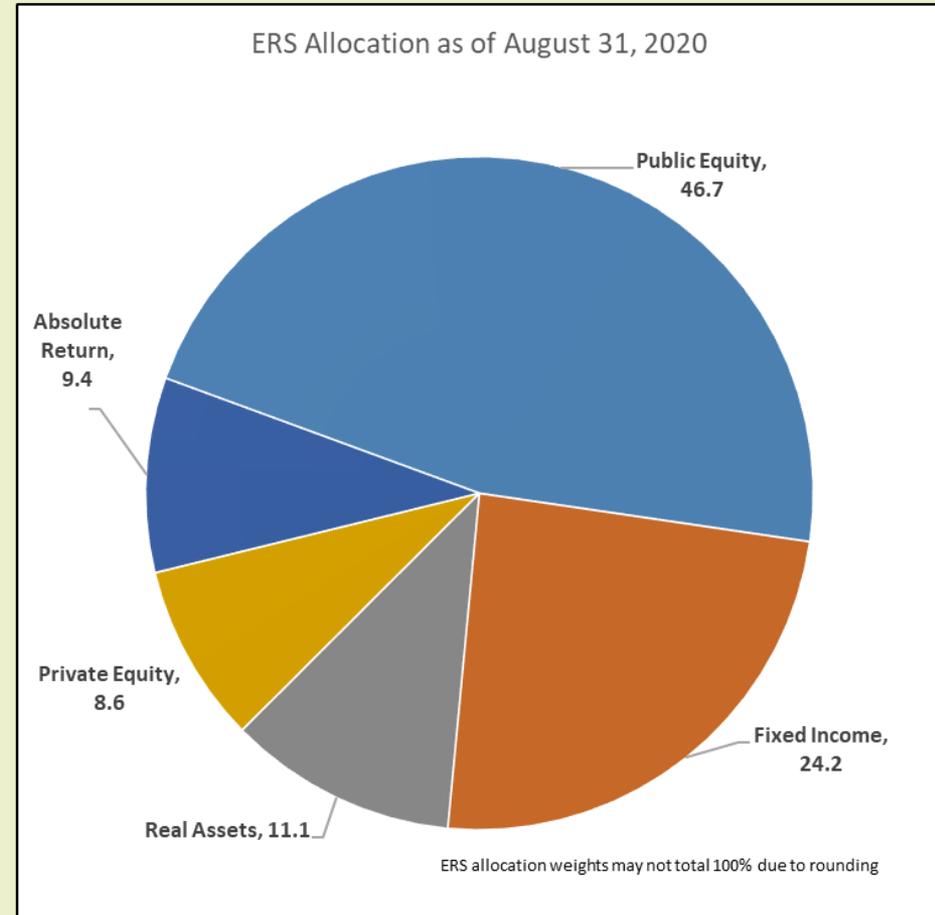

Finance & Personnel Committee

Employes' Retirement System
January 13, 2021

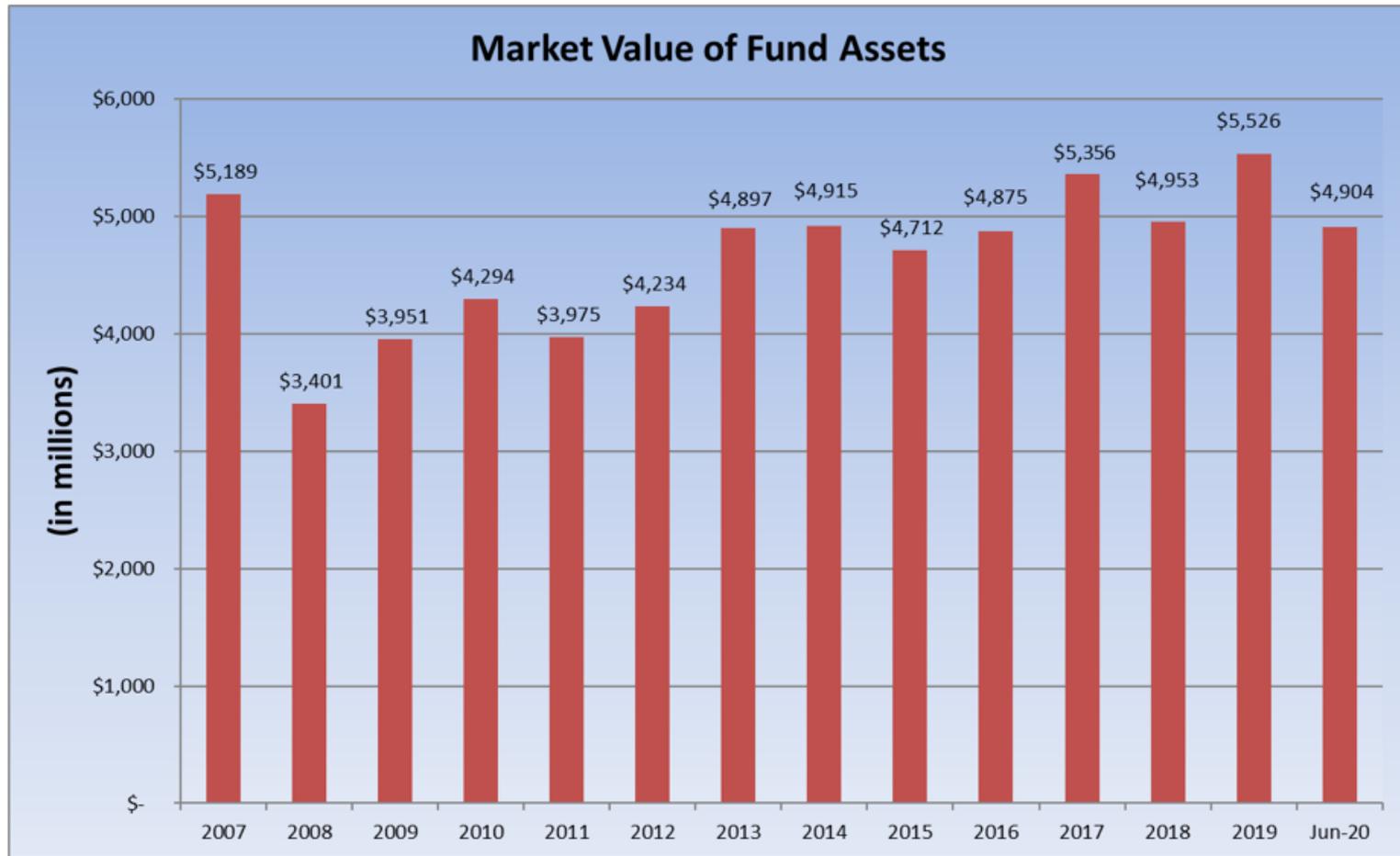
General Pension Statistics

- Fund Value: \$5.525 billion (as of December 31, 2020)
- Membership Breakdown (per 2020 valuation):
 - Actives: 10,974
 - Deferred: 4,568
 - Retirees / Beneficiaries: 13,555
 - Total: 29,097
- Actuarial Funded Status: 80.11% (per 2020 actuarial valuation; 84.23% based on market value)
- Total Annual Pension Payroll: \$410.5 million
- Total Annual Pensionable Wages: \$596.9 million (est. for 2020)
- Total Annual Member Contributions: \$33.7 million (est. for 2020)



Fund Value of Assets: 2007 – June 30, 2020

(Year Ended Dates Reflect 12/31 Fund Values)



Most recent Actuarial valuation projects benefit payments to total \$4.9 billion in next 10 years.

Benefit Payments	\$4.1 billion
Expenses	\$222 million
Contributions	\$1.2 billion
Investment Gain	\$2.8 billion

12 1/2 Year Estimates (1/1/08 - 6/30/20)

Milwaukee Employees' Retirement System - December 17, 2020

Fund as of November 30, 2020
 *Fund value of \$5.32b.
 *Fund return of 7.0%, gross of fees, outperformed the blended benchmark by 105bp.
 *Fund's returns underperformed in all other time periods shown except for the 20-Year period, net of fees.

November Relative Perf. Drivers

Manager Selection

- *Brandes 29bp
- *Loomis Sayles 25bp
- *Newton 14bp

Style Bias 37bp

- *Primarily US Small Cap & Value

Dec. Update (as of 12/15/20)

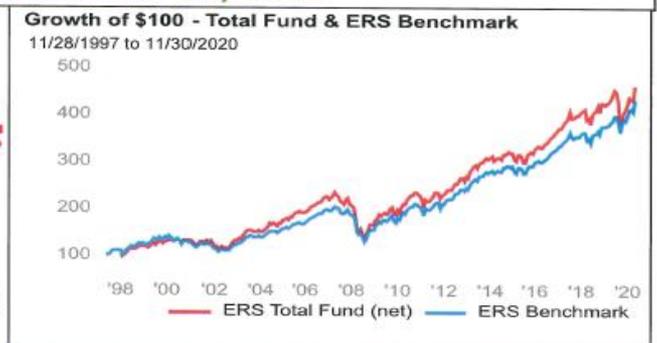
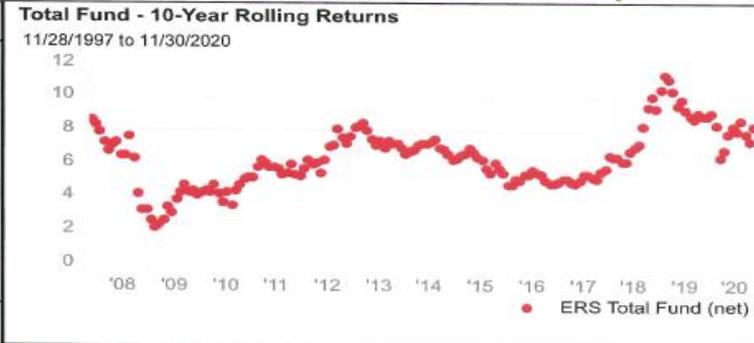
- *Fund return is 1.7% in Dec.
- *Fund return is 3.9% YTD, net of fees.
- *Fund's approx. value is \$5.42b.
- *9 out of 16 active managers outperforming YTD, net of fees.
- *The Private Equity asset class is exceeding its benchmark YTD, net of fees.

YTD, the Fund has generated:

- *Investment Gains: \$188.2m
- *Benefits & Expenses: 407.3m
- *Contributions: 114.7m

Monthly Withdrawals:

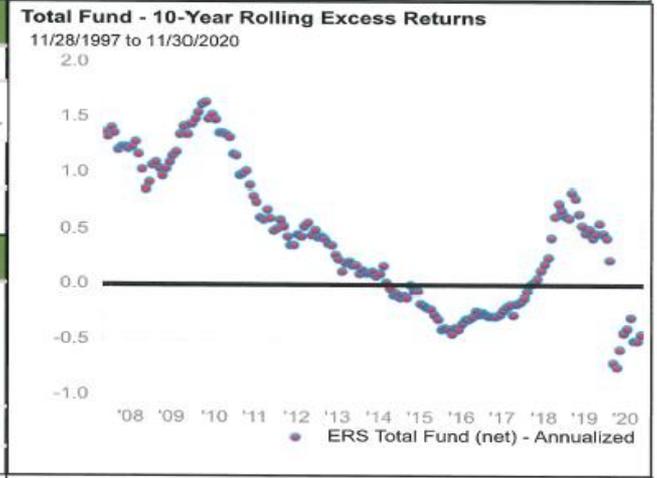
- *The Fund executed a rebalance from Public Equity to Absolute Return and Real Assets while retaining liquidity to fund December benefit payments.



Return Data

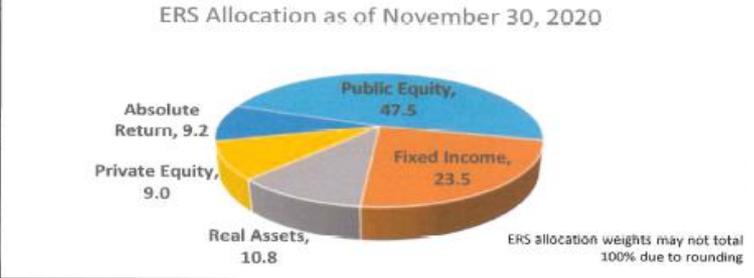
Source Data: Monthly Return

	1 Month	YTD	1 Year	5 Year	10 Year	15 Year	20 Year
Total Fund (net)	7.0	2.1	4.4	7.9	8.2	6.4	6.6
ERS Benchmark	6.0	8.9	11.1	8.6	8.7	6.8	6.2



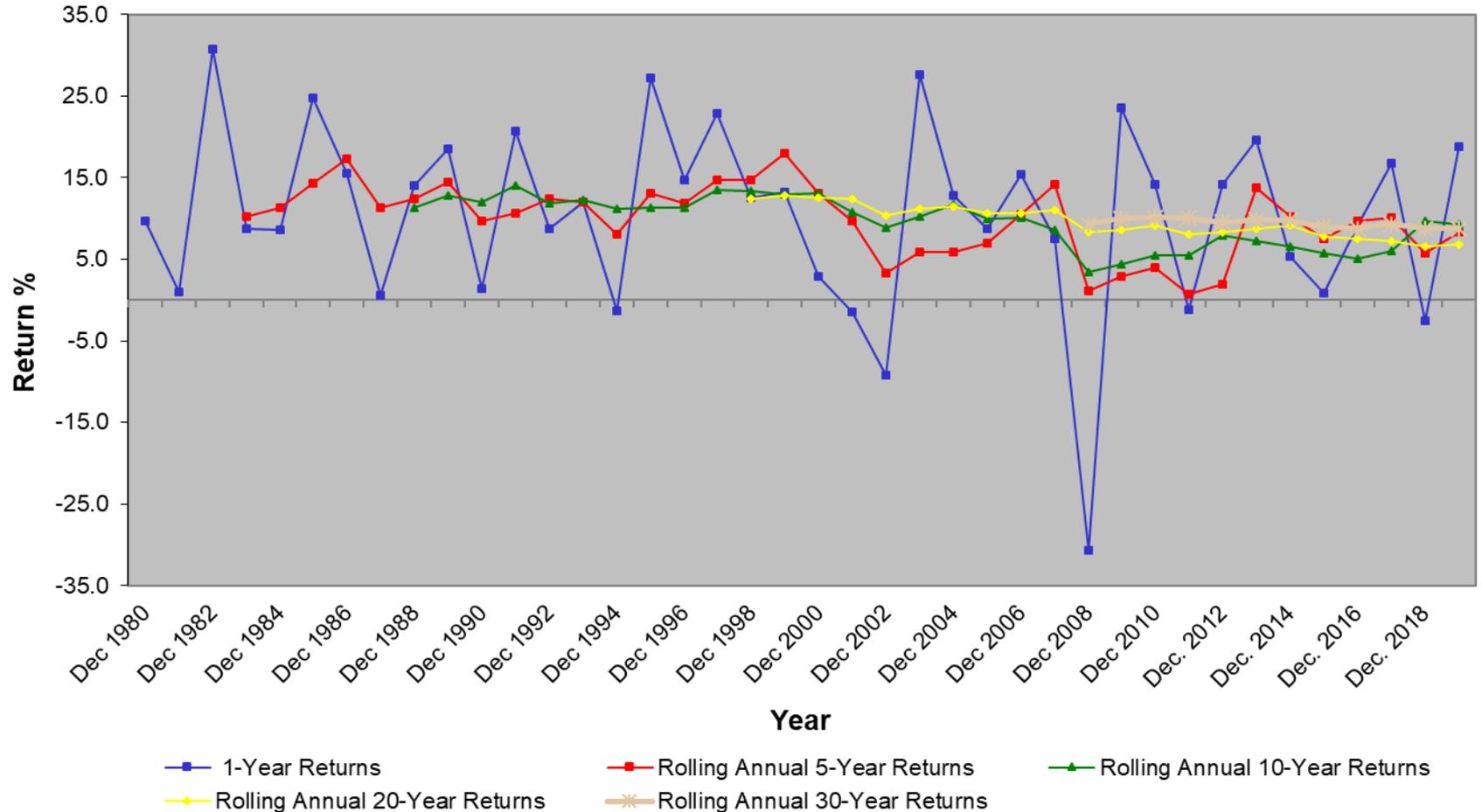
Total Fund - 20-Year Risk & Return Data

	Return	Std Dev	Tracking Error	Info Ratio (arith)	Sharpe Ratio	Alpha	Beta
Total Fund (net)	6.6	10.6	2.4	0.2	0.5	-0.1	1.1
ERS Benchmark	6.2	9.5	--	--	0.5	0.0	1.0



Rolling Fund Returns 1979 - 2019

Total Fund



Projections

(Alternate Investment Returns for 2020)



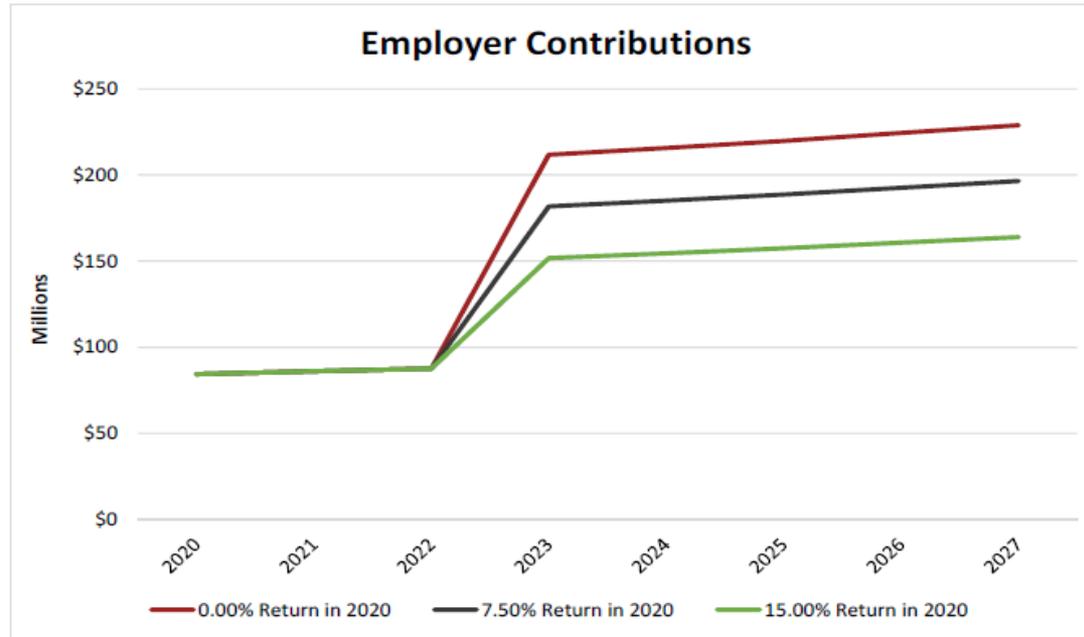
Inputs

- Membership Data
- Asset Data
- Benefit Provisions
- Assumptions
- Funding Methodology

↓

Results

- Actuarial Value of Assets
- Actuarial Accrued Liability
- UAAL/Funded Ratio
- Net Actuarial Gain or Loss
- Employer Contributions
- Projections**



This graph shows the projected dollar amount of aggregate employer contributions in the future under alternate investment return scenarios for 2020. Investment returns for 2021+ are assumed to be 7.50% in all scenarios.

Projections (Alternate Investment Returns for 2020)



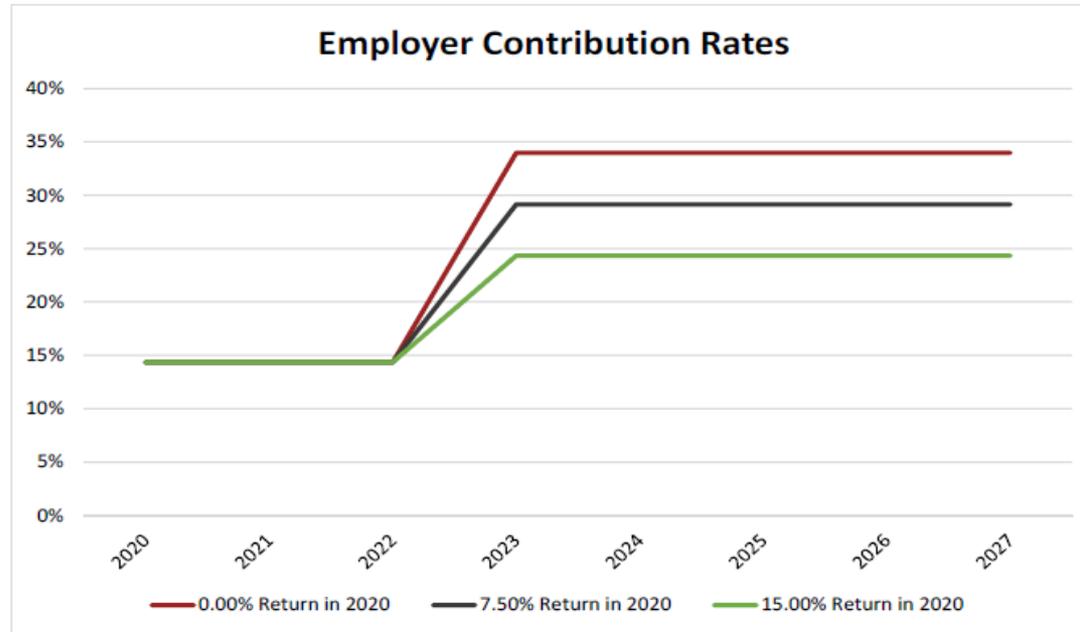
Inputs

- Membership Data
- Asset Data
- Benefit Provisions
- Assumptions
- Funding Methodology

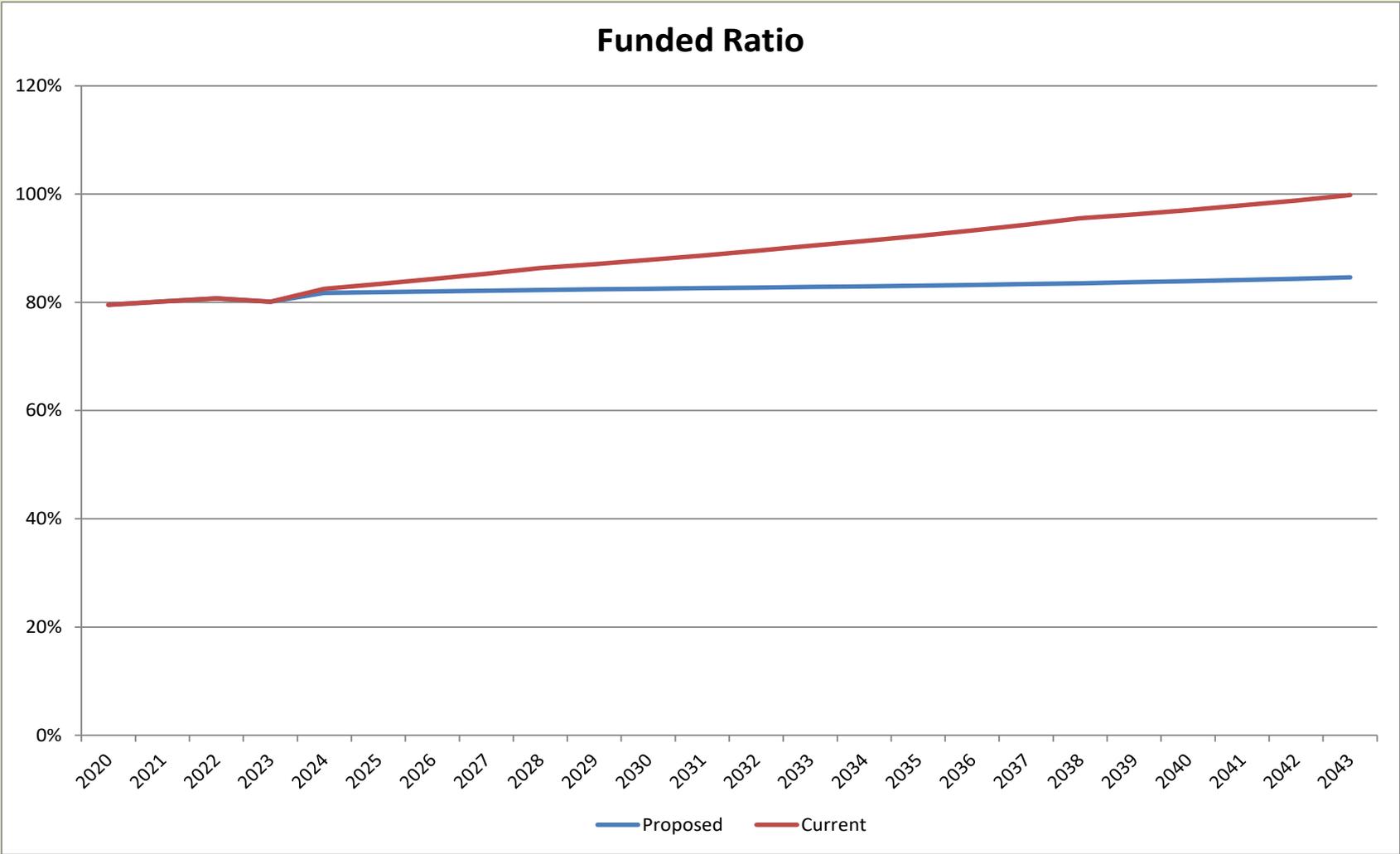
↓

Results

- Actuarial Value of Assets
- Actuarial Accrued Liability
- UAAL/Funded Ratio
- Net Actuarial Gain or Loss
- Employer Contributions
- Projections**

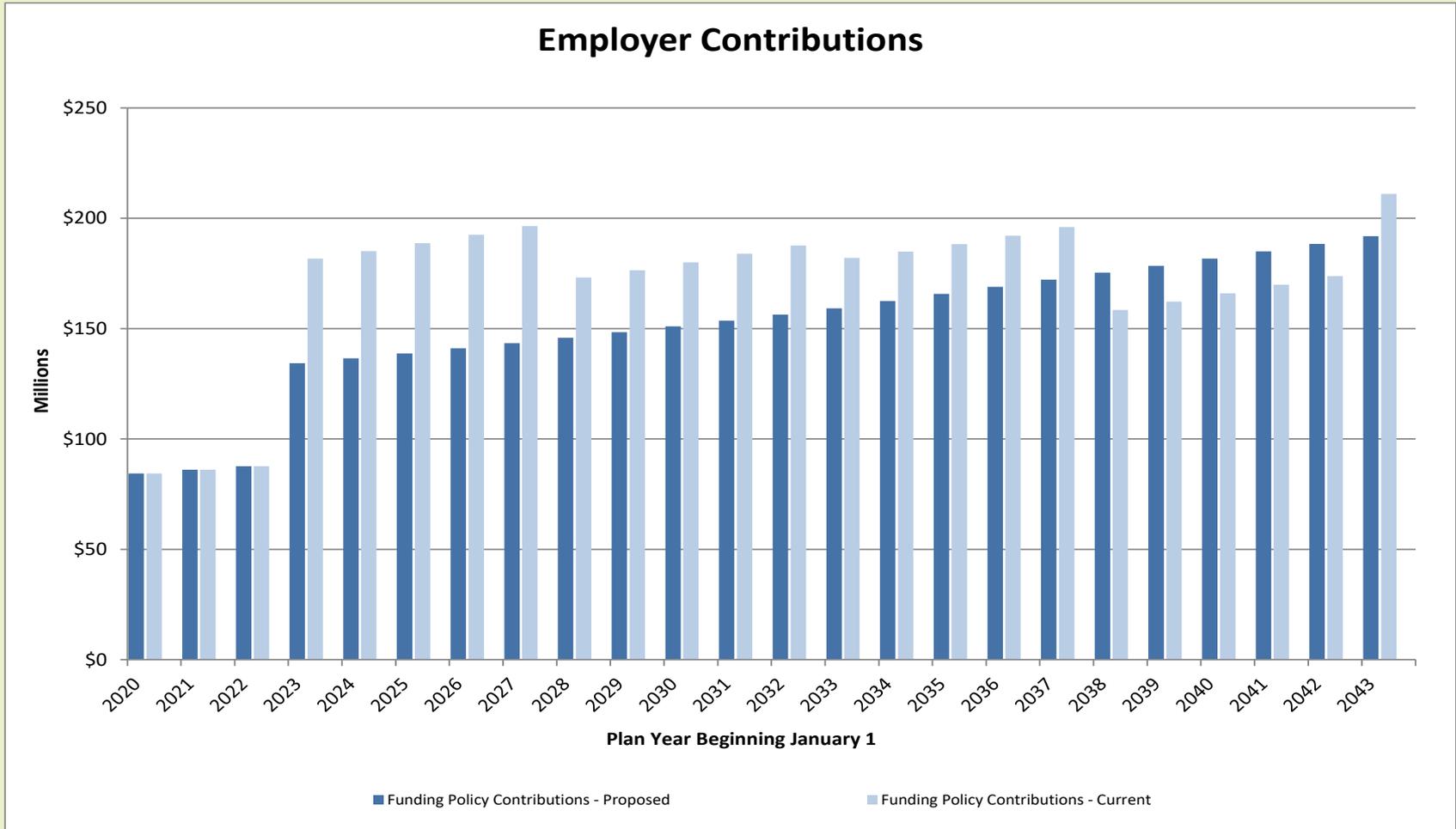


This graph shows the projected employer contribution rates under the Stable Contribution Policy, resulting from different investment returns during 2020 (returns for 2021+ are assumed to be 7.50%).



Under the proposed scenario, the contribution for City employers is capped at \$110 million during 2023, increasing each following year by 2.00%.

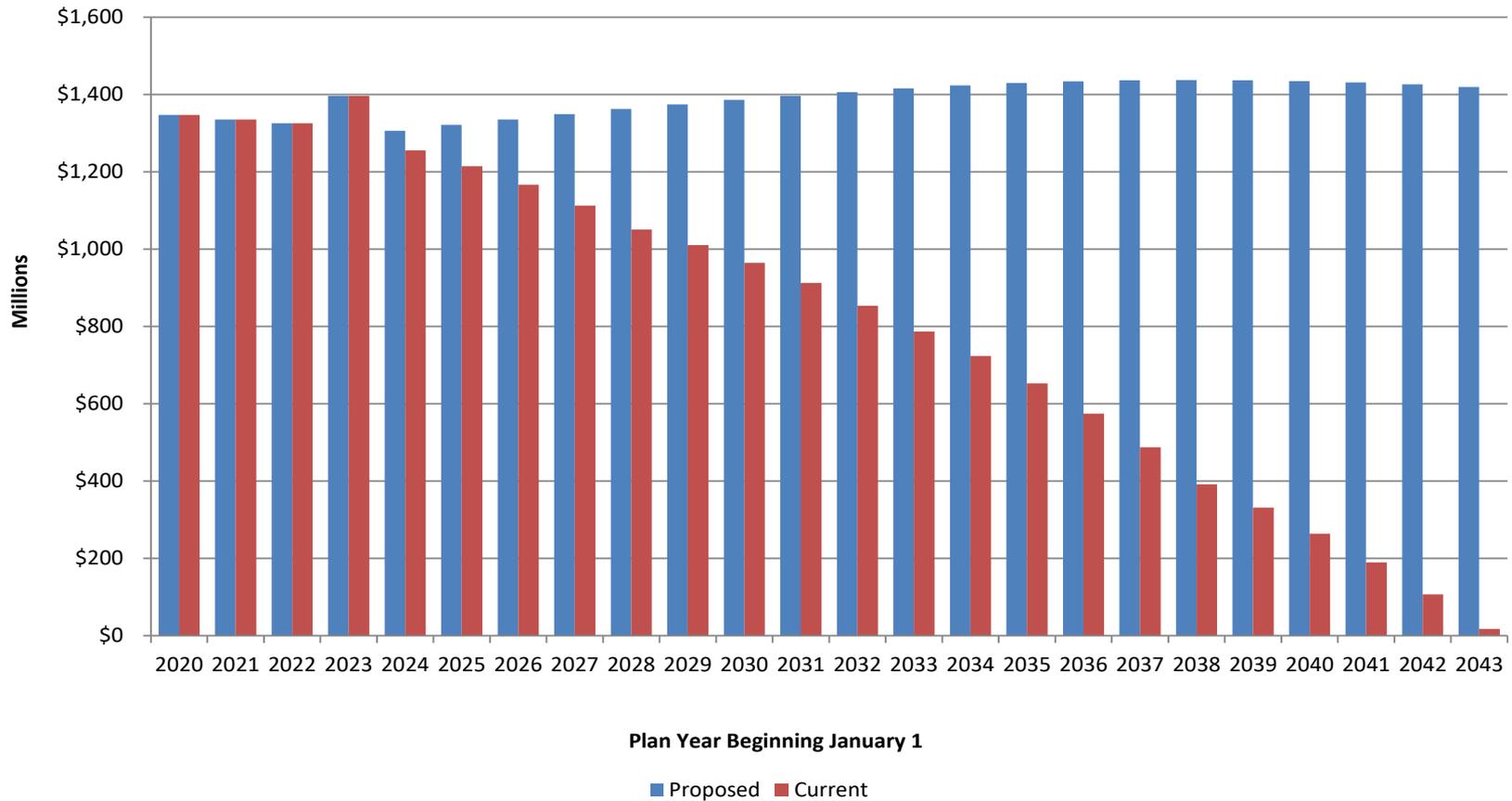
Employer Contributions



Employer contributions shown for the whole system.

Under the modelled scenario, the contribution for City employers is capped at \$110 million during 2023, increasing each following year by 2.00%.

Unfunded Actuarial Accrued Liability



UAAL shown for the whole System.

Under the proposed scenario, the contribution for City employers is capped at \$110 million during 2023, increasing each following year by 2.00%.

ERS Governing Law MCC 36-08-6-h-1 Provides in Relevant Part

h-1. Beginning with the contribution due on January 31, 2014, on account of members, retired members, survivors and beneficiaries who are participants in the combined fund, the city and city agencies shall pay annually into the combined fund for the preceding year an amount equal to the product of the actuarial contribution rate applied to the sum of the covered compensation. The actuarial contribution shall be based on separately calculated rates for policemen, firemen, and general city employees and shall be applicable for a 5-year period. **The actuary shall, consistent with actuarial standards of practice, set the actuarial contribution rate at a percentage sufficient to fund the entire amount of the employers' share of the normal cost, to amortize any unfunded past service liability and to maintain the solvency of the combined fund to meet benefit obligations for retired lives.**

h-2. Commencing with the contribution due on January 31, 2019, the actuary shall reset the actuarial contribution rate every 5 years in conjunction with a 5-year experience review of the employees' retirement system. The actuary shall, consistent with standards of actuarial practice, base the reset rate on the current interest, mortality, separation, morbidity and retirement tables as adopted by the board.

Appendix

CMERS Participant Headcount (Active, Deferred and Retired) as of August 31, 2020

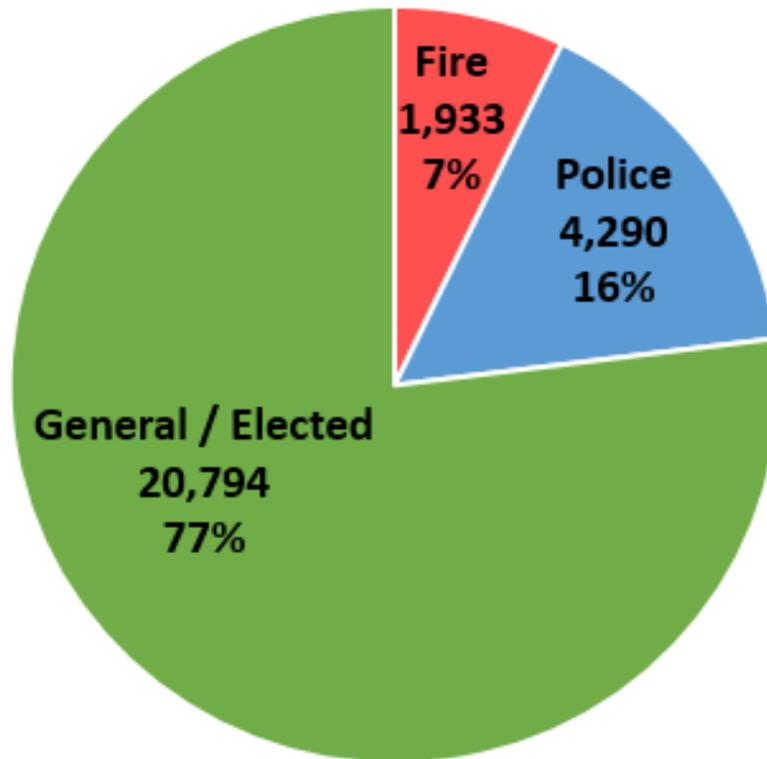
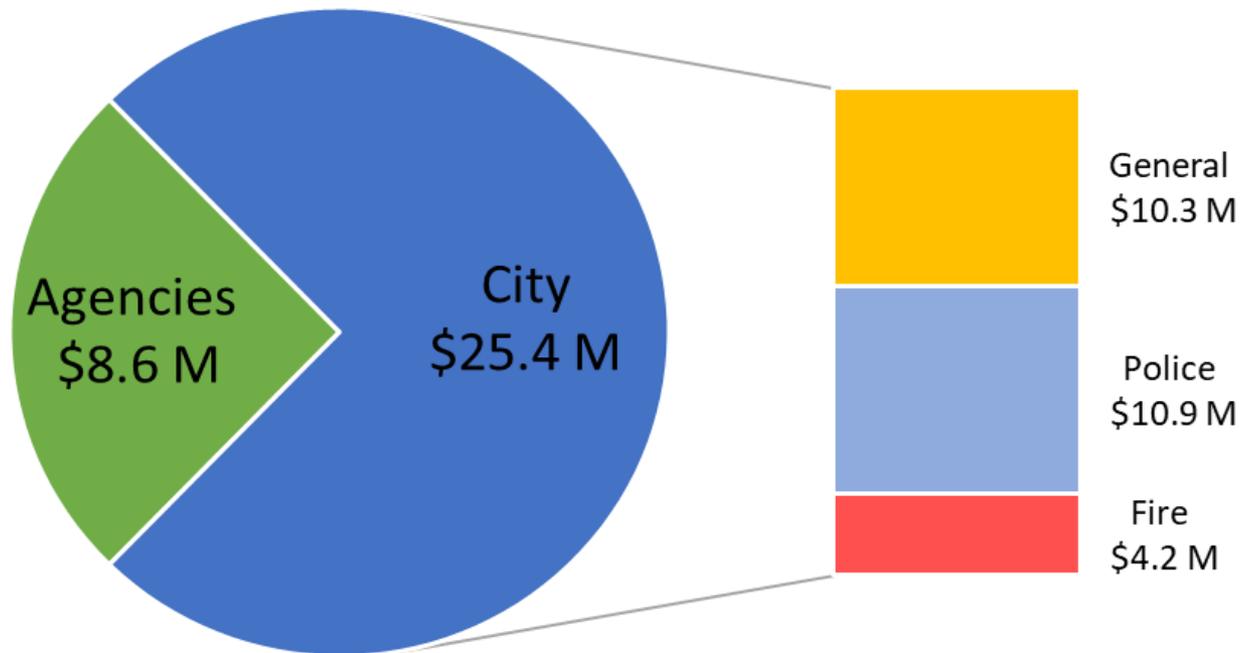


Chart does not include survivors/beneficiaries in payment

Total Annual Member Contributions

(in millions)
(projected for 2020)



Projected Total Member Contributions \approx \$34.0M

Annual Member Contributions

(projected for 2020)

Employer / Group	Reported through PP-18-2020*				Straightline Projections for FY 2020			
	Pensionable Wages	Employer Paid Member Contributions	Employee Paid Member Contributions	Total Member Contributions	Pensionable Wages	Employer Paid Member Contributions	Employee Paid Member Contributions	Total Member Contributions
City-General	138,622,340	-	6,828,243	6,828,243	208,713,824	-	10,264,579	10,264,579
City-Police	103,821,003	-	7,266,582	7,266,582	155,034,412	-	10,851,164	10,851,164
City-Fire	40,609,055	-	2,842,657	2,842,657	60,479,994	-	4,233,634	4,233,634
City-Total	283,052,398	-	16,937,482	16,937,482	424,228,230	-	25,349,377	25,349,377
Agencies	99,860,132	51,231	4,759,712	4,810,943	180,499,707	77,855	8,553,142	8,630,996
Grand Total	\$ 382,912,530	\$ 51,231	\$ 21,697,193	\$ 21,748,425	\$ 604,727,937	\$ 77,855	\$ 33,902,519	\$ 33,980,373

*for some agencies data has been reported through PP-17-2020

An attribution of the change in funded ratio on a market and actuarial basis from January 1, 2010 through January 1, 2020

		Decade Summary	
		AVA	MVA
Beginning of year		112.8%	94.2%
expected change		-1.1%	-1.1%
valuation updates		1.1%	1.1%
change due to:			
Actual vs actuarial contribution		-1.0%	-1.0%
actuary		1.7%	1.7%
cost method		-3.0%	-3.0%
assumptions		-11.6%	-11.6%
asset return		-15.4%	7.3%
liabilities		-3.4%	-3.4%
plan		<u>0.0%</u>	<u>0.0%</u>
total		-32.7%	-10.0%
End of year		80.1%	84.2%

ERS 20 Year Rolling Ave. Investment Returns 1978-2019

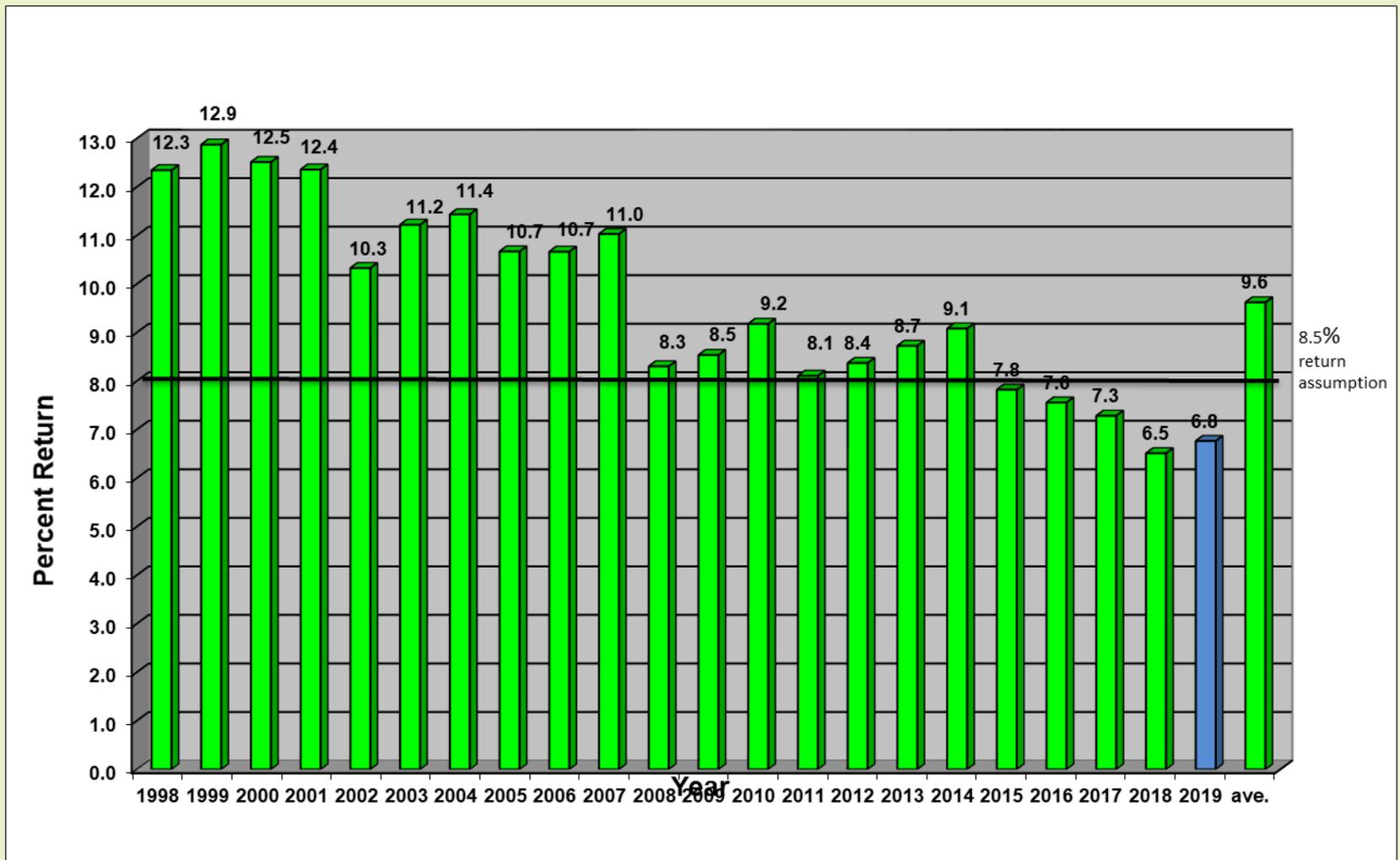


TABLE 19

Allocation of 2020 Contribution to Agencies for Combined Fund

Group	Active Members	Covered Compensation	Employer Rate**	Dollar Amount Payable***								
				Jan 1, 2020	June 1, 2020	July 1, 2020	Aug 1, 2020	Sept 1, 2020	Oct 1, 2020	Nov 1, 2020	Dec 1, 2020	Jan 31, 2021
General City*	3,325	\$185,003,090	7.48%	\$13,838,231	\$14,261,573	\$14,347,783	\$14,434,514	\$14,521,769	\$14,609,552	\$14,697,866	\$14,786,713	\$14,966,022
Water Department	340	19,131,954	7.48%	1,431,070	1,474,850	1,483,765	1,492,734	1,501,757	1,510,835	1,519,968	1,529,156	1,547,699
School Board****	4,220	134,030,658	7.48%	10,025,493	10,332,195	10,394,652	10,457,487	10,520,702	10,584,299	10,648,280	10,712,648	10,842,554
Milwaukee Technical College	0	0	7.48%	0	0	0	0	0	0	0	0	0
Sewerage Commission	226	19,747,666	7.48%	1,477,125	1,522,314	1,531,516	1,540,774	1,550,088	1,559,458	1,568,885	1,578,369	1,597,509
Veolia	20	1,613,840	7.48%	120,715	124,408	125,160	125,917	126,678	127,444	128,214	128,989	130,535
Wisconsin Center District	108	5,911,646	7.48%	442,191	455,719	458,474	461,243	464,033	466,838	469,660	472,499	478,229
Housing Authority	143	8,759,072	7.48%	655,179	675,222	679,304	683,410	687,541	691,697	695,878	700,085	708,574
Policemen	1,826	158,480,563	25.22%	39,968,798	41,191,532	41,440,531	41,691,036	41,943,055	42,196,597	42,451,672	42,708,289	43,226,186
Firemen	705	61,134,488	26.83%	16,402,383	16,904,168	17,006,352	17,109,154	17,212,577	17,316,626	17,421,304	17,526,614	17,739,148
Total	10,913	\$593,812,977		\$84,361,185	\$86,941,981	\$87,467,537	\$87,996,271	\$88,528,200	\$89,063,346	\$89,601,727	\$90,143,362	\$91,236,474

General City:
\$13.838M

Police:
\$39.969M

Fire:
\$16.402M

Total:
\$70.209M

Employer Contributions

(Combined Fund only as of January 1, 2020)



Inputs
Membership Data
Asset Data
Benefit Provisions
Assumptions
Funding Methodology

↓

Results
Actuarial Value of Assets
Actuarial Accrued Liability
UAAL/Funded Ratio
Net Actuarial Gain or Loss
Employer Contributions
Projections

Group	Employer Rate Based On:		
	Stable Contribution Policy	Actuarial Determined Rate	Market-Based Actuarial Determined Rate
General	7.48%	16.47%	13.71%
Policemen	25.22%	46.63%	39.95%
Firemen	26.83%	52.25%	44.89%

As a result of the events mentioned earlier, there is a significant difference between the actuarially determined employer contribution rate and the stable contribution policy rate as shown above.

Employer Normal Cost Rate



Inputs

- Membership Data
- Asset Data
- Benefit Provisions
- Assumptions
- Funding Methodology

↓

Results

- Actuarial Value of Assets
- Actuarial Accrued Liability
- UAAL/Funded Ratio
- Net Actuarial Gain or Loss
- Employer Contributions**
- Projections

	General			
	Employees	Police men	Firemen	Total
1. Retirement Benefits	\$22,168	\$35,342	\$11,741	\$69,251
2. Withdrawal Benefits	13,005	2,948	1,228	17,181
3. Disability Benefits	1,405	2,603	4,499	8,507
4. Death Benefits	668	241	110	1,019
5. Total Normal Cost	\$37,246	\$41,134	\$17,578	\$95,958
6. Projected Payroll	\$376,656	\$158,596	\$61,134	\$596,386
7. Normal Cost Rate	9.89%	25.94%	28.75%	16.09%
8. Member Contribution Rate	(4.87%)	(7.00%)	(7.00%)	(5.65%)
9. Employer Normal Cost Rate	5.02%	18.94%	21.75%	10.44%

The normal cost is the cost of benefits accruing during the current year. Member contributions offset the normal cost to determine the employer normal cost. If CMERS were fully funded, the actuarial contribution rate would be the employer normal cost rate.

Summary of December 31, 2019 Valuation Results

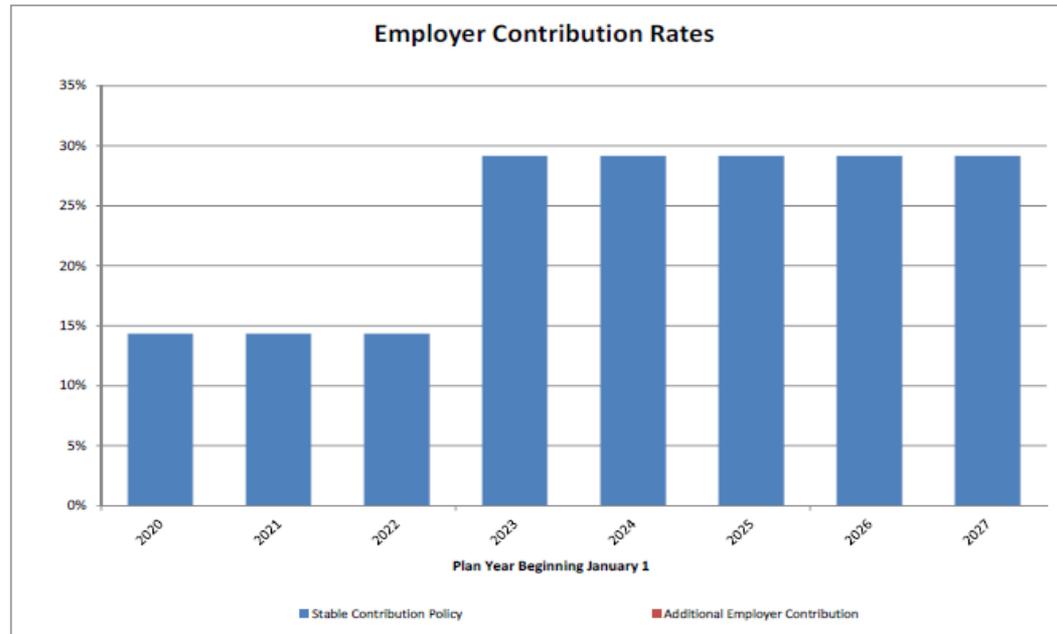
	General, Executive & Elected Officials		Protective Occupation				Average 2021
			With Soc. Sec.		Without Soc. Sec.		
	2021	2020	2021	2020	2021	2020	
Employer Normal Cost	6.75%	6.75%	11.75%	11.65%	16.35%	16.25%	7.45%
Participant Normal Cost	6.75%	6.75%	6.75%	6.75%	6.75%	6.75%	6.75%
Total Normal Cost	13.5%	13.5%	18.5%	18.4%	23.1%	23.0%	14.2%
Estimated Total NC (\$ millions)*	\$1,867.4	\$1,797.9	\$258.0	\$246.6	\$56.5	\$54.9	

* Based on payroll projected from valuation date to fiscal year using the payroll growth assumption.

Projections (Assuming All Assumptions Are Met)



- Inputs
 - Membership Data
 - Asset Data
 - Benefit Provisions
 - Assumptions
 - Funding Methodology
- ↓
- Results
 - Actuarial Value of Assets
 - Actuarial Accrued Liability
 - UAAL/Funded Ratio
 - Net Actuarial Gain or Loss
 - Employer Contributions
 - Projections



Given the significant difference between the projected 2023 actuarially determined contribution and the stable contribution policy in this valuation, the City and participating agencies should give serious consideration to increasing contributions and planning for a major increase in the contribution rate when it is reset in 2023.

Projections (Assuming All Assumptions Are Met)



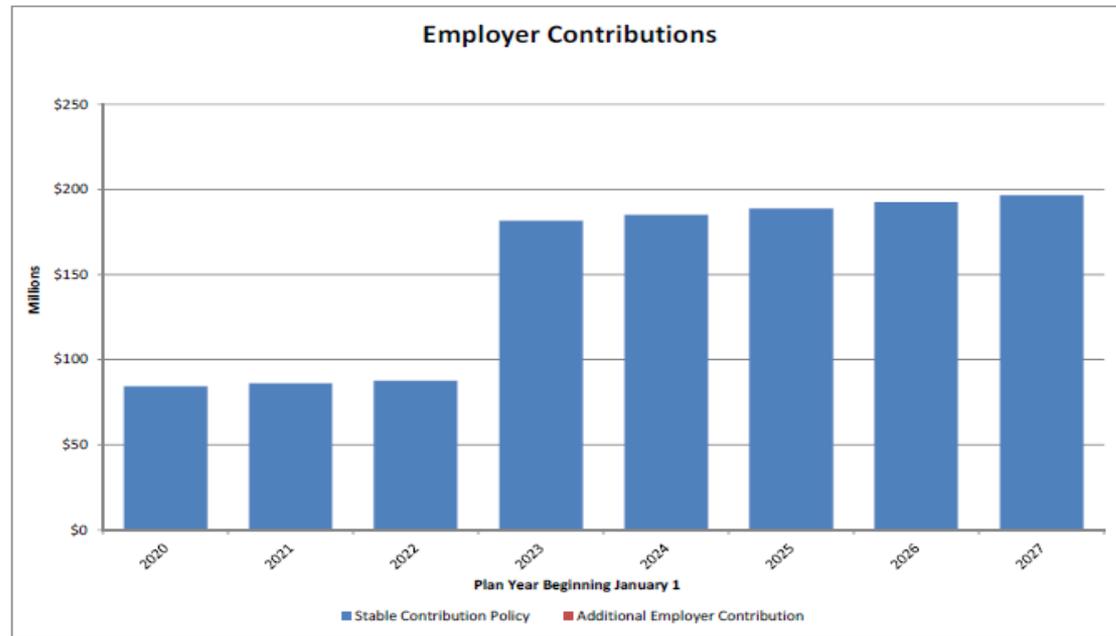
Inputs

- Membership Data
- Asset Data
- Benefit Provisions
- Assumptions
- Funding Methodology

↓

Results

- Actuarial Value of Assets
- Actuarial Accrued Liability
- UAAL/Funded Ratio
- Net Actuarial Gain or Loss
- Employer Contributions
- Projections**



This graphs shows the projected dollar amount of aggregate employer contributions in the future, if all actuarial assumptions are met.

Actuarially Determined Employer Contribution

(Combined Fund only as of January 1, 2020)

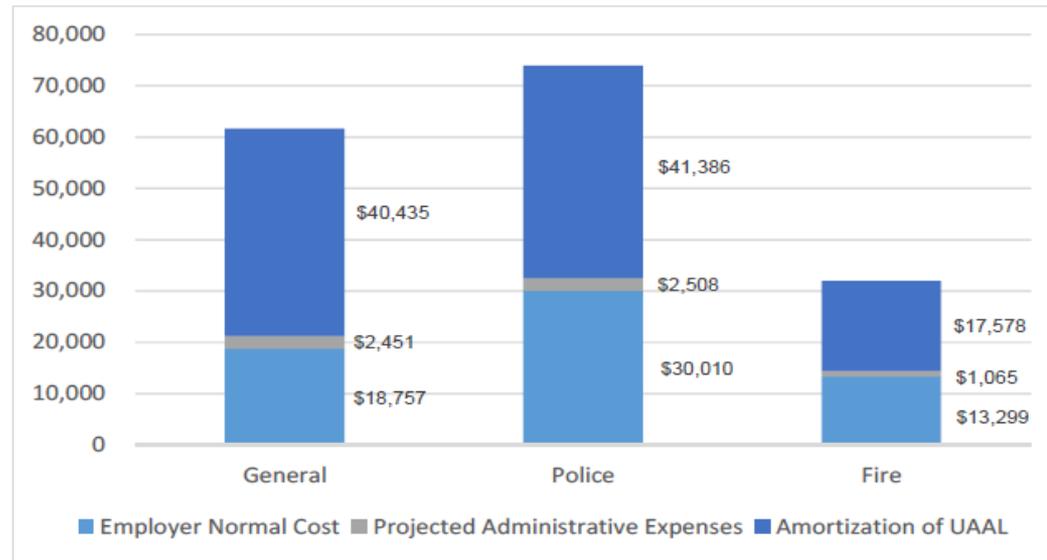
Inputs

- Membership Data
- Asset Data
- Benefit Provisions
- Assumptions
- Funding Methodology

↓

Results

- Actuarial Value of Assets
- Actuarial Accrued Liability
- UAAL/Funded Ratio
- Net Actuarial Gain or Loss
- Employer Contributions**
- Projections



The normal cost is just part of the actuarially determined contribution. The amortization of the unfunded actuarial accrued liability (UAAL) is a major component of the actuarial determined contribution.