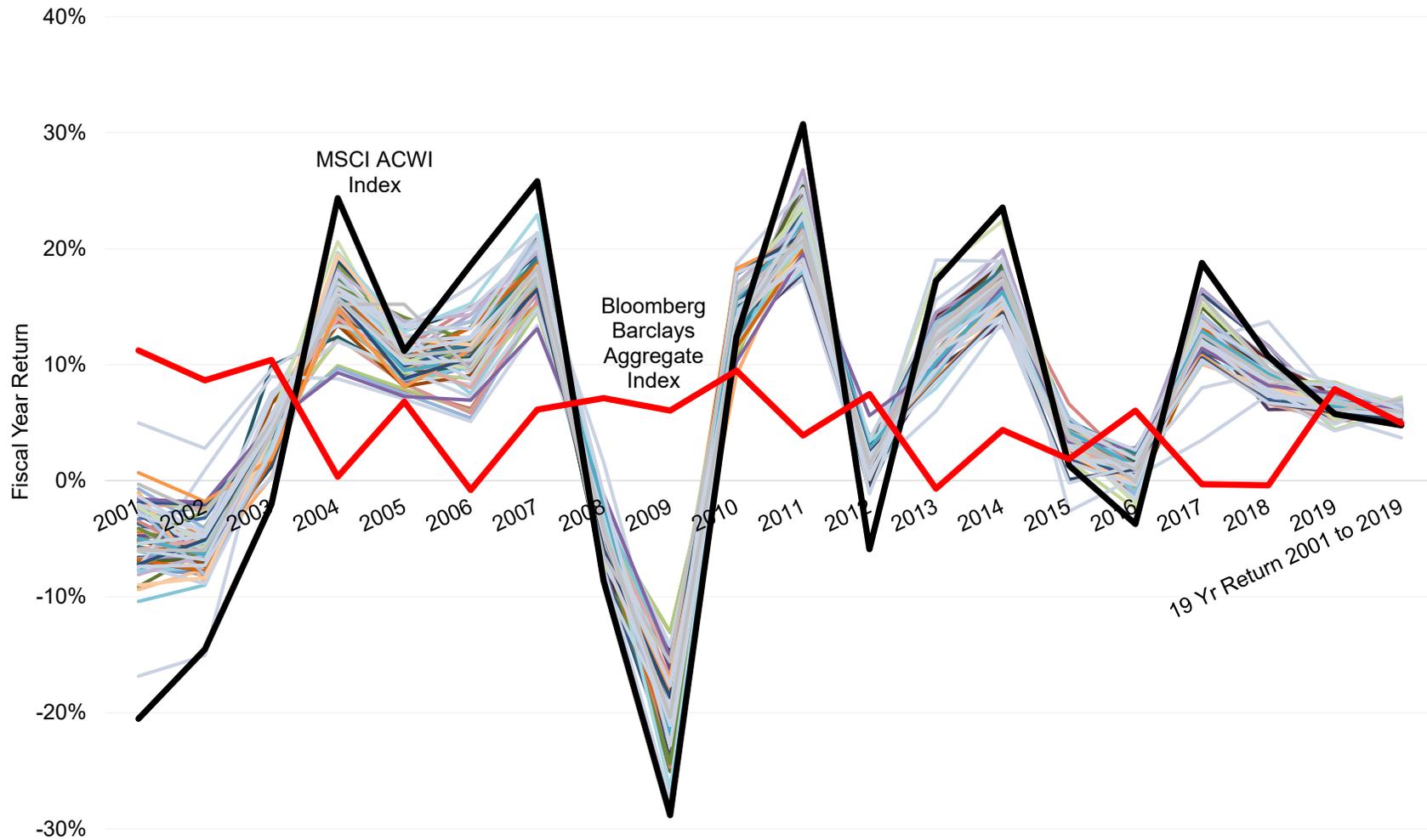
\* Gross of Fees

# State Pension Return and Risk: 10 Fiscal Years ending June 2019

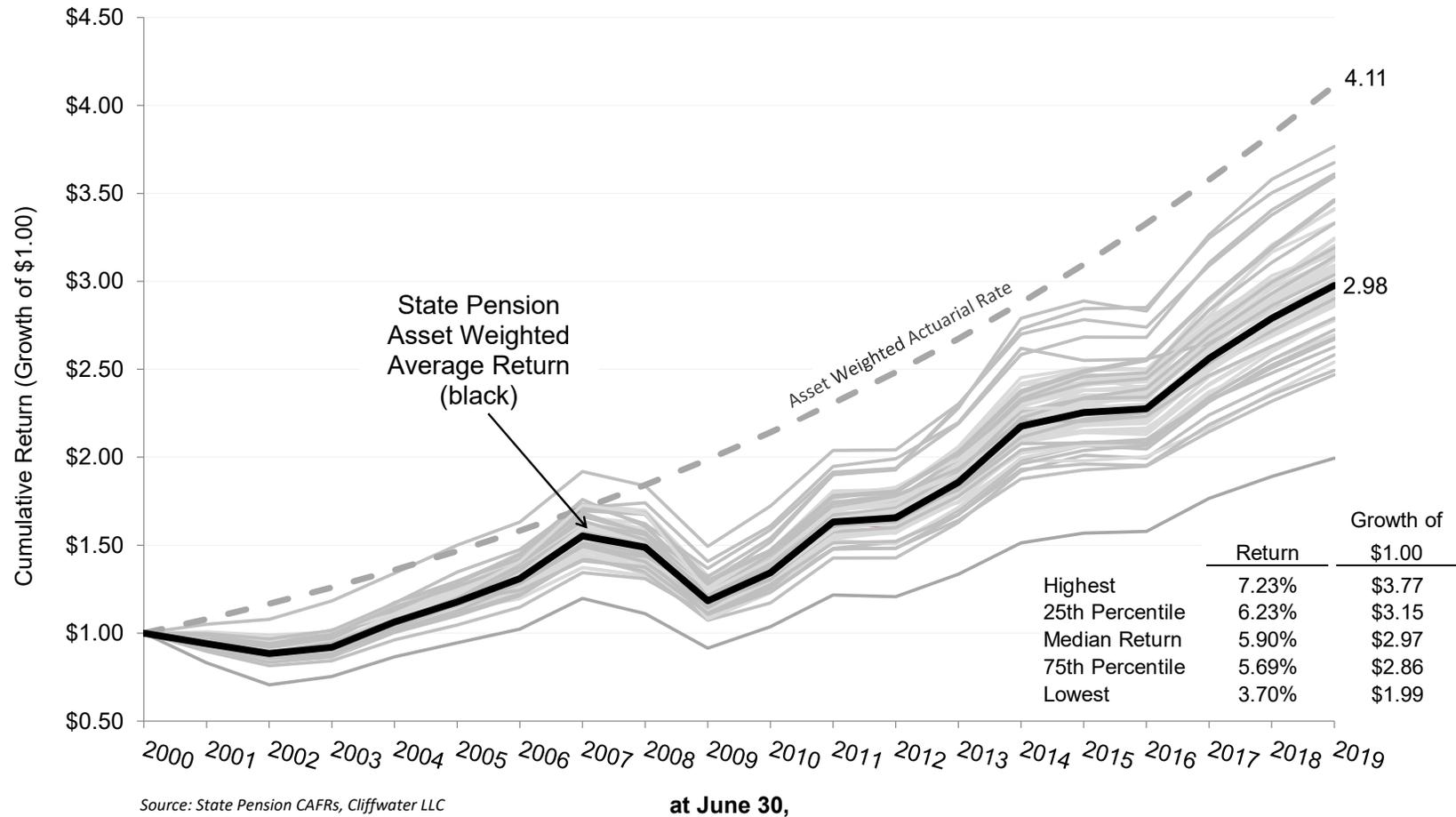


\* Gross of Fees

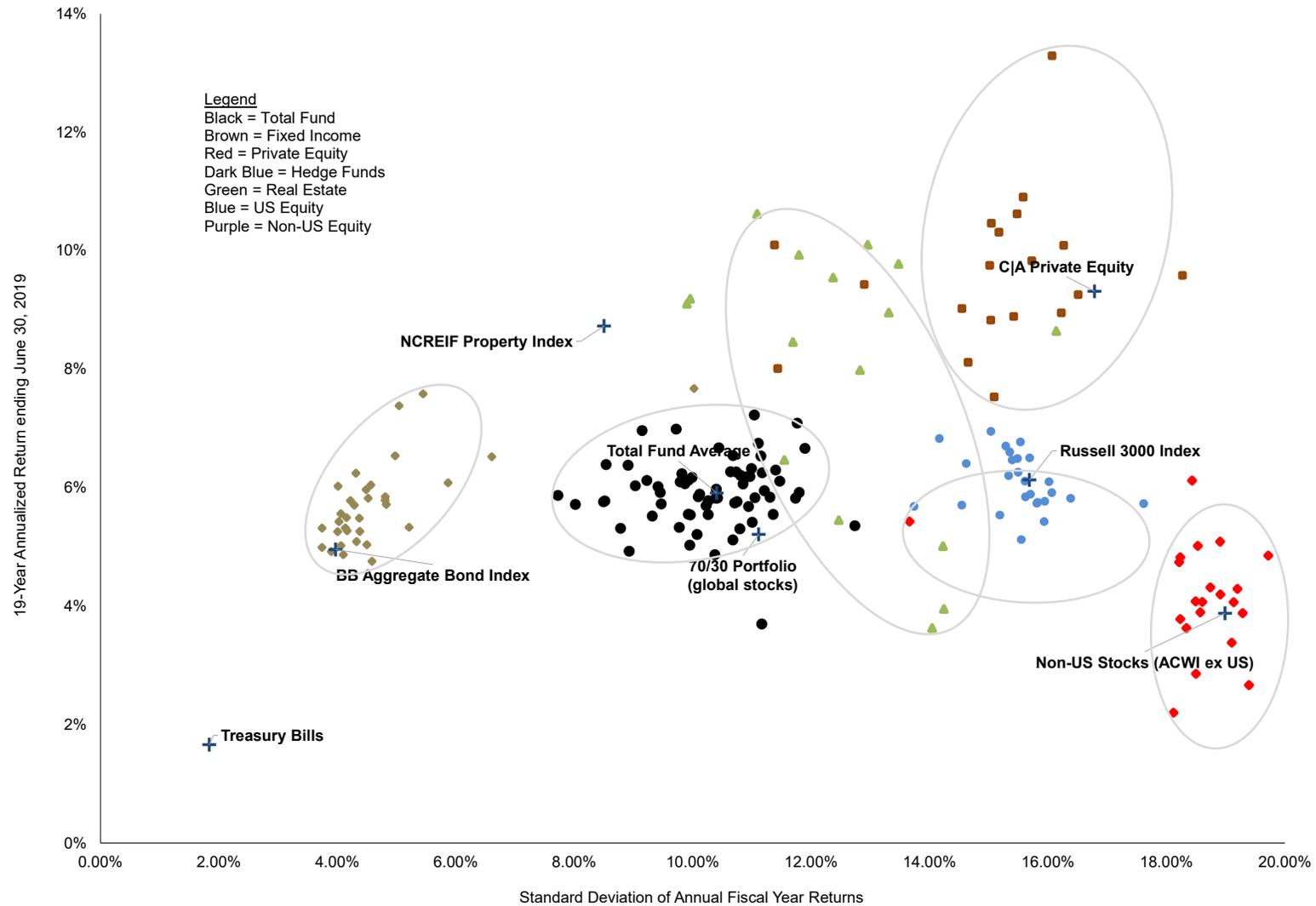
# Pension return volatility is stock driven



# Investment performance matters



# 19-Year State Pension Performance – Total and by Asset Class



# 19-Year State Pension Performance – Return Distributions across Systems

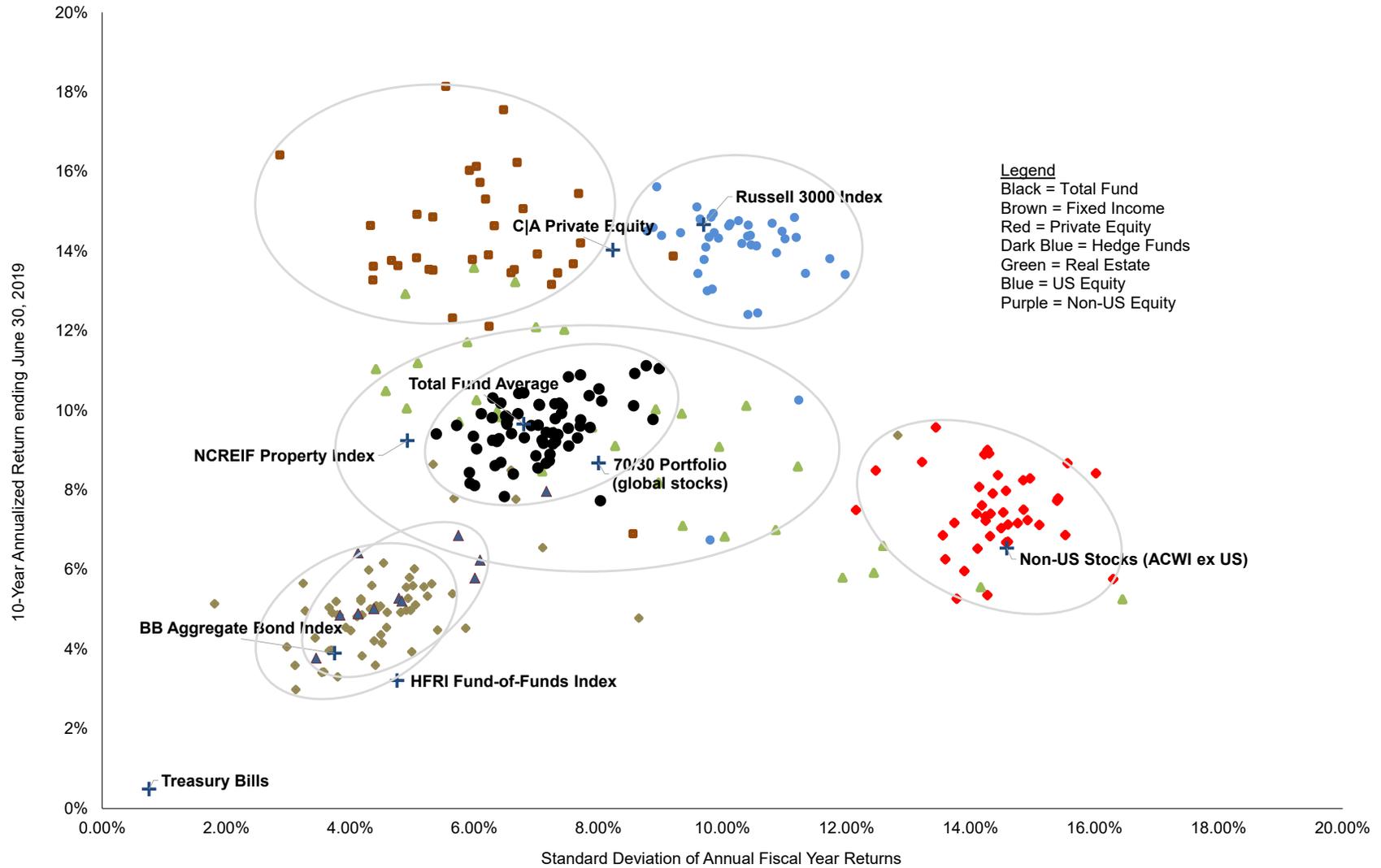
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	Total Fund	US Stocks	Non-US Stocks	Fixed Income	Real Estate	Private Equity
Highest Return	7.23%	6.95%	6.12%	7.67%	10.62%	13.29%
25th Percentile	6.23%	6.49%	4.83%	6.03%	9.61%	10.20%
Median Return	5.90%	6.01%	4.08%	5.56%	8.80%	9.58%
75th Percentile	5.69%	5.74%	3.78%	5.26%	6.21%	8.92%
Lowest Return	3.70%	5.12%	2.20%	4.76%	3.63%	7.53%
Average Return	5.91%	6.39%	4.45%	5.57%	8.21%	9.55%
Benchmark Return	5.21%	6.13%	3.88%	4.96%	8.73%	9.31%
Benchmark Percentile	92%	43%	70%	92%	52%	59%
25th - 75th Mid Range	0.54%	0.75%	1.04%	0.76%	3.39%	1.28%
Count	66	26	21	33	16	19

Benchmarks:

Total Fund	70% Global Stocks (MSCI ACWI), 30% Fixed Income
US Stocks	Russell 3000 Index
Non-US Stocks	MSCI ACWI ex US Index
Fixed Income	Bloomberg Barclays Aggregate Bond Index
Real Estate	NCREIF Index (NPI)
Private Equity	Cambridge Associates Private Equity Index

# 10-Year State Pension Performance – Total and by Asset Class



## 10-Year State Pension Performance – Return Distributions across Systems

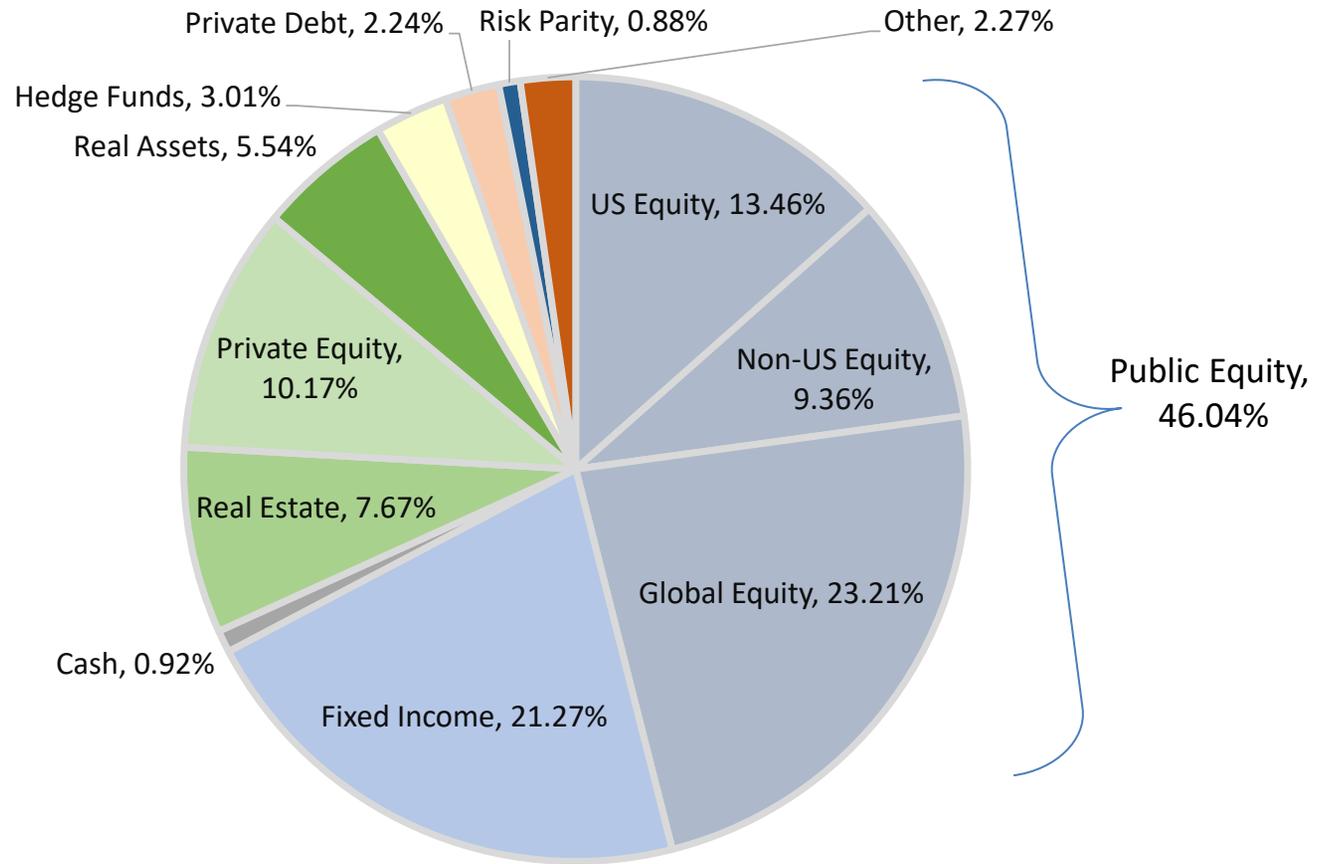
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	Total Fund	US Stocks	Non-US Stocks	Fixed Income	Real Estate	Private Equity	Absolute Return
Highest Return	11.13%	15.62%	9.58%	9.38%	13.58%	18.14%	7.97%
25th Percentile	10.12%	14.65%	8.20%	5.56%	10.76%	15.19%	6.29%
Median Return	9.59%	14.35%	7.42%	4.98%	9.71%	13.88%	5.25%
75th Percentile	9.19%	13.80%	6.91%	4.44%	7.18%	13.53%	4.89%
Lowest Return	7.73%	6.74%	5.27%	2.99%	-1.03%	6.90%	3.78%
Average Return	9.66%	14.11%	7.75%	5.18%	9.34%	14.27%	3.87%
Benchmark Return	8.68%	14.67%	6.54%	3.90%	9.24%	14.03%	3.21%
Benchmark Percentile	87%	23%	88%	89%	57%	43%	100%
25th - 75th Mid Range	0.93%	0.84%	1.29%	1.12%	3.58%	1.66%	1.39%
Count	66	39	42	60	39	35	12

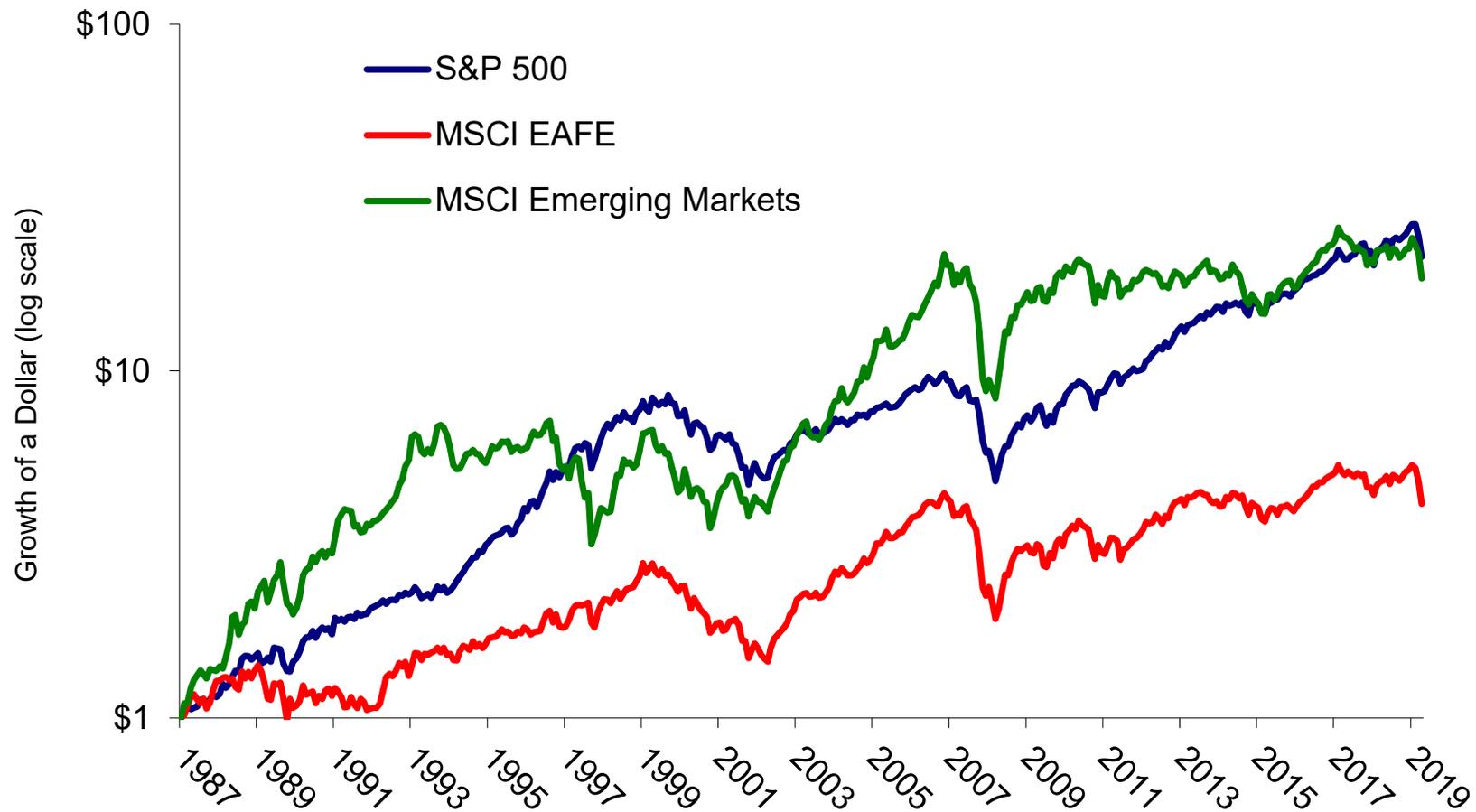
### Benchmarks:

Total Fund	70% Global Stocks (MSCI ACWI), 30% Fixed Income
US Stocks	Russell 3000 Index
Non-US Stocks	MSCI ACWI ex US Index
Fixed Income	Bloomberg Barclays Aggregate Bond Index
Real Estate	NCREIF Index (NPI)
Private Equity	Cambridge Associates Private Equity Index
Absolute Return	HFRI Fund of Funds Index

# State Pension Asset Allocation – Asset Weighted

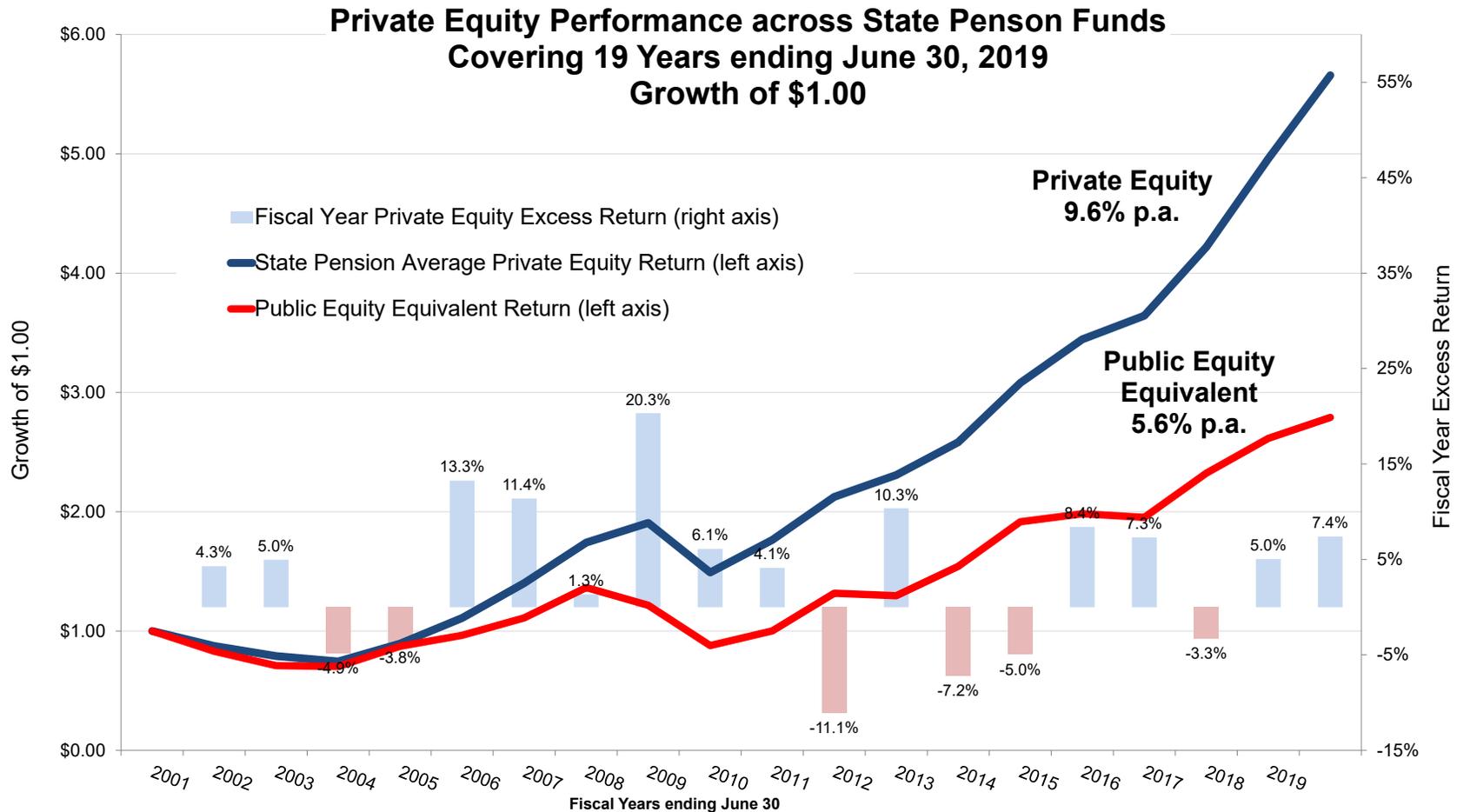


# US Stock returns compared to MSCI EAFE and MSCI Emerging Markets



Source: S&P Dow Jones, MSCI

# Private versus Public Equity



\* An equal-weighted average of all state funds who reported private equity returns in annual CAFRs for June 30 fiscal years 2001-2019.

\*\* A public equity benchmark weighted 70% to the Russell 3000 Index (7.48% annualized return) and 30% to the MSCI ACWI ex US Index (6.68% annualized return), with assigned weights reflecting regression-based weightings (a.k.a. "style analysis").

# Asset Allocation

## Asset-Weighted Allocations over Time

	2006	2011	2012	2013	2014	2015	2016	2017	2018	2019	Change from 2006 to 2019
Public Equities	61%	51%	49%	50%	51%	50%	48%	47%	47%	46%	-15%
Fixed Income	26%	25%	25%	22%	23%	23%	24%	23%	22%	21%	-5%
Alternatives	10%	21%	24%	25%	24%	24%	26%	26%	30%	32%	+22%
Cash	2%	3%	2%	3%	2%	3%	2%	3%	1%	1%	-1%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	

## Asset Class Weights at FYE 2019

	US Equity	Non-US Equity	Global Equity	Fixed Income	Cash	Private Equity	Real Estate	Real Assets	Hedge Funds	Private Debt	Risk Parity	Other
All States, Asset-Weighted	13.5%	9.4%	23.2%	21.3%	0.9%	10.2%	7.7%	5.5%	3.0%	2.2%	0.9%	2.3%
Average of States with Allocations	25.4%	18.4%	31.6%	21.2%	2.2%	10.3%	8.8%	7.6%	6.9%	6.4%	6.6%	5.0%
Highest State Allocation	52.9%	32.4%	60.3%	35.3%	22.9%	22.2%	18.3%	22.8%	25.8%	18.0%	13.2%	15.3%

## Summary

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### Performance:

- State pensions collectively & individually have not met actuarial assumptions over the 19 year period
- Meaningful differences in risk tolerances among plans
  - Equity exposure drives total fund standard deviation
- Differences in implementation are apparent in the returns
  - Return differences in alternatives are wider than in traditional asset classes
  - Private equity has outperformed public equity over time

### Asset allocation:

- Increase in the use of alternatives, going from 10% in 2006 to 32% in 2019
  - By product of need for higher return and desire to avoid sharp draw down from equity declines; trade-off is less liquidity, higher complexity and higher fees

# Cliffwater Disclosures

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**MEKETA**

INVESTMENT GROUP

# Merced County Employees' Retirement Association

January 28, 2021

Performance Update

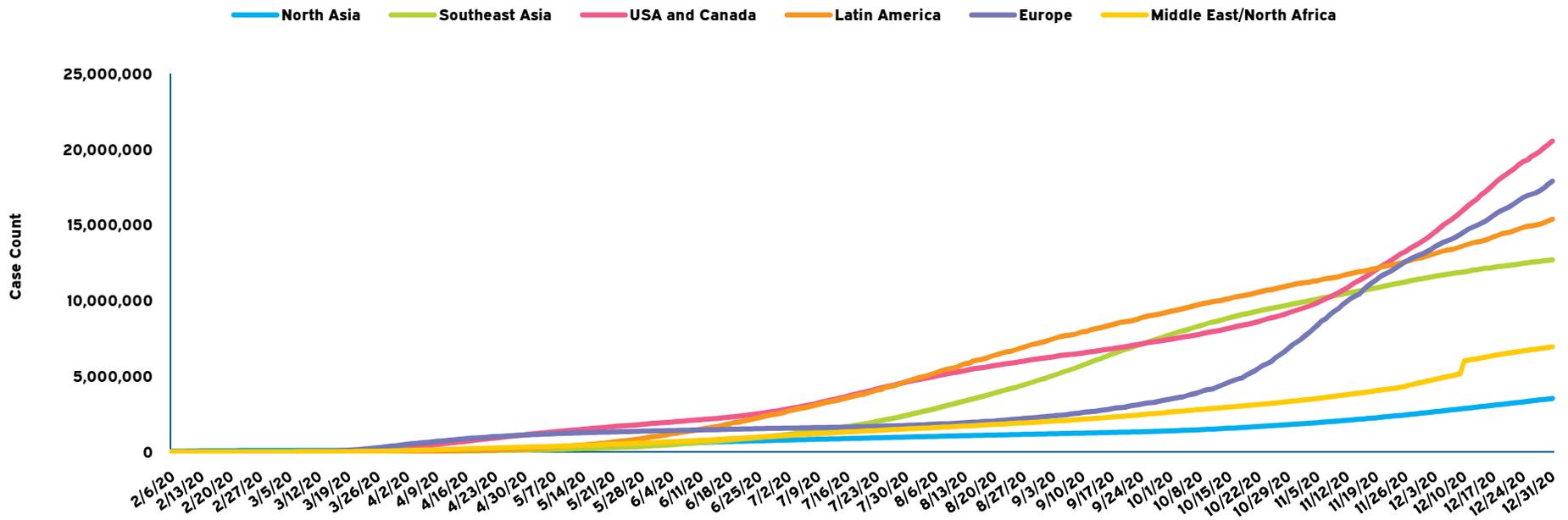
1. Economic and Market Update
2. Performance Highlights
3. Performance Update as of December 31, 2020
4. Disclaimer, Glossary, and Notes

# Economic and Market Update

Data as of December 31, 2020



### Case Count by Select Region<sup>1,2</sup>



- Cases of COVID-19 continue to grow globally, with over 95 million reported cases across 191 countries.
- The US still has the highest number of infections, with Europe collectively following given the recent spike in cases there. India and Brazil also continue to struggle with the virus.

<sup>1</sup> Source: Bloomberg. Data is as of December 31, 2020.

<sup>2</sup> North Asia: China, Hong Kong, Japan, Russia, South Korea, and Taiwan. Southeast Asia: Singapore, India, Indonesia, Malaysia, Pakistan, Philippines, Thailand, Bangladesh, Sri Lanka, and Vietnam. Europe: Austria, Belarus, Bulgaria, Croatia, Czech Republic, Denmark, France, Germany, Hungary, Italy, Netherlands, Norway, Poland, Romania, Spain, Sweden, United Kingdom, Switzerland, and Ukraine. Latin America: Chile, Brazil, Mexico, Argentina, Colombia, Peru, Venezuela, Ecuador, Panama, Paraguay, Costa Rica, Bolivia, Uruguay, El Salvador, Honduras, Cuba, Dominican Republic, Haiti, and Nicaragua. Middle East/North Africa: Algeria, Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syria, Turkey, Tunisia, United Arab Emirates, and Yemen.

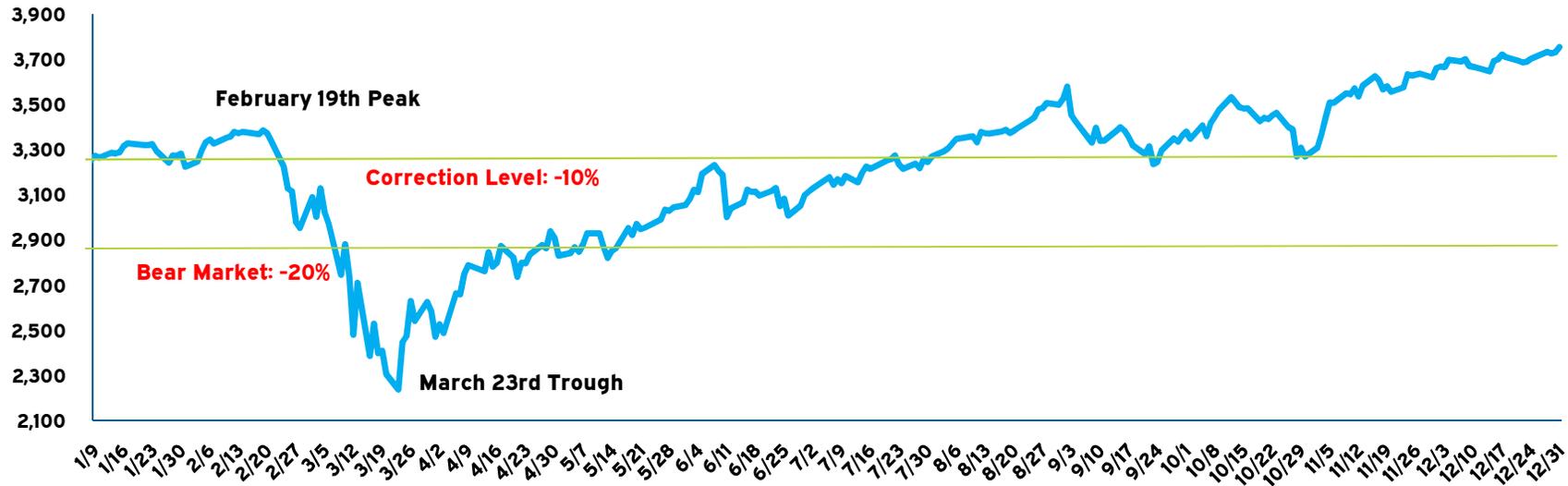
Market Returns<sup>1</sup>

Indices	December	1 Year	3 Year	5 Year	10 Year
S&P 500	3.8%	18.4%	14.1%	15.2%	13.9%
MSCI EAFE	4.7%	7.8%	4.3%	7.4%	5.5%
MSCI Emerging Markets	7.4%	18.3%	6.2%	12.8%	3.6%
MSCI China	2.8%	29.5%	9.1%	15.1%	7.6%
Bloomberg Barclays Aggregate	0.1%	7.5%	5.3%	4.4%	3.8%
Bloomberg Barclays TIPS	1.2%	11.0%	5.9%	5.1%	3.8%
Bloomberg Barclays High Yield	1.9%	7.1%	6.2%	8.6%	6.8%
10-year US Treasury	-0.6%	10.6%	6.6%	4.1%	4.4%
30-year US Treasury	-1.5%	18.7%	10.9%	7.8%	8.3%

- In December, equities, particularly emerging markets, continued to do well given progress on a US fiscal package, the passing of the US presidential election, and positive developments regarding a COVID-19 vaccine. The yield curve steepened, weighing on Treasury prices.
- For the year, global risk assets recovered meaningfully from their declines to finish in strong positive territory, largely driven by record fiscal and monetary policy stimulus and much more certainty related to the containment of the virus.
- US equities and longer-dated Treasuries performed particularly well in 2020 given policy support. Equities in China likewise performed well as China contained the virus and consequently started the reopening of their economy earlier than others. European and Japanese equity markets lagged behind the US and emerging markets.

<sup>1</sup> Source: InvestorForce and Bloomberg. Data is as of December 31, 2020.

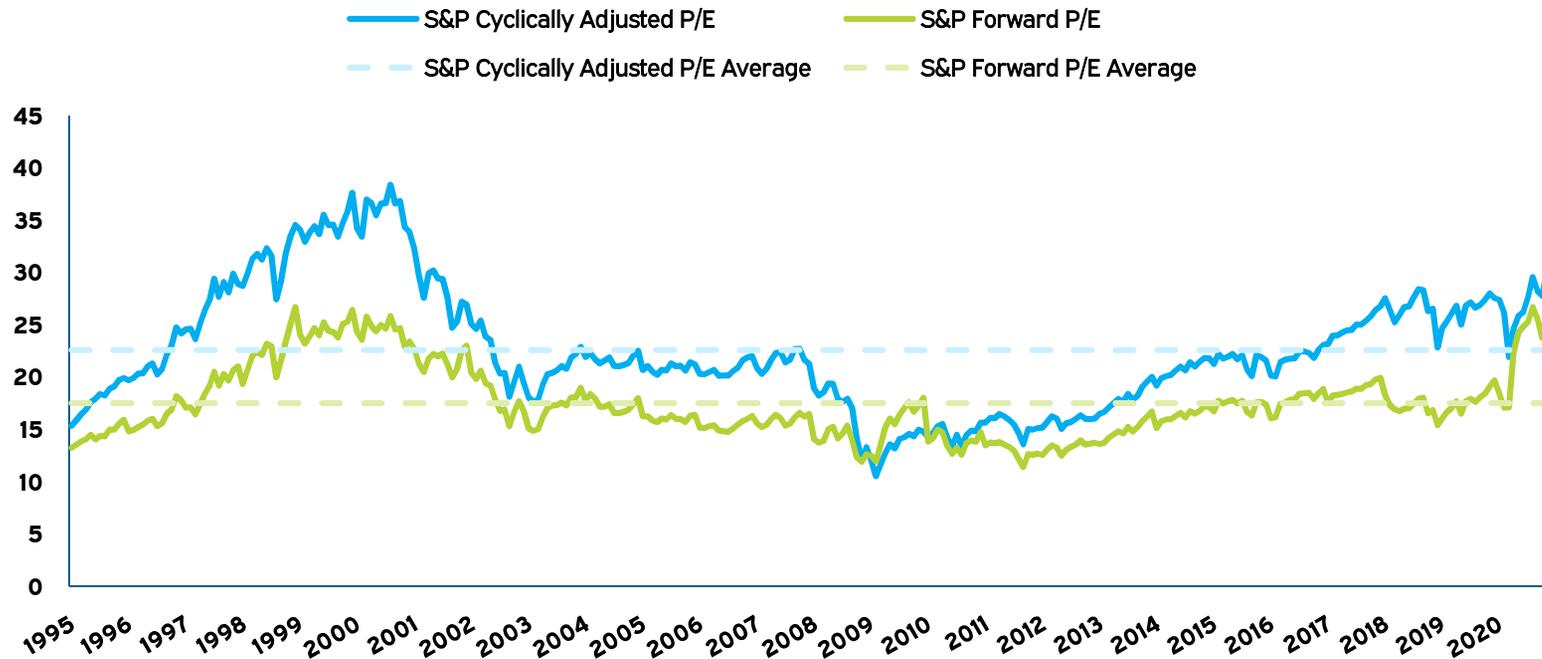
### S&P 500 Surpasses Prior Peak<sup>1</sup>



- Given the anticipated economic disruption surrounding the pandemic, US stocks declined from a February peak into bear market (-20%) territory at the fastest pace in history.
- From the February 19 peak, the S&P 500 plunged 34% in just 24 trading days.
- After quickly rebounding from its lows and finishing above pre-COVID levels by August, the market appreciated 3.8% in December, bringing its year-to-date gain to 18.4%.
- A key risk going forward remains that a spike in COVID-19 cases could slow, or reverse, reopening plans. The distribution process of the vaccine and people's willingness to take it will be important as well.

<sup>1</sup> Source: Bloomberg. Data is as of December 31, 2020.

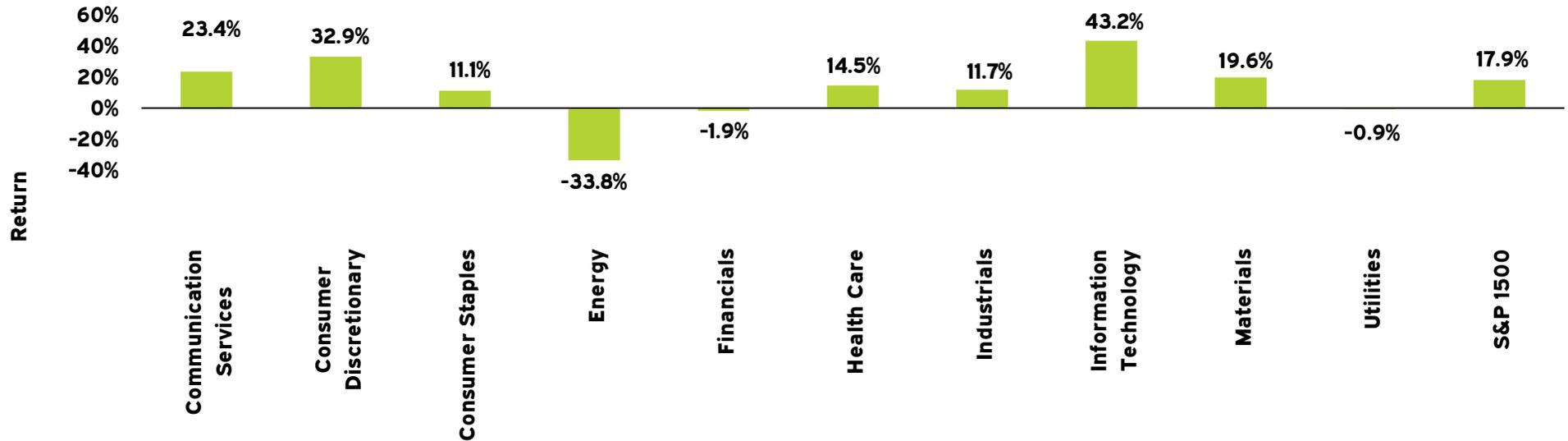
### S&P Equity Valuations<sup>1</sup>



- With positive developments regarding COVID vaccines, valuations based on both forward- and backward-looking earnings rose to levels not seen since 2001.
- Many are looking to expected improvements in earnings growth, as the US economy continues to reopen, to justify market levels, with historically low interest rates also providing support.

<sup>1</sup> Source: Bloomberg. Data is as of December 31, 2020.

### 2020 Sector Returns<sup>1</sup>

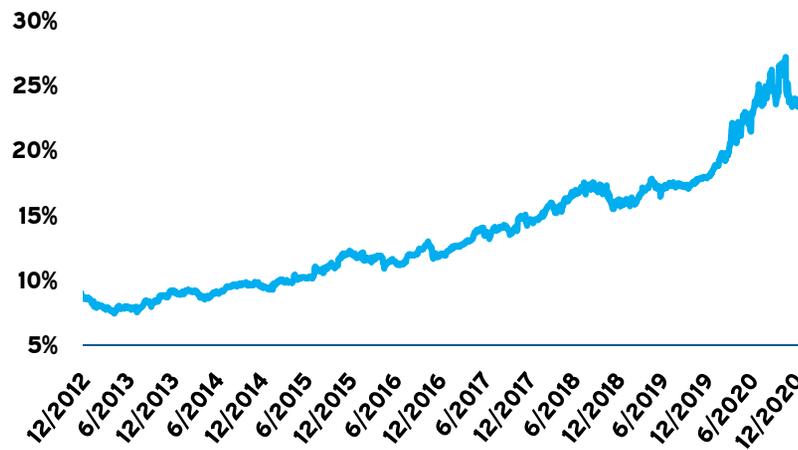


- With the recent development of multiple vaccines, there have been signs of a rotation into more cyclical stocks, but stay-at-home focused areas performed best in 2020.
- Information technology was the best performing sector, with a narrow group of companies including Amazon and Netflix driving market gains. The outperformance was due to consumers moving to online purchases and streaming services.
- The consumer discretionary sector also experienced gains as the economy reopened, people returned to work, and stimulus checks were spent.
- Energy was the sector with the greatest 2020 decline, triggered by the plunge in oil prices. Financials also struggled in this slow growth environment with demand for loans down and low interest rates weighing on loan revenue.

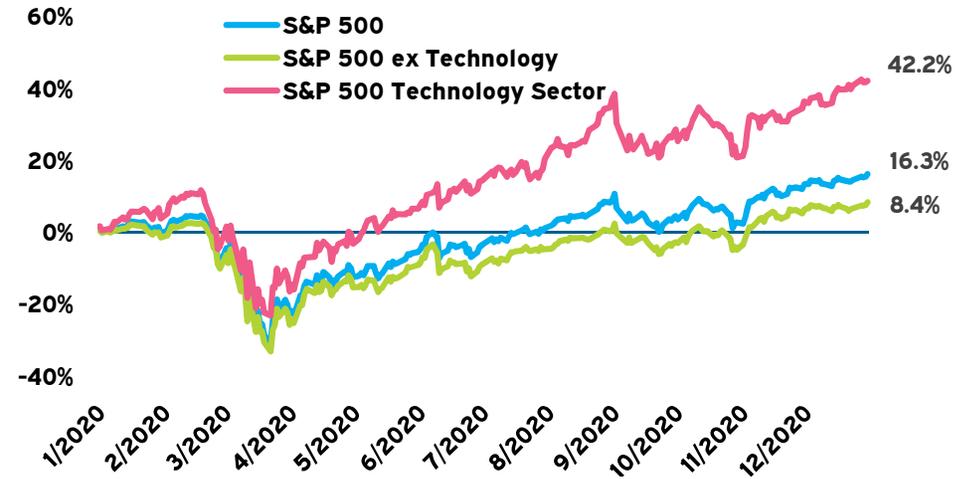
<sup>1</sup> Source: Bloomberg. Data is as of December 31, 2020.

### Technology has led the way in the Rebound

FAANG+M Share of S&P 500<sup>1</sup>



Returns Year to Date through December 31<sup>2</sup>

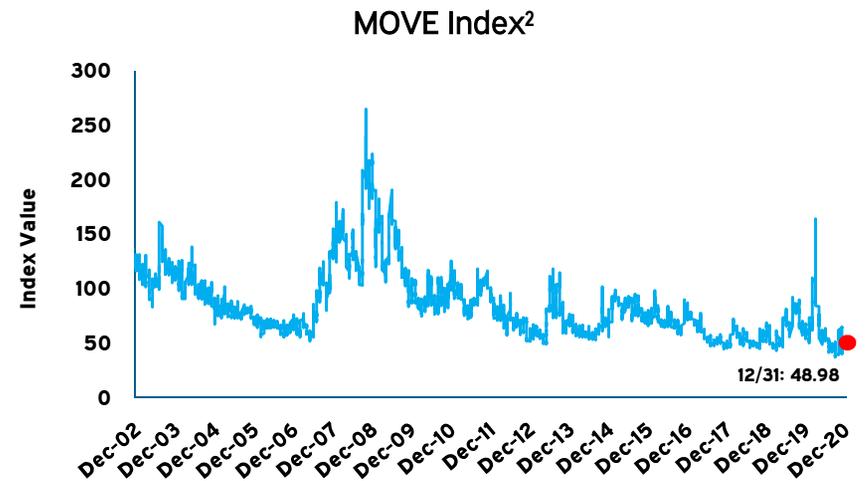
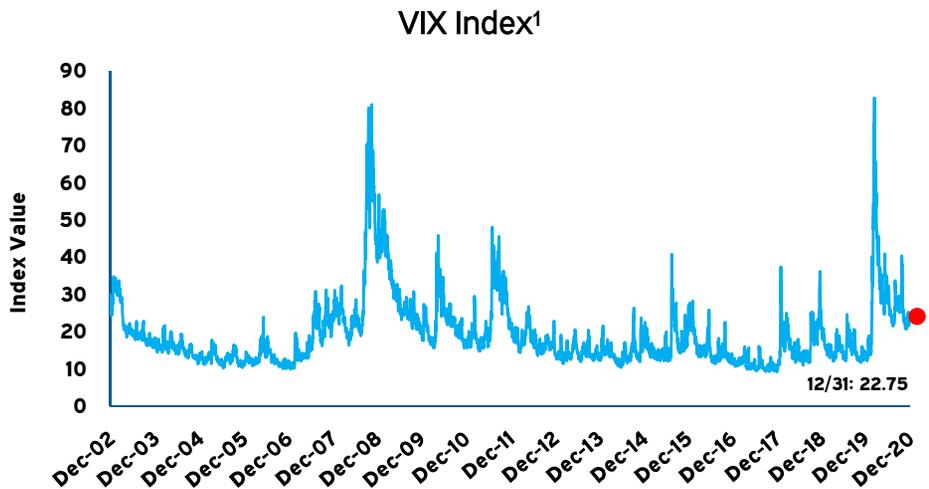


- The market recovery was largely been driven by a few technology companies that benefited from the stay-at-home environment related to the virus.
- In 2020, the S&P 500 technology sector returned +42.2%, compared to +8.4% for the S&P 500 ex-technology index, with Amazon (+76%), Netflix (+67%), and Apple (+81%) posting especially strong results.
- The outsized relative returns of these companies caused them to comprise an increasingly large portion (23%) of the S&P 500, though this trend reversed in the final months of 2020.

<sup>1</sup> FAANG+M = Facebook, Amazon, Apple, Netflix, Google (Alphabet), and Microsoft. The percentage represents the aggregate market capitalization of the 6 companies compared to the total market capitalization of the S&P 500 as of December 31, 2020.

<sup>2</sup> Each data point represents the price change relative to the 12/31/2019 starting value.

### Volatility has Declined



- Expectations of short-term equity volatility, as measured by the VIX index, finished the year much lower than the record levels experienced in March.
- At the March peak, the VIX reached 82.7, surpassing the pinnacle of volatility during the GFC, thus showing the magnitude of the crisis and of investor fear.
- Expectations of volatility within fixed income, as represented by the MOVE index, also spiked earlier in 2020, then dropped to historic lows, helped by the broad level of monetary support and forward guidance by the Fed. Volatility expectations in fixed income increased slightly in December, with the uncertainty around the Georgia Senate race looming in early January.

<sup>1</sup> Source: Chicago Board of Exchange. Data is as of December 31, 2020.

<sup>2</sup> Source: Bloomberg. Data is as of December 31, 2020.

### Key Elements of the Next Round of US Fiscal Stimulus

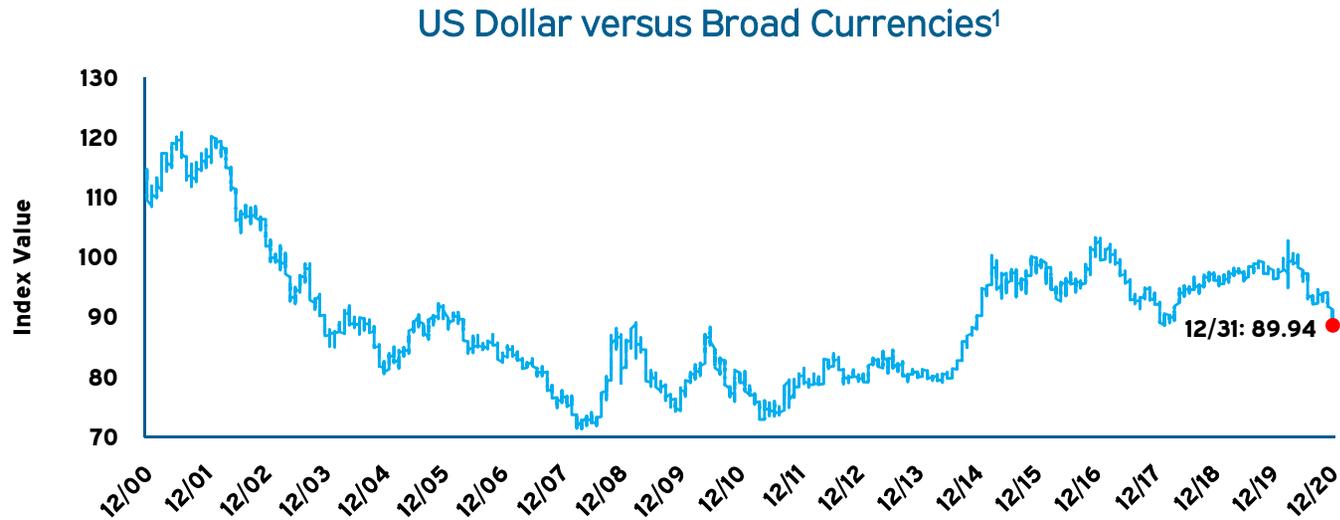
Joint Proposal	
Status	Final (voted on by house, senate and signed by President)
Direct Payments	Up to \$600 for individuals or \$1,200 for married couples and up to \$600 for each qualifying child.
Enhanced Unemployment	\$300 per week until mid-March
Vaccines, testing and tracing	\$69 billion
School aid	\$82 billion
Transportation	\$45 billion
Food / Agriculture aid	\$26 billion
Rental Assistance	\$25 billion
	Extends the eviction moratorium now in effect until Jan. 31.
State and Local Aid/Liability Protections	Excluded
Small Business Relief	\$325 billion (\$284 billion in paycheck protection)
Total	\$900 billion

- Another round of fiscal stimulus totaling ~\$900 billion, representing the second largest package in history, was finalized in late December.
- It includes direct payments to individuals, enhanced unemployment benefits, small business support, and a variety of other allocations.
- The relief was much needed for the many who lost their jobs and for businesses, particularly services like restaurants, trying to survive.
- A further \$1.9 trillion in stimulus has been outlined by the incoming Biden Administration. The package includes additional direct payments, enhanced unemployment benefits, a \$15 dollar minimum wage, extending further the eviction moratorium, and state and local aid.

## Election Results Lead to a Narrowly Democratic Majority

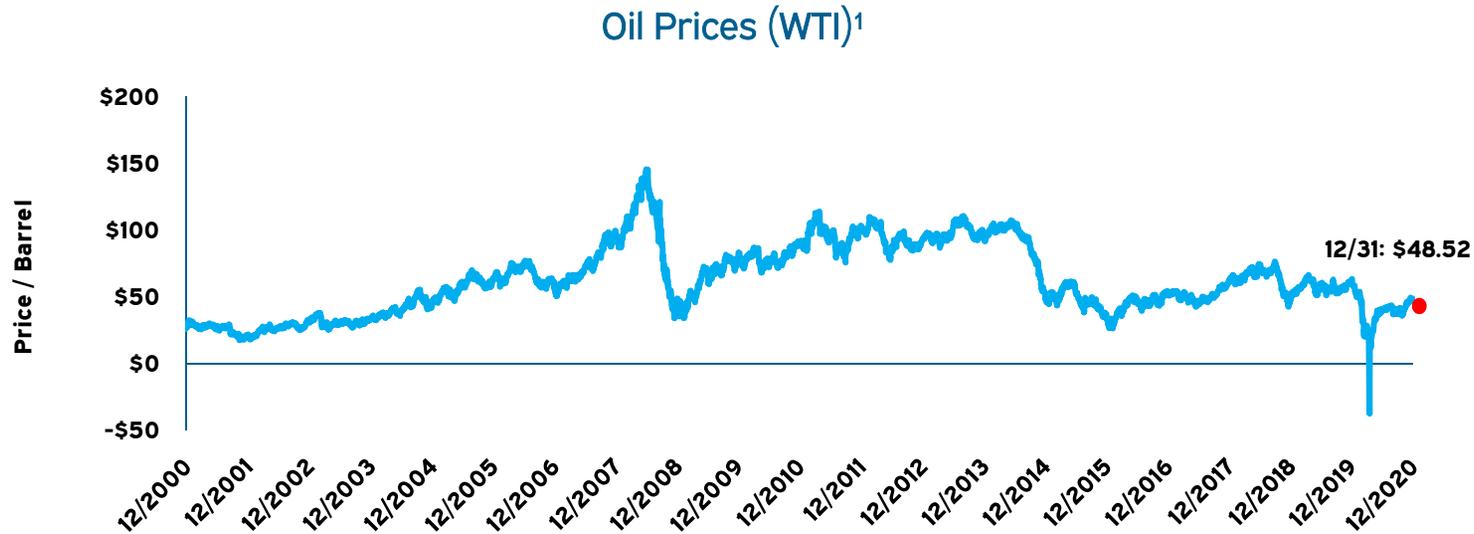
	Result	Change from Previous	Potential Implications
Presidency	<ul style="list-style-type: none"> <li>Democratic victory.</li> </ul>	<ul style="list-style-type: none"> <li>Donald Trump, Republican, left office January 20th.</li> </ul>	<ul style="list-style-type: none"> <li>Day one executive actions announced to set new 12 person COVID-19 task force, rejoin the WHO, repeal Muslim travel ban, reinstate DACA program, and rejoin Paris climate accord.</li> <li>Biden listed other priorities on the campaign trail that include addressing systemic racism, climate change, and expanding protections for union employees.</li> <li>Additional plans include bills for infrastructure, trade, foreign policy, and tax increases, that all seem more likely given the results of the recent senate elections in Georgia.</li> </ul>
Senate	<ul style="list-style-type: none"> <li>50 seats for the Democrats.</li> <li>50 seats for the Republicans.</li> </ul>	<ul style="list-style-type: none"> <li>Democrats picked up 4 seats.</li> <li>Democrats won an unlikely, double run off in Georgia and obtained an effective majority with Vice President Harris casting the tiebreaking vote.</li> </ul>	<ul style="list-style-type: none"> <li>Biden's agenda is particularly impacted by a united Senate and Congress in a few key areas, namely the next round of fiscal stimulus (greater amount), cabinet appointments (more liberal), tax reform (more rollbacks of Trump cuts), and infrastructure spending (more green, higher in amount).</li> </ul>
House	<ul style="list-style-type: none"> <li>Democratic majority maintained.</li> <li>As of January 13<sup>th</sup> 222 seats for Democrats, 211 seats for Republicans, and 2 undecided.</li> </ul>	<ul style="list-style-type: none"> <li>Heading into the November 3, 2020, election, Democrats held a 232-197 advantage in the US House. Libertarians held one seat, and five seats were vacant.</li> </ul>	<ul style="list-style-type: none"> <li>While the Democrats maintained their majority and therefore control of the agenda, Republicans gained ground, setting up a battle for the midterms in 2022.</li> <li>Nancy Pelosi remains Speaker of the House.</li> </ul>

- After much turmoil, including a storming of the US Capitol, Joe Biden was confirmed by Congress as the winner of the presidential election.
- Two run-off elections in Georgia took place in January, with Democrats winning both seats and taking a narrow Senate majority (Vice President Kamala Harris will cast the deciding vote).
- The Democratic majority sets the stage for a decidedly more liberal agenda with a higher likelihood of a large fiscal stimulus package in the coming months.



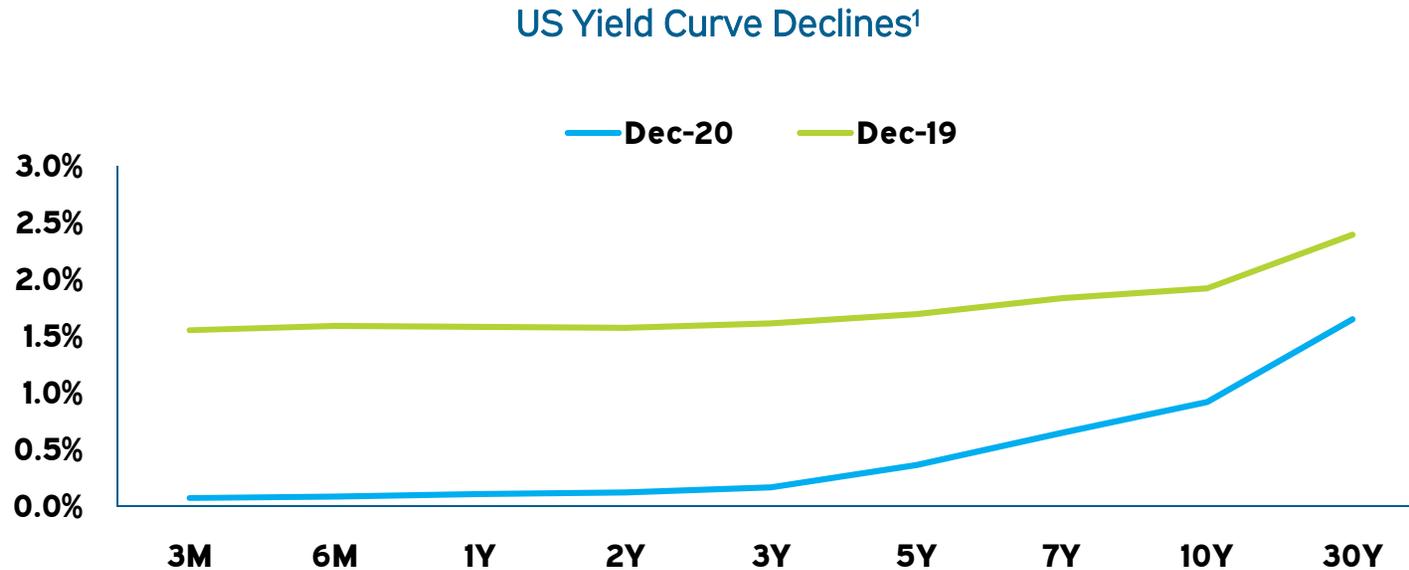
- As the crisis grew into a pandemic, investors' preferences shifted to holding US dollars and highly liquid, short-term securities like US Treasury bills.
- Recently we have seen some weakness in the dollar as the US struggles with containing the virus and investors seek higher growth non-US assets, particularly in emerging markets. This has created pressures on already stressed export-focused countries.
- Going forward, the dollar's safe haven quality and the relatively higher rates in the US could provide support.

<sup>1</sup> Source: Bloomberg. Represents the DXY Index. Data is as of December 31, 2020.



- While global oil prices rallied from April lows, they remain below their pre-pandemic level.
- In a surprise early January announcement, Saudi Arabia agreed to cut oil production by 1 million barrels/day in February and March. Other OPEC+ countries will continue production at current levels, with the exception of Russia and Kazakhstan, which will slightly increase output.
- Looking forward, global economies slowly reopening in 2021, a weaker US dollar, and production cuts should be supportive for prices. However, oil could experience renewed downward pressure in the short-term, with the increasing virus spread potentially weighing on demand.

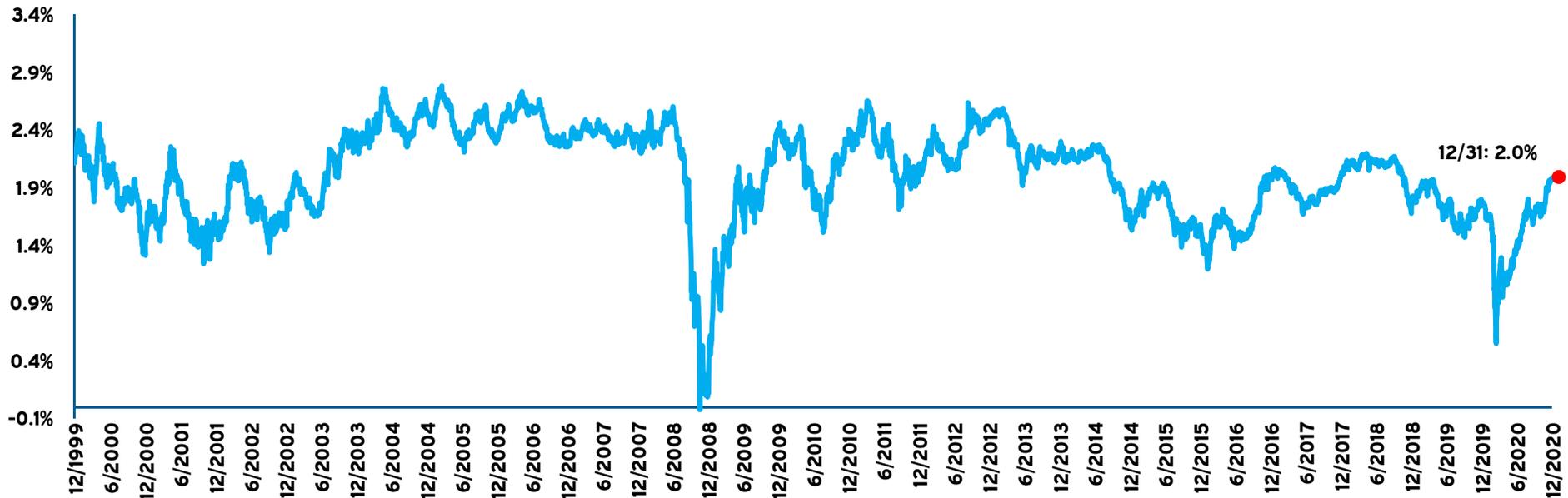
<sup>1</sup> Source: Bloomberg. Represents WTI first available futures contract. Data is as of December 31, 2020.



- The US Treasury yield curve declined materially during 2020, driven by safe-haven demand, Federal Reserve policies (policy rate cuts and the quantitative easing program), and weak US economic fundamentals.
- Over the last few months, the curve steepened on gradual signs of economic improvement, vaccine developments, and expectations for longer-dated Treasury issuance to support additional fiscal stimulus in the coming months.
- Higher yields relative to other countries and the Fed potentially extending the duration of their purchases could counterbalance steepening trends.

<sup>1</sup> Source: Bloomberg. Data is as of December 31, 2020.

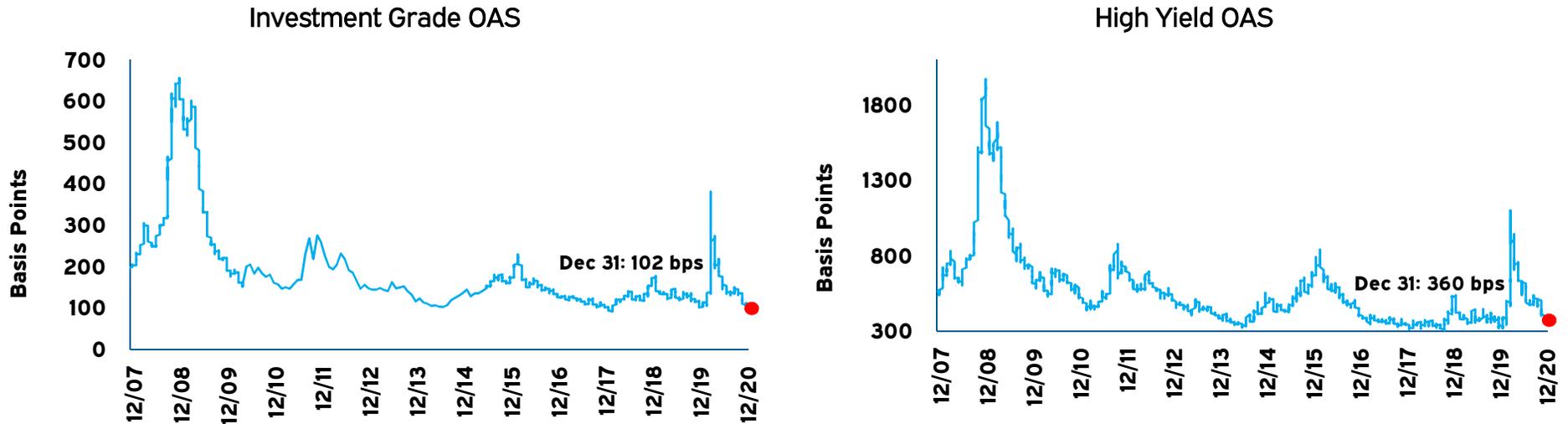
### 10-Year Breakeven Inflation<sup>1</sup>



- Inflation breakeven rates initially declined sharply, due to a combination of lower growth and inflation expectations, as well as liquidity dynamics in TIPS during the height of market volatility.
- Liquidity eventually improved and breakeven rates increased as deflationary concerns moderated. Recently, inflation expectations continued to increase given the vaccine announcements.
- Looking forward, the track of economic growth and the inflationary effects of the unprecedented US fiscal response will be key issues.

<sup>1</sup> Source: Bloomberg. Data is as of December 31, 2020.

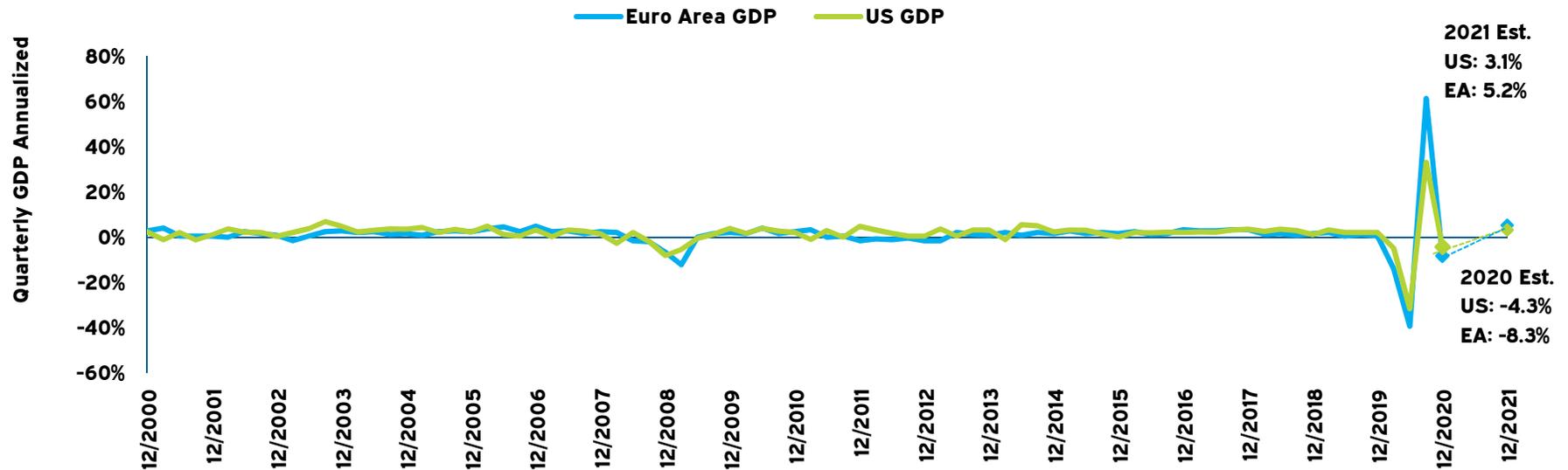
### Credit Spreads (High Yield & Investment Grade)<sup>1</sup>



- Credit spreads (the spread above a comparable Treasury) for investment grade and high yield corporate debt widened sharply at the start of the pandemic as investors sought safety.
- Investment grade bonds held up better than high yield bonds. The Federal Reserve’s corporate debt purchase program for investment grade and certain high yield securities recently downgraded from investment grade, was well received by investors. The policy support and the search for yield in the low rate environment led to a decline in spreads to below long-term averages.
- Overall, corporate debt issuance has more than doubled since 2008, which magnifies the impact of deterioration in the corporate debt market. This is particularly true in the energy sector, which represents over 10% of the high yield bond market.

<sup>1</sup> Source: Federal Reserve Bank of St. Louis Economic Research. Data is as of December 31, 2020.

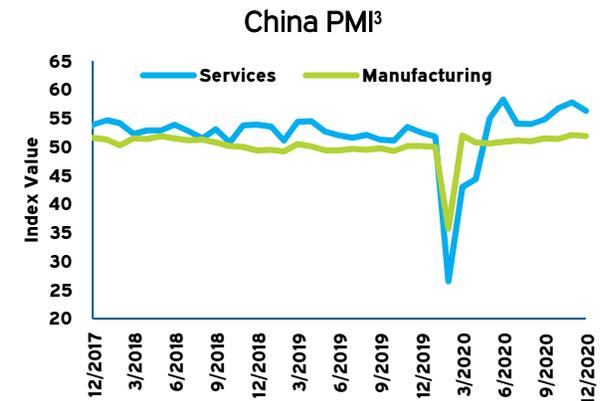
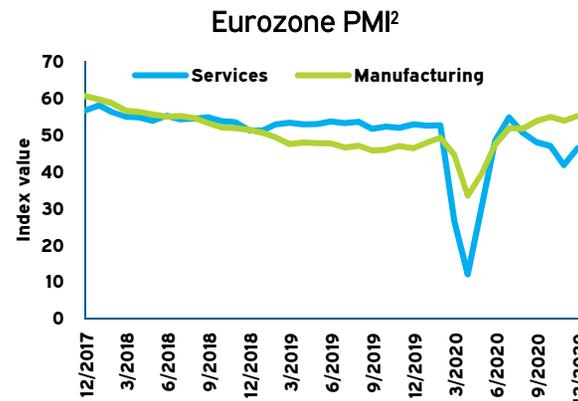
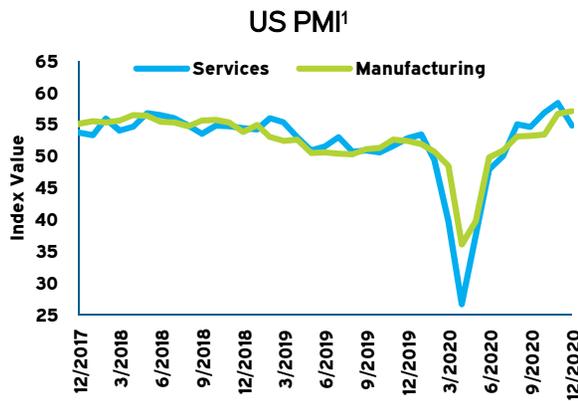
### GDP Data Shows Impact of the Pandemic<sup>1</sup>



- The global economy faced major recessionary pressures this year, but optimism remains for improvements in 2021, as economies are expected to gradually reopen despite the recent spike in virus cases.
- Historic declines in growth in the US and Europe during the second quarter were followed by record increases in the third quarter, due to pent up demand from the lockdown measures earlier in the year.
- Recently, GDPNow from the Atlanta Fed estimated that fourth quarter US GDP growth could be 7.4% (QoQ annualized), down from original estimates. Full year US GDP growth is forecasted to decline by 4.3% by the IMF.

<sup>1</sup> Source: Bloomberg, Atlanta FED and IMF. Q3 2020 data represents the second estimate of GDP for the Euro Area and United States. Euro Area figures annualized by Meketa. Projections via October 2020 IMF World Economic Outlook and represent annual numbers.

### Global PMIs



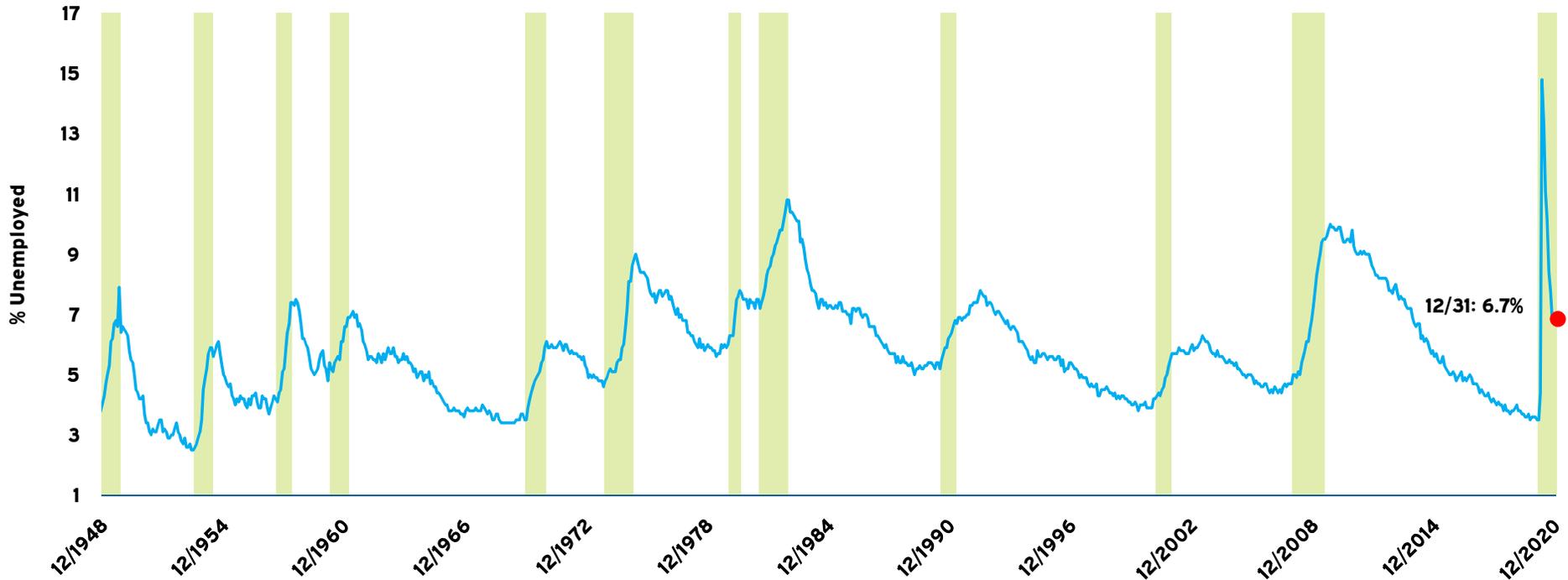
- Purchasing Managers Indices (PMI), based on surveys of private sector companies, initially collapsed across the world to record lows, as closed economies depressed output, new orders, production, and employment.
- Readings below 50 represent contractions across underlying components are a leading indicator of economic activity, including the future paths of GDP, employment, and industrial production.
- The services sector was particularly hard hit by stay-at-home restrictions in many places.
- As the Chinese economy reopened, their PMIs, particularly in the service sector, recovered materially. In the US, the indices have also improved from their lows to above contraction levels. In Europe, manufacturing has largely recovered, but services continue to show weakness due to increased lockdowns.

<sup>1</sup> Source: Bloomberg. US Markit Services and Manufacturing PMI. Data is as of December 2020.

<sup>2</sup> Source: Bloomberg. Eurozone Markit Services and Manufacturing PMI. Data is as of December 2020.

<sup>3</sup> Source: Bloomberg. Caixin Services and Manufacturing PMI. Data is as of December 2020.

### US Unemployment Rate<sup>1</sup>

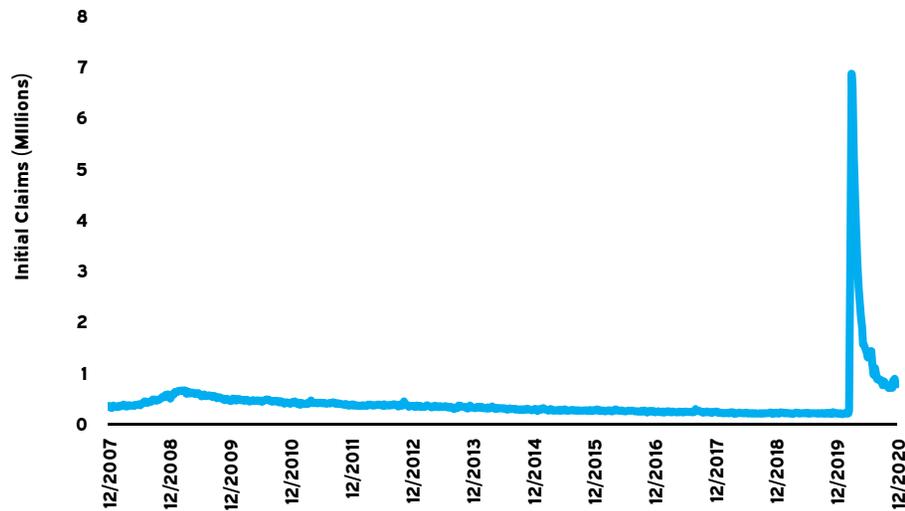


- In December, the unemployment rate continued its decline from the recent April 14.7% peak, falling to 6.7%.
- Despite the improvement, unemployment levels remain well above pre-virus readings and are likely higher than reported, as some workers appear misclassified. According to the Bureau of Labor Statistics, absent the misclassification issue, the December unemployment rate would be higher by 0.6%.

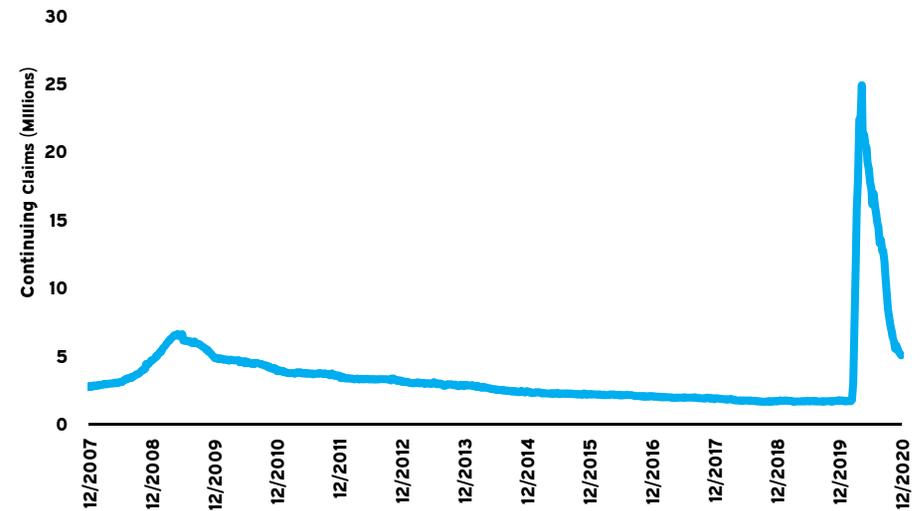
<sup>1</sup> Source: Bloomberg. Data is as of December 31, 2020. Bars represent recessions.

### US Jobless Claims

US Initial Jobless Claims<sup>1</sup>



Continuing Claims<sup>2</sup>

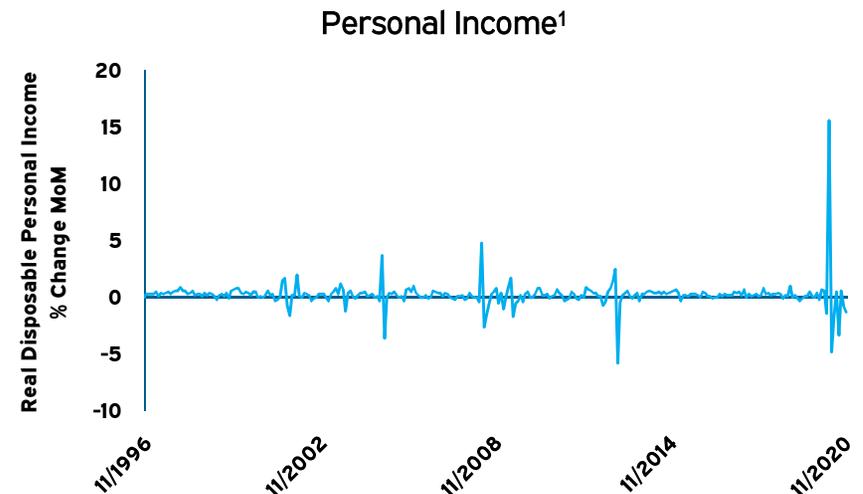
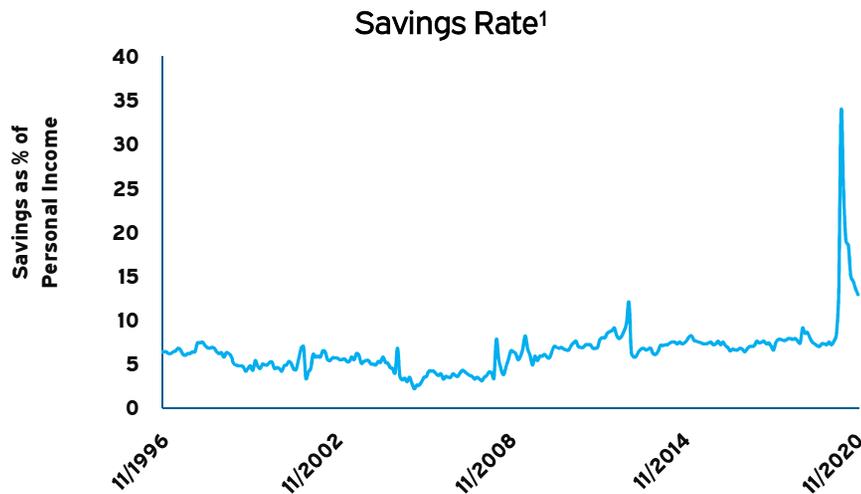


- Over the last 41 weeks, roughly 73 million people filed for initial unemployment. This level is well over three times the 22 million jobs added since the GFC, highlighting the unprecedented impact of the virus.
- Despite the continued decline in initial jobless claims to below one million per week, levels remain many multiples above the worst reading during the Global Financial Crisis.
- Continuing jobless claims (i.e., those currently receiving benefits) have also declined from record levels, but remain elevated at 5.1 million.

<sup>1</sup> Source: Bloomberg. First reading of seasonally adjusted initial jobless claims. Data is as of December 25, 2020.

<sup>2</sup> Source: Bloomberg. US Continuing Jobless Claims SA. Data is as of December 25, 2020.

### Savings and Spending

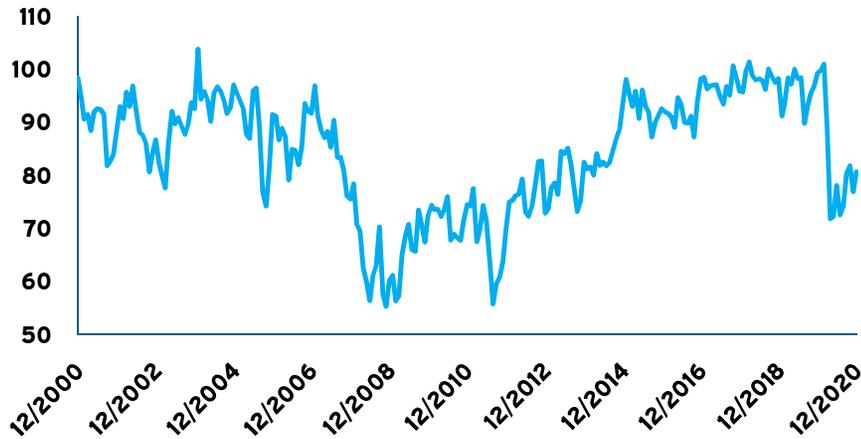


- Fiscal programs including stimulus checks, enhanced unemployment benefits, and loans to small businesses through the Paycheck Protection Program (PPP) have largely supported income levels through the shutdown. The growth in income declined dramatically as fiscal support waned.
- Despite the income support, the savings rate increased due to the decline in consumer spending, driven by the initial lock-down of the economy, and by uncertainties related to the future of the job market and stimulus programs.
- More recently, the savings rate declined from its peak as spending increased with the economy slowly reopening. Going forward, questions remain about how consumers will make use of the recently announced stimulus programs.

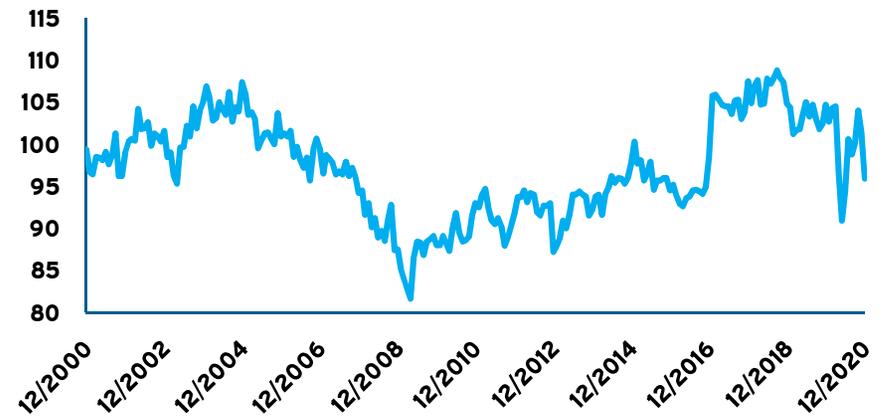
<sup>1</sup> Source: Bloomberg. Latest data is as of November 2020.

### Sentiment Indicators

University of Michigan Consumer Sentiment<sup>1</sup>



Small Business Confidence<sup>2</sup>



- The attitudes of businesses and consumers are useful indicators of future economic activity.
- Consumer spending comprises close to 70% of US GDP, making the attitudes of consumers an important driver of economic growth. Additionally, small businesses generate around half of US GDP, making sentiment in that segment important.
- Sentiment indicators have shown improvements as the economy re-opens, but increasing cases and greater restrictions could weigh on short-term sentiment.

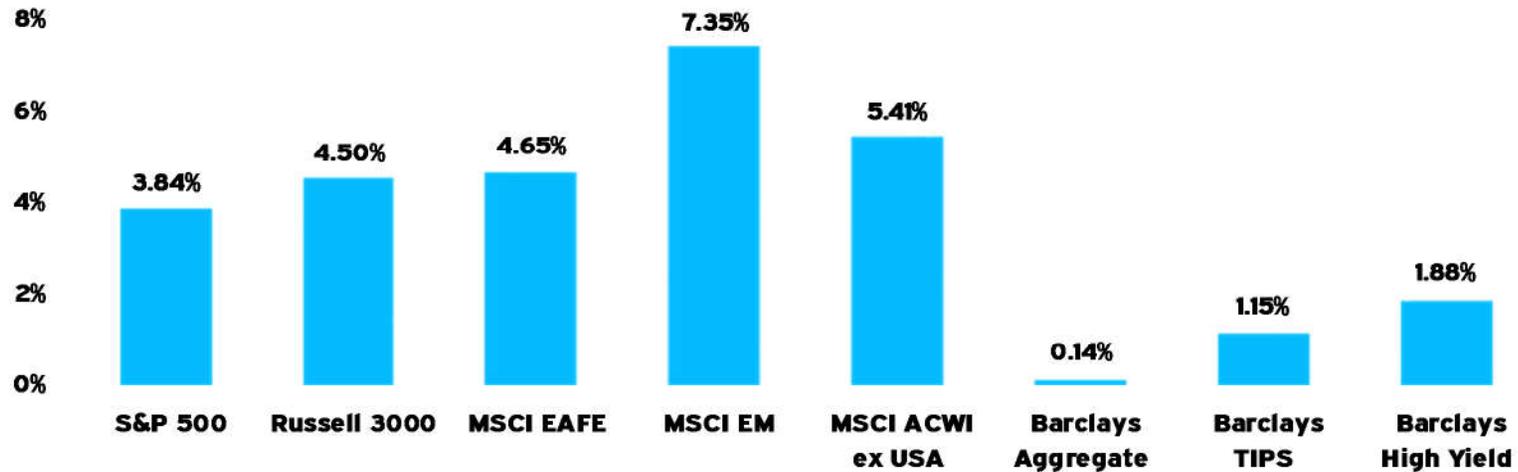
<sup>1</sup> Source: Bloomberg. University of Michigan Consumer Sentiment Index. Data is as of December 31, 2020.

<sup>2</sup> Source: Bloomberg. NFIB Small Business Optimism Index. Latest data is as of December 31, 2020.

**Performance Highlights**  
As of December 31, 2020

### Market Review and Performance Summary for December 2020

**December 2020 Broad Market Index Returns**



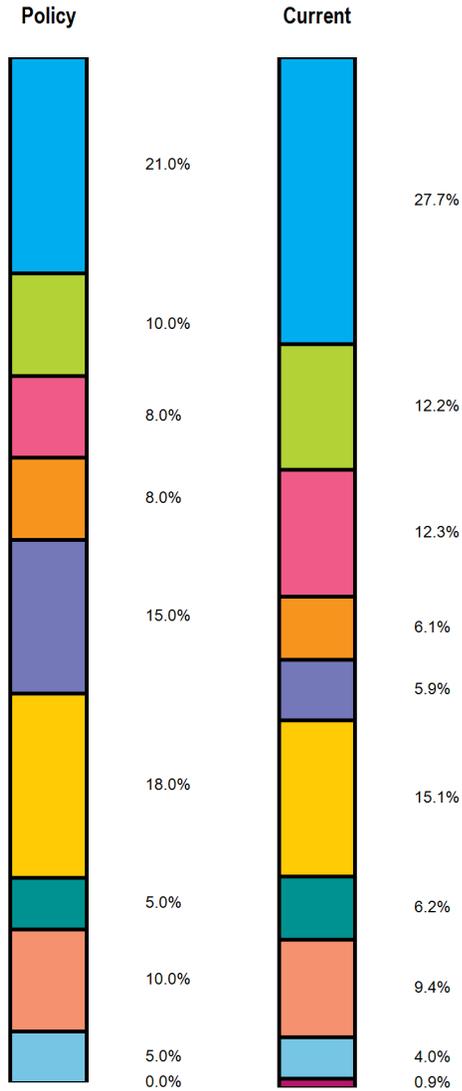
**Growth > Value      US Treasury 10 yr: +9 basis points      Small Cap > Large Cap**

- Financial assets rallied on the back of positive news in December as the first COVID vaccines were approved for emergency use by the FDA in the US.
- Equity investors continued the previous month's rotation from large cap to small cap stocks.
- The yield curve was mostly unchanged.

As of December 31, 2020, total assets for the Merced CERA Portfolio are estimated at \$1.05 billion.

- Merced CERA reported an overall monthly return of +3.6%.
- Within the portfolio, all asset classes were positive for the month. Emerging Markets led with +8.4%. Strong returns over the quarter (+23.1%) led to Emerging Markets breaching its policy range in December. Meketa is monitoring this and will recommend rebalancing action.

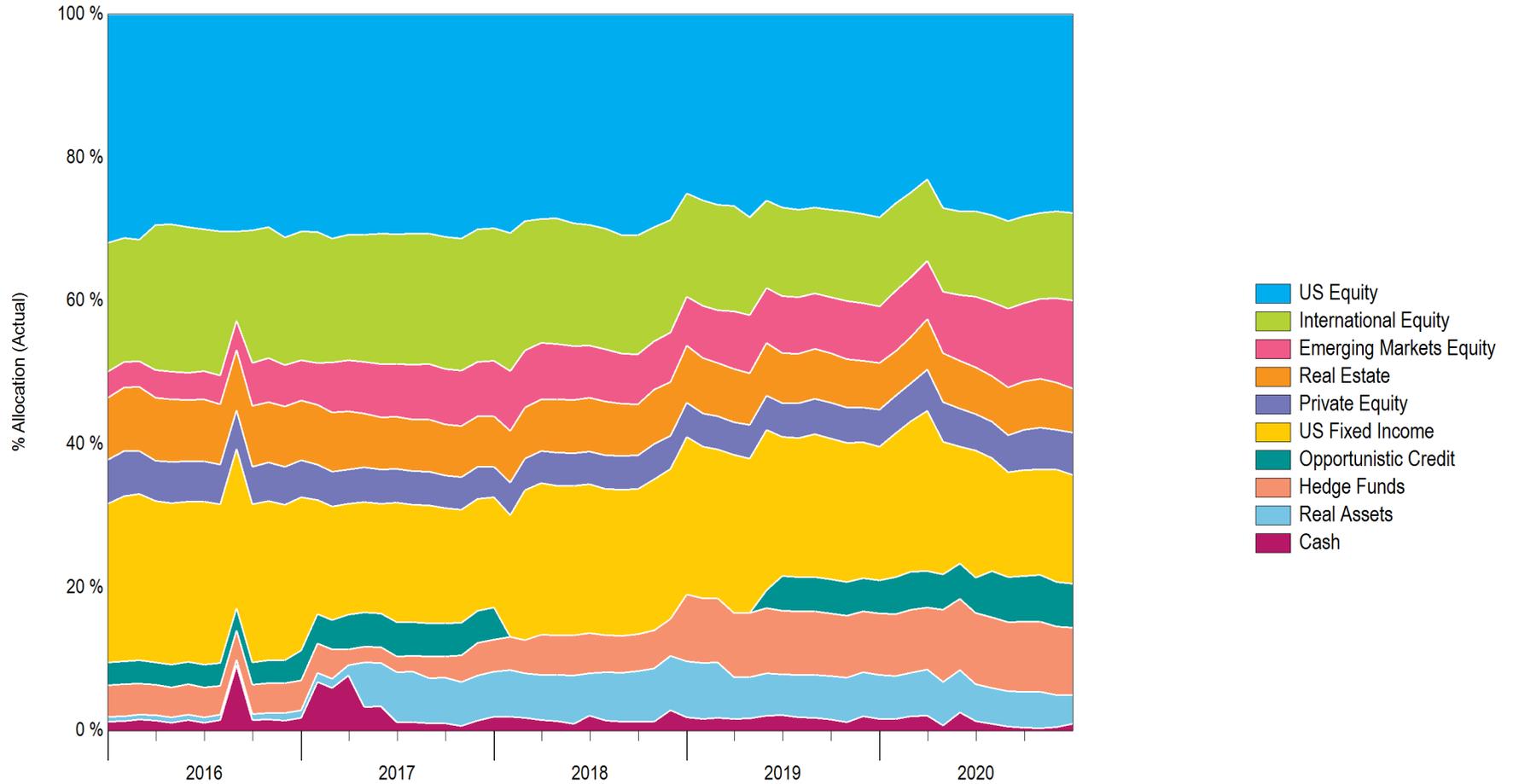
## **Performance Update as of December 31, 2020**



Allocation vs. Targets and Policy							
	Current Balance	Current Allocation	Policy	Difference	Policy Range	Within IPS Range?	
US Equity	\$291,590,907	27.7%	21.0%	6.7%	15.0% - 26.0%	No	
International Equity	\$128,526,495	12.2%	10.0%	2.2%	5.0% - 15.0%	Yes	
Emerging Markets Equity	\$129,419,215	12.3%	8.0%	4.3%	4.0% - 12.0%	No	
Real Estate	\$64,520,041	6.1%	8.0%	-1.9%	6.0% - 10.0%	Yes	
Private Equity	\$61,857,170	5.9%	15.0%	-9.1%	5.0% - 20.0%	Yes	
US Fixed Income	\$159,171,368	15.1%	18.0%	-2.9%	13.0% - 23.0%	Yes	
Opportunistic Credit	\$64,859,471	6.2%	5.0%	1.2%	3.0% - 7.0%	Yes	
Hedge Funds	\$99,134,531	9.4%	10.0%	-0.6%	5.0% - 15.0%	Yes	
Real Assets	\$42,217,737	4.0%	5.0%	-1.0%	3.0% - 7.0%	Yes	
Cash	\$9,816,207	0.9%	0.0%	0.9%	0.0% - 5.0%	Yes	
<b>Total</b>	<b>\$1,051,113,143</b>	<b>100.0%</b>	<b>100.0%</b>				

Cash range displayed for illustrative purposes only.

Asset Allocation History  
5 Years Ending December 31, 2020



Asset Class Performance Summary											
	Market Value (\$)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>Total Fund (Net)*</b>	<b>1,051,113,143</b>	<b>100.0</b>	<b>3.6</b>	<b>9.2</b>	<b>15.5</b>	<b>16.4</b>	<b>9.2</b>	<b>10.3</b>	<b>8.4</b>	<b>8.4</b>	<b>Dec-94</b>
<b>Total Fund (Gross)*</b>			<b>3.6</b>	<b>9.3</b>	<b>15.7</b>	<b>16.9</b>	<b>9.5</b>	<b>10.6</b>	<b>8.8</b>	<b>8.5</b>	
<i>Policy Index</i>			2.5	7.3	13.5	11.5	7.9	9.8	8.6	6.3	Dec-94
<b>Total Fund w/o Alternatives (Net)</b>	<b>773,567,456</b>	<b>73.6</b>	<b>3.9</b>	<b>11.0</b>	<b>18.8</b>	<b>21.1</b>	<b>11.1</b>	<b>11.9</b>	<b>9.6</b>	--	<b>Dec-94</b>
<b>Total Fund w/o Alternatives (Gross)</b>			<b>3.9</b>	<b>11.1</b>	<b>19.1</b>	<b>21.5</b>	<b>11.4</b>	<b>12.3</b>	<b>9.4</b>	--	
<i>Policy Index w/o AI</i>			3.8	12.1	18.4	14.8	9.1	10.6	--	--	Dec-94
<b>US Equity (Net)</b>	<b>291,590,907</b>	<b>27.7</b>	<b>4.5</b>	<b>14.2</b>	<b>23.2</b>	<b>18.3</b>	<b>13.8</b>	<b>15.8</b>	<b>13.7</b>	<b>10.6</b>	<b>Dec-94</b>
<b>US Equity (Gross)</b>			<b>4.5</b>	<b>14.3</b>	<b>23.4</b>	<b>18.6</b>	<b>14.1</b>	<b>16.0</b>	<b>13.9</b>	<b>10.7</b>	
<i>Russell 3000</i>			4.5	14.7	25.2	20.9	14.0	15.2	13.6	10.5	Dec-94
<b>International Equity (Net)</b>	<b>257,945,710</b>	<b>24.5</b>	<b>6.1</b>	<b>16.0</b>	<b>29.8</b>	<b>35.8</b>	<b>13.1</b>	<b>13.8</b>	<b>7.8</b>	<b>6.7</b>	<b>Dec-98</b>
<b>International Equity (Gross)</b>			<b>6.2</b>	<b>16.3</b>	<b>30.3</b>	<b>36.8</b>	<b>13.6</b>	<b>14.3</b>	<b>8.4</b>	<b>7.0</b>	
<i>International Equity Custom</i>			5.9	17.8	26.1	13.0	5.7	9.9	6.0	4.9	Dec-98
<b>Developed International Equity (Net)</b>	<b>128,526,495</b>	<b>12.2</b>	<b>4.0</b>	<b>9.6</b>	<b>18.2</b>	<b>13.9</b>	<b>6.0</b>	<b>8.9</b>	<b>6.0</b>	<b>4.5</b>	<b>Jan-08</b>
<b>Developed International Equity (Gross)</b>			<b>4.0</b>	<b>9.8</b>	<b>18.6</b>	<b>14.6</b>	<b>6.4</b>	<b>9.3</b>	<b>6.5</b>	<b>5.0</b>	
<i>Custom Blended Developed International Equity Benchmark</i>			5.1	16.6	23.5	9.2	4.7	7.7	5.6	3.4	Jan-08
<b>Emerging Markets Equity (Net)</b>	<b>129,419,215</b>	<b>12.3</b>	<b>8.4</b>	<b>23.1</b>	<b>43.7</b>	<b>68.0</b>	<b>22.5</b>	<b>22.9</b>	--	<b>10.6</b>	<b>Apr-12</b>
<b>Emerging Markets Equity (Gross)</b>			<b>8.5</b>	<b>23.4</b>	<b>44.5</b>	<b>69.4</b>	<b>23.6</b>	<b>24.0</b>	--	<b>11.6</b>	
<i>Custom Blended Emerging Markets Benchmark</i>			7.4	19.7	31.1	18.3	6.4	13.1	4.0	5.6	Apr-12
<b>US Fixed Income (Net)</b>	<b>159,171,368</b>	<b>15.1</b>	<b>0.2</b>	<b>0.7</b>	<b>1.3</b>	<b>7.4</b>	<b>4.9</b>	<b>4.8</b>	<b>4.2</b>	<b>5.4</b>	<b>Dec-94</b>
<b>US Fixed Income (Gross)</b>			<b>0.2</b>	<b>0.8</b>	<b>1.4</b>	<b>7.6</b>	<b>5.1</b>	<b>5.0</b>	<b>4.5</b>	<b>5.5</b>	
<i>BBqBarc US Aggregate TR</i>			0.1	0.7	1.3	7.5	5.3	5.1	4.0	5.7	Dec-94
<b>Opportunistic Credit (Net)</b>	<b>64,859,471</b>	<b>6.2</b>	<b>1.9</b>	<b>5.4</b>	<b>9.4</b>	<b>6.3</b>	--	--	--	<b>6.3</b>	<b>May-19</b>
<b>Opportunistic Credit (Gross)</b>			<b>1.9</b>	<b>5.6</b>	<b>9.6</b>	<b>6.6</b>	--	--	--	<b>6.6</b>	
<i>50% Barclays US Aggregate / 25% Barclays US High Yield / 25% Credit Suisse Leveraged Loans</i>			0.9	2.8	5.4	6.5	--	--	--	6.8	May-19

The current US Fixed Income benchmark is the Barclays US Agg. Please refer to the benchmark history for the composition of the US Fixed Income benchmark in earlier periods. Data prior to March 2018 provided by prior consultant.

	Market Value (\$)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>Real Estate (Net)</b>	<b>64,520,041</b>	<b>6.1</b>	<b>NA</b>	<b>2.0</b>	<b>0.8</b>	<b>2.9</b>	<b>3.1</b>	<b>4.6</b>	<b>7.0</b>	--	<b>Mar-99</b>
<b>Real Estate (Gross)</b>			<b>NA</b>	<b>2.0</b>	<b>0.8</b>	<b>2.9</b>	<b>3.1</b>	<b>4.9</b>	<b>7.7</b>	<b>7.9</b>	
<i>Custom Blended Real Estate Benchmark</i>			NA	0.5	-1.1	1.4	4.4	5.5	9.0	7.1	Mar-99
<i>CPI + 5% (Seasonally Adjusted)</i>			NA	1.8	4.3	6.3	6.9	7.0	--	--	Mar-99
<b>Private Real Estate (Net)</b>	<b>59,202,741</b>	<b>5.6</b>	<b>NA</b>	<b>1.5</b>	<b>0.4</b>	<b>2.4</b>	<b>2.9</b>	<b>4.5</b>	<b>6.9</b>	--	<b>Mar-99</b>
<b>Private Real Estate (Gross)</b>			<b>NA</b>	<b>1.5</b>	<b>0.4</b>	<b>2.4</b>	<b>2.9</b>	<b>4.8</b>	<b>7.6</b>	<b>7.9</b>	
<i>Custom Blended Real Estate Benchmark</i>			NA	0.5	-1.1	1.4	4.4	5.5	9.0	7.1	Mar-99
<b>Private Equity (Net)</b>	<b>61,857,170</b>	<b>5.9</b>	<b>NA</b>	<b>6.3</b>	<b>12.0</b>	<b>9.2</b>	<b>11.4</b>	<b>9.7</b>	<b>9.9</b>	<b>8.1</b>	<b>Jun-05</b>
<b>Private Equity (Gross)</b>			<b>NA</b>	<b>6.3</b>	<b>12.0</b>	<b>9.2</b>	<b>11.4</b>	<b>9.7</b>	<b>10.1</b>	<b>8.2</b>	
<i>Custom Blended Private Equity Benchmark</i>			NA	NA	10.7	10.4	13.4	16.0	--	--	Jun-05
<i>Russell 3000 +3% 1-Quarter Lag</i>			NA	10.0	35.2	18.4	15.0	17.1	16.9	12.5	Jun-05
<b>Hedge Fund (Net)</b>	<b>99,134,531</b>	<b>9.4</b>	<b>2.2</b>	<b>5.4</b>	<b>8.4</b>	<b>4.8</b>	<b>4.0</b>	<b>4.6</b>	--	<b>4.0</b>	<b>Jun-14</b>
<b>Hedge Fund (Gross)</b>			<b>2.2</b>	<b>5.6</b>	<b>8.8</b>	<b>5.7</b>	<b>4.5</b>	<b>4.9</b>	--	<b>4.3</b>	
<i>Custom Blended Hedge Fund Benchmark</i>			3.1	7.6	12.2	10.3	4.8	5.0	--	4.1	Jun-14
<b>Real Assets (Net)</b>	<b>42,217,737</b>	<b>4.0</b>	<b>1.9</b>	<b>3.9</b>	<b>8.0</b>	<b>3.8</b>	<b>6.4</b>	<b>7.0</b>	<b>8.1</b>	--	<b>Mar-99</b>
<b>Real Assets (Gross)</b>			<b>1.9</b>	<b>3.9</b>	<b>8.0</b>	<b>4.0</b>	<b>6.5</b>	<b>7.4</b>	<b>8.8</b>	--	
<i>Custom Blended Real Assets Benchmark</i>			NA	NA	3.9	-1.1	2.5	6.8	--	--	Mar-99
<i>CPI + 5% (Seasonally Adjusted)</i>			0.8	1.8	4.3	6.3	6.9	7.0	--	--	Mar-99
<b>Private Infrastructure (Net)</b>	<b>20,889,734</b>	<b>2.0</b>	<b>NA</b>	<b>1.0</b>	<b>2.7</b>	<b>13.4</b>	<b>11.1</b>	<b>10.5</b>	--	<b>8.7</b>	<b>Dec-14</b>
<b>Private Infrastructure (Gross)</b>			<b>NA</b>	<b>1.0</b>	<b>2.7</b>	<b>13.5</b>	<b>11.1</b>	<b>10.5</b>	--	<b>8.7</b>	
<i>S&amp;P Global Infrastructure Net TR USD</i>			NA	14.8	16.4	-6.5	1.8	6.9	5.6	3.5	Dec-14
<b>Private Natural Resources (Net)</b>	<b>11,554,192</b>	<b>1.1</b>	<b>NA</b>	<b>1.8</b>	<b>10.0</b>	<b>-9.4</b>	<b>4.1</b>	<b>12.1</b>	--	<b>11.2</b>	<b>Sep-15</b>
<b>Private Natural Resources (Gross)</b>			<b>NA</b>	<b>1.8</b>	<b>10.0</b>	<b>-9.4</b>	<b>4.1</b>	<b>12.1</b>	--	<b>11.2</b>	
<i>S&amp;P Global Natural Resources Index TR USD</i>			NA	21.9	24.5	0.7	1.0	10.9	0.6	10.4	Sep-15
<b>Cash (Net)</b>	<b>9,816,207</b>	<b>0.9</b>	<b>0.0</b>	<b>0.0</b>	<b>0.2</b>	<b>0.7</b>	<b>1.0</b>	--	--	--	
<b>Cash (Gross)</b>			<b>0.0</b>	<b>0.0</b>	<b>0.2</b>	<b>0.7</b>	<b>1.0</b>	--	--	--	

\*One or more accounts have been excluded from the composite for the purposes of performance calculations and market value.

Private Markets values are cash flow adjusted from 9/30/2020 NAVs unless otherwise noted.

Real Assets includes State Street Real Asset NL Fund.

### Trailing Net Performance

	Market Value (\$)	% of Portfolio	% of Sector	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>Total Fund(Net)*</b>	<b>1,051,113,143</b>	<b>100.0</b>	<b>--</b>	<b>3.6</b>	<b>9.2</b>	<b>15.5</b>	<b>16.4</b>	<b>9.2</b>	<b>10.3</b>	<b>8.4</b>	<b>8.4</b>	<b>Dec-94</b>
<i>Policy Index</i>				2.5	7.3	13.5	11.5	7.9	9.8	8.6	6.3	Dec-94
<b>Total Fund w/o Alternatives(Net)</b>	<b>773,567,456</b>	<b>73.6</b>	<b>73.6</b>	<b>3.9</b>	<b>11.0</b>	<b>18.8</b>	<b>21.1</b>	<b>11.1</b>	<b>11.9</b>	<b>9.6</b>	<b>--</b>	<b>Dec-94</b>
<i>Policy Index w/o AI</i>				3.8	12.1	18.4	14.8	9.1	10.6	--	--	Dec-94
<b>US Equity(Net)</b>	<b>291,590,907</b>	<b>27.7</b>	<b>37.7</b>	<b>4.5</b>	<b>14.2</b>	<b>23.2</b>	<b>18.3</b>	<b>13.8</b>	<b>15.8</b>	<b>13.7</b>	<b>10.6</b>	<b>Dec-94</b>
<i>Russell 3000</i>				4.5	14.7	25.2	20.9	14.0	15.2	13.6	10.5	Dec-94
Mellon Dynamic US Equity(Net)	136,547,042	13.0	46.8	3.7	11.7	20.6	19.3	15.7	17.9	--	18.1	Dec-12
<i>S&amp;P 500</i>				3.8	12.1	22.2	18.4	14.2	15.2	13.9	15.2	Dec-12
Mellon Large Cap(Net)	121,328,824	11.5	41.6	4.2	13.7	24.4	20.9	14.8	--	--	16.2	Mar-16
<i>Russell 1000</i>				4.2	13.7	24.5	21.0	14.8	15.6	14.0	16.2	Mar-16
Champlain Small Cap(Net)	33,715,041	3.2	11.6	9.0	--	--	--	--	--	--	24.2	Oct-20
<i>Russell 2000</i>				8.7	31.4	37.9	20.0	10.2	13.3	11.2	28.7	Oct-20
<b>International Equity(Net)</b>	<b>257,945,710</b>	<b>24.5</b>	<b>33.3</b>	<b>6.1</b>	<b>16.0</b>	<b>29.8</b>	<b>35.8</b>	<b>13.1</b>	<b>13.8</b>	<b>7.8</b>	<b>6.7</b>	<b>Dec-98</b>
<i>International Equity Custom</i>				5.9	17.8	26.1	13.0	5.7	9.9	6.0	4.9	Dec-98
<b>Developed International Equity(Net)</b>	<b>128,526,495</b>	<b>12.2</b>	<b>49.8</b>	<b>4.0</b>	<b>9.6</b>	<b>18.2</b>	<b>13.9</b>	<b>6.0</b>	<b>8.9</b>	<b>6.0</b>	<b>4.5</b>	<b>Jan-08</b>
<i>Custom Blended Developed International Equity Benchmark</i>				5.1	16.6	23.5	9.2	4.7	7.7	5.6	3.4	Jan-08
GQG International Equity(Net)	52,146,852	5.0	40.6	3.2	5.2	14.6	15.8	--	--	--	14.5	Dec-19
<i>MSCI ACWI ex USA</i>				5.4	17.0	24.3	10.7	4.9	8.9	4.9	14.2	Dec-19
First Eagle International Value Fund(Net)	48,291,692	4.6	37.6	3.2	10.3	15.3	7.3	--	--	--	6.7	Dec-19
<i>MSCI EAFE</i>				4.6	16.0	21.6	7.8	4.3	7.4	5.5	10.4	Dec-19
<i>MSCI World ex USA</i>				4.5	15.8	21.5	7.6	4.2	7.6	5.2	10.1	Dec-19

Historical returns for the US Equity Composite prior to January 2012 and for the International Equity Composite prior to December 2010 are gross only. Developed International Equity and Emerging Markets Equity composites were only reported as one composite prior to March 2018.

	Market Value (\$)	% of Portfolio	% of Sector	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Driehaus International Small Cap Growth(Net)	15,183,362	1.4	11.8	7.7	19.9	35.7	29.3	--	--	--	26.7	May-19
<i>MSCI ACWI ex US Small Cap Growth NR USD</i>				7.1	16.2	31.4	23.7	8.0	10.9	7.0	19.5	May-19
Acadian ACWI ex U.S. Small Cap Equity(Net)	12,904,588	1.2	10.0	6.2	14.6	27.1	16.4	--	--	--	15.3	May-19
<i>MSCI ACWI ex US Small Cap</i>				7.0	18.6	31.0	14.2	4.6	9.4	5.9	13.8	May-19
<b>Emerging Markets Equity(Net)</b>	<b>129,419,215</b>	<b>12.3</b>	<b>50.2</b>	<b>8.4</b>	<b>23.1</b>	<b>43.7</b>	<b>68.0</b>	<b>22.5</b>	<b>22.9</b>	<b>--</b>	<b>10.6</b>	<b>Apr-12</b>
<i>Custom Blended Emerging Markets Benchmark</i>				7.4	19.7	31.1	18.3	6.4	13.1	4.0	5.6	Apr-12
Artisan Developing World TR(Net)	100,403,830	9.6	77.6	7.2	20.1	42.6	81.2	--	--	--	73.2	Dec-19
<i>MSCI Emerging Markets</i>				7.4	19.7	31.1	18.3	6.2	12.8	3.6	24.8	Dec-19
RWC(Net)	29,015,385	2.8	22.4	12.7	34.9	47.8	34.3	--	--	--	31.3	Dec-19
<i>MSCI Emerging Markets</i>				7.4	19.7	31.1	18.3	6.2	12.8	3.6	24.8	Dec-19
<b>US Fixed Income(Net)</b>	<b>159,171,368</b>	<b>15.1</b>	<b>20.6</b>	<b>0.2</b>	<b>0.7</b>	<b>1.3</b>	<b>7.4</b>	<b>4.9</b>	<b>4.8</b>	<b>4.2</b>	<b>5.4</b>	<b>Dec-94</b>
<i>BBgBarc US Aggregate TR</i>				0.1	0.7	1.3	7.5	5.3	5.1	4.0	5.7	Dec-94
Barrow Hanley(Net)	78,191,322	7.4	49.1	0.2	0.9	1.7	8.8	5.8	4.7	3.8	4.1	Mar-10
<i>BBgBarc US Aggregate TR</i>				0.1	0.7	1.3	7.5	5.3	4.4	3.8	4.0	Mar-10
Vanguard Total Bond Market Index Fund(Net)	70,374,716	6.7	44.2	0.2	0.7	1.3	7.7	--	--	--	8.0	May-19
<i>BBgBarc US Aggregate TR</i>				0.1	0.7	1.3	7.5	5.3	4.4	3.8	7.9	May-19
Vanguard Short-Term Treasury Index Fund(Net)	10,605,330	1.0	6.7	0.1	0.0	0.1	3.1	--	--	--	3.0	Feb-18
<i>BBgBarc US Govt 1-3 Yr TR</i>				0.1	0.1	0.2	3.1	2.8	1.9	1.3	3.1	Feb-18
<i>BBgBarc US Govt 1-5 Yr TR</i>				0.1	0.0	0.2	4.3	3.4	2.3	1.8	3.8	Feb-18

The current US Fixed Income benchmark is the Barclays US Agg. Please refer to the benchmark history for the composition of the US Fixed Income benchmark in earlier periods. Historical returns for the US Fixed Income Composite prior to December 2010 and for Barrow Hanley prior to June 2010 are gross only.

	Market Value (\$)	% of Portfolio	% of Sector	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>Opportunistic Credit(Net)</b>	<b>64,859,471</b>	<b>6.2</b>	<b>8.4</b>	<b>1.9</b>	<b>5.4</b>	<b>9.4</b>	<b>6.3</b>	--	--	--	<b>6.3</b>	<b>May-19</b>
<i>50% Barclays US Aggregate / 25% Barclays US High Yield / 25% Credit Suisse Leveraged Loans</i>				0.9	2.8	5.4	6.5	--	--	--	6.8	May-19
PIMCO Income Fund(Net) <i>BBgBarc US Aggregate TR</i>	25,712,083	2.4	39.6	1.5	4.5	7.6	5.8	--	--	--	5.9	Apr-19
				0.1	0.7	1.3	7.5	5.3	4.4	3.8	7.9	Apr-19
GoldenTree Multi-Sector Credit(Net) <i>50% BBgBarc US High Yield TR/50% Credit Suisse Leveraged Loans</i>	22,670,373	2.2	35.0	1.9	6.3	11.2	6.4	--	--	--	6.7	Jun-19
				1.6	5.0	9.6	4.9	5.1	6.9	5.6	6.1	Jun-19
Sculptor Credit Opportunities Domestic Partners, LP(Net) <i>50% BBgBarc US High Yield TR/50% Credit Suisse Leveraged Loans</i>	16,477,015	1.6	25.4	2.4	5.8	9.8	--	--	--	--	9.8	Jul-20
				1.6	5.0	9.6	4.9	5.1	6.9	5.6	9.6	Jul-20
<b>Real Estate(Net)</b>	<b>64,520,041</b>	<b>6.1</b>	<b>6.1</b>	<b>NA</b>	<b>2.0</b>	<b>0.8</b>	<b>2.9</b>	<b>3.1</b>	<b>4.6</b>	<b>7.0</b>	--	<b>Mar-99</b>
<i>Custom Blended Real Estate Benchmark</i>				NA	0.5	-1.1	1.4	4.4	5.5	9.0	7.1	Mar-99
<i>CPI + 5% (Seasonally Adjusted)</i>				NA	1.8	4.3	6.3	6.9	7.0	--	--	Mar-99
Vanguard REIT Index(Net) <i>Spliced Vanguard REIT Benchmark</i>	5,317,300	0.5	8.2	NA	9.2	--	--	--	--	--	6.3	Aug-20
				NA	9.3	10.8	-4.6	5.1	5.8	8.8	6.4	Aug-20
<b>Private Real Estate(Net)</b>	<b>59,202,741</b>	<b>5.6</b>	<b>91.8</b>	<b>NA</b>	<b>1.5</b>	<b>0.4</b>	<b>2.4</b>	<b>2.9</b>	<b>4.5</b>	<b>6.9</b>	--	<b>Mar-99</b>
<i>Custom Blended Real Estate Benchmark</i>				NA	0.5	-1.1	1.4	4.4	5.5	9.0	7.1	Mar-99
UBS Trumbull Property(Net)	36,216,729	3.4	61.2	NA	NA	-2.4	-2.4	0.5	2.4	6.4	6.5	Mar-99
Patron Capital V(Net)	6,543,682	0.6	11.1	NA	5.3	9.8	22.9	5.2	--	--	7.0	Jan-16

GoldenTree Multi-Sector Credit market value based on manager estimate.

Private Markets values are cash flow adjusted from 9/30/2020 NAVs. GTCR XII, Marlin Heritage Europe II, Ocean Avenue Fund II, Silver Point Specialty Credit Fund II, Spark Capital Growth Fund III, Spark Capital VI, Summit Partners Growth Equity Fund X-A, Taconic Market Dislocation Fund III, and KKR Global Infrastructure Investors III are cash flow adjusted from 6/30/2020 NAVs.

Data prior to March 2018 provided by prior consultant.

Private Real Estate results prior to 1/1/2019 were included in the Real Assets composite. All results for the Private Real Estate composite that include the period prior to 1/1/2019 will reflect only the latest lineup of managers that Meketa received information for, therefore it may not reflect the entire Private Real Estate composite at that given time.

### Total Fund | As of December 31, 2020

	Market Value (\$)	% of Portfolio	% of Sector	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Greenfield Gap VII(Net)	5,716,553	0.5	9.7	NA	1.4	2.5	4.8	11.0	12.2	--	11.9	Dec-14
Taconic CRE Dislocation Fund II(Net)	4,598,011	0.4	7.8	NA	0.9	2.2	8.3	--	--	--	7.8	Nov-18
Carlyle Realty VIII(Net)	2,025,489	0.2	3.4	NA	14.6	3.9	28.8	-11.4	--	--	-11.4	Dec-17
AG Realty Value Fund X, L.P.(Net)	1,922,028	0.2	3.2	NA	3.0	6.0	6.2	--	--	--	-8.2	Jun-19
Cerberus Real Estate Debt Fund, L.P.(Net)	1,204,503	0.1	2.0	NA	16.7	16.7	--	--	--	--	16.7	Jul-20
Rockpoint Real Estate Fund VI, L.P.(Net)	736,386	0.1	1.2	NA	-3.6	-2.8	--	--	--	--	-5.8	May-20
Carmel Partners Investment Fund VII(Net)	239,360	0.0	0.4	NA	-8.0	-15.2	-30.5	--	--	--	-43.2	Apr-19
<b>Private Equity(Net)</b>	<b>61,857,170</b>	<b>5.9</b>	<b>5.9</b>	<b>NA</b>	<b>6.3</b>	<b>12.0</b>	<b>9.2</b>	<b>11.4</b>	<b>9.7</b>	<b>9.9</b>	<b>8.1</b>	<b>Jun-05</b>
<i>Custom Blended Private Equity Benchmark</i>				NA	NA	10.7	10.4	13.4	16.0	--	--	Jun-05
<i>Russell 3000 +3% 1-Quarter Lag</i>				NA	10.0	35.2	18.4	15.0	17.1	16.9	12.5	Jun-05
Invesco VI(Net)	6,977,997	0.7	11.3	NA	15.3	30.6	24.8	16.8	13.9	--	13.7	Jun-13
Adams Street(Net)	6,588,847	0.6	10.7	NA	14.3	30.7	22.5	14.1	12.8	13.7	7.8	Sep-05
Ocean Avenue II(Net)	6,202,797	0.6	10.0	NA	NA	-11.8	-6.6	10.1	12.8	--	9.0	Jun-14
Davidson Kempner Long-Term Distressed Opportunities Fund IV(Net)	4,656,517	0.4	7.5	NA	4.9	14.2	5.1	--	--	--	8.5	Apr-18
Pantheon II(Net)	4,093,956	0.4	6.6	NA	17.5	27.5	24.1	14.6	15.0	--	12.7	Dec-11
TCV X(Net)	4,052,582	0.4	6.6	NA	11.9	38.6	36.8	--	--	--	13.0	Apr-19
Summit Partners Growth Equity Fund X-A(Net)	3,790,835	0.4	6.1	NA	NA	3.3	--	--	--	--	1.8	Mar-20
Genstar Capital Partners IX(Net)	3,152,074	0.3	5.1	NA	14.4	25.9	25.4	--	--	--	17.1	Jul-19

Adams Street includes Adams Street 2005, Adams Street 2007, and Adams Street 2011.

Pantheon I includes Pantheon US Fund VI and Pantheon Europe Fund IV.

Pantheon II includes Pantheon US Fund IX, Pantheon Asia Fund VI, and Pantheon Europe Fund VII.

Pantheon Secondary includes Pantheon GLO SEC III B.

### Total Fund | As of December 31, 2020

	Market Value (\$)	% of Portfolio	% of Sector	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Cortec Group Fund VII(Net)	3,084,587	0.3	5.0	NA	-2.5	20.7	15.7	--	--	--	14.4	Dec-19
GTCR Fund XII(Net)	2,756,998	0.3	4.5	NA	NA	14.0	15.4	--	--	--	2.8	Jun-18
Raven Asset Fund II(Net)	2,620,858	0.2	4.2	NA	-4.1	-17.6	-24.5	-2.1	-4.9	--	-4.4	Aug-14
Carrick Capital Partners III(Net)	2,579,771	0.2	4.2	NA	2.5	9.4	5.9	--	--	--	3.7	Aug-18
Taconic Market Dislocation Fund III L.P.(Net)	2,240,000	0.2	3.6	NA	NA	NA	--	--	--	--	NA	Jul-20
Silver Point Specialty Credit Fund II, L.P.(Net)	2,087,675	0.2	3.4	NA	NA	NA	--	--	--	--	NA	Jul-20
Cressey & Company Fund VI(Net)	1,987,473	0.2	3.2	NA	15.9	22.9	35.2	--	--	--	8.9	Jan-19
Accel-KKR Growth Capital Partners III(Net)	1,536,138	0.1	2.5	NA	3.2	4.4	4.0	--	--	--	-8.7	Jul-19
Spark Capital Growth Fund III(Net)	1,430,928	0.1	2.3	NA	NA	-6.7	--	--	--	--	-6.7	Mar-20
Marlin Heritage Europe II, L.P.(Net)	839,217	0.1	1.4	NA	NA	--	--	--	--	--	NA	Oct-20
Spark Capital VI(Net)	550,463	0.1	0.9	NA	NA	-8.3	--	--	--	--	-8.3	Mar-20
Pantheon I(Net)	342,482	0.0	0.6	NA	-0.2	0.2	-27.6	-11.6	-4.8	1.4	0.3	Dec-05
Pantheon Secondary(Net)	280,373	0.0	0.5	NA	2.3	15.4	-8.3	1.6	2.1	2.4	2.9	Jun-07
Invesco IV(Net)	4,602	0.0	0.0	NA	-17.5	-19.6	-42.3	28.8	12.4	12.0	10.1	Jun-05
<b>Hedge Fund(Net)</b>	<b>99,134,531</b>	<b>9.4</b>	<b>9.4</b>	<b>NA</b>	<b>5.4</b>	<b>8.4</b>	<b>4.8</b>	<b>4.0</b>	<b>4.6</b>	<b>--</b>	<b>4.0</b>	<b>Jun-14</b>
<i>Custom Blended Hedge Fund Benchmark</i>				<i>3.1</i>	<i>7.6</i>	<i>12.2</i>	<i>10.3</i>	<i>4.8</i>	<i>5.0</i>	<i>--</i>	<i>4.1</i>	<i>Jun-14</i>
Wellington-Archipelago(Net)	13,350,153	1.3	13.5	1.5	5.3	8.3	5.9	5.8	--	--	5.8	Aug-17
Silver Point Capital(Net)	13,035,540	1.2	13.1	3.3	1.9	6.6	5.7	2.7	--	--	2.9	Nov-17
Sculptor (OZ) Domestic II(Net)	12,970,048	1.2	13.1	1.9	5.6	11.4	17.1	10.2	9.5	--	7.9	Jun-14

Historical returns for Invesco IV prior to April 2012 are gross only.

### Total Fund | As of December 31, 2020

	Market Value (\$)	% of Portfolio	% of Sector	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Taconic Opportunity Fund(Net)	12,918,776	1.2	13.0	2.1	6.0	7.7	2.5	--	--	--	3.6	Dec-18
Laurion Capital(Net)	11,671,587	1.1	11.8	1.1	10.0	7.2	32.8	--	--	--	16.0	Aug-18
Marshall Wace Global Opportunities(Net)	10,385,995	1.0	10.5	2.2	9.2	14.0	--	--	--	--	15.4	May-20
KLS Diversified(Net)	8,353,464	0.8	8.4	1.8	4.3	8.3	-8.1	-2.3	--	--	-2.1	Oct-17
Graham Absolute Return(Net)	7,637,257	0.7	7.7	3.5	3.5	9.9	-1.3	2.5	--	--	1.9	Aug-17
Winton(Net)	4,949,909	0.5	5.0	3.1	-1.5	-5.0	-21.3	-7.2	--	--	-6.0	Oct-17
Marshall Wace Eureka(Net)	3,861,801	0.4	3.9	3.7	7.8	13.2	11.6	7.0	--	--	7.1	Nov-17
<b>Real Assets(Net)</b>	<b>42,217,737</b>	<b>4.0</b>	<b>4.0</b>	<b>1.9</b>	<b>3.9</b>	<b>8.0</b>	<b>3.8</b>	<b>6.4</b>	<b>7.0</b>	<b>8.1</b>	<b>--</b>	<b>Mar-99</b>
<i>Custom Blended Real Assets Benchmark</i>				<i>NA</i>	<i>NA</i>	<i>3.9</i>	<i>-11.1</i>	<i>2.5</i>	<i>6.8</i>	<i>--</i>	<i>--</i>	<i>Mar-99</i>
<i>CPI + 5% (Seasonally Adjusted)</i>				<i>0.8</i>	<i>1.8</i>	<i>4.3</i>	<i>6.3</i>	<i>6.9</i>	<i>7.0</i>	<i>--</i>	<i>--</i>	<i>Mar-99</i>
SSgA(Net)	9,773,811	0.9	23.2	3.7	11.1	15.4	2.7	2.5	--	--	4.1	Apr-17
<i>Real Asset NL Custom Blended Index</i>				<i>2.4</i>	<i>9.9</i>	<i>14.2</i>	<i>0.7</i>	<i>2.2</i>	<i>--</i>	<i>--</i>	<i>3.8</i>	<i>Apr-17</i>
<b>Private Infrastructure(Net)</b>	<b>20,889,734</b>	<b>2.0</b>	<b>49.5</b>	<b>NA</b>	<b>1.0</b>	<b>2.7</b>	<b>13.4</b>	<b>11.1</b>	<b>10.5</b>	<b>--</b>	<b>8.7</b>	<b>Dec-14</b>
<i>S&amp;P Global Infrastructure Net TR USD</i>				<i>NA</i>	<i>14.8</i>	<i>16.4</i>	<i>-6.5</i>	<i>1.8</i>	<i>6.9</i>	<i>5.6</i>	<i>3.5</i>	<i>Dec-14</i>
KKR Global II(Net)	7,533,647	0.7	36.1	NA	-0.4	10.5	38.6	18.7	14.5	--	14.6	Dec-14
North Haven Infrastructure II(Net)	7,180,485	0.7	34.4	NA	0.3	-1.3	2.3	8.0	9.7	--	6.9	May-15
ISQ Global Infrastructure Fund II(Net)	3,410,352	0.3	16.3	NA	5.6	6.4	10.1	--	--	--	-4.8	Jul-18
KKR Global Infrastructure Investors III(Net)	2,190,720	0.2	10.5	NA	NA	-0.1	-4.6	--	--	--	-10.0	Jan-19
Ardian Infrastructure Fund V(Net)	574,530	0.1	2.8	NA	5.3	-34.7	-40.5	--	--	--	-35.9	Oct-19

	Market Value (\$)	% of Portfolio	% of Sector	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>Private Natural Resources(Net)</b>	<b>11,554,192</b>	<b>1.1</b>	<b>27.4</b>	<b>NA</b>	<b>1.8</b>	<b>10.0</b>	<b>-9.4</b>	<b>4.1</b>	<b>12.1</b>	<b>--</b>	<b>11.2</b>	<b>Sep-15</b>
<i>S&amp;P Global Natural Resources Index TR USD</i>				<i>NA</i>	<i>21.9</i>	<i>24.5</i>	<i>0.7</i>	<i>1.0</i>	<i>10.9</i>	<i>0.6</i>	<i>10.4</i>	<i>Sep-15</i>
GSO Energy Opportunities(Net)	2,773,462	0.3	24.0	NA	5.7	26.9	-17.1	-1.7	7.7	--	7.6	Nov-15
Taurus Mining Annex(Net)	2,288,127	0.2	19.8	NA	4.7	7.6	17.7	21.5	--	--	26.1	Jan-17
Taurus Mining(Net)	2,163,024	0.2	18.7	NA	-2.3	-0.6	-12.2	5.7	12.3	--	11.3	Sep-15
BlackRock Global Energy and Power Infrastructure Fund III LP(Net)	1,408,047	0.1	12.2	NA	0.1	34.1	16.9	--	--	--	25.3	Jul-19
EnCap IV(Net)	1,237,023	0.1	10.7	NA	-1.1	3.8	-4.7	--	--	--	-0.6	Feb-18
EnCap XI(Net)	1,067,251	0.1	9.2	NA	-5.2	-6.5	-35.9	-25.1	--	--	-30.4	Jul-17
Tailwater Energy Fund IV, LP(Net)	617,259	0.1	5.3	NA	10.7	5.2	-34.5	--	--	--	-28.7	Oct-19
<b>Cash(Net)</b>	<b>9,816,207</b>	<b>0.9</b>	<b>0.9</b>	<b>0.0</b>	<b>0.0</b>	<b>0.2</b>	<b>0.7</b>	<b>1.0</b>	<b>--</b>	<b>--</b>	<b>--</b>	
Cash(Net)	8,657,405	0.8	88.2	0.0	0.1	0.2	0.8	1.3	1.1	-3.7	--	Sep-03
Treasury Cash(Net)	1,158,802	0.1	11.8									

\*One or more accounts have been excluded from the composite for the purposes of performance calculations and market value.

**Benchmark History**  
As of December 31, 2020

Total Fund		
1/1/2020	Present	21% Russell 3000 / 10% Custom Blended Developed International Equity Benchmark / 8% Custom Blended Emerging Markets Benchmark / 18% BBgBarc US Aggregate TR / 10% Custom Blended Hedge Fund Benchmark / 15% Custom Blended Private Equity Benchmark / 5% Custom Blended Real Assets Benchmark / 8% Custom Blended Real Estate Benchmark / 5% 50% Barclays US Aggregate / 25% Barclays US High Yield / 25% Credit Suisse Leveraged Loans
7/1/2019	12/31/2019	21% US Equity Custom / 18% International Equity Custom / 18% US Fixed Custom / 10% Custom Blended Hedge Fund Benchmark / 15% Thomson Reuters Cambridge Private Equity Index / 5% Real Asset Custom / 8% NCREIF ODCE (net) / 5% 50% Barclays US Aggregate / 25% Barclays US High Yield / 25% Credit Suisse Leveraged Loans
1/1/2019	6/30/2019	21% US Equity Custom / 18% International Equity Custom / 23% US Fixed Custom / 10% Custom Blended Hedge Fund Benchmark / 15% Thomson Reuters Cambridge Private Equity Index / 5% Real Asset Custom / 8% NCREIF ODCE (net)
1/1/2017	12/31/2018	27% US Equity Custom / 23% International Equity Custom / 22% US Fixed Custom / 5% Custom Blended Hedge Fund Benchmark / 9% Thomson Reuters Cambridge Private Equity Index / 14% Real Asset Custom
7/1/2014	12/31/2016	22.7% Russell 1000 / 5.7% Russell 2000 / 23.6% International Equity Custom / 28.5% US Fixed Custom / 4.5% Custom Blended Hedge Fund Benchmark / 8% NCREIF ODCE (net) / 7% Cambridge Assoc. U.S. Private Equity Legacy Index
Total Fund w/o Alternatives		
1/1/2017	Present	37.5% US Equity Custom / 31.94% International Equity Custom / 30.56% US Fixed Custom
7/1/2014	12/31/2016	28.2% Russell 1000 / 7.1% Russell 2000 / 29.3% International Equity Custom / 35.4% US Fixed Custom
US Equity		
1/1/2020	Present	Russell 3000
12/31/1994	12/31/2019	80% R1000 / 20% R2000
International Equity		
1/1/2019	Present	56% MSCI EAFE Gross / 44% MSCI Emerging Markets Gross
1/1/2017	12/31/2018	69.56% MSCI EAFE Gross / 30.44% MSCI Emerging Markets Gross
7/1/2013	12/31/2016	MSCI ACWI ex USA Gross
Developed International Equity		
1/1/2020	Present	80% MSCI EAFE / 20% MSCI ACWI ex US Small Cap
1/31/2008	12/31/2019	MSCI EAFE
Emerging Markets Equity		
1/1/2020	Present	MSCI Emerging Markets
4/30/2012	12/31/2019	MSCI Emerging Markets Gross
US Fixed Income		
1/1/2020	Present	BBgBarc US Aggregate TR
3/1/2018	12/31/2019	77.27% BBgBarc US Aggregate TR / 22.73% BBgBarc US Govt 1-5 Yr TR
1/1/2017	2/28/2018	77.27% BBgBarc US Aggregate TR / 22.73% Credit Suisse Leveraged Loans
8/1/2014	12/31/2016	71.93% BBgBarc US Aggregate TR / 17.54% ICE BofA US High Yield TR / 10.53% Credit Suisse Leveraged Loans
12/31/1994	7/31/2014	US Fixed Custom

Opportunistic Credit		
5/1/2019	Present	50% BBgBarc US Aggregate TR / 25% BBgBarc US High Yield TR / 25% Credit Suisse Leveraged Loans
Real Estate		
1/1/2020	Present	NCREIF ODCE (lagged one quarter)
3/31/1999	12/31/2019	NCREIF ODCE (net)
Vanguard REIT Index		
8/31/2020	Present	MSCI US IMI Real Estate 25-50 GR USD
Private Real Estate		
1/1/2020	Present	NCREIF ODCE (lagged one quarter)
3/31/1999	12/31/2019	NCREIF ODCE (net)
Private Equity		
1/1/2020	Present	50% Cambridge Glob Priv Eq Qtr Lag / 50% Cambridge Venture Capital (1 Quarter Lagged)
6/30/2005	12/31/2019	Thomson Reuters Cambridge Private Equity Index
Hedge Fund		
7/1/2017	Present	100% HFRI Fund of Funds Composite Index
1/1/2015	6/30/2017	50% HFRI Fund of Funds Composite Index / 50% HFRI RV: Multi-Strategy Index
Real Assets		
1/1/2020	Present	50% Cambridge Infrastructure (1 Quarter Lagged) / 50% Cambridge Energy Upstream & Royalties & Private Energy
3/31/1999	12/31/2019	Real Asset Custom
Private Infrastructure		
12/31/2014	Present	S&P Global Infrastructure Net TR USD
Private Natural Resources		
9/30/2015	Present	S&P Global Natural Resources Index TR USD
SSgA		
4/30/2017	Present	25% Bloomberg Roll Select Commodities Index TR USD / 25% S&P Global LargeMidCap Commodity and Resources NR USD / 10% S&P Global Infrastructure TR USD / 15% DJ US Select REIT TR USD / 25% BBgBarc US TIPS TR

Annual Investment Expense Analysis				
As Of December 31, 2020				
Name	Fee Schedule	Market Value	Estimated Fee Value	Estimated Fee
<b>Total Fund w/o Alternatives</b>		<b>\$773,567,456</b>		
<b>US Equity</b>		<b>\$291,590,907</b>		
Mellon Dynamic US Equity	0.30% of Assets	\$136,547,042	\$409,641	0.30%
Mellon Large Cap	0.04% of First 100.0 Mil, 0.02% Thereafter	\$121,328,824	\$44,266	0.04%
Champlain Small Cap	1.00% of Assets	\$33,715,041	\$337,150	1.00%
<b>International Equity</b>		<b>\$257,945,710</b>		
<b>Developed International Equity</b>		<b>\$128,526,495</b>		
Acadian ACWI ex U.S. Small Cap Equity	0.99% of Assets	\$12,904,588	\$127,755	0.99%
Driehaus International Small Cap Growth	0.90% of Assets	\$15,183,362	\$136,650	0.90%
GQG International Equity	0.50% of Assets	\$52,146,852	\$260,734	0.50%
First Eagle International Value Fund	0.79% of Assets	\$48,291,692	\$381,504	0.79%
<b>Emerging Markets Equity</b>		<b>\$129,419,215</b>		
Artisan Developing World TR	1.05% of Assets	\$100,403,830	\$1,054,240	1.05%
RWC	0.87% of Assets	\$29,015,385	\$252,434	0.87%
<b>US Fixed Income</b>		<b>\$159,171,368</b>		
Barrow Hanley	0.30% of First 50.0 Mil, 0.20% of Next 100.0 Mil, 0.15% Thereafter	\$78,191,322	\$206,383	0.26%
Vanguard Short-Term Treasury Index Fund	0.05% of Assets	\$10,605,330	\$5,303	0.05%
Vanguard Total Bond Market Index Fund	0.04% of Assets	\$70,374,716	\$24,631	0.04%
<b>Opportunistic Credit</b>		<b>\$64,859,471</b>		
PIMCO Income Fund	0.50% of Assets	\$25,712,083	\$128,560	0.50%
GoldenTree Multi-Sector Credit	0.70% of Assets	\$22,670,373	\$158,693	0.70%
Sculptor Credit Opportunities Domestic Partners, LP	Performance-based 1.00 and 20.00	\$16,477,015	\$164,770	1.00%

Name	Fee Schedule	Market Value	Estimated Fee Value	Estimated Fee
<b>Real Estate</b>		<b>\$64,520,041</b>		
Vanguard REIT Index	0.10% of Assets	\$5,317,300	\$5,317	0.10%
<b>Private Real Estate</b>		<b>\$59,202,741</b>		
Greenfield Gap VII		\$5,716,553		
Patron Capital V		\$6,543,682		
UBS Trumbull Property		\$36,216,729		
Carlyle Realty VIII		\$2,025,489		
Taconic CRE Dislocation Fund II		\$4,598,011		
Carmel Partners Investment Fund VII		\$239,360		
AG Realty Value Fund X, L.P.		\$1,922,028		
Rockpoint Real Estate Fund VI, L.P.		\$736,386		
Cerberus Real Estate Debt Fund, L.P.		\$1,204,503		
Invesco IV		\$4,602		
Invesco VI		\$6,977,997		
Ocean Avenue II		\$6,202,797		
Pantheon I		\$342,482		
Pantheon II		\$4,093,956		
Pantheon Secondary		\$280,373		
Raven Asset Fund II		\$2,620,858		
Davidson Kempner Long-Term Distressed Opportunities Fund IV		\$4,656,517		
GTCR Fund XII		\$2,756,998		
Carrick Capital Partners III		\$2,579,771		
Cressey & Company Fund VI		\$1,987,473		
TCV X		\$4,052,582		
Accel-KKR Growth Capital Partners III		\$1,536,138		
Genstar Capital Partners IX		\$3,152,074		

Name	Fee Schedule	Market Value	Estimated Fee Value	Estimated Fee
Cortec Group Fund VII		\$3,084,587		
Spark Capital Growth Fund III		\$1,430,928		
Spark Capital VI		\$550,463		
Summit Partners Growth Equity Fund X-A		\$3,790,835		
Taconic Market Dislocation Fund III L.P.		\$2,240,000		
Silver Point Specialty Credit Fund II, L.P.		\$2,087,675		
Marlin Heritage Europe II, L.P.		\$839,217		
<b>Hedge Fund</b>		<b>\$99,134,531</b>		
Sculptor (OZ) Domestic II	Performance-based 1.50 and 20.00	\$12,970,048	\$244,456	1.88%
Graham Absolute Return	Performance-based 1.75 and 20.00	\$7,637,257	\$186,960	2.45%
Wellington-Archipelago	Performance-based 1.00 and 20.00	\$13,350,153	\$174,153	1.30%
KLS Diversified	Performance-based 2.00 and 20.00	\$8,353,464	\$197,142	2.36%
Winton	Performance-based 0.90 and 20.00	\$4,949,909	\$76,938	1.55%
Marshall Wace Eureka	Performance-based 2.00 and 20.00	\$3,861,801	\$105,861	2.74%
Silver Point Capital	Performance-based 1.50 and 20.00	\$13,035,540	\$282,871	2.17%
Laurion Capital		\$11,671,587		
Taconic Opportunity Fund		\$12,918,776		
Marshall Wace Global Opportunities		\$10,385,995		
<b>Real Assets</b>		<b>\$42,217,737</b>		
SSgA	0.30% of First 50.0 Mil, 0.27% of Next 50.0 Mil, 0.25% Thereafter	\$9,773,811	\$29,321	0.30%
<b>Private Infrastructure</b>		<b>\$20,889,734</b>		
KKR Global II		\$7,533,647		
North Haven Infrastructure II		\$7,180,485		
ISQ Global Infrastructure Fund II		\$3,410,352		
KKR Global Infrastructure Investors III		\$2,190,720		
Ardian Infrastructure Fund V		\$574,530		

Name	Fee Schedule	Market Value	Estimated Fee Value	Estimated Fee
<b>Private Natural Resources</b>		<b>\$11,554,192</b>		
EnCap XI		\$1,067,251		
EnCap IV		\$1,237,023		
GSO Energy Opportunities		\$2,773,462		
Taurus Mining		\$2,163,024		
Taurus Mining Annex		\$2,288,127		
BlackRock Global Energy and Power Infrastructure Fund III LP		\$1,408,047		
Tailwater Energy Fund IV, LP		\$617,259		
<b>Cash</b>		<b>\$9,816,207</b>		
Cash		\$8,657,405		
Treasury Cash		\$1,158,802		

## **Disclaimer, Glossary, and Notes**

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PERFORMANCE DATA CONTAINED HEREIN REPRESENT PAST PERFORMANCE. PAST PERFORMANCE IS NO GUARANTEE OF FUTURE RESULTS.

**Credit Risk:** Refers to the risk that the issuer of a fixed income security may default (i.e., the issuer will be unable to make timely principal and/or interest payments on the security.)

**Duration:** Measure of the sensitivity of the price of a bond to a change in its yield to maturity. Duration summarizes, in a single number, the characteristics that cause bond prices to change in response to a change in interest rates. For example, the price of a bond with a duration of three years will rise by approximately 3% for each 1% decrease in its yield to maturity. Conversely, the price will decrease 3% for each 1% increase in the bond's yield. Price changes for two different bonds can be compared using duration. A bond with a duration of six years will exhibit twice the percentage price change of a bond with a three-year duration. The actual calculation of a bond's duration is somewhat complicated, but the idea behind the calculation is straightforward. The first step is to measure the time interval until receipt for each cash flow (coupon and principal payments) from a bond. The second step is to compute a weighted average of these time intervals. Each time interval is measured by the present value of that cash flow. This weighted average is the duration of the bond measured in years.

**Information Ratio:** This statistic is a measure of the consistency of a portfolio's performance relative to a benchmark. It is calculated by subtracting the benchmark return from the portfolio return (excess return), and dividing the resulting excess return by the standard deviation (volatility) of this excess return. A positive information ratio indicates outperformance versus the benchmark, and the higher the information ratio, the more consistent the outperformance.

**Jensen's Alpha:** A measure of the average return of a portfolio or investment in excess of what is predicted by its beta or "market" risk.  $\text{Portfolio Return} - [\text{Risk Free Rate} + \text{Beta} * (\text{market return} - \text{Risk Free Rate})]$ .

**Market Capitalization:** For a firm, market capitalization is the total market value of outstanding common stock. For a portfolio, market capitalization is the sum of the capitalization of each company weighted by the ratio of holdings in that company to total portfolio holdings; thus it is a weighted-average capitalization. Meketa Investment Group considers the largest 65% of the broad domestic equity market as large capitalization, the next 25% of the market as medium capitalization, and the smallest 10% of stocks as small capitalization.

**Market Weighted:** Stocks in many indices are weighted based on the total market capitalization of the issue. Thus, the individual returns of higher market-capitalization issues will more heavily influence an index's return than the returns of the smaller market-capitalization issues in the index.

**Maturity:** The date on which a loan, bond, mortgage, or other debt/security becomes due and is to be paid off.

**Prepayment Risk:** The risk that prepayments will increase (homeowners will prepay all or part of their mortgage) when mortgage interest rates decline; hence, investors' monies will be returned to them in a lower interest rate environment. Also, the risk that prepayments will slow down when mortgage interest rates rise; hence, investors will not have as much money as previously anticipated in a higher interest rate environment. A prepayment is any payment in excess of the scheduled mortgage payment.

**Price-Book Value (P/B) Ratio:** The current market price of a stock divided by its book value per share. Meketa Investment Group calculates P/B as the current price divided by Compustat's quarterly common equity. Common equity includes common stock, capital surplus, retained earnings, and treasury stock adjusted for both common and nonredeemable preferred stock. Similar to high P/E stocks, stocks with high P/B's tend to be riskier investments.

**Price-Earnings (P/E) Ratio:** A stock's market price divided by its current or estimated future earnings. Lower P/E ratios often characterize stocks in low growth or mature industries, stocks in groups that have fallen out of favor, or stocks of established blue chip companies with long records of stable earnings and regular dividends. Sometimes a company that has good fundamentals may be viewed unfavorably by the market if it is an industry that is temporarily out of favor. Or a business may have experienced financial problems causing investors to be skeptical about its future. Either of these situations would result in lower relative P/E ratios. Some stocks exhibit above-average sales and earnings growth or expectations for above average growth. Consequently, investors are willing to pay more for these companies' earnings, which results in elevated P/E ratios. In other words, investors will pay more for shares of companies whose profits, in their opinion, are expected to increase faster than average. Because future events are in no way assured, high P/E stocks tend to be riskier and more volatile investments. Meketa Investment Group calculates P/E as the current price divided by the I/B/E/S consensus of twelve-month forecast earnings per share.

**Quality Rating:** The rank assigned a security by such rating services as Fitch, Moody's, and Standard & Poor's. The rating may be determined by such factors as (1) the likelihood of fulfillment of dividend, income, and principal payment of obligations; (2) the nature and provisions of the issue; and (3) the security's relative position in the event of liquidation of the company. Bonds assigned the top four grades (AAA, AA, A, BBB) are considered investment grade because they are eligible bank investments as determined by the controller of the currency.

**Sharpe Ratio:** A commonly used measure of risk-adjusted return. It is calculated by subtracting the risk free return (usually three-month Treasury bill) from the portfolio return and dividing the resulting excess return by the portfolio's total risk level (standard deviation). The result is a measure of return per unit of total risk taken. The higher the Sharpe ratio, the better the fund's historical risk adjusted performance.

**STIF Account:** Short-term investment fund at a custodian bank that invests in cash-equivalent instruments. It is generally used to safely invest the excess cash held by portfolio managers.

**Standard Deviation:** A measure of the total risk of an asset or a portfolio. Standard deviation measures the dispersion of a set of numbers around a central point (e.g., the average return). If the standard deviation is small, the distribution is concentrated within a narrow range of values. For a normal distribution, about two thirds of the observations will fall within one standard deviation of the mean, and 95% of the observations will fall within two standard deviations of the mean.

**Style:** The description of the type of approach and strategy utilized by an investment manager to manage funds. For example, the style for equities is determined by portfolio characteristics such as price-to-book value, price-to-earnings ratio, and dividend yield. Equity styles include growth, value, and core.

**Tracking Error:** A divergence between the price behavior of a position or a portfolio and the price behavior of a benchmark, as defined by the difference in standard deviation.

**Yield to Maturity:** The yield, or return, provided by a bond to its maturity date; determined by a mathematical process, usually requiring the use of a “basis book.” For example, a 5% bond pays \$5 a year interest on each \$100 par value. To figure its current yield, divide \$5 by \$95—the market price of the bond—and you get 5.26%. Assume that the same bond is due to mature in five years. On the maturity date, the issuer is pledged to pay \$100 for the bond that can be bought now for \$95. In other words, the bond is selling at a discount of 5% below par value. To figure yield to maturity, a simple and approximate method is to divide 5% by the five years to maturity, which equals 1% pro rata yearly. Add that 1% to the 5.26% current yield, and the yield to maturity is roughly 6.26%.

$$\frac{5\% \text{ (discount)}}{5 \text{ (yrs. to maturity)}} = 1\% \text{ pro rata, plus } 5.26\% \text{ (current yield)} = 6.26\% \text{ (yield to maturity)}$$

**Yield to Worst:** The lowest potential yield that can be received on a bond without the issuer actually defaulting. The yield to worst is calculated by making worst-case scenario assumptions on the issue by calculating the returns that would be received if provisions, including prepayment, call, or sinking fund, are used by the issuer.

**NCREIF Property Index (NPI):** Measures unleveraged investment performance of a very large pool of individual commercial real estate properties acquired in the private market by tax-exempt institutional investors for investment purposes only. The NPI index is capitalization-weighted for a quarterly time series composite total rate of return.

**NCREIF Fund Index - Open End Diversified Core Equity (NFI-ODCE):** Measures the investment performance of 28 open-end commingled funds pursuing a core investment strategy that reflects funds' leverage and cash positions. The NFI-ODCE index is equal-weighted and is reported gross and net of fees for a quarterly time series composite total rate of return.

Sources: Investment Terminology, International Foundation of Employee Benefit Plans, 1999.

The Handbook of Fixed Income Securities, Fabozzi, Frank J., 1991

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Throughout this report, numbers may not sum due to rounding.

Returns for periods greater than one year are annualized throughout this report.

Values shown are in millions of dollars, unless noted otherwise.

**Merced County Employees' Retirement Association (MercedCERA)  
RETIREMENT BOARD AGENDA ITEM**

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**DATE:** January 28, 2021

**TO:** MercedCERA Board of Retirement

**FROM:** Kristie Santos, Plan Administrator

**SUBJECT:** Approval of 2021 Educational Investment Calendar and Asset Allocation Dates for the Merced County Employees' Retirement Association Board.

**ITEM NUMBER: 4**

**ITEM TYPE: Action**

**DISCUSSION:**

The Investment Subcommittee met on December 10, 2020 to discuss potential educational items and a date for the 2021 Asset Allocation for the Merced County Employees' Retirement Association (MercedCERA). The goal of the subcommittee was to set a calendar of educational items that would provide education to the Trustees prior to the asset allocation meetings and choose a date for MercedCERA's asset allocation review and approval. The subcommittee is hoping that in the Fall of 2021, Trustees will be able to resume in-person meetings and therefore have an in-person asset allocation meeting. The subcommittee is recommending September 23, 2021 as the review date of the proposed asset allocation and October 28, 2021 as the date for approval of the asset allocation.

Attached is the Educational Calendar and Asset Allocation dates as proposed by the Investment Subcommittee. Per the MercedCERA Board, the Investment Subcommittee has no authority to approve any items and can only recommend to the full Board of Retirement for approval.

By approving this item, the Board is agreeing to the educational calendar and the asset allocation dates, September 23, 2021 as the review date and October 28, 2021 as the approval (decision) date.

2021 Calendar Outlook

Meeting Date	Educational Topic(s)	Additional Materials
January 28	Cliffwater Presentation: How are big state plans allocating to alternatives?	Monthly Performance Report
February 25	Quarterly performance reporting	Quarterly Performance Report
March 25	A Refresher on how Meketa formulates its Capital Market Assumptions	Monthly Performance Report Preview of 2021 Capital Market Expectations's
April 22	The Role of the Fed: Pre and post pandemic Role of the Dept. of US Treasury	Quarterly Performance Report Market Discussion
May 27	Thinking outside the Box: Where to Invest in a low interest rate environment	Monthly Performance Report
June 24	Putting it all together: Understanding asset class roles within the Fund	Monthly Performance Report
July 22	Meketa/Cliffwater: Analysis of MercedCERA's use of Hedged Assets and Alternatives	Quarterly Performance Report Market Discussion
August 26		Monthly Performance Report
September 23	Asset Allocation Review (last amended Nov 2018)	Monthly Performance Report
October 28	Asset Allocation Approval ( <b>Action Item</b> )	Quarterly Performance Report
November 25	The Year in Review	Monthly Performance Report