Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

City of Milwaukee Employes' Retirement System
Stable Contribution Policy for Calendar Years 2023 through 2027

March 28, 2023

Today's topics

Preliminary Valuation Results

- We have preliminary assets as of January 1, 2023;
- Preliminary results needed to provide Callan information necessary to set investment policy including Stable Employer Contribution Policy

Stable Employer Contribution Policy

- Established with the January 1, 2013 valuation for 2013 through 2017: 8.48% (General) 22.63% (Police) 24.83 Fire
- Reset with the January 1, 2018 valuation for 2018 through 2022: 7.48% (General) 25.22% (Police) 26.83% Fire
- Purpose of today's meeting is to reset for calendar years 2023 through 2027

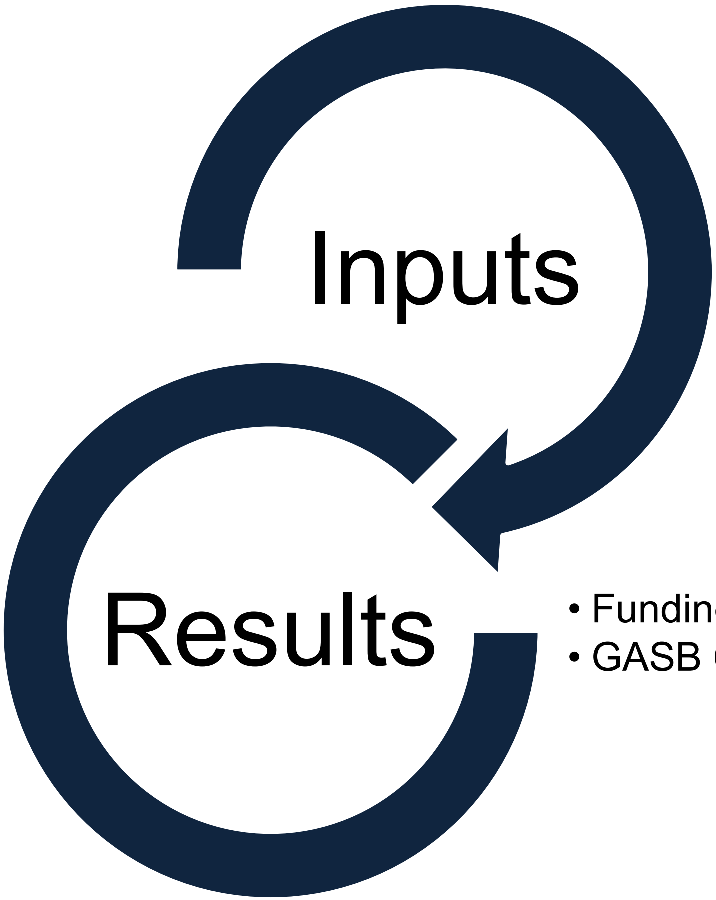
Final Valuation Results

- CMC will present final valuation results at the June Board meeting based on final assets

Purpose of the Actuarial Valuation

- Section 36-15-15 of the Milwaukee City Charter requires the Actuary and Pension Board to "….prepare an annual valuation of the assets and liabilities of the funds of the retirement system". The primary purposes of performing a valuation are to:
  - estimate the liabilities for future benefits expected to be paid by the System;
  - determine the employer contribution rate required to fund the System on an actuarial basis and compare that rate to the Stable Contribution Policy;
  - disclose certain asset and liability measures, including the funded ratio;
  - assess and disclose the key risks associated with funding the System;
  - monitor any deviation between actual plan experience and experience projected by the actuarial assumptions, and
  - analyze and report on any significant trends in contributions, assets and liabilities over the past several years.

Actuarial Valuation Process



- Member Data
- Asset Information
- Benefit Provisions
- Assumptions
- Actuarial Methods

- Funding Results
- GASB 67/68

The valuation process can be viewed as a budgeting process. Like a budget, we make use of information we know as of a certain date and using assumptions we estimate what we think will happen in the future.

To the left are the inputs and results of the valuation process.

Member Data, Asset Information and Benefit Provisions are provided by CMERS Staff. Thank you!!

Assumptions and Actuarial Methods will vary depending on the purpose of the calculation. Unless prescribed elsewhere, these are determined by the Board of Trustees, with input from the actuary and other professionals.

Events During 2022 Which Impacted the January 1, 2023 Actuarial Valuation Results

Actual versus Expected

- Preliminary market return for Calendar 2022 of -6.49%, as reported by Northern Trust, was less than the 7.50% assumption; Return on an actuarial basis was 7.5% due to scheduled recognition of previous deferred asset gains
- Contributions under the Stable Contribution policy were $76.6 million lower than the ADEC (Actuarially Determined Employer Contribution) primarily due to the reduction in the investment return to 7.50% for the January 1, 2019 actuarial valuation

Assumption Changes

- At the February 27, 2023 Board meeting, the following was adopted:
  - Change Retiree Mortality, Other Mortality, Retirement, Termination, Disability, Duty-related disability and Salary increases
  - Maintain 7.50% investment return assumption

Actuarial Methods (Funding Policy)

- At the February 27, 2023 Board meeting, the following was adopted:
  - Adoption of many amortization period policies, including increasing Gain/Loss Amortization period from 15 to 20 years
  - Continuation of the Stable Employer Contribution Policy with the understanding that rates can be updated before the 2028 reset for changes in assumptions or plan provisions

Summary of Liabilities and Assets Based on DRAFT Assets

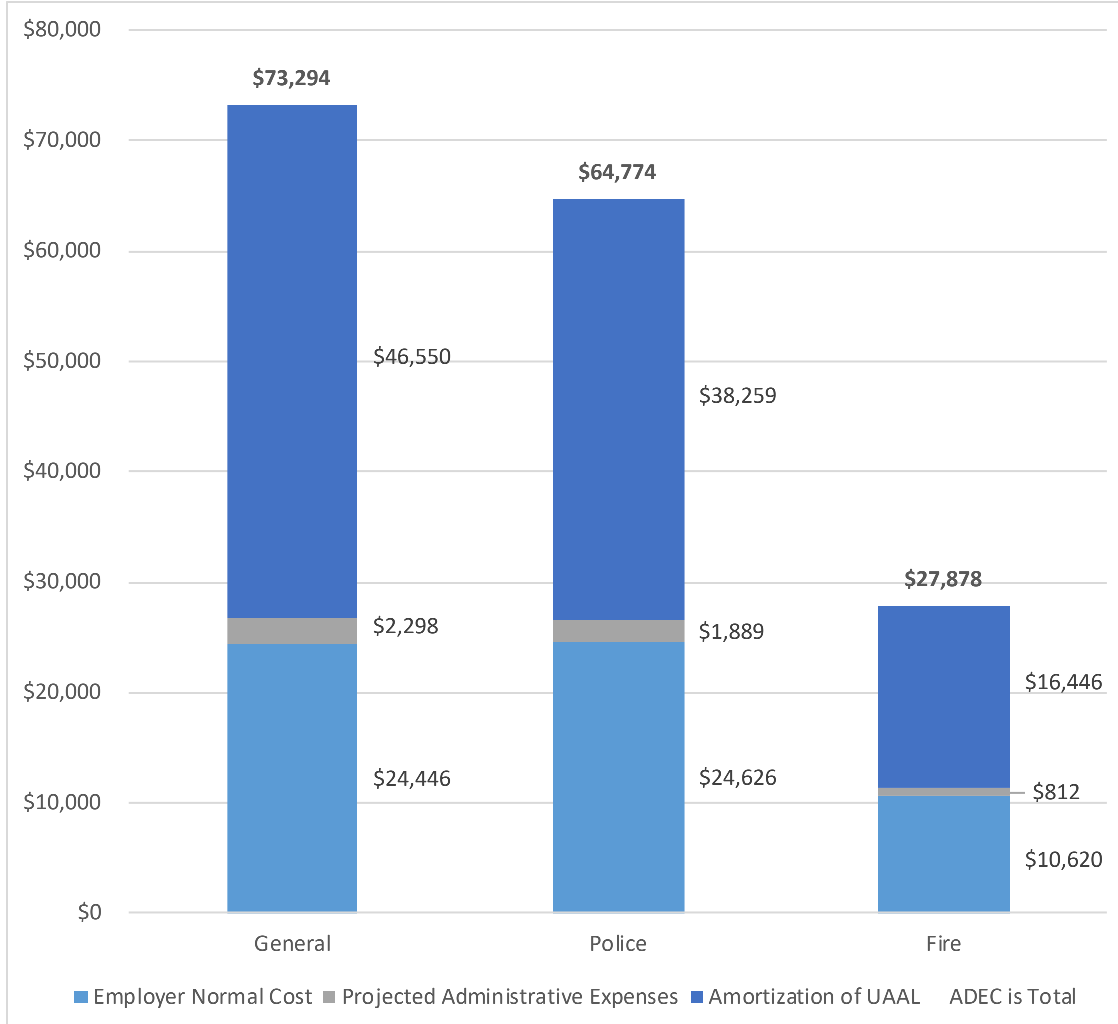
	January 1, 2023	January 1, 2022	% Change
1. Membership Data			
a. Active			
(i) Count			
- General Employees	7,509	7,768	(3.3%)
- Policemen	1,592	1,631	(2.4%)
- Firemen	699	695	0.6%
- Total	9,800	10,094	(2.9%)
(ii) Total Estimated Payroll			
- General Employees	$390,258,000	$369,306,000	5.7%
- Policemen	146,653,000	148,844,000	(1.5%)
- Firemen	62,373,000	61,201,000	1.9%
- Total	$599,284,000	$579,351,000	3.4%
b. Retirees, Beneficiaries and Disabled			
(i) Number	13,853	13,758	0.7%
(ii) Total Annual Benefits	$451,053,000	$434,381,000	3.8%
(iii) Average Annual Benefit	$32,560	$31,573	3.1%
2. Assets and Liabilities			
a. Asset Values			
(i) Actuarial Value of Assets (AVA)	$5,848,749,000	$5,734,986,000	2.0%
(ii) Market Value of Assets (MVA)	$5,525,419,000	$6,431,356,000	(14.1%)
b. Actuarial Accrued Liability (AAL)	$7,067,109,000	$6,875,927,000	2.8%
c. Funded Status			
(i) Unfunded AAL (Based on AVA)	$1,218,360,000	$1,140,941,000	6.8%
(ii) Funded Ratio (Based on AVA)	82.76%	83.41%	(0.8%)
(iii) Unfunded AAL (Based on MVA)	$1,541,690,000	$444,571,000	246.8%
(iv) Funded Ratio (Based on MVA)	78.18%	93.53%	(16.4%)

To the left is a summary of the January 1, 2023 Valuation Results based on draft Assets which was used to develop the Stable Contribution Policy Rates.

ADEC for Combined Fund as of January 1, 2023 based on DRAFT Assets

The Employer Normal Cost is one component of the ADEC and represents the Employer Cost of the benefits accruing during the year.

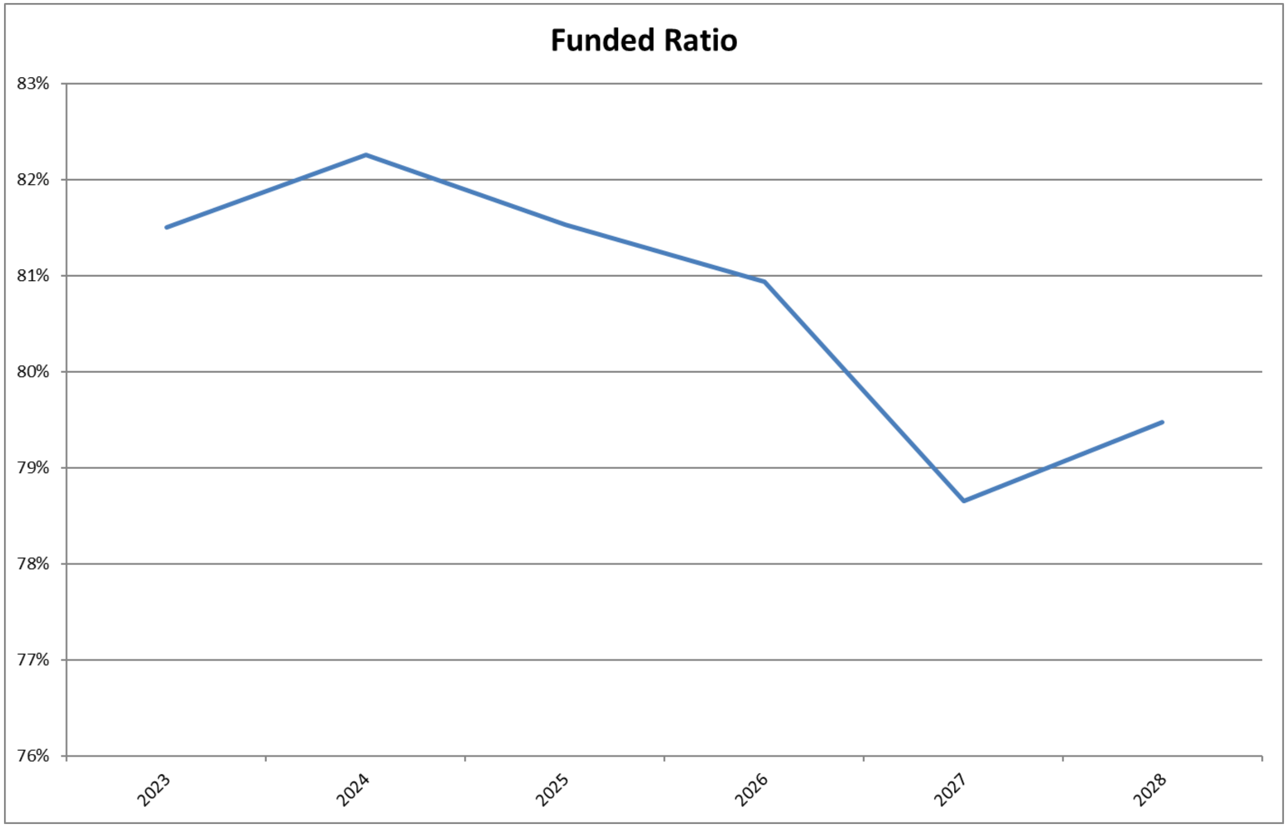
The amortization of the unfunded actuarial accrued liability (UAAL) is the major component of the ADEC.



Stable Contribution Policy Process

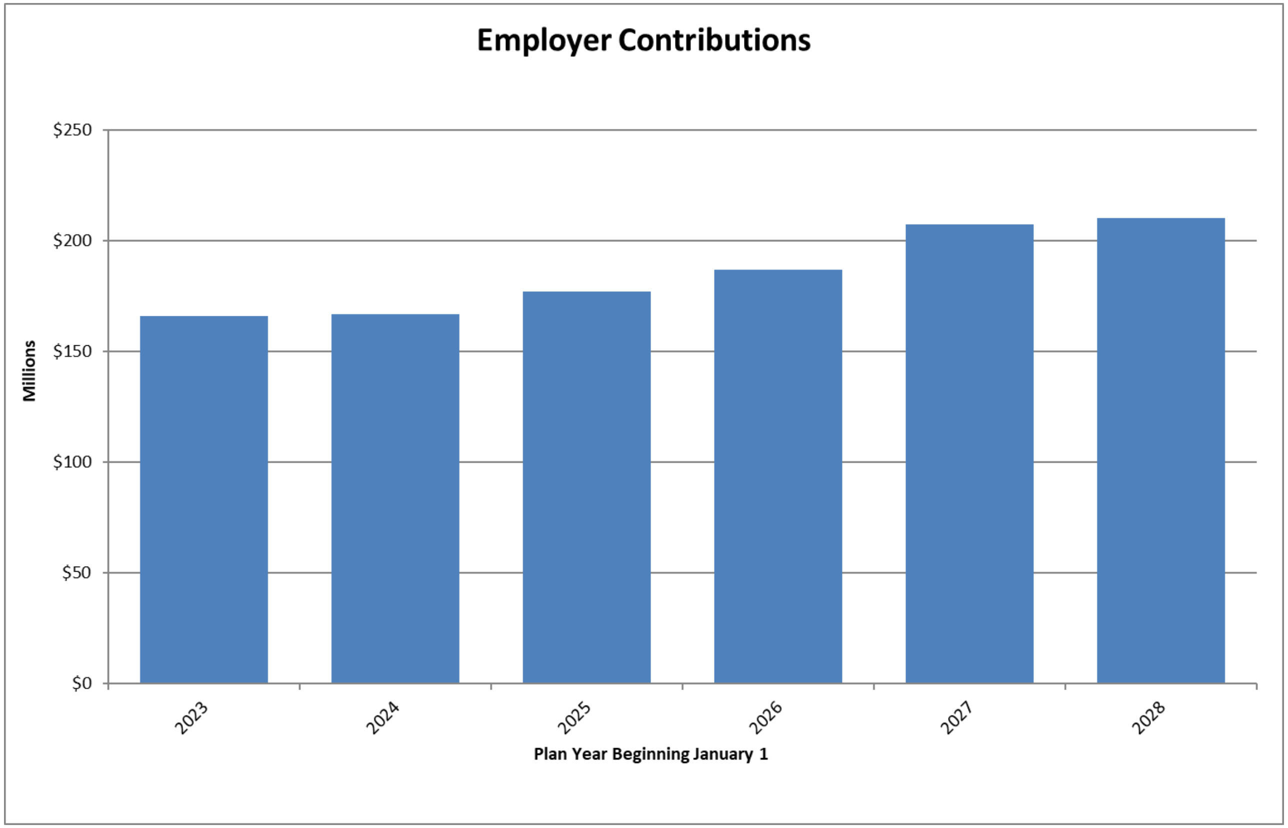
January 1, 2023 Actuarial Valuation	• Perform Preliminary January 1, 2023 Actuarial Valuation Based on Preliminary Assets
Baseline Projection	• Develop Baseline Projection of • Actuarially Determined Employer Contribution (ADEC) for 2023 through 2027 • Funded Ratio from January 1, 2023 through January 1, 2028
2,000 Stochastic Projections	• Run 2,000 Stochastic Projections of ADEC and Funded Ratio based on 2,000 return scenarios provided by Callan
Determine Funded Ratio at Various Percentiles	• Determine Funded Ratio at the 50th, 55th and 60th percentile assuming the projected ADEC under each return scenario is contributed every year.
Determine Stable Employer Contribution Rates	• Stable Employer Contribution Rates are developed for General, Police and Fire which results in *at least a* 50th Percentile Funded Ratio for each employer group and CMERS Combined Fund in total

Projected Funded Ratio for Combined Fund based on DRAFT Assets and 7.50% Returns



The Funded Ratio is expected to decline over the five-year period as the calendar year 2022 return is reflected based on ADEC funding, even if all assumptions are met in the future.

Projected ADEC for Combined Fund based on DRAFT Assets and 7.50% Returns



Based on all assumptions being achieved, including an investment return of 7.50%, the ADEC is expected to increase as the calendar year 2022 return is fully reflected over the five-year period.

Stable Contribution Policy

- Adopted by the Common Council on April 30, 2013. Contribution rate set for each group: Policemen, Firemen, and General Employees of the Combined Fund, and is applicable for the subsequent five-year period following the Experience Study performed by the actuary.

- The current actuarial contribution rates under the Stable Employer Contribution Policy in effect for calendar years 2018 though 2022 are:
  - General Employees: 7.48%
  - Policemen: 25.22%
  - Firemen: 26.83%.

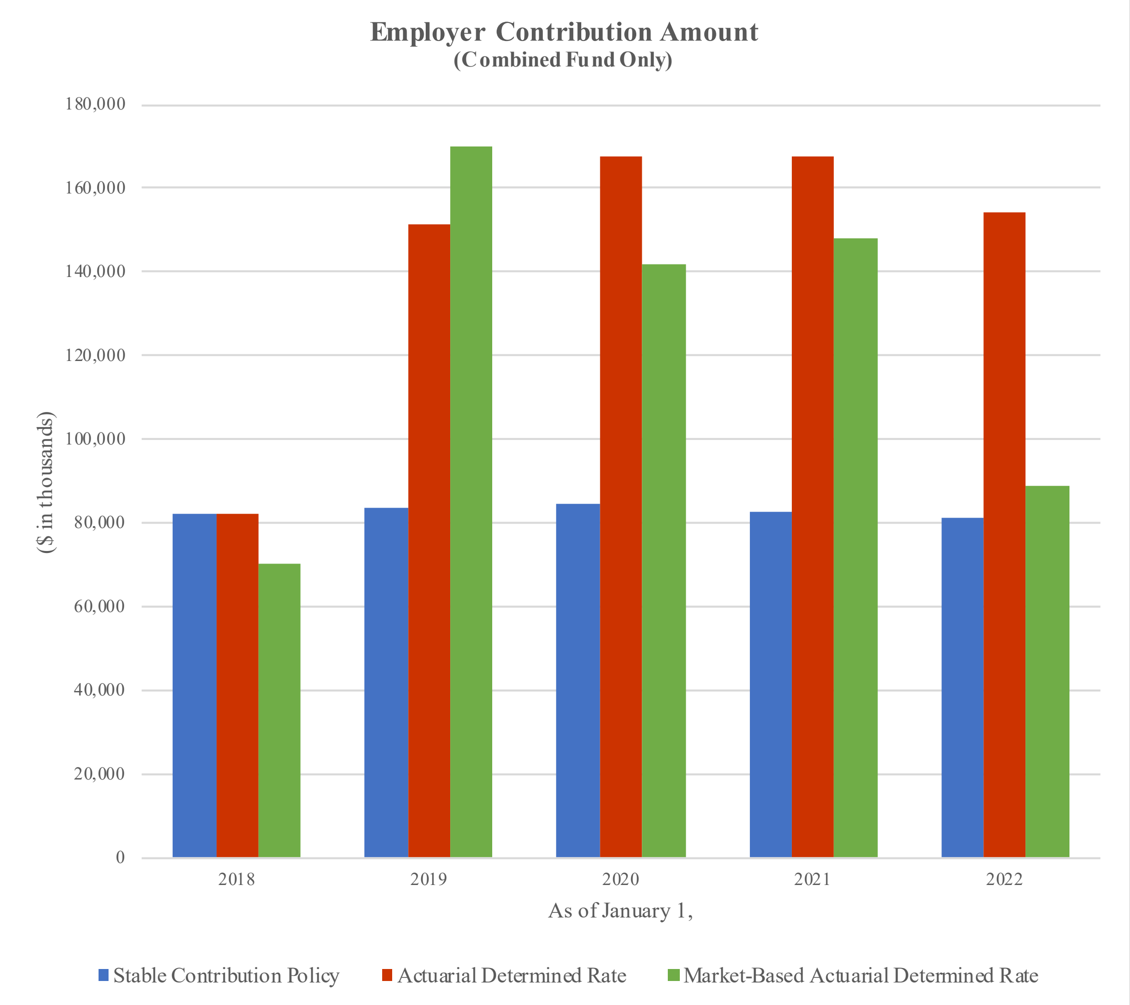
- January 1, 2022 results are used to monitor the impact of the Stable Employer Contribution Policy on the System's funding and anticipate possible adjustments when the rate is reset for calendar years 2023 through 2027.

- January 1, 2023 preliminary results are the basis for the rates for calendar years 2023 through 2027

History of Stable Contribution Policy vs ADEC

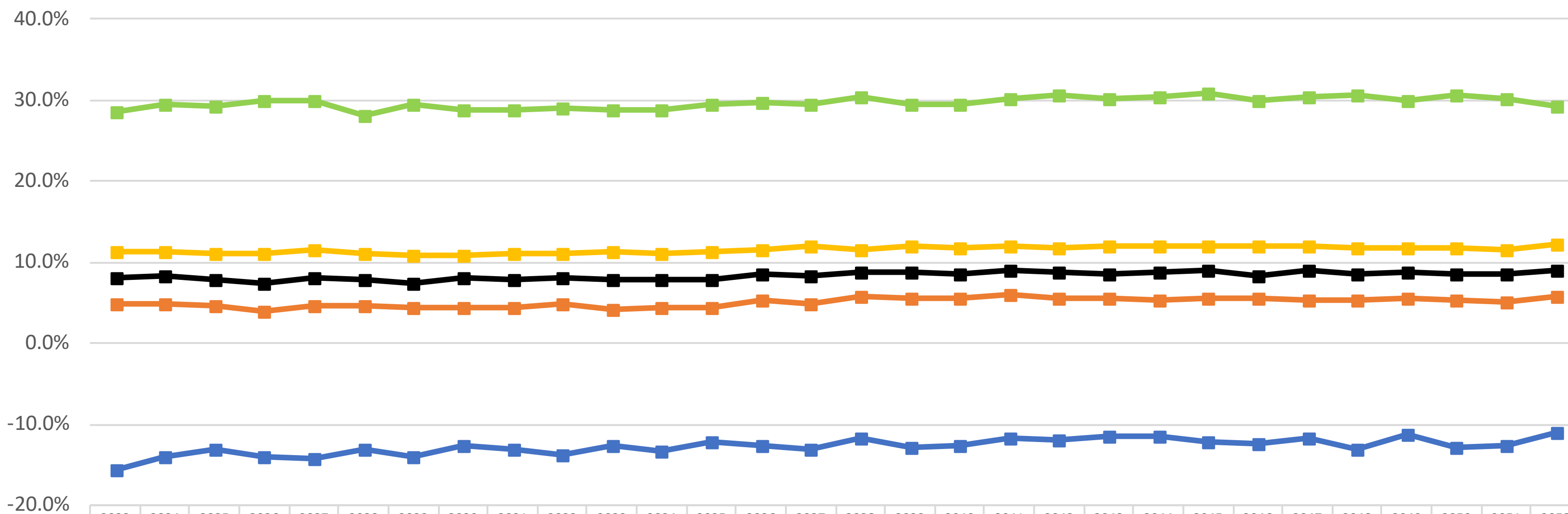
Since the off-cycle reduction in the investment return assumption to 7.50% for the January 1, 2019 actuarial valuation, employer contributions under the Stable Contribution Policy have been less than those developed under the ADEC.

As we have noted since 2019, the Stable Contribution Policy Rates will increase for 2023.



CMERS Annual Portfolio Net Returns from Callan

CMERS Annual Portfolio Net Returns



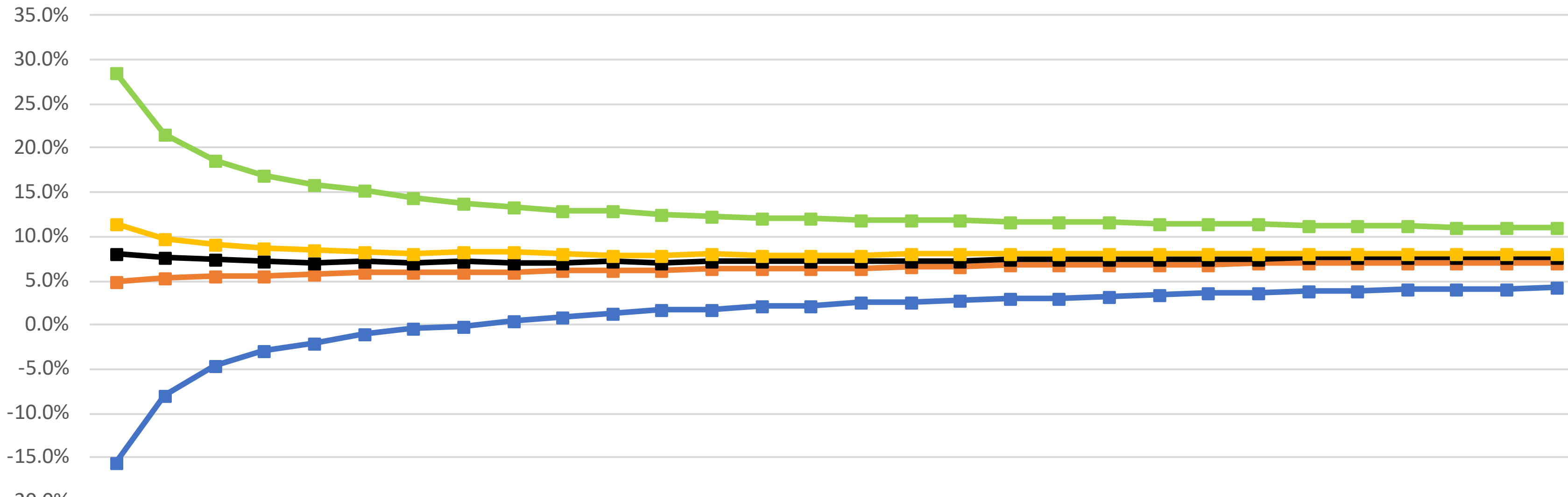
	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
5th Percentile	-15.6%	-13.9%	-13.1%	-14.1%	-14.3%	-13.1%	-13.9%	-12.7%	-13.1%	-13.8%	-12.7%	-13.3%	-12.2%	-12.6%	-13.2%
40th Percentile	4.9%	5.0%	4.5%	4.0%	4.5%	4.7%	4.5%	4.5%	4.5%	4.8%	4.3%	4.4%	4.3%	5.3%	4.8%
50th Percentile	8.0%	8.2%	7.8%	7.4%	8.0%	7.9%	7.5%	8.1%	7.8%	8.0%	7.7%	7.9%	7.8%	8.5%	8.3%
60th Percentile	11.4%	11.3%	11.0%	11.1%	11.5%	11.0%	10.9%	10.9%	11.1%	11.1%	11.2%	11.1%	11.4%	11.6%	12.0%
95th Percentile	28.7%	29.4%	29.4%	29.9%	29.9%	28.1%	29.4%	28.7%	28.8%	29.1%	28.9%	28.8%	29.6%	29.7%	29.5%

	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052
5th Percentile	-11.7%	-12.8%	-12.6%	-11.6%	-11.9%	-11.5%	-11.6%	-12.3%	-12.4%	-11.6%	-13.0%	-11.4%	-13.0%	-12.5%	-11.0%
40th Percentile	5.7%	5.6%	5.6%	6.0%	5.5%	5.5%	5.4%	5.6%	5.5%	5.3%	5.2%	5.5%	5.3%	5.1%	5.9%
50th Percentile	8.7%	8.8%	8.5%	9.0%	8.8%	8.7%	8.8%	9.0%	8.4%	9.0%	8.5%	8.7%	8.6%	8.5%	9.1%
60th Percentile	11.5%	12.0%	11.8%	12.1%	11.8%	12.1%	11.9%	12.1%	12.0%	12.0%	11.7%	11.9%	11.7%	11.5%	12.2%
95th Percentile	30.5%	29.4%	29.5%	30.1%	30.6%	30.3%	30.4%	30.9%	29.9%	30.4%	30.7%	30.1%	30.6%	30.1%	29.4%

We want to thank Callan for providing CMC with 2,000 simulated 30-year net annual return scenarios based on the portfolio. Those returns are summarized here by percentile rankings.

CMERS Geometric Average Net Returns from Callan

CMERS Geometric Average Net Returns



	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
5th Percentile	-15.6%	-8.0%	-4.6%	-2.9%	-2.2%	-1.0%	-0.4%	-0.1%	0.5%	0.9%	1.3%	1.6%	1.7%	2.1%	2.2%
40th Percentile	4.9%	5.4%	5.6%	5.6%	5.6%	5.9%	6.0%	6.0%	6.0%	6.2%	6.2%	6.2%	6.3%	6.4%	6.4%
50th Percentile	8.0%	7.6%	7.4%	7.3%	7.0%	7.1%	7.0%	7.2%	7.1%	7.1%	7.2%	7.1%	7.2%	7.2%	7.2%
60th Percentile	11.4%	9.7%	9.1%	8.6%	8.4%	8.3%	8.1%	8.2%	8.2%	8.0%	7.9%	8.0%	8.0%	7.9%	7.9%
95th Percentile	28.7%	21.7%	18.5%	16.9%	15.9%	15.2%	14.3%	13.8%	13.4%	13.0%	12.8%	12.4%	12.3%	12.2%	12.0%

	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052
5th Percentile	2.5%	2.6%	2.8%	3.0%	3.1%	3.3%	3.5%	3.6%	3.6%	3.8%	3.9%	4.0%	4.0%	4.0%	4.2%
40th Percentile	6.5%	6.6%	6.7%	6.8%	6.8%	6.8%	6.9%	6.9%	6.9%	6.9%	7.1%	7.0%	7.1%	7.1%	7.0%
50th Percentile	7.2%	7.2%	7.3%	7.4%	7.4%	7.4%	7.4%	7.5%	7.5%	7.6%	7.6%	7.6%	7.6%	7.6%	7.6%
60th Percentile	7.9%	8.0%	8.0%	8.0%	8.0%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%
95th Percentile	11.9%	11.8%	11.8%	11.6%	11.7%	11.6%	11.4%	11.4%	11.4%	11.3%	11.2%	11.2%	11.1%	11.1%	11.0%

5th Percentile 40th Percentile 50th Percentile 60th Percentile 95th Percentile

Geometric returns based on Callan's information are summarized here by percentile rankings. Note cumulative return over the next five years at the median is 7.1%.

Projected Employer Contributions Under ADEC

Employer Contribution Rate Based on ADEC

Percentile Ranking

Year	5th	25th	40th	45th	50th	55th	60th	75th	95th
2023	27.77%	27.77%	27.77%	27.77%	27.77%	27.77%	27.77%	27.77%	27.77%
2024	24.23%	25.83%	26.61%	26.86%	27.09%	27.32%	27.50%	28.32%	30.33%
2025	20.70%	24.91%	26.76%	27.27%	27.76%	28.32%	28.91%	30.71%	35.08%
2026	16.73%	23.84%	26.76%	27.67%	28.43%	29.30%	30.19%	33.29%	39.95%
2027	13.79%	24.36%	28.32%	29.66%	30.93%	32.25%	33.38%	37.63%	46.32%
2032	9.60%	15.54%	25.15%	27.96%	30.93%	33.42%	36.08%	43.97%	58.71%
2037	9.28%	9.28%	21.41%	25.41%	28.75%	32.50%	36.27%	46.09%	63.61%
2042	9.15%	9.15%	9.15%	9.97%	18.06%	26.72%	32.38%	44.90%	63.96%
2047	9.04%	9.04%	9.04%	9.04%	9.04%	9.04%	12.89%	25.84%	45.64%
2052	9.03%	9.03%	9.03%	9.03%	9.03%	9.03%	9.03%	18.37%	41.45%

The Stable Employer Contribution is based on the ADEC funding policy adopted at the February 28, 2023 Board meeting. We have projected the ADEC based on the 2,000 Callan returns here.

At the lower percentiles, returns are higher than expected. The ADEC "floor" of the employer normal cost plus administrative expenses – 9.60% to 9.03% - is achieved as the Funded Ratio exceeds 100%.

At the higher percentiles, returns are lower than expected. The ADEC includes a component for UAAL amortization which results in a contribution higher than the employer normal cost plus administrative expenses because the Funded Ratio is less than 100%.

In later years, the ADEC decreases as the initial 2019 UAAL amortization base is paid off.

The Funded Ratio corresponding to these contributions in on the next slide.

Projected Funded Ratio Under ADEC

Funded Ratio Based on ADEC

Percentile Ranking

January 1,	5th	25th	40th	45th	50th	55th	60th	75th	95th
2024	78.80%	80.99%	81.87%	82.07%	82.33%	82.58%	82.84%	83.69%	85.44%
2025	73.76%	78.51%	80.47%	81.10%	81.73%	82.26%	82.81%	84.80%	89.44%
2026	68.67%	75.86%	79.24%	80.23%	81.13%	81.98%	82.97%	86.20%	93.87%
2027	61.88%	71.33%	75.94%	77.11%	78.54%	79.98%	81.41%	85.73%	97.40%
2028	57.16%	69.67%	75.31%	77.27%	78.79%	80.91%	82.86%	88.83%	104.48%
2033	50.48%	67.18%	75.47%	78.80%	82.31%	85.61%	88.23%	99.51%	135.41%
2038	51.62%	70.34%	79.99%	83.60%	86.90%	90.87%	94.73%	109.48%	168.44%
2043	58.99%	79.52%	91.14%	94.67%	98.58%	102.32%	107.48%	127.37%	224.00%
2048	64.64%	86.47%	99.75%	103.90%	108.92%	115.69%	123.55%	155.82%	295.89%
2053	65.97%	91.91%	107.73%	114.88%	121.66%	129.24%	140.10%	188.77%	385.60%

We have projected the funded ratio based on the previous ADEC projections here. The highlighted amounts are used to determine the Stable Employer Contribution Rates.

The 2028 Funded Ratio at the median is projected to be less than 2023 Funded Ratio due to Calendar 2022 investment experience and returns over the next decade that are expected to be less than the 7.5% return assumption

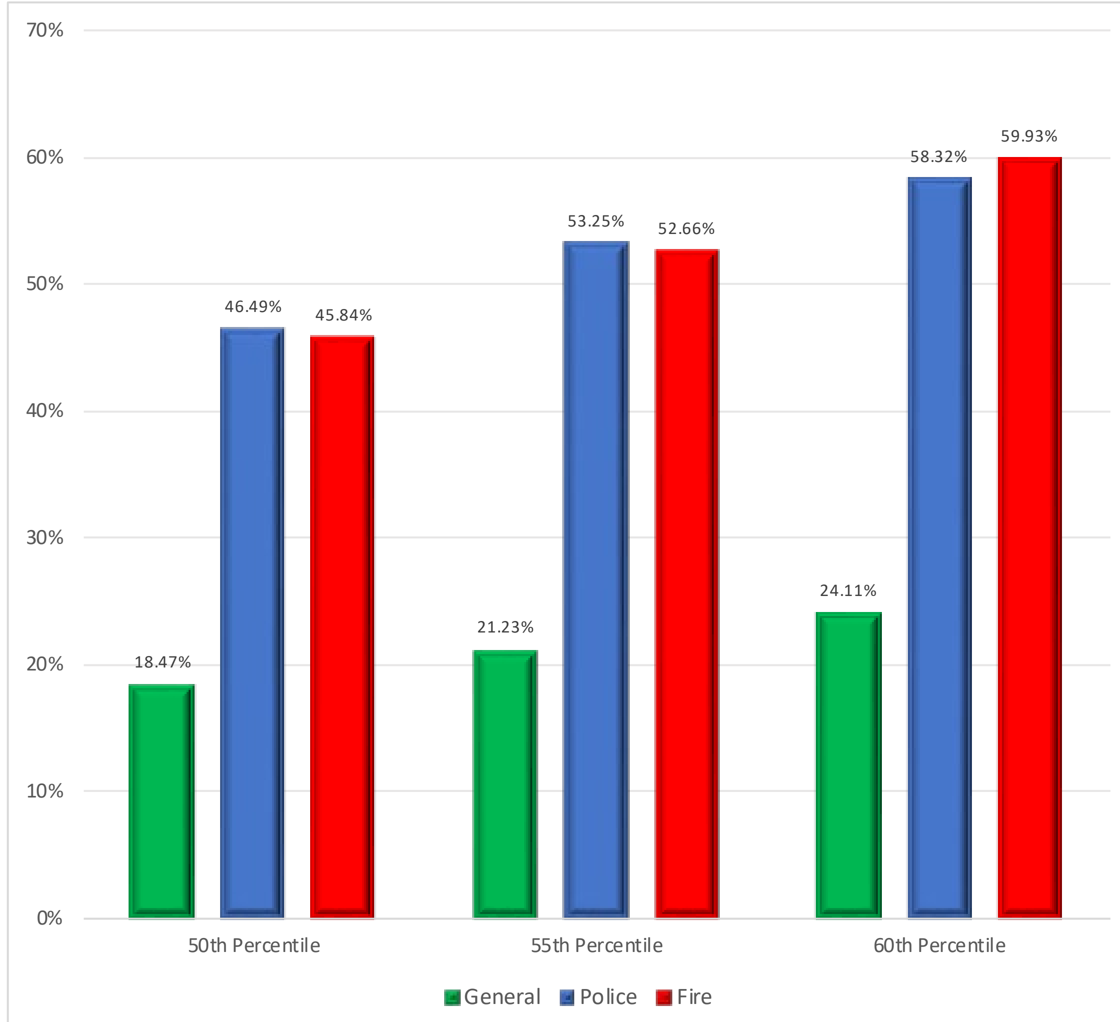
In 25 years, the median Funded Ratio is over 100%.

Funded Ratios in above median scenarios continue to grow due to the employer normal cost minimum policy..

Stable Employer Contribution Rates at Select Percentiles

We use the following target funded ratios from the stochastic projections on the previous slide to determine the Stable Employer Contribution Rates to the right:

- 50th Percentile: 78.79%
- 55th Percentile: 80.91%
- 60th Percentile: 82.86%



50th Percentile Projected Dollar Contributions ($ in Thousands)

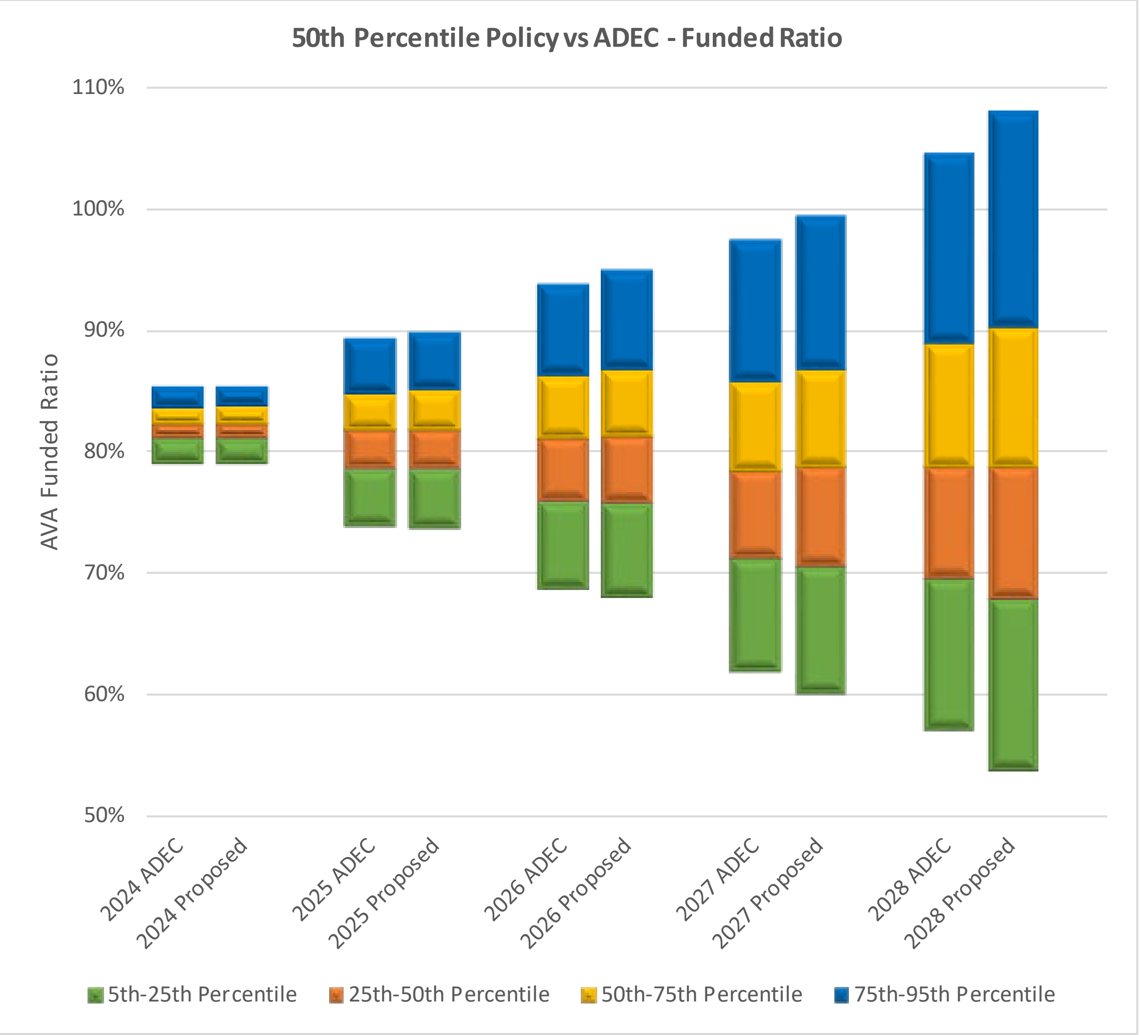
1) City of Milwaukee	2023	2024	2025	2026	2027
a) General	$35,067	$35,768	$36,483	$37,213	$37,957
b) Police	68,121	69,483	70,873	72,290	73,736
c) Fire	28,592	29,164	29,747	30,342	30,949
d) Total City	$131,780	$134,415	$137,103	$139,845	$142,642
2) Non-City Employers					
a) Water Dept	$3,594	$3,666	$3,739	$3,814	$3,890
b) School Board	26,204	26,728	27,263	27,808	28,364
c) Milwaukee Technical College	0	0	0	0	0
d) Sewerage Commission	4,249	4,334	4,421	4,509	4,599
e) Veolia	134	137	140	143	146
f) Wisconsin Center District	1,259	1,284	1,310	1,336	1,363
g) Housing Authority	1,282	1,308	1,334	1,361	1,388
h) Total Non-City	$36,722	$37,456	$38,205	$38,969	$39,748
3) Total System (1d) + (2h)	$168,502	$171,871	$175,308	$178,814	$182,390

A breakdown of the projected dollar contributions is above. Amounts shown are as of January 1 of each year. Interest at 7.50% per year is added for contributions made after January 1.

Comparison of 50th Percentile versus ADEC Funded Ratio

The Funded Ratio at the median is just a little better under the Stable Employer Contribution Policy compared to the ADEC.

The dispersion of the Funded Ratio is narrower under the ADEC because adjustments to the employer contribution is made annually.



Key Takeaways

As noted in our actuarial valuation reports since 2019, we anticipated significant increases in the Stable Employer Contribution Rates primarily due to the reduction in the assumed rate of return of 7.50%

Returns in 2022 for CMERS, like many Funds, were much lower than expected which puts upward pressure on future contributions.

The process used to develop the Stable Employer Contribution Policy frontloads the 2022 return and expected returns that are less than expected

The Stable Employer Contribution Rates can be revisited if expectations in assumptions or changes in plan provisions are needed. We will continue to monitor the policy as in the past.

Certification

In order to prepare these results, we have utilized appropriate actuarial models that were developed for this purpose. These models use assumptions about future contingent events along with recognized actuarial approaches to develop the needed results. Future actuarial measurements may differ significantly from current measurements due to plan experience differing from that anticipated by the economic and demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements, and changes in plan provisions or applicable law. Because of limited scope, Cavanaugh Macdonald performed no analysis of the potential range of such future differences, except for some limited analysis in financial projections or required disclosure information. Results prior to January 1, 2019 were provided by the prior consulting actuary.

We meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this report. This report has been prepared in accordance with all applicable Actuarial Standards of Practice, and we are available to answer questions about it.

Larry Langer	Patrice A. Beckham	Aaron Chochon
ASA, EA, FCA, MAAA	FSA, EA, FCA, MAAA	ASA, EA, FCA, MAAA
Principal and Consulting Actuary	Principal and Consulting Actuary	Senior Actuary

Questions?

Thank you!