



Denver Employees Retirement Plan

Actuarial Valuation Report as of January 1, 2023

Produced by Cheiron

December 7, 2023

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Via Electronic Mail

December 7, 2023

Retirement Board
Denver Employees Retirement Plan
777 Pearl Street
Denver, Colorado 80203

Dear Members of the Retirement Board,

At your request, we have conducted an actuarial valuation of the Denver Employees Retirement Plan (DERP, the Plan) as of January 1, 2023. This report contains information on the Plan's assets and liabilities and discloses 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 DERP. This report is for the use of the Retirement Board of Denver 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.

Cheiron's report was prepared solely for the Retirement Board of Denver for the purposes described herein, except that the plan auditor may rely on this report solely for the purpose of completing an audit related to the matters herein. It is not intended to benefit any third party, and Cheiron assumes no duty or liability to any such party.

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

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

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

**DENVER EMPLOYEES RETIREMENT PLAN
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2023**

FOREWORD

Cheiron has performed the actuarial valuation of the Denver Employees Retirement Plan as of January 1, 2023. 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 System's
 - Section II – Identification and Assessment of Risk
 - Section III – Assets
 - Section IV – Liabilities
 - Section V – Contributions
 - Section VI – Annual Comprehensive Financial Reporting
- 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), and a glossary of key actuarial terms (Appendix D).

Future results may differ significantly from the current projections presented in this report due to such factors as the following: plan experience different from that anticipated by the assumptions; changes in assumptions; and changes in plan provisions or applicable law.

In preparing our report, we relied on information (some oral and some written) supplied by DERP staff. This information includes, but is not limited to, the 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.

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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 funded status of the Plan,
- Past and expected trends in the funding progress of the Plan,
- Total Actuarially Determined Contribution Rate (comprising both employer and employee rates)
- Information required by the GFOA for the Annual Comprehensive Financial Report, and
- The assessment and disclosure of risks.

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 results, (C) an examination of the historical trends, and (D) the projected outlook for the Plan.

A. Valuation Basis

This valuation determines the actuarially determined contributions for the employers' fiscal years beginning January 1, 2023. The Plan's funding policy is to collect contributions from the employers and employees equal to the normal cost under the actuarial funding method and the amortization payment of the Unfunded Actuarial Liability.

The Unfunded Actuarial Liability payment is determined as the amount needed to fund the outstanding Unfunded Actuarial liability (UAL). Effective with the January 1, 2019 valuation, the existing UAL as of January 1, 2019 is amortized over a closed 20-year period as a level percentage of payroll. The additional UAL attributable to the change in funding method and asset valuation method, also effective with the January 1, 2019 valuation, is amortized over a separate 20-year period. All future experience gains and losses will be amortized over new 20-year periods as a level percentage of payroll.

As of the January 1, 2021 valuation, the assumed rate of return and discount rate were reduced from 7.50% to 7.25%, based on an action taken by the Board at its September 23, 2020 meeting. The amortization payment to cover the increase in the UAL from lowering the discount rate is being phased-in over a three-year period beginning with January 1, 2021 valuation. The January 1, 2023 valuation includes the third and final year of the phase-in period.

As of the January 1, 2023 valuation, the assumed rate of return and discount rate were reduced from 7.25% to 7.00% with no phase-in based on an action taken by the Board at its July 21, 2023 meeting.

This valuation was performed based on the economic and demographic assumptions and methods that were recommended in the Actuarial Experience Study performed by Cheiron as of December 31, 2022. These assumptions were adopted by the Board of Trustees at their July 21, 2023 Board meeting. 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.

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SECTION I – EXECUTIVE SUMMARY

Key Findings of this Valuation

The key results for the January 1, 2023 actuarial valuation for the combined pension and retiree medical plans are as follows:

- The actuarially determined contribution rate (ADC) decreased from 26.38% to 26.10% of payroll for the current valuation. The projected ADC from the January 1, 2022 valuation was 26.44%. The decrease from last year's contribution rate is primarily due to a significant increase in projected payroll, partially offset by assumption changes, demographic experience and unfavorable asset performance.
- Projected payroll increased by 15.6%, compared to the assumed payroll growth of 3.00%, due to an active membership increase of 5.5% and higher than expected salary increases for continuing actives. The Unfunded Actuarial Liability (UAL) payments increase with assumed payroll growth of 3.00%, so if payroll grows as expected, the UAL payment as a percentage of payroll remains the same. However, when payroll growth is higher than assumed, the UAL payment as a percentage of payroll decreases. The payroll increase decreased the ADC by 2.00% of payroll.
- The Actuarial Liability increased more than expected, resulting in an experience loss of \$85.0 million, increasing the contribution by 0.70% of payroll. The experience losses were primarily due to higher than expected pay increases.
- The changes to the economic and demographic assumptions from the Experience Study, including the decrease in the discount rate from 7.25% to 7.00%, increased the Actuarial Liability by \$47.2 million and the Actuarially Determined Contribution rate by 0.42% of payroll.
- During the plan year ending December 31, 2022, the return on the Market Value of Assets (MVA) was -9.2%, net of investment and administrative expenses and assuming mid-year cash flows, as compared to the prior year's 7.25% assumption.

Based on the Actuarial Value of Assets (AVA), the Plan returned 5.2% for the year since \$29.1 million in net deferred asset gains were recognized from previous years. Only 20% of each year's gains or losses on the Market Value of Assets are recognized in the Actuarial Value of Assets based on the Plan's asset smoothing method. There was an actuarial asset loss of \$50.9 million since 5.2% is less than the assumed 7.25%. As of January 1, 2023, there are \$189 million in net deferred asset losses that will be recognized over the next four years.

- As of January 1, 2023, the impact of lowering the discount rate from 7.50% to 7.25% in 2021 is fully phased-in, increasing the ADC by 0.40% of payroll. The amortization payment to cover the increase in the Unfunded Actuarial Liability (UAL) for this assumption change was phased-in over a three-year period starting with the January 1, 2021 actuarial valuation.
- The current total contribution rate is 26.40% with the employer rate at 17.95% and the employee rate at 8.45%. If there is no change to the contribution rates, there would be a 0.30%

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SECTION I – EXECUTIVE SUMMARY

surplus compared to the Actuarial Determined Contribution that would serve to pay down the principal on the UAL and better fund the Plan.

- The projected actuarially determined contribution rate for January 1, 2024 increases slightly to 26.3%, based on the January 1, 2023 actuarial valuation.
- The Plan's funded ratio, the ratio of assets over Actuarial Liability, decreased from 61.2% to 59.4% based on the Actuarial Value of Assets as of December 31, 2022. On a Market Value of Assets basis, the funded ratio decreased from 65.8% to 55.0%. The decrease in the funded ratios are primarily due to the actuarial investment losses, demographic losses and the assumption changes.
- The UAL is the excess of the Plan's Actuarial Liability over the Actuarial Value of Assets. The Plan experienced an increase in the UAL from \$1,619.2 million to \$1,771.8 million, an increase of \$152.6 million. The Actuarial Liability increased by \$181.7 million while the Actuarial Value of Assets increased by \$29.1 million.

On the following pages, we present Tables I-1, I-2, I-3, and I-4, which summarize the key results of the valuation with respect to DERP assets, liabilities, Unfunded Actuarial Liability, funded ratios, contribution rates, and membership. The results are shown for both the prior and current plan year, and for the total combined plans and separate exhibits for the pension and retiree medical plans. Table I-1(c) summarizes the key results of the valuation split by employers: the Denver Health and Hospital Authority (DHHA) and the City.

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ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2023**

SECTION I – EXECUTIVE SUMMARY

Table I-1			
Pension Plan and Retiree Medical Plan (Combined Basis)			
Summary of Key Valuation Results			
(\$ in millions)			
	January 1, 2022	January 1, 2023	Change
Funded Status			
Actuarial Liability	\$ 4,178.09	\$ 4,359.83	\$ 181.73
Actuarial Value of Assets (AVA)	<u>2,558.93</u>	<u>2,588.00</u>	<u>29.07</u>
Unfunded Actuarial Liability (UAL)	\$ 1,619.17	\$ 1,771.82	\$ 152.66
Funded Ratio - Based on AVA	61.2%	59.4%	-1.9%
Market Value of Assets (MVA)	\$ 2,749.75	\$ 2,399.24	\$ (350.51)
Unfunded Actuarial Liability (UAL)	1,428.34	1,960.58	532.24
Funded Ratio - Based on MVA	65.8%	55.0%	-10.8%
Actuarially Determined Contribution (ADC)			
Normal Cost	\$ 61.25	\$ 72.12	\$ 10.87
UAL Payment			
Interest	\$ 117.39	\$ 124.03	\$ 6.64
Principal	<u>12.72</u>	<u>23.04</u>	<u>10.32</u>
Total UAL Payment	\$ 130.11	\$ 147.07	\$ 16.96
Total Contributions \$	\$ 191.36	\$ 219.19	\$ 27.83
<u>Contribution Rate Components</u>			
Normal Cost	8.44%	8.59%	0.15%
UAL Payment			
Interest	16.18%	14.77%	-1.41%
Principal	<u>1.75%</u>	<u>2.74%</u>	<u>0.99%</u>
Total UAL Payment	17.94%	17.51%	-0.42%
Total Contribution Rate % ¹	26.38%	26.10%	-0.27%
Equivalent single amortization period	17.7	16.5	(1.2)
DHHA Supplemental Normal Cost	\$ 0.45	\$ 0.48	\$ 0.03
DHHA Supplemental UAL Payment	<u>6.46</u>	<u>9.22</u>	<u>2.76</u>
DHHA Total Supplemental Contribution	\$ 6.91	\$ 9.70	2.79

¹ Impact of lowering discount rate to 7.25% for the January 1, 2021 valuation is fully phased-in as of January 1, 2023. The January 1, 2022 Actuarially Determined Contribution Rate without the phase-in was 26.75%.

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The total actuarially determined contribution rate decreased from 26.38% to 26.10% of payroll. In addition, more of the UAL payment is going toward paying principal on the UAL than last year.

Based on the estimated 2023 payroll of \$843.2 million, the estimated total employer and employee contributions (26.4% of payroll) for 2023 are \$223 million.

Table I-1 (Continued)			
Pension Plan and Retiree Medical Plan (Combined Basis)			
Summary of Key Valuation Results			
(\$ in millions)			
	January 1, 2022	January 1, 2023	Change
Total Actuarially Determined Contribution Rate			
Pension Plan	25.13%	25.04%	-0.09%
Retiree Medical Plan	<u>1.25%</u>	<u>1.06%</u>	<u>-0.19%</u>
Total Contribution %	26.38%	26.10%	-0.28%
Actual Contribution Rate	25.60%	26.40%	0.80%
Contribution (Shortfall) / Surplus	-0.78%	0.30%	1.08%
Actuarially Determined Contribution Dollars			
Pension Plan	\$ 182.31	\$ 210.30	\$ 27.99
Retiree Medical Plan	<u>9.05</u>	<u>8.89</u>	<u>(0.16)</u>
Total Contribution \$	\$ 191.36	\$ 219.19	\$ 27.83
DHHA Supplemental Normal Cost			
Pension Plan	\$ 0.43	\$ 0.46	\$ 0.03
Retiree Medical Plan	<u>0.02</u>	<u>0.02</u>	<u>0.00</u>
Total	\$ 0.45	\$ 0.48	\$ 0.03

The pension plan actuarially determined contribution rate decreased by 0.09%, while the retiree medical plan contribution rate decreased by 0.19%, for a total decrease of 0.28%.

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SECTION I – EXECUTIVE SUMMARY

Tables I-1(a) and I-1(b) below and on the following page show the key results for the pension plan and retiree medical plan independently.

Table I-1(a)			
Pension Plan - Summary of Key Valuation Results			
(\$ in millions)			
	January 1, 2022	January 1, 2023	Change
Funded Status			
Actuarial Liability	\$ 4,012.70	\$ 4,199.98	\$ 187.28
Actuarial Value of Assets (AVA)	<u>2,480.03</u>	<u>2,508.20</u>	<u>28.17</u>
Unfunded Actuarial Liability (UAL)	\$ 1,532.67	\$ 1,691.77	\$ 159.10
Funded Ratio - Based on AVA	61.8%	59.7%	-2.1%
Market Value of Assets (MVA)	\$ 2,665.05	\$ 2,325.29	\$ (339.76)
Unfunded Actuarial Liability (UAL)	1,347.66	1,874.69	527.03
Funded Ratio - Based on MVA	66.4%	55.4%	-11.0%
Actuarially Determined Contribution			
Normal Cost	\$ 59.29	\$ 70.14	\$ 10.85
UAL Payment	<u>123.02</u>	<u>140.16</u>	<u>17.14</u>
Total Pension Contribution \$	\$ 182.31	\$ 210.30	\$ 27.99
<u>Contribution Rate Components</u>			
Normal Cost	8.17%	8.35%	0.18%
UAL Payment	<u>16.96%</u>	<u>16.69%</u>	<u>-0.27%</u>
Total Pension Contribution Rate % ¹	25.13%	25.04%	-0.09%
DHHA Supplemental Normal Cost	\$ 0.43	\$ 0.46	\$ 0.03

¹ Impact of lowering discount rate to 7.25% for the January 1, 2021 valuation is fully phased-in as of January 1, 2023. The January 1, 2022 Actuarially Determined Contribution Rate without the phase-in was 25.49%.

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SECTION I – EXECUTIVE SUMMARY

Table I-1(b)			
Retiree Medical Plan - Summary of Key Valuation Results			
(\$ in millions)			
	January 1, 2022	January 1, 2023	Change
Funded Status			
Actuarial Liability	\$ 165.39	\$ 159.85	\$ (5.54)
Actuarial Value of Assets (AVA)	<u>78.90</u>	<u>79.80</u>	<u>0.90</u>
Unfunded Actuarial Liability (UAL)	\$ 86.50	\$ 80.05	\$ (6.45)
Funded Ratio - Based on AVA	47.7%	49.9%	2.2%
Market Value of Assets (MVA)	\$ 84.71	\$ 73.95	\$ (10.76)
Unfunded Actuarial Liability (UAL)	80.69	85.90	5.21
Funded Ratio - Based on MVA	51.2%	46.3%	-5.0%
Actuarially Determined Contribution			
Normal Cost	\$ 1.96	\$ 1.98	\$ 0.02
UAL Payment	<u>7.10</u>	<u>6.91</u>	<u>(0.19)</u>
Total Retiree Medical Contributions \$	\$ 9.05	\$ 8.89	\$ (0.17)
<u>Contribution Rate Components</u>			
Normal Cost	0.27%	0.24%	-0.03%
UAL Payment	<u>0.98%</u>	<u>0.82%</u>	<u>-0.15%</u>
Total Retiree Medical Contribution Rate % ¹	1.25%	1.06%	-0.19%
DHHA Supplemental Normal Cost	\$ 0.02	\$ 0.02	\$ 0.00

¹ Impact of lowering discount rate to 7.25% for the January 1, 2021 valuation is fully phased-in as of January 1, 2023. The January 1, 2022 Actuarially Determined Contribution Rate without the phase-in was 1.26%.

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SECTION I – EXECUTIVE SUMMARY

Table I-1(c) below shows the allocation of DERP’s Unfunded Actuarial Liability between the City and the Denver Health and Hospital Authority (DHHA) based on their porportion of DERP’s total Actuarial Liability. The DHHA Actuarial Liability excludes service prior to January 1, 1997 for calculating benefits but this service is included for benefit eligibility. The calculations for the DHHA are based on the same actuarial assumptions and methods and amortization policy used in the January 1, 2023 actuarial valuation.

The Denver City Council sets the contribution rates for employers, contractual entities, and employees in the DRMC Sec. 18-407 as a percentage of covered payroll. The DHHA contributions as a percentage of covered payroll were omitted in this schedule as they will be set at the same level as other participants (employers and employees) in the plan by City Council. Any supplemental contribution required from an employer is calculated pursuant to DRMC Sec. 18-407(e)(1) and shown in Table I-1.

Table I-1(c)						
Summary Valuation Results Allocated between the City and the DHHA						
(\$ in millions)						
	DHHA		City / Non-DHHA		Total DERP	
	2022 Valuation	2023 Valuation	2022 Valuation	2023 Valuation	2022 Valuation	2023 Valuation
Actuarial Liability	\$ 454.32	\$ 479.26	\$ 3,723.78	\$ 3,880.57	\$ 4,178.09	\$ 4,359.83
Actuarial Value of Assets	<u>278.25</u>	<u>318.50</u>	<u>2,280.68</u>	<u>2,269.51</u>	<u>2,558.93</u>	<u>2,588.00</u>
Unfunded Actuarial Liability	\$ 176.07	\$ 160.76	\$ 1,443.10	\$ 1,611.06	\$ 1,619.17	\$ 1,771.82
Prefunding Credit ¹	<u>(41.58)</u>	N/A	<u>41.58</u>	N/A	-	N/A
Net UAL	\$ 134.48	\$ 160.76	\$ 1,484.68	\$ 1,611.06	\$ 1,619.17	\$ 1,771.82
Funded Ratio						
Prior to Prefunding Credit	61.2%		61.2%		61.2%	
After Prefunding Credit	67.4%	66.5%	60.6%	58.5%	61.2%	59.4%
Contributions						
Normal Cost	\$ 2.50	\$ 2.43	\$ 59.20	\$ 70.19	\$ 61.70	\$ 72.61
UAL Payment	<u>10.81</u>	<u>13.20</u>	<u>119.31</u>	<u>133.87</u>	<u>130.11</u>	<u>147.07</u>
Total Contribution \$	\$ 13.31	\$ 15.63	\$ 178.50	\$ 204.06	\$ 191.81	\$ 219.68
Normal Cost	N/A	N/A	8.44%	8.59%	8.44%	8.59%
Total UAL Payment	N/A	N/A	<u>17.01%</u>	<u>16.38%</u>	<u>17.94%</u>	<u>17.51%</u>
Total Contribution Rate	N/A	N/A	25.45%	24.97%	26.38%	26.10%
Projected payroll	\$ 24.22	\$ 22.71	\$ 701.37	\$ 817.07	\$ 725.59	\$ 839.78

¹ The DHHA made higher Supplemental Normal Cost contributions prior to 2019 under the Projected Unit Credit actuarial cost method. This credit is based on the calculations shown in our October 4, 2021 DHHA Cost Allocation Study, updated for December 31, 2021 actual market returns of 16.75%.

The DHHA has a higher funded ratio than the City due to the Prefunding Credit allocated to the DHHA for the Supplemental Normal Cost contributions made by DHHA prior to 2019, which were higher under the previous actuarial cost method.

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As shown in Table I-2 below, pension membership in DERP increased by 4.6%. Active membership increased by 5.5%, terminated members increased by 7.8%, while members receiving benefits increased by 1.9%. Retiree medical counts show similar changes. Total projected payroll, based on the census data projected with a full year of assumed salary increases, increased by 15.6% from the last valuation, which is significantly higher than the assumed 3.0% increase. The average pay per active member increased by 9.6%.

Table I-2 Membership Total			
	January 1, 2022	January 1, 2023	% Change
Pension			
Actives	8,751	9,228	5.5%
Terminated Employees Entitled to Benefits But Not Yet Receiving Them	3,550	3,703	4.3%
Non-Vested Members Due a Refund of Employee Contributions	3,180	3,549	11.6%
Members Receiving Benefits	<u>10,690</u>	<u>10,895</u>	<u>1.9%</u>
Total Members	26,171	27,375	4.6%
Retiree Medical			
Actives	8,751	9,228	5.5%
Terminated Employees Entitled to Benefits But Not Yet Receiving Them	3,550	3,703	4.3%
Retirees and Beneficiaries Entitled to Health Benefits But Not Receiving Any	3,573	3,763	5.3%
Members Receiving Benefits	<u>7,118</u>	<u>7,133</u>	<u>0.2%</u>
Total Members	22,992	23,827	3.6%
	FYE 2022	FYE 2023	
Active Member Projected Payroll	\$ 729,704,460	\$ 843,226,068	15.6%
Average Pay per Active	83,385	91,377	9.6%
Projected Payroll to Calculate the UAL Payment as a Percentage of Payroll	\$ 725,590,084	\$ 839,783,600	15.7%

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The combined Unfunded Actuarial Liability (UAL) increased by \$153 million, from \$1,619 million to \$1,772 million as a result of assumption changes, demographic experience and investment losses. Table I-3 presents the specific components of the change in the UAL.

Table I-3	
Combined Basis - Change in Unfunded Actuarial Liability	
(\$ in thousands)	
Unfunded Actuarial Liability, January 1, 2022	\$ 1,619,166
Expected change in unfunded actuarial liability	(17,359)
Increase due to assumption changes	47,198
Increase due to actuarial investment loss	50,935
Decrease due to net contribution gains	(13,089)
Increase due to pay increases more than expected	92,185
Decrease due to other liability gains	(7,215)
Total change in Unfunded Actuarial Liability	<u>\$ 152,656</u>
Unfunded Actuarial Liability, January 1, 2023	\$ 1,771,822

The UAL was expected to decrease by \$17.4 million since the expected UAL payment for FY 2022 was more than the interest on the UAL. The demographic and economic assumption changes increased the UAL by \$47.2 million. The actuarial asset loss increased the UAL by \$50.9 million, and the net liability experience loss increased the UAL by \$85.0 million.

The total contribution rate for 2022 was 25.60% compared to the Actuarially Determined Rate of 26.38% based on the January 1, 2022 valuation. However, there was a \$13.1 million contribution gain due to the payroll being significantly higher than expected which more than offset the contribution rate shortfall.

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Tables I-3(a) and I-3(b) below show the results for the pension and retiree medical plan independently.

Table I-3(a)	
Pension Plan	
Development of 2023 Experience (Gain)/Loss	
(\$ in thousands)	
1. Unfunded Actuarial Liability (UAL) at January 1, 2022	\$ 1,532,670
2. Middle of year actuarial liability payment	(123,019)
3. Interest to end of year on 1. and 2.	106,737
4. Assumption Changes	<u>49,700</u>
5. Expected UAL at January 1, 2023 (1+2+3+4)	\$ 1,566,089
6. Actual Unfunded Liability at January 1, 2023	<u>1,691,774</u>
7. Net (Gain)/Loss: (6. - 5.)	\$ 125,685
Portion of Net (Gain)/Loss due to:	
a. Actuarial investment loss	\$ 49,309
b. Salary increases more than expected	92,185
c. Retiree, disabled, and beneficiary mortality losses	4,856
d. Retirement, termination, and disability experience	276
e. Contribution gain due to payroll more than expected	(12,385)
f. DROP account balances credited at 1% instead of 7.25%	(5,864)
g. Other experience	<u>(2,692)</u>
h. Total Net (Gain)/Loss	\$ 125,685

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Table I-3(b)		
Retiree Medical Plan		
Development of 2023 Experience (Gain)/Loss		
(\$ in thousands)		
1. Unfunded Actuarial Liability (UAL) at January 1, 2022	\$	86,495
2. Middle of year actuarial liability payment		(7,095)
3. Interest to end of year on 1. and 2.		6,018
4. Assumption Changes		(2,502)
5. Expected UAL at January 1, 2023 (1+2+3+4)	\$	82,916
6. Actual Unfunded Liability at January 1, 2023		80,048
7. Net (Gain)/Loss: (6. - 5.)	\$	(2,868)
Portion of Net (Gain)/Loss due to:		
a. Actuarial investment loss	\$	1,626
b. Changes in health coverage		(2,065)
c. Retiree, disabled, and beneficiary mortality gains		(925)
d. Retirement experience gain		(955)
e. Termination experience gain		(414)
f. Contribution gain due to payroll more than expected		(704)
g. Other experience		569
h. Total Net (Gain)/Loss	\$	(2,868)

The liability experience for the retiree medical plan was favorable. Most of the liability gains were due to retirees who had coverage in the last valuation but declined coverage during 2022 along with some retirees changing to coverage with lower premiums.

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Contributions Comparison

Thus far, the experience of the 2022 plan year has been presented in terms of the UAL. Table I-4 below compares the contribution rates from the prior year and their components to the current year.

The overall contribution rate decreased by 0.28% for the January 1, 2023 valuation, with an increase of 0.15% in normal cost from 8.44% to 8.59% of payroll and an decrease of 0.43% in the amortization of the UAL from 17.94% to 17.51% of payroll.

Table I-4			
Combined Basis - Contribution Rate Reconciliation			
	Normal Cost	UAL Payment	Total
2022 Contribution Rate	8.44%	17.94%	26.38%
Impact of Tier 3 New Hires	-0.08%	0.00%	-0.08%
Assumption Changes	0.32%	0.10%	0.42%
Discount rate change phase-in (last year)	0.00%	0.40%	0.40%
Actuarial investment experience	0.00%	0.50%	0.50%
Demographic experience	-0.09%	0.70%	0.61%
Contribution experience	0.00%	-0.13%	-0.13%
Effect of payroll on amortization payments	<u>0.00%</u>	<u>-2.00%</u>	<u>-2.00%</u>
2023 Contribution Rate	8.59%	17.51%	26.10%

The changes in the total employer and employee contribution rate for both the pension and retiree medical plans are detailed below.

- Tier 3 members are now over 66% of active member payroll. The impact of the increasing number of Tier 3 members was a decrease of 0.08% in the rate since their benefits and normal cost rates are lower than those of the Tier 1 and Tier 2 members that are being replaced.
- The assumption changes increased the contribution rate by 0.42% of payroll. The demographic assumption changes decreased the contribution rate by 0.66%, with less optimistic future mortality improvements, while the decrease in the assumed rate of return to 7.00% increased the contribution rate by 1.08%.
- The third and final year of the phase-in for lowering the assumed rate of investment return from 7.50% to 7.25% in 2021 increased the contribution rate by 0.40% of payroll.
- The unfavorable investment experience for 2022 on the Market and Actuarial Value of Assets increased the contribution rate by 0.50% of payroll. There are \$189 million in net deferred asset losses that will be recognized over the next four years.

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- The demographic experience increased the total contribution rate by 0.61% of payroll primarily due to higher than expected pay increases.
- As explained previously, the impact of the net contribution gain decreased the UAL, with a resulting decrease in the contribution rate of 0.13% of payroll.
- The UAL payments increase with assumed payroll growth and are expected to remain constant as a percentage of payroll. However, with a payroll increase significantly higher than the expected rate of growth, the UAL payment rate decreased by 2.00% since the payment is spread over a significantly larger payroll base than expected.

Tables I-4(a) and I-4(b) below show contribution rate reconciliations for the pension plan and retiree medical plan independently.

Table I-4(a)			
Pension Plan - Contribution Rate Reconciliation			
	Normal Cost	UAL Payment	Total
2022 Contribution Rate	8.17%	16.96%	25.13%
Impact of Tier 3 New Hires	-0.08%	0.00%	-0.08%
Assumption Changes	0.32%	0.15%	0.47%
Discount rate change phase-in (last year)	0.00%	0.39%	0.39%
Actuarial investment experience	0.00%	0.49%	0.49%
Demographic experience	-0.06%	0.71%	0.65%
Contribution experience	0.00%	-0.12%	-0.12%
Effect of payroll on amortization payments	<u>0.00%</u>	<u>-1.89%</u>	<u>-1.89%</u>
2023 Contribution Rate	8.35%	16.69%	25.04%

Table I-4(b)			
Retiree Medical Plan - Contribution Rate Reconciliation			
	Normal Cost	UAL Payment	Total
2022 Contribution Rate	0.27%	0.98%	1.25%
Discount rate change phase-in (last year)	0.00%	0.01%	0.01%
Assumption changes	0.00%	-0.05%	-0.05%
Actuarial investment experience	0.00%	0.02%	0.02%
Demographic experience	-0.03%	-0.02%	-0.06%
Contribution experience	0.00%	-0.01%	-0.01%
Effect of payroll on amortization payments	<u>0.00%</u>	<u>-0.11%</u>	<u>-0.11%</u>
2023 Contribution Rate	0.24%	0.82%	1.06%

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B. Historical Trends

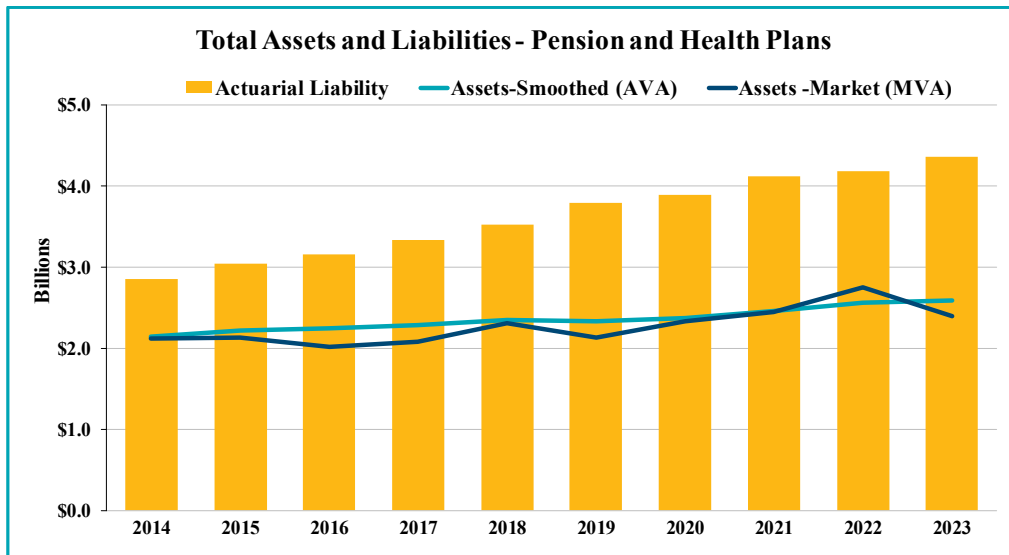
Despite the fact that for most retirement plans the greatest attention is given to the current valuation results and in particular, the size of the current Unfunded Actuarial Liability and the contribution, it is important to remember that each valuation is merely a snapshot in the long-term progress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

Assets and Liabilities

The chart below compares the Actuarial Liability, as gold bars, to the assets at both market value (MVA, blue line) and smoothed value (AVA, teal line). The percentages shown in the table below the graph are the ratios of the assets to the Actuarial Liability (the funded ratio) as of the valuation date at the beginning of the year. The funded ratio on an AVA basis has decreased from 75% in 2014 to 59% in 2023, primarily as a result of lowering the assumed rate of return from 8.00% to 7.00%, asset losses, and actuarial method changes (2019).

Despite the annual investment return on a MVA basis exceeding the assumed in several of the last 10 years, on an actuarial basis the only year the return was greater than assumed was in 2021. The poor investment performance in 2022 offset the deferred asset gains from the previous three years of asset experience. The reason for the lagging actuarial investment return prior to 2019 is that the previous asset smoothing method took a much longer period of time to recognize losses on the MVA and the rate of return in 2008 (the great recession) was -26%.

The funded ratio on an MVA basis has decreased from 74% to 55% during this period. The AVA returns are very stable, despite the overall market fluctuations, whereas the MVA is more volatile.



	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Average Annual Return
Funded Ratio (AVA)	75%	73%	71%	69%	67%	61%	61%	60%	61%	59%	
Rate of Return* (AVA)	7.6%	7.1%	5.1%	5.5%	7.0%	4.9%	5.8%	6.5%	8.2%	5.2%	6.3%
Funded Ratio (MVA)	74%	70%	64%	63%	65%	56%	60%	59%	66%	55%	
Rate of Return* (MVA)	18.0%	4.9%	-2.0%	7.5%	15.2%	-3.5%	13.9%	7.9%	16.8%	-9.2%	6.6%

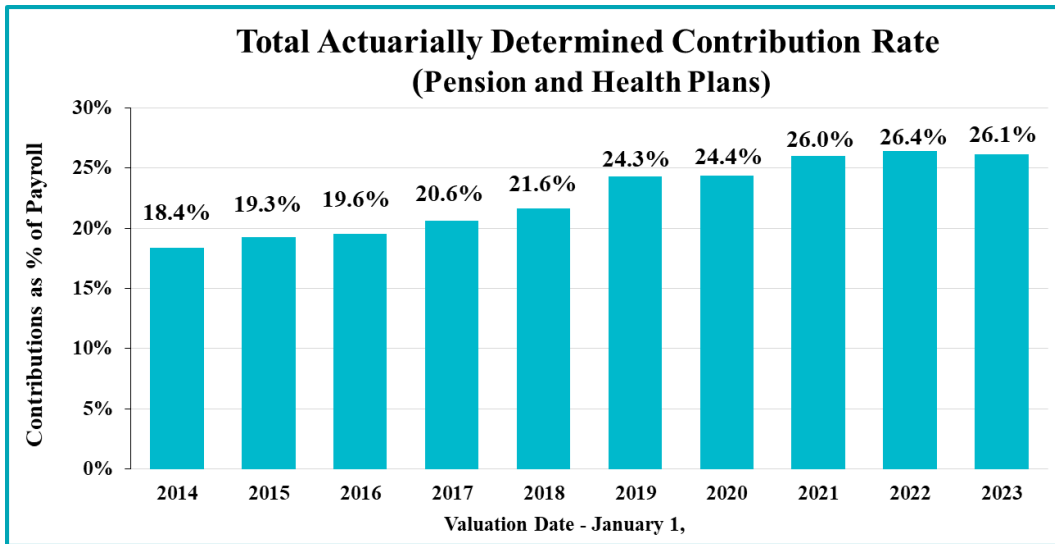
* Rate of Return for prior year ending 12/31

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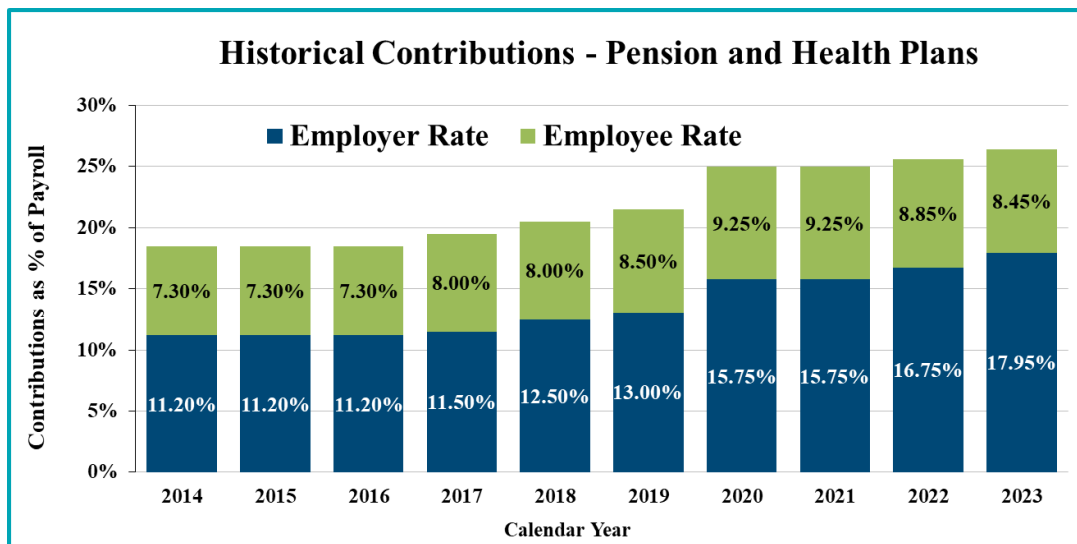
SECTION I – EXECUTIVE SUMMARY

Contribution Trends

In the graph below, we present the historical trends for the DERP contribution rates. The contribution rates have risen from 18.4% in 2014 to 26.1% in 2023 as a result of actuarial assumption and method changes as well as investment experience on the actuarial value of assets. In 2019, there was a significant increase in the contribution rate primarily due to changes in asset smoothing method and amortization policy, which increased the required rate by 2.3%. The total contribution rate has been relatively stable the last three years.



The graph below shows the increases to the employer rate and changes to the employee rate over the last 10 years.



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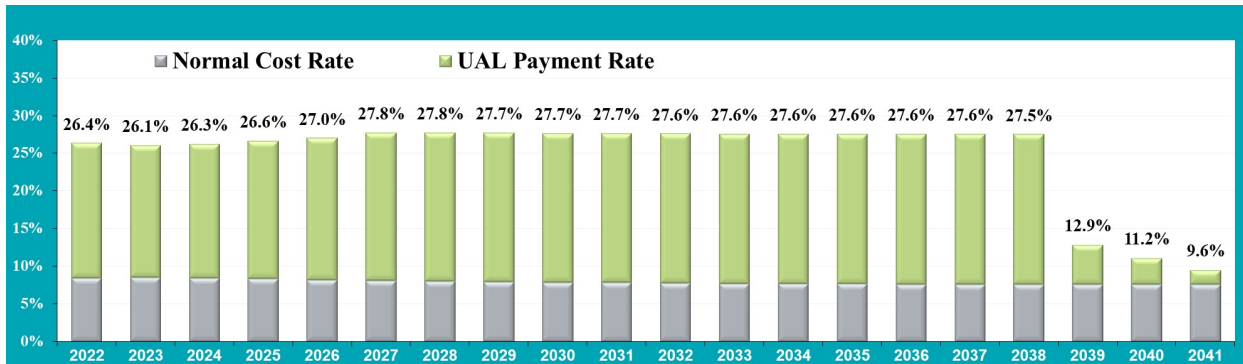
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C. Future Expected Financial Trends

The analysis of projected financial trends is an important component of this valuation. All the projections in this section are based on the investment return assumption of 7.00%. We have assumed future payroll increases of 3.00% per year for the non-DHHA membership. The projections also assume that all other actuarial assumptions are met each year.

Projection of Contributions

The following graph shows the expected contribution rate based on achieving the 7.00% assumption **each year** for the next 20 years. This scenario is highly unlikely; even if the Plan does achieve an **average** return of 7.00% over this time period, the returns in each given year will certainly vary. The projections also assume that the full actuarially determined contribution is made each year.



The contribution rate for pension and retiree medical combined is approximately 26.1% of member payroll for the January 1, 2023 valuation. The total contribution is projected to increase over the next four years to 27.8% as due to the recognition of \$189 million in net deferred asset losses.

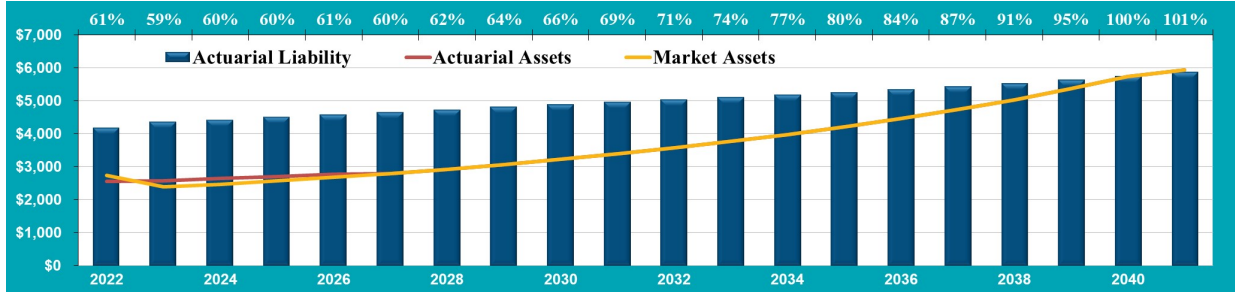
After 2028, the rate is expected to decrease gradually until 2038 as Tier 1 and Tier 2 active members leave DERP employment and are replaced by Tier 3 members who have a lower normal cost rate due to lower benefits. In 2039, the total contribution rate is expected to drop significantly, when the existing unfunded liability as of January 1, 2019, will be fully amortized.

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Asset and Liability Projections

In this section, we present our assessment of the implications of the January 1, 2023 valuation results in terms of benefit security (assets over liabilities). The following 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 above the graph represent the combined funded ratio of the Plan (Pension and Retiree Medical) based on the Actuarial Value of Assets.



The funded ratio, based on the Actuarial Value of Assets, decreased in 2023 primarily due to assumption changes, liability experience and the poor asset experience in 2022. The projected funded status remains around 60% through 2027, as \$189 million in net deferred asset losses are recognized. After 2027 the funded status is expected to increase annually by 2% to 4%. The Plan is expected to reach 80% funded by 2035 and 100% funded in 2040.

However, as noted above, it is the **actual** return on Plan assets that will determine the future funded status and actuarially determined contribution rates for the Plan.

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SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS

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 be significantly different. 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. Even in the case that the Plan remains affordable, the contributions needed to support the Plan may differ significantly from expectations. While there are a number of factors that could lead to contribution amounts deviating from expectations, we believe the primary sources are:

- Investment risk,
- Assumption change risk,
- Contribution risk, and
- Payroll 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 from expected. Lower investment returns than anticipated will increase the Unfunded Actuarial Liability (UAL) necessitating higher contributions in the future unless there are other gains that offset these investment losses. Expected future investment returns and their potential volatility are determined by the Plan's asset allocation.

Assumption change risk is the potential for the environment to change such that future valuation assumptions are different from the current assumptions. For example, declines in interest rates over the last three decades (which have recently reversed) 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 that the future actuarially determined contributions will not be made. Generally, this will occur when the actuarially determined contributions deviate from their expected levels to the extent that they become a financial strain. However, it could also result from external fiscal stresses that affect the plan sponsors' ability to pay the contributions, or any other factor that prevents the contributions from being made.

The Plan's funding policy is to calculate an Actuarially Determined Contribution (ADC) equal to the sum of the normal cost and amortization of the UAL. The UAL is amortized over a 20-year period as a level percentage of payroll. This means that the payments increase with the assumed payroll growth rate so that over the period the payment remains constant as a percentage of payroll. A significant investment loss, change in assumptions, or a material change in the contribution base (e.g., covered employees, covered payroll) may cause a large increase in the ADC rate. While the

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Plan can change its Funding Policy when such a situation occurs, any reduction in the ADC will result in a slower recovery in funded status.

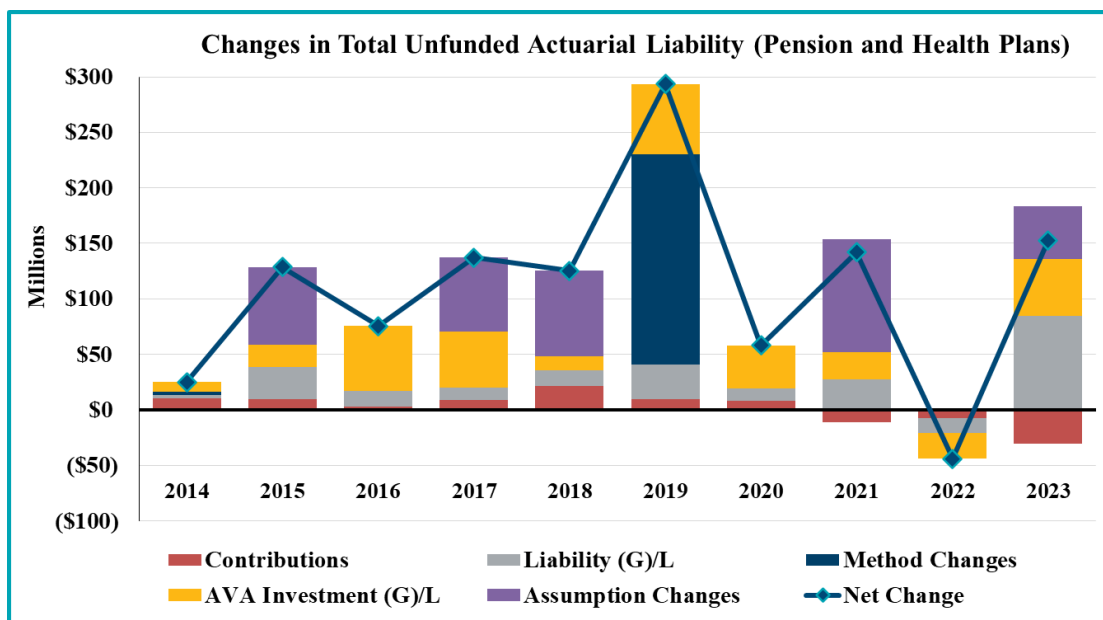
Payroll risk is the potential for member payroll growth to stagnate or even decline. As a result, the dollar level of contributions made to the Plan would also stagnate or decline since contributions are based on payroll levels. This risk was heightened due to the impacts of COVID-19 on budgets and hiring ability. Previously, the active membership dropped from 9,400 to 8,751 from January 1, 2020, to January 1, 2022, which caused a continued drag on total payroll for DERP. However, during 2022 the active membership increased by 5.5% to 9,228 and total projected payroll by 15.6%, which provides a significantly larger payroll base for contributions.

There is also a risk of the contribution rate increasing 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 3.00%, so that the payment is expected to remain constant as a percentage of payroll. If payroll growth is less than the expected 3.00% 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 the plan sponsors.

Components of the Unfunded Actuarial Liability

The charts below show the components of changes in the Unfunded Actuarial Liability (UAL) for the Pension Plan during the last 10 years, including investment and liability experience, assumption and method changes, and contributions compared to the “tread water” level of contributions (normal cost-plus interest on the UAL). The net UAL change in the Pension Plan is shown by the dark blue line.

Chart II-1



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Table II-1 below numerically summarizes the changes in the UAL for each year over the last 10 years. These totals support our identification of investment returns and assumption changes as the primary risks to the Plan.

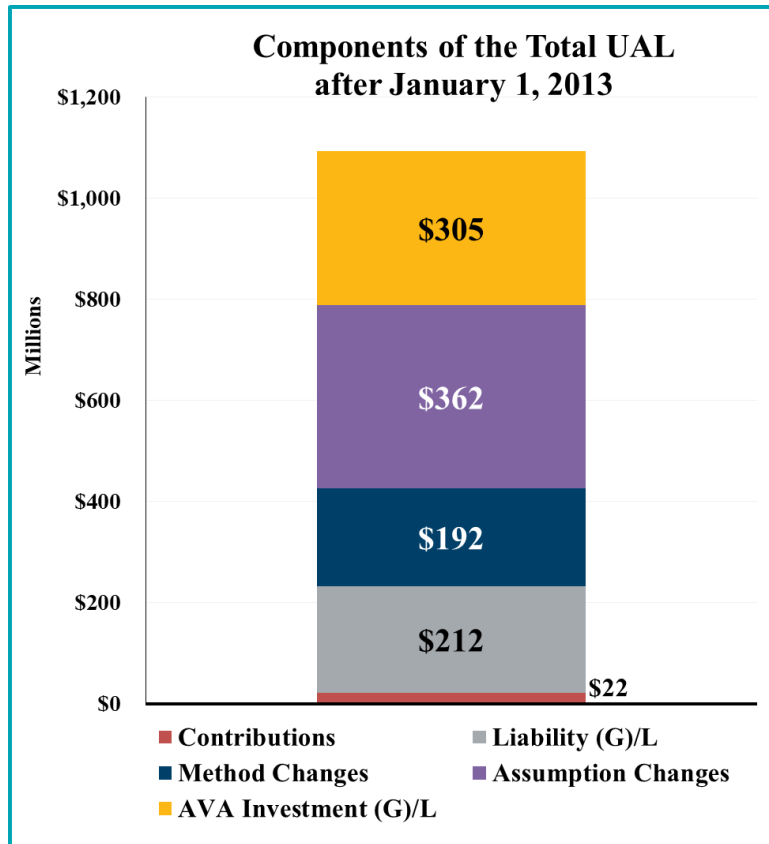
Table II-1

Changes in Total Unfunded Actuarial Liability (Pension and Health Plans) (\$ in millions)											
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
Assumed Rate of Return	8.00%	7.75%	7.75%	7.50%	7.50%	7.50%	7.50%	7.25%	7.25%	7.00%	
Source											
AVA (Gain)/Loss	\$ 8.7	\$ 20.3	\$ 58.2	\$ 51.0	\$ 12.6	\$ 63.2	\$ 38.9	\$ 24.6	\$ (23.2)	\$ 50.9	\$ 305.2
Liability (Gain)/Loss	2.9	28.8	14.6	10.9	13.8	30.9	11.2	27.1	(13.5)	85.0	211.7
Assumption Change	0.0	70.1	0.0	66.3	77.1	0.0	0.0	101.7	0.0	47.2	362.4
Method Change	2.6	0.0	0.0	0.0	0.0	189.7	0.0	0.0	0.0	0.0	192.3
Contributions ¹	10.7	9.6	2.6	8.8	21.8	9.6	7.9	(11.6)	(7.5)	(30.4)	21.5
Total UAL Change	\$ 24.9	\$ 128.8	\$ 75.4	\$ 137.0	\$ 125.3	\$ 293.4	\$ 58.0	\$ 141.8	\$ (44.2)	\$ 152.7	\$ 1,093.1

¹ Actual contributions less than / (more than) normal cost and interest on the UAL (tread water level).

Chart II-2 below shows the component sources contributing to the pension plan UAL in total from the 2014 through 2023 actuarial valuations.

Chart II-2



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Over the last 10 years, the total UAL has increased by approximately \$1.1 billion, primarily as a result of actuarial investment experience and assumption changes. On a market value basis, the negative returns in 2011, 2015, 2018 and 2022 contributed to investment losses on an actuarial value or smoothed asset basis (gold bars). The asset smoothing method prior to 2019 was slower to recognize actual market losses (or gains) and extended these losses over a longer timeframe than the current method. Over the 10-year period, investment losses have added approximately \$305 million to the UAL.

Assumption changes (purple bars) increased the UAL by \$362 million. The changes have included reductions in the assumed rate of investment return from 8.00% to 7.00%, decreases in mortality rates, and longevity improvements projected in the future.

The total increase in the UAL due to actuarial method changes over the last 10 years is \$192 million. The majority of these changes are a result of the funding methods adopted by the Board in May 2019. The change to the entry age normal actuarial cost method from projected unit credit increased the total liabilities by about \$147 million. The asset smoothing method change decreased the Actuarial Value of Assets by about \$43 million, for a total change in the total UAL of approximately \$190 million.

Each year, the UAL is expected to increase for benefits attributable to the current year (the normal cost), and interest on the UAL. This expected increase is referred to as the tread water level. 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 UAL decreased during 2022 by \$30.4 million due to a portion of the UAL payment going toward the principal on the UAL.

Over the 10-year period, contributions (red bars) have increased the UAL by about \$22 million since the UAL payment was based on a 30-year amortization schedule prior to 2019, wherein only a portion of the interest on the UAL was paid. Under the new amortization policy, any new UAL layers are amortized over separate 20-year periods as a level percent of payroll. This policy creates contribution levels intentionally designed to be greater than the tread water level and is expected to pay off principal as well as interest on the UAL.

The liability experience (gray bars) has increased the UAL by \$212 million. The large liability loss in 2022 was primarily due to larger than expected pay increases for continuing active members. The assumption changes adopted for the January 1, 2023 valuation from the recent Experience Study are intended to more closely align with actual Plan experience.

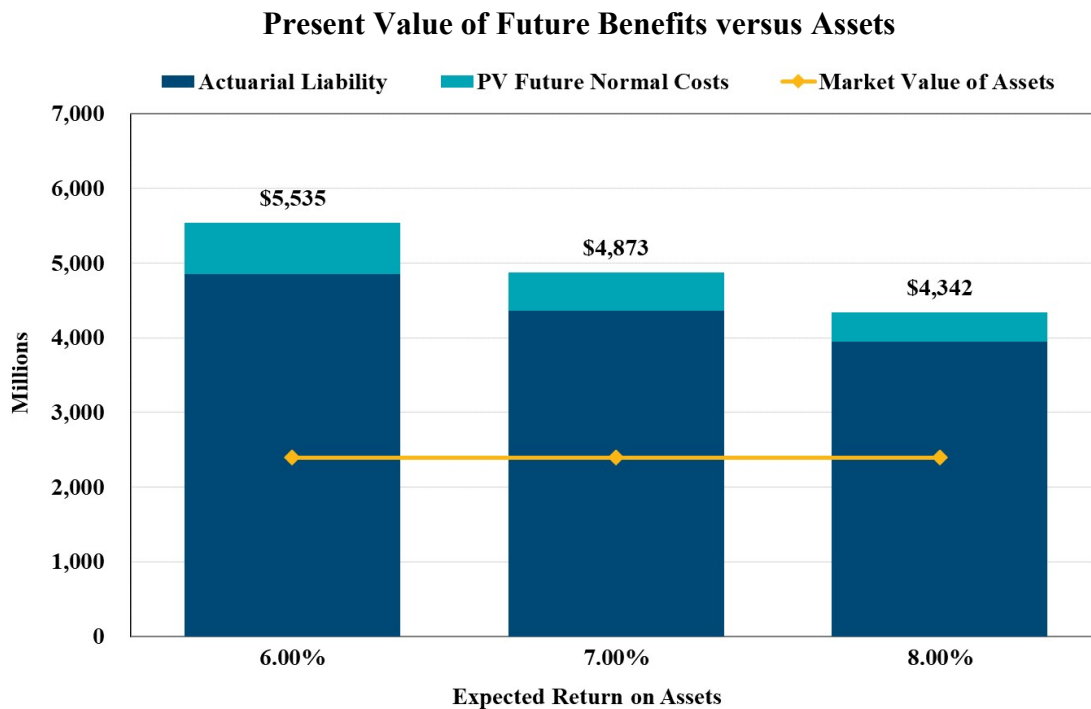
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SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS

Assessing Costs and Risks

Sensitivity to Investment Returns – Sensitivity Testing

The chart below compares assets to the present value of all projected future benefits discounted at the current expected rate of return and at investment returns 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 gold line shows the Market Value of Assets.



If investments return 7.00% annually, the Plan would need approximately \$4.9 billion in assets today to pay all projected benefits compared to assets of \$2.4 billion as of January 1, 2023. If investment returns are only 6.00%, the Plan would need approximately \$5.5 billion in assets today, and if investment returns are 8.00%, the Plan would need approximately \$4.3 billion in assets today.

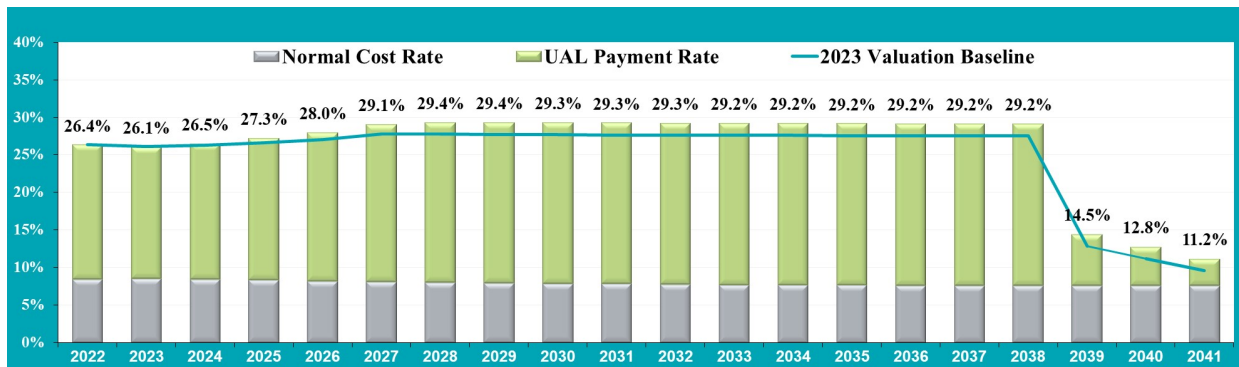
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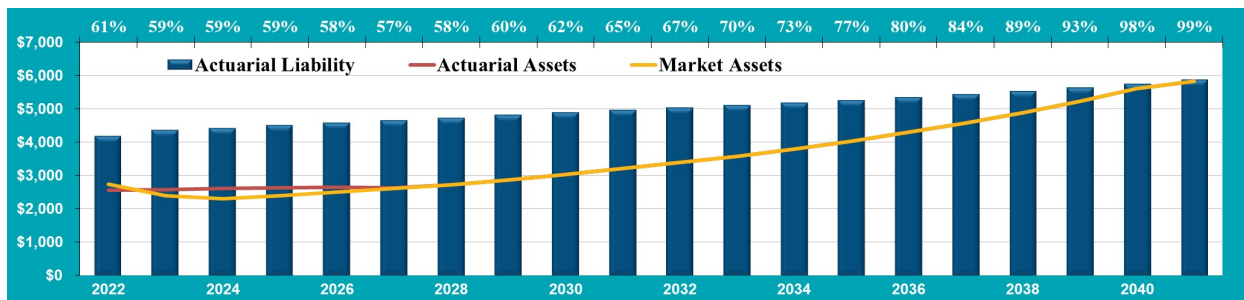
Sensitivity to Investment Returns – Stress Testing

The charts on the following pages show the projected contribution rates and funded ratios under two investment return scenarios for calendar year ending 2023: a 0.00% and 14.00% return on the Market Value of Assets compared to the 7.00% expected rate of return, or a 7.00% actuarial loss and a 7.00% actuarial gain. The returns are expected to be 7.00% each year thereafter. The teal line represents the total projected contribution rate assuming the Market Value of Assets earn 7.00% each year including 2023, all other actuarial assumptions are met, and that the full actuarially determined contribution is contributed each year.

0.00% Investment Return on the Market Value of Assets for 2023



The contribution rate would steadily increase due to the actuarial asset loss in 2023 and would add to the deferred asset losses from 2022. The projected contribution rate under this scenario is about 1.5% higher than the 2023 baseline projections, which assumes the assets would earn 7.00% during the 2023 plan year.

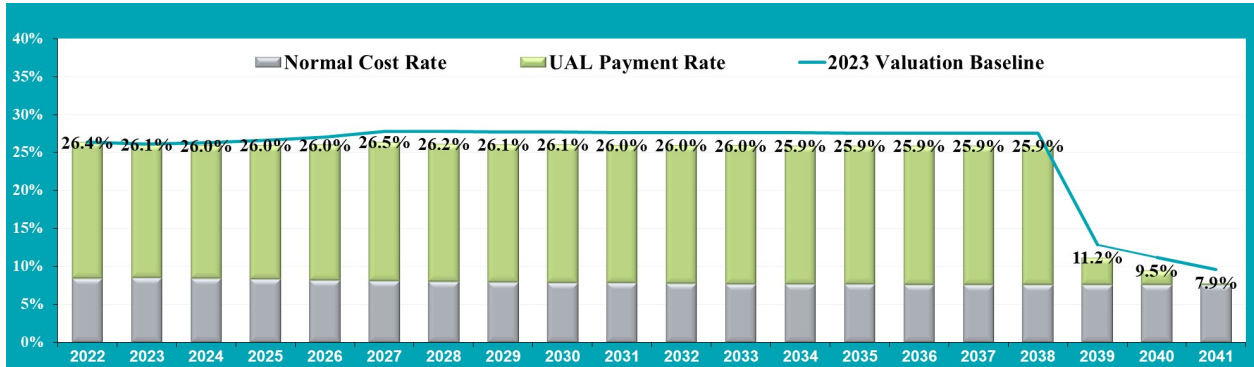


The funded ratio would decline through 2028 then improves each year thereafter. The funded ratio is not projected to reach full funding until 2042 (not shown in this projections) instead of 2040.

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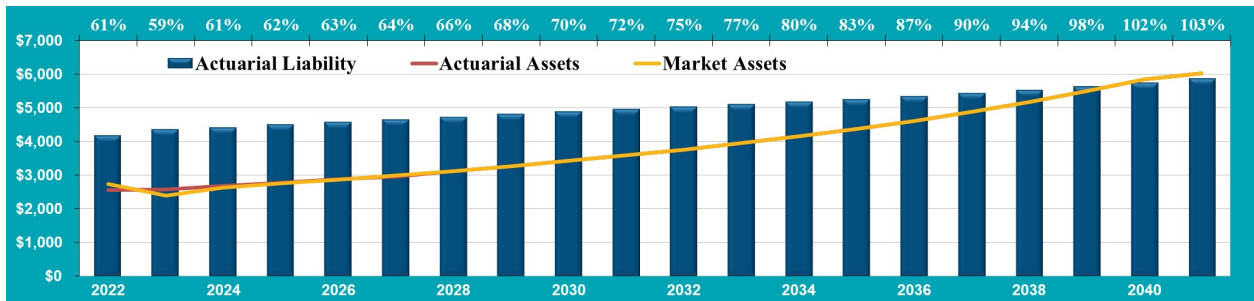
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14.00% Investment Return on the Market Value of Assets for 2023



With a 14.00% investment return for plan year 2023, the contribution rate would slightly decrease to 26.0% for 2024 to 2026. There is an increase in the rate in 2027 when the last portion of the 2022 actuarial asset loss is recognized. Starting in 2028, the contribution rate stabilizes around 26%, about 1.5% lower than the baseline projection until 2039.

With a 14.00% investment return for plan year 2023, the funded ratio increases from 59% to 66% over the next five years as the asset gain is recognized under the Plan’s asset smoothing method. The funded ratio is still projected to reach full funding, even with the decreases in the contribution rates.



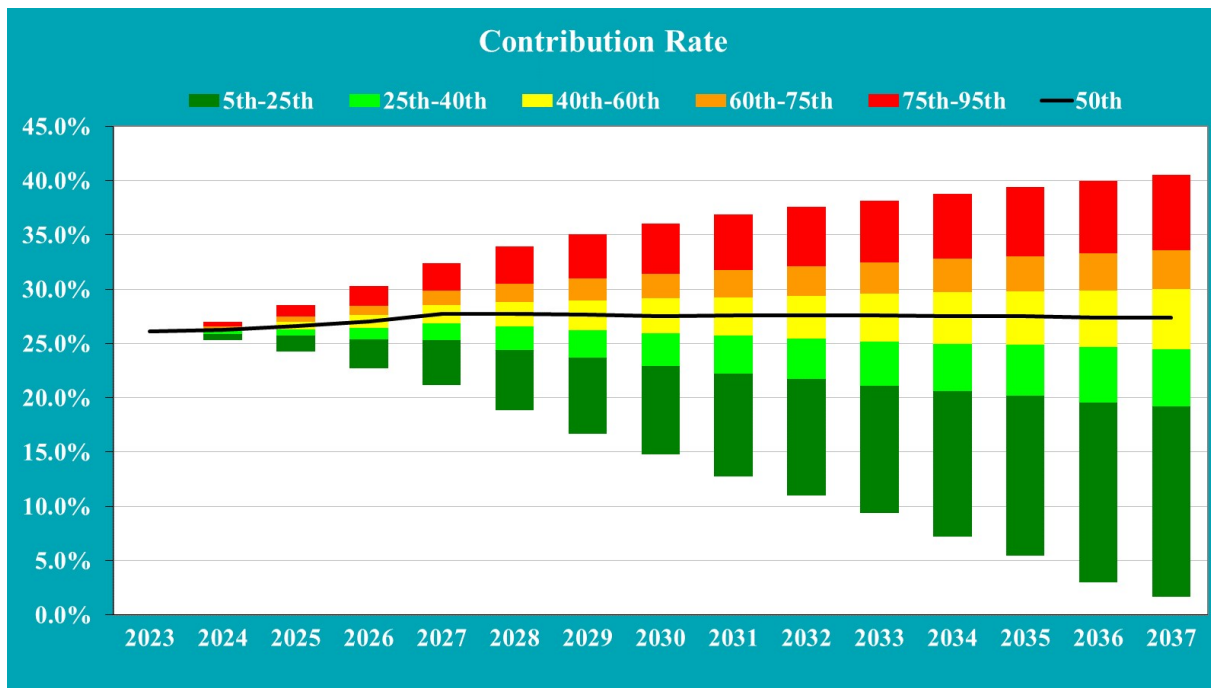
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Sensitivity to Investment Returns – Stochastic Projections

If experience has taught us anything, it is that there is a significant level of uncertainty in projections of the future. The largest source of uncertainty is the projection of investment returns. In order to better understand the potential impact of investment returns on the Plan, we have included some stochastic projections in this section of the report. The stochastic projections are based on a 7.00% average geometric return – net of investment and administrative expenses - and a 13.1% standard deviation (based on Meketa’s capital market assumptions) for the Plan’s investment portfolio. Each projection contains 5,000 trials that are 15 years in length.

Stochastic projections show the range of probable outcomes of various measurements. The charts on the following pages show the projected range of the total contribution rate and of the funded ratio on an Actuarial Value of Assets basis.

Stochastic Projection of Total Contributions as a Percent of Pay

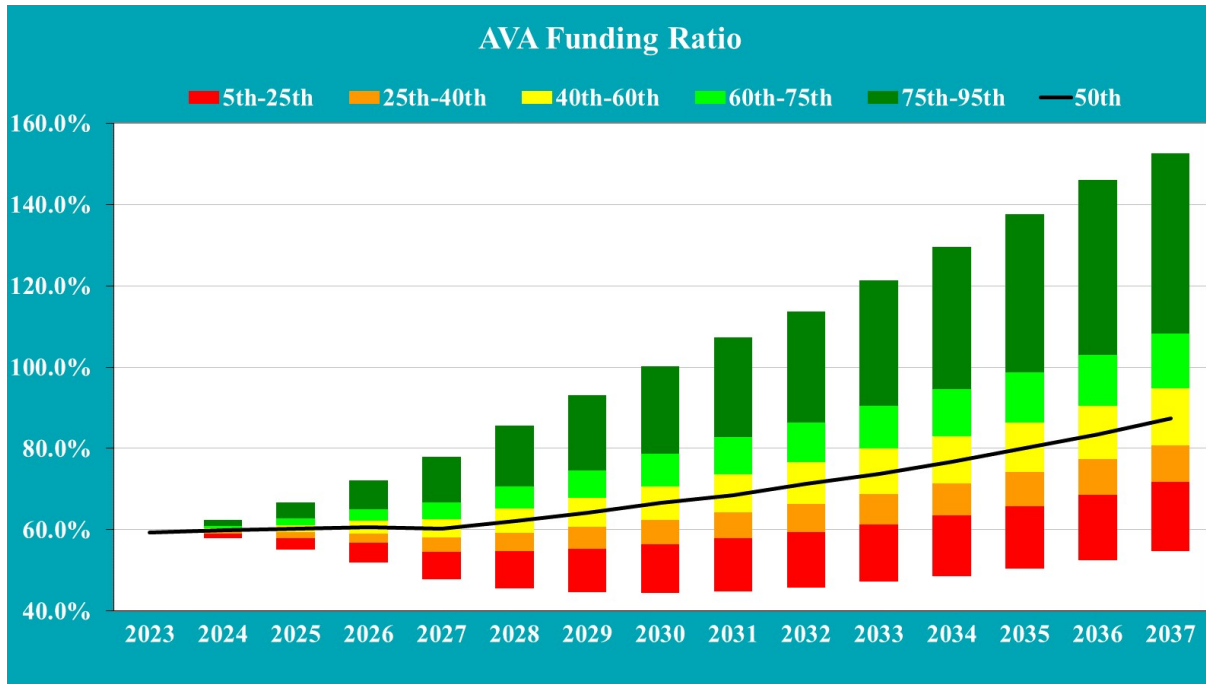


The stochastic projection of total contributions as a percent of pay shows the probable range of future contribution rates. The baseline contribution rate (black line), which is based on the median of the simulations using an average return of 7.00%, aligns closely with the projections discussed in the Executive Summary of this report. The projections do not include any known market events that have occurred after December 31, 2022. In the most pessimistic scenario shown, the 95th percentile, the total projected contribution rate is about 40% of pay but not until 2036. Conversely, in the most optimistic scenario shown, the 5th percentile, the contribution rate is 3%.

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Stochastic Projection of Funded Ratio on an Actuarial Value of Assets Basis



While the baseline-funded ratio (black line) is projected to be approximately 87% 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 sound funding policy of the Plan, even in scenarios with unfavorable investment returns, the Plan is projected to remain over 44% funded on an Actuarial Value of Assets basis. However, this assumes that the ADC will continue to be paid by the plan sponsors, regardless of the magnitude of the contributions.

Contribution Risk

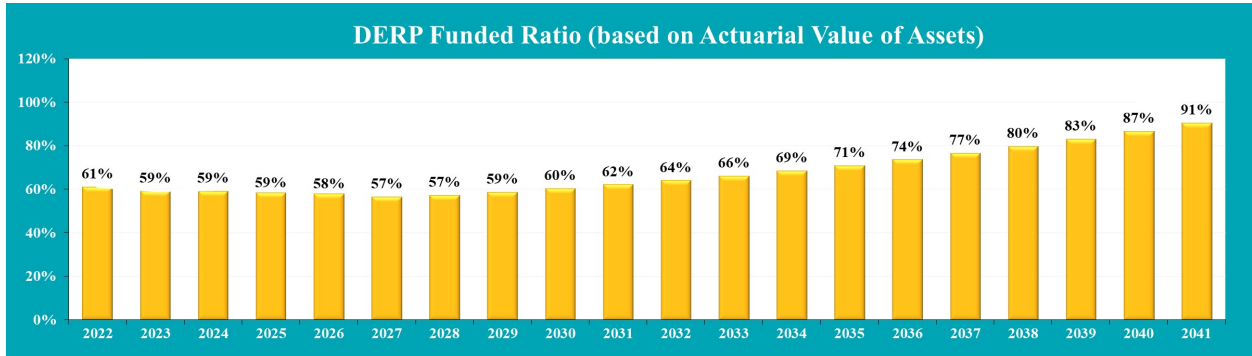
The Board of Trustees adopts the Actuarially Determined Contributions (ADC) for DERP. However, there is a risk in the future that Plan sponsors will not agree to pay these rates.

As an example on the following page, we have shown the impact on the Plan if the actual investment return on a market value basis is 0% for 2023, 7.00% for every year after, and if the sponsors do not agree to increase the contribution rates to the ADC. The projected ADC with a 0% return in 2023 (as shown on page 24) would be between 26.5% and 29.4% through 2038, higher than the current rate of 26.40%. The yellow bars represent the projected funded ratios, if the contributions made to the Plan remain at the scheduled rate of 26.40%, instead of increasing to the ADC levels. The Plan is still expected to make funding progress every year in the projection period, but is not expected to reach full funding.

**DENVER EMPLOYEES RETIREMENT PLAN
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2023**

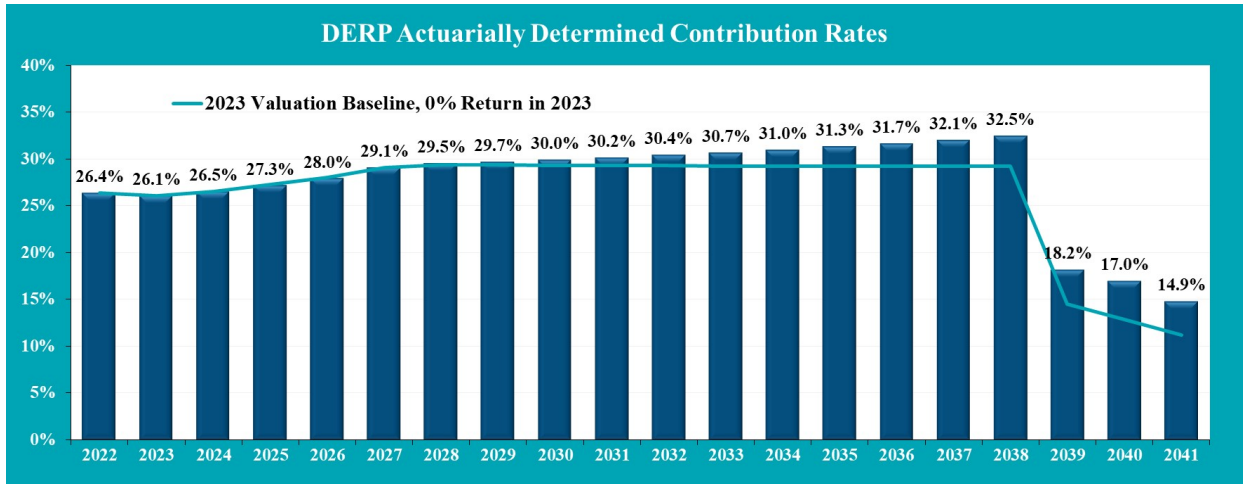
SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS

Scheduled Contribution Remaining at 26.40%, 0.00% Investment return for 2023



The graph below shows the impact on the ADC rate if the actual investment return on a market value basis is 0.00% for 2023, 7.00% for every year after, and the contribution to the Plan remains at 26.40% of payroll. Each year after 2023 a small actuarial loss would occur since the actual contributions would be slightly less than the expected ADC. Each year these losses would create a new UAL base with a 20-year amortization schedule that slightly increases the ADC each year to 32.5% of payroll by 2038. These projections below assume that the asset return on a market value basis is 7.00% every year after 2023.

Scheduled Contribution Remaining at 26.40%, 0.00% Investment Return in 2023



The teal line represents the projected ADC, if the ADC is made every year during the period. The blue bars represent the projected ADC, if the contributions made to the Plan remain at the current scheduled rate of 26.40% instead of increasing to the ADC levels.

**DENVER EMPLOYEES RETIREMENT PLAN
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SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS

Plan Maturity Measures

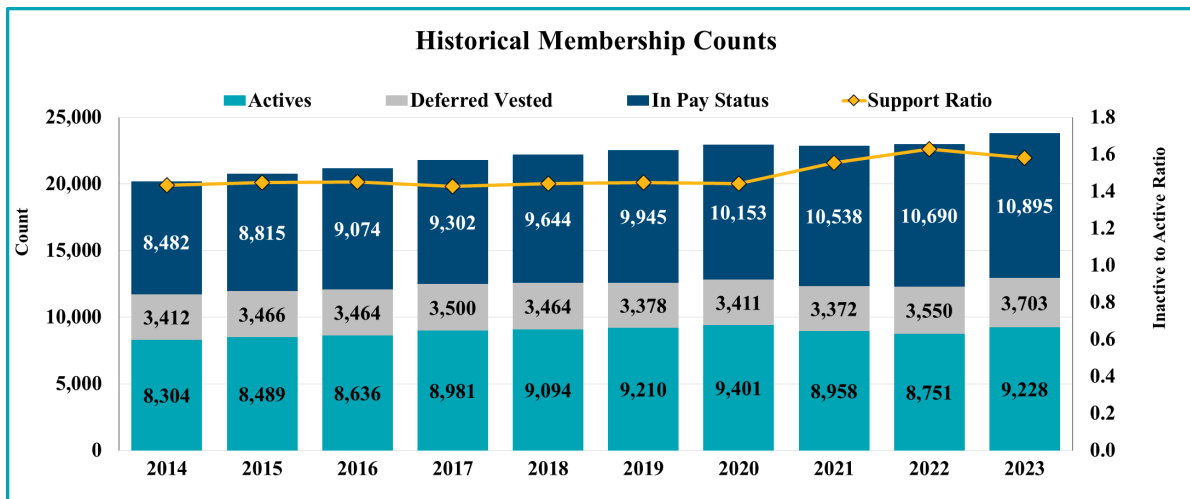
The future financial condition of a mature pension plan is more sensitive to each of the risks identified above than a less mature plan. Before assessing each of these risks, it is important to understand the maturity of the plan.

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. Maturity measures of the Plan show a gradual increase in maturity.

Support Ratio (Inactives per Active)

One simple measure of plan maturity is the ratio of inactive members (those receiving benefits or entitled to a deferred benefit) to active members. The revenue base supporting the plan is usually proportional to the number of active members, so a relatively high number of inactives compared to actives indicate a larger plan relative to its revenue base. The Support Ratio is expected to increase gradually as a Plan matures.

The chart below shows the Support Ratio (gold line) from 2014 to 2020 was very stable as active and inactive membership grew at a similar pace. However, during COVID, the active membership decreased by 650 members or 7%, increasing the Support Ratio up to 1.6 from 1.4. In 2023, the ratio decreased slightly as the active membership increased by 5.5% while inactive membership only increased by 2.5%.



**DENVER EMPLOYEES RETIREMENT PLAN
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SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS

Leverage Ratios

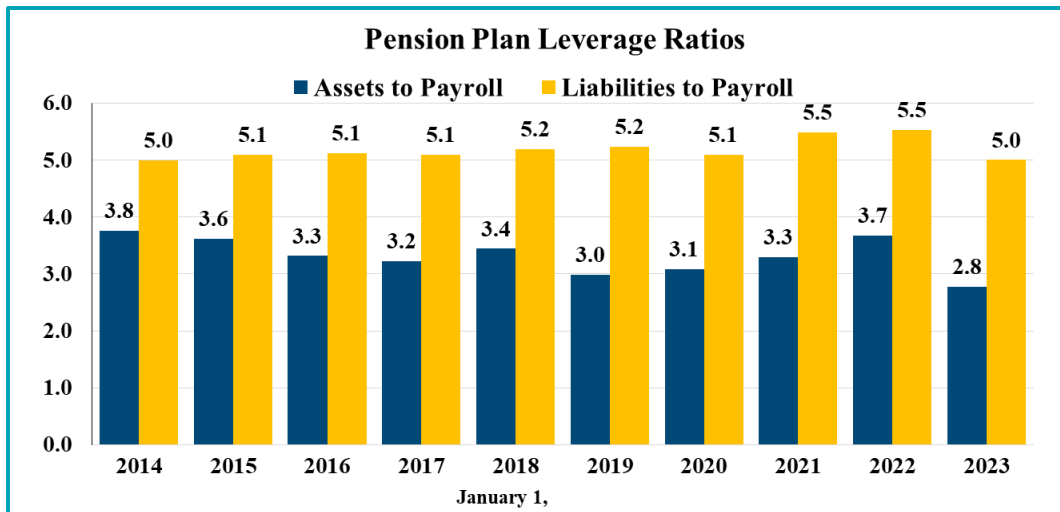
Leverage or volatility ratios (market value of assets to covered payroll and actuarial liabilities to covered payroll) measure the size of the plan compared to its revenue base (payroll) more directly than the Support Ratio. The asset leverage ratio indicates the sensitivity of the Plan to investment returns while the liability leverage ratio indicates the sensitivity of the Plan to assumption changes or demographic experience.

An asset leverage ratio of 3.0 means that if the Plan experiences a 10% loss on assets compared to the expected return, the loss would be equivalent to 30% of the Plan’s payroll. An additional UAL payment of approximately 2.18% of payroll would be required to amortize this asset loss over a 20-year period. However, the same investment loss for a plan with an asset leverage ratio of 6.0 would be equivalent to 60% of payroll and an approximately 4.35% increase in the UAL payment.

As DERP becomes better funded, the asset leverage ratio will increase, and if it was 100% funded, the asset leverage ratio would equal the Actuarial Liability (AL) leverage ratio.

The chart below shows the historical leverage ratios of the Pension Plan. The asset leverage ratios were relatively stable but decreased significantly to 2.8 in 2023. Lower than expected asset returns combined with a significant increase in DERP payroll were the reasons for the decrease. This decrease represents a decrease in sensitivity of the Plan to investment volatility. However, the sensitivity is expected to increase in the future as the Plan becomes better funded.

The liability leverage ratios have also been relatively stable with an increase in 2021 to 5.5, where it remained in 2022 and then decreased to 5.0 in 2023. In 2023, the 15.6% increase in payroll, partially offset by the increase in liabilities due to assumption changes and demographic losses, accounted for the decrease. This indicated a decrease in sensitivity of the Plan to assumption changes and unexpected liability changes.



**DENVER EMPLOYEES RETIREMENT PLAN
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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 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 December 31, 2021, and December 31, 2022,
- Statement of the **changes** in market values during the year,
- Development of the Actuarial Value of Assets, and
- An assessment of historical **investment performance**.

Disclosure

There are two types of asset values disclosed in this value, the Market Value of Assets and the Actuarial Value of Assets. The market value represents a “snap-shot” or “cash-out” value, which provides the principal basis for measuring financial performance from one year to the next. Market values, however, can fluctuate widely with corresponding swings in the marketplace. As a result, market values are usually not as suitable for long-term planning as the Actuarial Value of Assets. The Actuarial Value of Assets reflects smoothing of annual investment returns in order to mitigate any wide fluctuations in overall investment returns.

Tables III-1(a) and III-1(b) on the next two pages disclose and compare the asset values as of December 31, 2021, and December 31, 2022, separated by pension plan and retiree medical plan.

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)

Tables III-2(a) and III-2(b) on the following pages show the components of change in the Market Value of Assets during the fiscal years ending December 31, 2021, and December 31, 2022.

**DENVER EMPLOYEES RETIREMENT PLAN
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SECTION III – ASSETS

Table III-1(a)			
Pension Plan - Statement of Assets at Market Value			
	December 31, 2021	December 31, 2022	
Cash and short-term investments	\$ 81,931,339	\$ 54,835,922	
Securities lending collateral	74,706,776	66,488,313	
Receivables:			
Unsettled securities sold	48,160	312,432	
Contributions	0	7,923,011	
Interest and Dividends	1,326,529	1,601,069	
Leases receivable	21,534	83,713	
Investments, at fair value			
U.S. Government Obligations	403,202,329	401,240,517	
Domestic corporate bonds/Fixed income	263,925,632	160,668,391	
Domestic Stocks	516,367,236	414,250,144	
International Stocks	538,264,163	446,834,826	
Real Estate	234,276,751	228,282,670	
Alternative investments	558,789,049	423,767,097	
Absolute return	67,045,488	116,863,368	
Infrastructure	0	68,792,570	
Total Investments	2,581,870,648	2,260,699,583	
Prepaid items	0	0	
Capital assets	2,257,606	1,890,130	
Total Assets	\$ 2,742,162,592	\$ 2,393,834,173	
Liabilities:			
Securities lending obligations	74,706,776	66,488,313	
Unsettled securities purchased	207,265	11,524	
Leases payable	29,629	19,348	
Accounts payable	2,151,444	1,940,216	
Total Liabilities	\$ 77,095,114	\$ 68,459,401	
Deferred inflow of resources	\$ 21,534	\$ 83,713	
Market Value of Assets	\$ 2,665,045,944	\$ 2,325,291,059	

**DENVER EMPLOYEES RETIREMENT PLAN
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2023**

SECTION III – ASSETS

Table III-1(b)			
Retiree Medical Plan - Statement of Assets at Market Value			
	December 31, 2021	December 31, 2022	
Cash and short-term investments	\$ 2,637,758	\$	1,743,990
Securities lending collateral	2,373,543		2,114,581
Receivables:			
Unsettled securities sold	1,530		9,937
Contributions	0		251,982
Interest and dividends	42,146		50,920
Leases receivable	684		2,662
Investments, at fair value			
U.S. Government Obligations	12,810,323		12,760,971
Domestic corporate bonds/Fixed income	8,385,300		5,109,865
Domestic Stocks	16,405,737		13,174,727
International Stocks	17,101,434		14,211,043
Real Estate	7,443,313		7,260,255
Alternative investments	17,753,539		13,477,402
Absolute return	2,130,132		3,716,699
Infrastructure	0		2,187,865
Total Investments	82,029,778		71,898,827
Prepaid items	0		0
Capital assets	71,728		60,113
Total Assets	\$ 87,157,167	\$	76,133,012
Liabilities:			
Securities lending obligations	2,373,543		2,114,581
Unsettled securities purchased	6,585		366
Leases payable	941		615
Accounts payable	68,355		61,706
Total Liabilities	\$ 2,449,424	\$	2,177,268
Deferred inflow of resources	\$ 684	\$	2,662
Market Value of Assets	\$ 84,707,059	\$	73,953,082

**DENVER EMPLOYEES RETIREMENT PLAN
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2023**

SECTION III – ASSETS

Table III-2(a)		
Pension Plan - Changes in Market Values		
	December 31, 2021	December 31, 2022
Additions		
Contributions		
City and County of Denver	\$ 105,687,056	\$ 125,584,507
Denver Health and Hospital Authority	4,777,943	4,107,478
Plan members	<u>62,604,568</u>	<u>69,032,726</u>
Total Contributions	173,069,567	198,724,711
Net Investment Income		
Net appreciation/(depreciation) in fair value of investments	351,060,379	(284,762,531)
Dividends	14,063,092	13,203,135
Interest	16,364,860	9,630,512
Real estate, alternative investments, and absolute return gain/(loss)	25,639,250	39,839,437
Investment expenses	<u>(13,856,677)</u>	<u>(14,459,773)</u>
Net Investment Income	393,270,904	(236,549,220)
Securities Lending Income		
Securities lending income	255,589	1,342,883
Securities lending expense	<u>2,453</u>	<u>(1,089,328)</u>
Net Securities Lending Income	258,042	253,555
Total Additions	\$ 566,598,513	\$ (37,570,954)
Deductions		
Retired member benefits	\$ 240,811,989	\$ 249,148,975
DROP benefits paid	15,261,680	39,502,980
Return of contributions	7,505,752	8,874,264
Administrative expenses	<u>4,657,946</u>	<u>4,657,712</u>
Total Deductions	\$ 268,237,367	\$ 302,183,931
Net Increase (Decrease)	298,361,146	(339,754,885)
Fiduciary Net Position held in trust for benefits		
Beginning of Year	\$ 2,366,684,798	\$ 2,665,045,944
End of Year	2,665,045,944	2,325,291,059
Expected Return (Net of All Expenses)	\$ 168,361,071	\$ 189,696,940
Actual Return (Net of All Expenses)	388,871,000	(240,953,377)
Expected Return	7.25%	7.25%
Approximate Return	16.75%	-9.21%

**DENVER EMPLOYEES RETIREMENT PLAN
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2023**

SECTION III – ASSETS

Table III-2(b)		
Retiree Medical Plan - Changes in Market Values		
	December 31, 2021	December 31, 2022
Additions		
Contributions		
City and County of Denver	\$ 6,518,351	\$ 6,246,525
Denver Health and Hospital Authority	286,912	207,202
Plan members	3,820,520	3,396,199
Total Contributions	<u>10,625,783</u>	<u>9,849,926</u>
Net Investment Income		
Net Appreciation/(Depreciation) in Fair Value of Investments	11,115,416	(8,988,811)
Dividends	444,938	415,939
Interest	518,057	303,396
Real estate, alternative investments, and absolute return gain/(loss)	811,425	1,191,095
Investment expenses	<u>(438,470)</u>	<u>(454,844)</u>
Net Investment Income	12,451,366	(7,533,225)
Securities Lending Income		
Securities lending income	8,089	42,159
Securities lending expense	<u>79</u>	<u>(34,166)</u>
Net Securities Lending Income	8,168	7,993
Total Additions	\$ 23,085,317	\$ 2,324,694
Deductions		
Retired member benefits	\$ 12,999,600	\$ 12,652,365
Return of contributions	237,527	279,550
Administrative expenses	<u>147,406</u>	<u>146,756</u>
Total Deductions	\$ 13,384,533	\$ 13,078,671
Net increase (Decrease)	9,700,784	(10,753,977)
Fiduciary Net Position held in trust for benefits		
Beginning of Year	\$ 75,006,275	\$ 84,707,059
End of Year	84,707,059	73,953,082
Expected Return (Net of All Expenses)	\$ 5,344,950	\$ 6,031,494
Actual Return (Net of All Expenses)	12,312,128	(7,671,988)
Expected Return	7.25%	7.25%
Approximate Return	16.71%	-9.22%

**DENVER EMPLOYEES RETIREMENT PLAN
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2023**

SECTION III – ASSETS

Development of Actuarial Value of Assets

Tables III-3(a) and III-3(b) below show the development of the Actuarial Value of Assets under the new five-year smoothing method for the pension and retiree medical plans, respectively, using a fresh start approach. The period ending December 31, 2018, was the first year to have investment return experience recognized over five years under this method, and that experience was fully recognized in 2022.

Table III-3(a)					
Pension Plan - Development of Actuarial Value of Assets					
<u>Year End</u>	<u>Actual Return</u>	<u>Expected Return</u>	<u>Investment Gain/(Loss)</u>	<u>Not Recognized</u>	<u>Unrecognized Earnings/(Loss)</u>
December 31, 2019	\$ 279,986,731	\$ 151,601,024	\$ 128,385,707	20%	\$ 25,677,141
December 31, 2020	175,951,743	166,891,470	9,060,273	40%	3,624,109
December 31, 2021	388,871,000	168,361,071	220,509,929	60%	132,305,958
December 31, 2022	(240,953,377)	189,696,940	(430,650,317)	80%	<u>(344,520,254)</u>
1) Total Unrecognized Net (Loss)					\$ (182,913,046)
					Asset Values
2) Market Value of Assets as of December 31, 2022					\$ 2,325,291,059
3) Actuarial Value of Assets as of December 31, 2022 [(2) - (1)]					2,508,204,105
4) Ratio of Actuarial Value to Market Value [(3) / (2)]					108%

Table III-3(b)					
Retiree Medical Plan - Development of Actuarial Value of Assets					
<u>Year End</u>	<u>Actual Return</u>	<u>Expected Return</u>	<u>Investment Gain/(Loss)</u>	<u>Not Recognized</u>	<u>Unrecognized Earnings/(Loss)</u>
December 31, 2019	\$ 9,052,155	\$ 4,878,333	\$ 4,173,822	20%	\$ 834,764
December 31, 2020	5,546,054	5,294,653	251,401	40%	100,560
December 31, 2021	12,312,128	5,344,950	6,967,178	60%	4,180,307
December 31, 2022	(7,671,988)	6,031,494	(13,703,482)	80%	<u>(10,962,786)</u>
1) Total Unrecognized Net (Loss)					\$ (5,847,154)
					Asset Values
2) Market Value of Assets as of December 31, 2022					\$ 73,953,082
3) Actuarial Value of Assets as of December 31, 2022 [(2) - (1)]					79,800,236
4) Ratio of Actuarial Value to Market Value [(3) / (2)]					108%

**DENVER EMPLOYEES RETIREMENT PLAN
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2023**

SECTION III – ASSETS

Tables III-4(a) and III-4(b) below show a comparison of the Market and Actuarial Value of Assets returns for the pension and retiree medical plans, respectively.

Table III-4(a)		
Pension Plan - Development of Investment Returns		
	Market Value	Actuarial Value
1) Assets, Beginning of Year	\$ 2,665,045,944	\$ 2,480,031,193
a) Contributions	198,724,711	198,724,711
b) Benefit Paid and Refunds of Contributions	(297,526,219)	(297,526,219)
c) Expected Investment Earnings at 7.25%	<u>189,696,940</u>	<u>176,283,371</u>
2) Expected Value of Assets, End of Year	\$ 2,755,941,376	\$ 2,557,513,056
3) Actual Value, End of Year	\$ 2,325,291,059	\$ 2,508,204,105
4) Investment Gain/(Loss) [(3) - (2)]	\$ (430,650,317)	\$ (49,308,951)
5) Actual Investment Earnings, net of expenses [(1c) + (4)]	\$ (240,953,377)	\$ 126,974,419
6) Rate of Return	-9.21%	5.22%
7) Ratio of Actuarial Value of Assets to Market Value		108%

Table III-4(b)		
Retiree Medical Plan - Development of Investment Returns		
	Market Value	Actuarial Value
1) Assets, Beginning of Year	\$ 84,707,059	\$ 78,898,221
a) Contributions	9,849,926	9,849,926
b) Benefit Paid and Refunds of Contributions	(12,931,915)	(12,931,915)
c) Expected Investment Earnings at 7.25%	<u>6,031,494</u>	<u>5,610,354</u>
2) Expected Value of Assets, End of Year	\$ 87,656,564	\$ 81,426,586
3) Actual Value, End of Year	\$73,953,082	\$ 79,800,236
4) Investment Gain/(Loss) [(3) - (2)]	\$ (13,703,482)	\$ (1,626,350)
5) Actual Investment Earnings, net of expenses [(1c) + (4)]	\$ (7,671,988)	\$ 3,984,004
6) Rate of Return	-9.22%	5.15%
7) Ratio of Actuarial Value of Assets to Market Value		108%

**DENVER EMPLOYEES RETIREMENT PLAN
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2023**

SECTION III – ASSETS

Historical Investment Performance

The following table shows the historical annual asset returns on both a market value and actuarial value basis since 2003. The 10-year and 20-year geometric average annual returns are also included for reference.

Table III-5				
History of Investment Rates of Return				
Year Ended Dec 31	Pension Plan		Retiree Medical	
	Market	Actuarial	Market	Actuarial
2022	-9.2%	5.2%	-9.2%	5.2%
2021	16.8%	8.2%	16.7%	8.1%
2020	7.9%	6.5%	7.9%	6.4%
2019	13.9%	5.8%	13.9%	5.8%
2018 ¹	-3.5%	3.1%	-3.5%	1.1%
2017	15.2%	7.0%	15.3%	6.5%
2016	7.5%	5.5%	7.5%	5.1%
2015	-2.0%	5.1%	-1.9%	4.7%
2014	4.9%	7.1%	5.0%	6.6%
2013	18.0%	7.6%	18.2%	7.1%
2012	12.5%	5.4%	12.6%	5.0%
2011	-0.3%	3.9%	-0.2%	3.6%
2010	13.9%	5.0%	13.7%	4.7%
2009	13.7%	3.4%	13.6%	3.2%
2008	-26.2%	1.7%	-26.1%	1.7%
2007	10.6%	9.1%	10.6%	9.0%
2006	13.7%	8.7%	13.7%	8.6%
2005	9.3%	7.5%	9.2%	7.4%
2004	11.1%	7.1%	11.0%	7.0%
2003	19.4%	6.1%	19.3%	6.1%
Geometric				
<u>Averages</u>				
20-Year	6.7%	5.9%	6.8%	5.6%
10-Year	6.6%	6.1%	6.6%	5.6%

¹ Actuarial return for 2018 recalculated based on revised AVA smoothing method.

**DENVER EMPLOYEES RETIREMENT PLAN
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2023**

SECTION III – ASSETS

Table III-6 below shows the Asset Allocation as of January 1, 2022 for the City (non-DHHA) and DHHA groups. The initial allocation of assets in the January 1, 2022 actuarial valuation report did not include an allocation of assets associated with the DHHA’s DROP liability. As of January 1, 2022 the DHHA’s Actuarial Value of Assets is \$137.24 million with this adjustment.

Table III-6			
Allocation of January 1, 2022 Assets			
(\$ in millions)			
	City	DHHA	Total
Funded Status			
Actuarial Liability	\$ 3,723.78	\$ 454.32	\$ 4,178.09
Actuarial Value of Assets	2,280.68	278.25	2,558.93
Funded Ratio	61.2%	61.2%	61.2%
Unfunded Actuarial Liability	\$ 1,443.10	\$ 176.07	\$ 1,619.17
Prefunding Credit	41.58	(41.58)	-
Initial Net UAL as of January 1, 2022	\$ 1,484.68	\$ 134.48	\$ 1,619.17
Allocation of the DROP Liability	\$ (7.11)	\$ 7.11	\$ -
Allocation of Assets due to DROP	(4.36)	4.36	-
Change in UAL	\$ (2.76)	\$ 2.76	\$ -
Net UAL as of January 1, 2022	\$ 1,481.92	\$ 137.24	\$ 1,619.17
Adjusted Actuarial Value of Assets (based on Net UAL)	\$ 2,234.74	\$ 324.19	\$ 2,558.93
% of Total	87.3%	12.7%	
Allocation of Market Value of Assets	\$ 2,401.38	\$ 348.37	\$ 2,749.75

**DENVER EMPLOYEES RETIREMENT PLAN
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2023**

SECTION III – ASSETS

Table III-7 below shows the asset reserve development as of January 1, 2023 for the City (non-DHHA) and DHHA groups. Both the Market Value and Actuarial Value of Assets are proportional to the expected Market Value of the Assets (based on actual contributions and benefit payments for each employer) as of January 1, 2023.

Table III-7			
Asset Reserve Development as of January 1, 2023 for the City and DHHA			
	City	DHHA	Total
Market Value of Assets as of January 1, 2022	\$ 2,401.38	\$ 348.37	\$ 2,749.75
Contributions			
DHHA Supplemental Normal Cost	\$ -	\$ 0.45	\$ 0.45
Other Employer Contributions	131.83	3.86	135.69
Employee Contributions	<u>70.41</u>	<u>2.02</u>	<u>72.43</u>
Total Contributions	\$ 202.24	\$ 6.34	\$ 208.57
Deductions			
Benefit Payments	\$ 236.89	\$ 24.92	\$ 261.80
DROP Benefits Paid	35.22	4.28	39.50
Refunds of Member Contributions	<u>9.15</u>	<u>-</u>	<u>9.15</u>
	\$ 281.26	\$ 29.19	\$ 310.46
Assumed Investment Earnings	171.29	24.44	195.73
Total Expected Market Value of Assets	2,493.65	349.95	2,843.60
Market Value of Assets - January 1, 2023	\$ 2,103.98	\$ 295.27	\$ 2,399.24
Actuarial Value of Assets - January 1, 2023	\$ 2,269.51	\$ 318.50	\$ 2,588.00

**DENVER EMPLOYEES RETIREMENT PLAN
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2023**

SECTION IV – LIABILITIES

In this section, we present detailed information on Plan liabilities.

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 appropriate 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; the obligations of the Plan 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 Normal Costs under an acceptable actuarial funding method. The method used for this Plan as of January 1, 2023, is called the **Entry Age Normal (EAN)** funding method.
- **Unfunded Actuarial Liability:** The excess of the Actuarial Liability over the Actuarial Value of Assets.

Tables IV-1(a) and IV-1(b) on the following page disclose each of these liabilities for the current and prior valuations.

The results for the current year are also split between the DHHA and City/non-DHHA groups. The DHHA liabilities are calculated excluding DERP benefit service prior to January 1, 1997. The total DERP assets are split between the pension and retiree medical plans; however, the pension and retiree medical assets have not been specifically allocated to the City and DHHA. The asset allocation for the employers was determined for the total DERP assets.

**DENVER EMPLOYEES RETIREMENT PLAN
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SECTION IV – LIABILITIES

Table IV-1(a)				
Pension Plan - Present Value of Future Benefits and Actuarial Liability				
(\$ in thousands)				
	DHHA	City	January 1, 2023 Total	January 1, 2022 Total
Present Value of Future Benefits				
Actives			\$ 1,781,812	\$ 1,554,851
DROP Balances			73,691	112,322
Terminated Vested			268,496	255,584
Retirees			2,356,974	2,284,461
Disabled			42,733	46,312
Beneficiaries			176,574	174,406
Total PVFB			\$ 4,700,280	\$ 4,427,935
Actuarial Liability				
Actives	\$ 131,547	\$ 1,149,963	\$ 1,281,510	\$ 1,139,618
Inactives	333,674	2,584,794	2,918,468	2,873,084
Total Actuarial Liability	\$ 465,221	\$ 3,734,757	\$ 4,199,978	\$ 4,012,702
Actuarial Value of Assets			\$ 2,508,204	\$ 2,480,031
Funded Ratio			59.7%	61.8%
Unfunded Actuarial Liability			\$ 1,691,774	\$ 1,532,670

Table IV-1(b)				
Retiree Medical Plan - Present Value of Future Benefits and Actuarial Liability				
(\$ in thousands)				
	DHHA	City	January 1, 2023 Total	January 1, 2022 Total
Present Value of Future Benefits				
Actives			\$ 56,275	\$ 57,111
Terminated Vested			8,295	9,754
Retirees			99,015	101,234
Disabled			3,209	3,632
Beneficiaries			5,852	6,342
Total PVFB			\$ 172,646	\$ 178,073
Actuarial Liability				
Actives	\$ 3,594	\$ 39,883	\$ 43,477	\$ 44,432
Inactives	10,440	105,931	116,371	120,962
Total Actuarial Liability	\$ 14,035	\$ 145,814	\$ 159,848	\$ 165,393
Actuarial Value of Assets			\$ 79,800	\$ 78,898
Funded Ratio			49.9%	47.7%
Unfunded Actuarial Liability			\$ 80,048	\$ 86,495

**DENVER EMPLOYEES RETIREMENT PLAN
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2023**

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 two primary components to the total contribution: the **normal cost rate** (employee and employer) and the **Unfunded Actuarial Liability rate** (UAL rate).

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

The Unfunded Actuarial Liability (UAL) is the difference between the EAN Actuarial Liability and the Actuarial Value of Assets. As of January 1, 2019, all of the prior UAL bases were combined and an initial layer to amortize the existing UAL as a level percentage of projected payroll over a 20-year period was created.

An additional layer was created to amortize the change in the actuarial cost method and the asset smoothing method as of January 1, 2019. Any subsequent unexpected changes in the Unfunded Actuarial Liability after January 1, 2019, will be amortized over new 20-year periods as a level percentage of projected payroll. The amortization payment to cover the increase in the UAL from the discount rate change as of January 1, 2021, was phased-in over three years, becoming fully phased-in with the January 1, 2023 valuation.

**DENVER EMPLOYEES RETIREMENT PLAN
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2023**

SECTION V – CONTRIBUTIONS

Tables V-1 below shows the development of the amortization payments for the combined pension and retiree medical plans.

Table V-1					
Total Combined Pension and Retiree Medical Plans					
Development of Unfunded Actuarial Liability (UAL) Amortization Payment					
<u>Amortization Base</u>	<u>Initial Amount</u>	<u>January 1, 2023 Outstanding Balance</u>	<u>Remaining Amortization Years</u>	<u>UAL Amortization Payment</u>	<u>% of Pay</u>
2019 Combined Bases	\$ 1,273,670,423	\$ 1,233,513,205	16	\$ 104,505,063	12.44%
2019 Funding Method Changes	189,718,363	183,736,782	16	15,566,452	1.85%
2020 (Gain)/Loss	62,903,812	61,668,883	17	5,001,990	0.60%
2021 (Gain)/Loss	48,981,967	48,449,214	18	3,774,857	0.45%
2021 Assumption Change	101,723,895	108,593,594	18	8,460,928	1.01%
2022 (Gain)/Loss	(34,296,883)	(34,154,939)	19	(2,563,868)	-0.31%
2023 (Gain)/Loss	122,816,619	122,816,619	20	8,905,963	1.06%
2023 Assumption Change	47,198,188	47,198,188	20	3,422,545	0.41%
Total		\$ 1,771,821,547		\$ 147,073,930	17.51%

**DENVER EMPLOYEES RETIREMENT PLAN
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2023**

SECTION V – CONTRIBUTIONS

Tables V-1(a) and V-1(b) below show the development of the amortization payments separately for the pension plan and retiree medical plan.

Table V-1(a)						
Pension Plan - Development of Unfunded Actuarial Liability (UAL) Amortization Payment						
Amortization Base	Initial Amount	Initial Amortization Years	January 1, 2023 Outstanding Balance	Remaining Amortization Years	UAL Amortization Payment	% of Pay
2019 Combined Bases	\$ 1,187,452,154	20	\$ 1,150,013,289	16	\$ 97,430,827	11.60%
2019 Funding Method Changes	180,806,014	20	175,105,429	16	14,835,191	1.77%
2020 (Gain)/Loss	63,701,219	20	62,450,634	17	5,065,398	0.60%
2021 (Gain)/Loss	51,810,995	20	51,247,472	18	3,992,880	0.48%
2021 Assumption Change	97,875,749	20	104,485,573	18	8,140,857	0.97%
2022 (Gain)/Loss	(27,025,557)	20	(26,913,708)	19	(2,020,299)	-0.24%
2023 (Gain)/Loss	125,684,711	20	125,684,711	20	9,113,941	1.09%
2023 Assumption Change	49,700,178	20	49,700,178	20	3,603,975	0.43%
Total			\$ 1,691,773,578		\$ 140,162,770	16.69%

Table V-1(b)						
Retiree Medical Plan - Development of Unfunded Actuarial Liability (UAL) Amortization Payment						
Amortization Base	Initial Amount	Initial Amortization Years	January 1, 2023 Outstanding Balance	Remaining Amortization Years	UAL Amortization Payment	% of Pay
2019 Combined Bases	\$ 86,218,269	20	\$ 83,499,916	16	\$ 7,074,236	0.84%
2019 Funding Method Changes	8,912,349	20	8,631,353	16	731,261	0.09%
2020 (Gain)/Loss	(797,406)	20	(781,751)	17	(63,408)	-0.01%
2021 (Gain)/Loss	(2,829,029)	20	(2,798,258)	18	(218,023)	-0.03%
2021 Assumption Change	3,848,146	20	4,108,022	18	320,071	0.04%
2022 (Gain)/Loss	(7,271,325)	20	(7,241,231)	19	(543,569)	-0.06%
2023 (Gain)/Loss	(2,868,091)	20	(2,868,091)	20	(207,978)	-0.02%
2023 Assumption Change	(2,501,990)	20	(2,501,990)	20	(181,430)	-0.02%
Total			\$ 80,047,969		\$ 6,911,160	0.82%

**DENVER EMPLOYEES RETIREMENT PLAN
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2023**

SECTION V – CONTRIBUTIONS

Tables V-2(a) and V-2(b) show the development of the amortization payments for the City (non-DHHA) and DHHA groups.

Table V-2(a)					
City Amortization Bases					
Development of Unfunded Actuarial Liability (UAL) Amortization Payment					
<u>Amortization Base</u>	<u>Initial Amount</u>	<u>January 1, 2023 Outstanding Balance</u>	<u>Remaining Amortization Years</u>	<u>UAL Amortization Payment</u>	<u>% of Pay</u>
2019 Combined Bases	\$ 1,167,882,062	\$ 1,131,060,217	16	\$ 95,825,094	11.73%
2019 Funding Method Changes	173,960,759	168,475,995	16	14,273,536	1.75%
2020 (Gain)/Loss	57,679,155	56,546,797	17	4,586,535	0.56%
2021 (Gain)/Loss	44,913,629	44,425,125	18	3,461,325	0.42%
2021 Assumption Change	93,274,924	99,574,041	18	7,758,181	0.95%
2022 (Gain)/Loss	(31,448,257)	(31,318,102)	19	(2,350,919)	-0.29%
2023 (Gain)/Loss	97,626,260	97,626,260	20	7,079,301	0.87%
2023 Assumption Change	44,672,517	44,672,517	20	3,239,398	0.40%
Total		\$ 1,611,062,850		\$ 133,872,451	16.38%

Table V-2(b)					
DHHA Amortization Bases					
Development of Unfunded Actuarial Liability (UAL) Amortization Payment					
<u>Amortization Base</u>	<u>Initial Amount</u>	<u>January 1, 2023 Outstanding Balance</u>	<u>Remaining Amortization Years</u>	<u>UAL Amortization Payment</u>	
2019 Combined Bases	\$ 105,788,361	\$ 102,452,988	16	\$ 8,679,969	
2019 Funding Method Changes	15,757,604	15,260,787	16	1,292,916	
2020 (Gain)/Loss	5,224,657	5,122,086	17	415,455	
2021 (Gain)/Loss	4,068,338	4,024,089	18	313,532	
2021 Assumption Change	8,448,971	9,019,553	18	702,747	
2022 (Gain)/Loss	(2,848,626)	(2,836,836)	19	(212,949)	
2023 (Gain)/Loss	25,190,359	25,190,359	20	1,826,662	
2023 Assumption Change	2,525,671	2,525,671	20	183,147	
Total		\$ 160,758,697		\$ 13,201,479	

**DENVER EMPLOYEES RETIREMENT PLAN
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2023**

SECTION V – CONTRIBUTIONS

Tables V-3(a), V-3(b), and V-3(c) show the development of contributions as both a dollar amount and a percentage of projected payroll split between the DHHA and non-DHHA groups.

Table V-3(a)						
Pension Plan - Development of Contributions						
(\$ in thousands)						
January 1, 2023 Valuation						
	DHHA	Non-DHHA			Total	
		Tier 1	Tier 2	Tier 3	Non-DHHA	TOTAL ¹
Normal Cost \$	\$ 2,352	\$ 11,798	\$ 13,068	\$ 43,377	\$ 68,244	\$ 70,140
Normal Cost % of Pay	10.36%	10.32%	9.26%	7.72%	8.35%	8.35%
Amortization \$						\$ 140,163
Amortization % of Pay						16.69%
Total Contribution \$						\$ 210,303
Total Contribution % of Pay						25.04%
Total Salary	\$ 22,712	\$ 114,298	\$ 140,961	\$ 561,812	\$ 817,072	\$ 839,784

¹ Total Normal Cost does not include the DHHA Supplemental Contribution of \$457,000, but it is included in the DHHA Normal Cost, thus the total does not equal the sum of DHHA and Non-DHHA.

Table V-3(b)						
Pension Plan - Development of Contributions						
(\$ in thousands)						
January 1, 2022 Valuation						
	DHHA	Non-DHHA			Total	
		Tier 1	Tier 2	Tier 3	Non-DHHA	TOTAL ¹
Normal Cost \$	\$ 2,406	\$ 11,476	\$ 11,853	\$ 33,983	\$ 57,311	\$ 59,290
Normal Cost % of Pay	9.94%	9.81%	8.97%	7.51%	8.17%	8.17%
Amortization \$						\$ 123,019
Amortization % of Pay						16.95%
Total Contribution \$						\$ 182,309
Total Contribution % of Pay						25.13%
Total Salary	\$ 24,216	\$ 116,931	\$ 132,103	\$ 452,340	\$ 701,375	\$ 725,590

¹ Total Normal Cost does not include the DHHA Supplemental Contribution of \$429,000, but it is included in the DHHA Normal Cost, thus the total does not equal the sum of DHHA and Non-DHHA.

**DENVER EMPLOYEES RETIREMENT PLAN
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2023**

SECTION V – CONTRIBUTIONS

Table V-3(c)						
Retiree Medical Plan - Development of Contributions (\$ in thousands)						
	January 1, 2022			January 1, 2023		
	DHHA	Non-DHHA	TOTAL ¹	DHHA	Non-DHHA	TOTAL ¹
Normal Cost \$	\$ 90	\$ 1,894	\$ 1,959	\$ 75	\$ 1,922	\$ 1,975
Normal Cost % of Pay	0.37%	0.27%	0.27%	0.33%	0.24%	0.24%
Amortization \$			\$ 7,095			\$ 6,911
Amortization % of Pay			0.98%			0.82%
Total Contribution \$			\$ 9,054			\$ 8,886
Total Contribution % of Pay			1.25%			1.06%
Total Salary	\$ 24,216	\$ 701,375	\$ 725,590	\$ 22,712	\$ 817,072	\$ 839,784

¹Total Normal Cost does not include the DHHA Supplemental Contribution of \$24,000 and \$23,000 for 2022 and 2023 respectively, but it is included in the DHHA Normal Cost, thus the total does not equal the sum of DHHA and Non-DHHA.

**DENVER EMPLOYEES RETIREMENT PLAN
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2023**

SECTION V – CONTRIBUTIONS

Tables V-4(a) and V-4(b) present the determination of the DHHA Supplemental Contributions for the pension plan and retiree medical plan for both the current and prior valuations.

Table V-4(a)		
Pension Plan - DHHA Normal Cost Supplemental Contribution		
	January 1, 2022	January 1, 2023
Number of Active Members at Hospital	248	217
Average Age for Active Members at Hospital	56.0	56.5
Number of Active Members Non-Hospital	8,503	9,011
Average Age for Active Members Non-Hospital	43.9	43.7
Normal Cost \$ for Hospital	\$ 2,406,216	\$ 2,352,058
Estimated Payroll for Hospital	24,215,513	22,711,692
Normal Cost % of Hospital Payroll	9.94%	10.36%
Normal Cost \$ for Non-Hospital	\$ 57,311,106	\$ 68,243,549
Estimated Payroll for Non-Hospital	701,374,571	817,071,908
Normal Cost % of Non-Hospital Payroll	8.17%	8.35%
Difference in Normal Cost %	1.77%	2.01%
Estimated Payroll for Hospital	\$ 24,215,513	\$ 22,711,692
DHHA Normal Cost Supplemental Contribution	428,615	456,505

Table V-4(b)		
Retiree Medical Plan -DHHA Normal Cost Supplemental Contribution		
	January 1, 2022	January 1, 2023
Number of Active Members at Hospital	248	217
Average Age for Active Members at Hospital	56.0	56.5
Number of Active Members Non-Hospital	8,503	9,011
Average Age for Active Members Non-Hospital	43.9	43.7
Normal Cost \$ for Hospital	\$ 89,319	\$ 74,851
Estimated Payroll for Hospital	24,215,513	22,711,692
Normal Cost % of Hospital Payroll	0.37%	0.33%
Normal Cost \$ for Non-Hospital	\$ 1,878,833	\$ 1,897,616
Estimated Payroll for Non-Hospital	701,374,571	817,071,908
Normal Cost % of Non-Hospital Payroll	0.27%	0.23%
Difference in Normal Cost %	0.10%	0.10%
Estimated Payroll for Hospital	\$ 24,215,513	\$ 22,711,692
DHHA Normal Cost Supplemental Contribution	24,216	22,712

**DENVER EMPLOYEES RETIREMENT PLAN
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2023**

SECTION VI – ANNUAL COMPREHENSIVE FINANCIAL REPORTING

The GASB adopted Statement Nos. 67 and 68, which replaced GASB Statement Nos. 25 and 27. GASB 67 became effective December 31, 2014, for the Plan and GASB 68 became effective for the fiscal year beginning after June 15, 2014, for the Employers. The disclosures needed to satisfy the GASB requirements can be found in the DERP GASB 67/68 Report as of December 31, 2022.

In accordance with Government Finance Officers Association (GFOA) and their recommended checklist for Annual Comprehensive Financial Reports, we continue to prepare the Schedule of Funded Liabilities by Type and the Schedule of Funding Progress.

Tables VI-1(a) and VI-1(b) below and on the next page show the Schedule of Funded Liabilities by Type for the pension plan and Member Benefit Coverage Information for the retiree medical plan.

Tables VI-2(a) and VI-2(b) on the following pages show the Schedule of Funding Progress for the pension plan and retiree medical plan independently.

Valuation Date	Actuarial Liabilities			Reported Assets	Portion of Actuarial Liabilities Covered by Reported Assets		
	(A)	(B)	(C)		(A)	(B)	(C)
	Non-Vested Member Contributions ¹	Retirees, Beneficiaries, and Term Vested	Remaining Active Members' Liabilities				
January 1, 2014	\$ 15,239,000	\$ 1,793,125,000 ²	\$ 890,636,000	\$ 2,062,323,000	100%	100%	29%
2015	21,758,000	1,938,787,000 ³	933,123,000	2,132,025,000	100%	100%	18%
2016	30,578,000	2,038,925,000 ⁴	934,087,000	2,168,754,000	100%	100%	11%
2017	39,110,000	2,177,513,000 ⁵	958,017,000	2,207,268,000	100%	100%	0%
2018	47,644,000	2,345,254,000 ⁶	965,324,000	2,272,599,000	100%	95%	0%
2019	53,342,000	2,468,387,000 ⁷	1,101,941,000	2,255,412,000	100%	89%	0%
2020	58,696,000	2,554,340,000 ⁸	1,114,751,000	2,300,324,000	100%	88%	0%
2021	63,042,000	2,800,846,000 ⁹	1,083,780,000	2,378,772,000	100%	83%	0%
2022	64,673,000	2,855,029,000 ¹⁰	1,093,000,000	2,480,031,000	100%	85%	0%
2023	69,210,000	2,898,424,000 ¹¹	1,232,344,000	2,508,204,000	100%	84%	0%

Amounts for January 1, 2018 and earlier were calculated by the prior actuary, and are based on the Projected Unit Credit actuarial cost method.

Amounts for January 1, 2019 and later were calculated by Cheiron, and are based on the Entry Age Normal actuarial cost method.

¹ Non-vested member contributions are allocated between pension and health benefits based on the proportion of total member contributions.

² Includes DROP accounts of \$107,944,000.

⁷ Includes DROP accounts of \$118,078,000.

³ Includes DROP accounts of \$110,655,000.

⁸ Includes DROP accounts of \$118,320,000.

⁴ Includes DROP accounts of \$113,006,000.

⁹ Includes DROP accounts of \$122,517,000.

⁵ Includes DROP accounts of \$116,493,000.

¹⁰ Includes DROP accounts of \$112,322,000.

⁶ Includes DROP accounts of \$125,524,000.

¹¹ Includes DROP accounts of \$73,691,000.

**DENVER EMPLOYEES RETIREMENT PLAN
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2023**

SECTION VI – ANNUAL COMPREHENSIVE FINANCIAL REPORTING

Table VI-1(b)								
Retiree Medical Plan - Member Benefit Coverage Information								
Valuation Date	Actuarial Liabilities ¹				Reported Assets	Portion of Actuarial Liabilities Covered by Reported Assets		
	(A)	(B)	(C)	Remaining Active Members' Liabilities		(A)	(B)	(C)
	Non-Vested Member Contributions ²	Retirees, Beneficiaries, and Term Vested	Retirees, Beneficiaries, and Term Vested					
January 1, 2014	\$ 946,000	\$ 106,514,000	\$ 42,322,000	\$ 82,737,000	100%	77%	0%	
2015	1,350,000	108,982,000	42,590,000	82,195,000	100%	74%	0%	
2016	1,898,000	110,239,000	41,118,000	80,383,000	100%	71%	0%	
2017	2,427,000	112,599,000	41,076,000	78,723,000	100%	68%	0%	
2018	2,957,000	117,103,000	42,200,000	77,858,000	100%	64%	0%	
2019	3,311,000	120,108,000	45,418,000	73,706,000	100%	59%	0%	
2020	3,257,000	119,238,000	44,633,000	73,107,000	100%	59%	0%	
2021	3,309,000	124,184,000	42,461,000	75,471,000	100%	58%	0%	
2022	3,208,000	120,066,000	42,119,000	78,898,000	100%	63%	0%	
2023	2,932,000	115,522,000	41,395,000	79,800,000	100%	67%	0%	

Amounts for January 1, 2018 and earlier were calculated by the prior actuary, and are based on the Projected Unit Credit actuarial cost method. Amounts for January 1, 2019 and later were calculated by Cheiron, and are based on the Entry Age Normal actuarial cost method.

¹ *These liabilities only represent the value of the explicit benefit without regard to the implicit rate subsidy, and therefore are not compliant with GASB No. 75.*

² *Non-vested member contributions are allocated between pension and health benefits based on the proportion of total member contributions.*

The Schedule of Funded Liabilities by Type (pension) and Member Benefit Coverage Information (retiree medical) 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. As of December 31, 2022, liabilities are discounted at the assumed valuation interest rate of 7.00%.

**DENVER EMPLOYEES RETIREMENT PLAN
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2023**

SECTION VI – ANNUAL COMPREHENSIVE FINANCIAL REPORTING

Table VI-2(a) Pension Plan - Schedule of Funding Progress						
Valuation Date January 1,	Actuarial Value of Assets	Actuarial Liability (AL)	Unfunded AL	Funded Ratio	Covered Payroll	Unfunded AL as a % of Covered Payroll
2014	\$ 2,062,323,000	\$ 2,699,000,000	\$ 636,677,000	76.4%	\$ 540,229,000	117.9%
2015	2,132,025,000	2,893,668,000	761,643,000	73.7%	568,563,000	134.0%
2016	2,168,754,000	3,003,590,000	834,836,000	72.2%	586,819,000	142.3%
2017	2,207,268,000	3,174,640,000	967,372,000	69.5%	623,098,000	155.3%
2018	2,272,599,000	3,358,222,000	1,085,623,000	67.7%	646,777,000	167.9%
2019	2,255,412,000	3,623,670,000	1,368,258,000	62.2%	692,151,000	197.7%
2020	2,300,324,000	3,727,787,000	1,427,463,000	61.7%	732,075,000	195.0%
2021	2,378,772,000	3,947,667,000	1,568,895,000	60.3%	719,481,000	218.1%
2022	2,480,031,000	4,012,702,000	1,532,671,000	61.8%	725,590,000	211.2%
2023	2,508,204,000	4,199,978,000	1,691,774,000	59.7%	839,784,000	201.5%

Amounts for January 1, 2018 and earlier were calculated by the prior actuary, and are based on the Projected Unit Credit actuarial cost method.

Amounts for January 1, 2019 and later were calculated by Cheiron, and are based on the Entry Age Normal actuarial cost method.

Table VI-2(b) Retiree Medical Plan - Schedule of Funding Progress						
Valuation Date January 1,	Actuarial Value of Assets	Actuarial Liability (AL)	Unfunded AL	Funded Ratio	Covered Payroll	Unfunded AL as a % of Covered Payroll
2014	\$ 82,737,000	\$ 149,782,000	\$ 67,045,000	55.2%	\$ 540,229,000	12.4%
2015	82,195,000	152,922,000	70,727,000	53.7%	568,563,000	12.4%
2016	80,383,000	153,255,000	72,872,000	52.5%	586,819,000	12.4%
2017	78,723,000	156,102,000	77,379,000	50.4%	623,098,000	12.4%
2018	77,858,000	162,260,000	84,402,000	48.0%	646,777,000	13.0%
2019	73,706,000	168,837,000	95,131,000	43.7%	692,151,000	13.7%
2020	73,107,000	167,128,000	94,021,000	43.7%	732,075,000	12.8%
2021	75,471,000	169,954,000	94,483,000	44.4%	719,481,000	13.1%
2022	78,898,000	165,393,000	86,495,000	47.7%	725,590,000	11.9%
2023	79,800,000	159,848,000	80,048,000	49.9%	839,784,000	9.5%

Amounts for January 1, 2018 and earlier were calculated by the prior actuary, and are based on the Projected Unit Credit actuarial cost method.

Amounts for January 1, 2019 and later were calculated by Cheiron, and are based on the Entry Age Normal actuarial cost method.

**DENVER EMPLOYEES RETIREMENT PLAN
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The data for this valuation was provided by the Plan staff as of January 1, 2023. 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.

Denver Employees Retirement Plan - Pension Plan Valuation Data Comparison - Actives				
	January 1, 2022	January 1, 2023	Change	
<i>Total Actives</i>				
Count	8,751	9,228	5.5 %	
Average Age	44.3	44.0	(0.3)	
Average Service	9.2	8.6	(0.6)	
Total Salaries	\$ 729,704,460	\$ 843,226,068	15.6 %	
Average Salaries	\$ 83,385	\$ 91,377	9.6 %	
<i>DHHA</i>				
Count	248	217	(12.5)%	
Average Age	56.0	56.5	0.5	
Average Service	25.5	26.3	0.8	
Total Salaries	\$ 28,329,889	\$ 26,154,160	(7.7)%	
Average Salaries	\$ 114,233	\$ 120,526	5.5 %	
<i>Non-DHHA</i>				
Count	8,503	9,011	6.0 %	
Average Age	43.9	43.7	(0.3)	
Average Service	8.7	8.2	(0.5)	
Total Salaries	\$ 701,374,571	\$ 817,071,908	16.5 %	
Average Salaries	\$ 82,486	\$ 90,675	9.9 %	

Total salaries are based on valuation data projected for the next calendar year using a full year of salary increases. However, for the January 1, 2023 valuation, the projected payroll used to calculate the UAL payments as a percentage of payroll is \$839,783,600, adjusted for assumed attrition during 2023 for the DHHA active membership since they are a closed group.

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APPENDIX A – MEMBERSHIP INFORMATION

**Denver Employees Retirement Plan - Pension Plan
Valuation Data Comparison - Actives**

	January 1, 2022	January 1, 2023	Change
<i>Total Actives: Tier 1</i>			
Count	1,481	1,301	(12.2)%
Average Age	53.8	54.3	0.5
Average Service	24.4	25.2	0.8
Total Salaries	\$ 145,192,794	\$ 140,452,359	(3.3)%
Average Salaries	\$ 98,037	\$ 107,957	10.1 %
<i>Total Actives: Tier 2</i>			
Count	1,479	1,404	(5.1)%
Average Age	49.2	50.0	0.8
Average Service	14.2	15.0	0.8
Total Salaries	\$ 132,171,422	\$ 140,961,329	6.7 %
Average Salaries	\$ 89,365	\$ 100,400	12.3 %
<i>Total Actives: Tier 3</i>			
Count	5,791	6,523	12.6 %
Average Age	40.6	40.6	0.0
Average Service	4.1	4.0	(0.1)
Total Salaries	\$ 452,340,244	\$ 561,812,380	24.2 %
Average Salaries	\$ 78,111	\$ 86,128	10.3 %

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APPENDIX A – MEMBERSHIP INFORMATION

Denver Employees Retirement Plan - Pension Plan Valuation Data Comparison - Inactives			
	January 1, 2022	January 1, 2023	Change
<i>Vested Inactive Members</i>			
Count	3,550	3,703	4.3 %
Average Age	50.4	50.2	(0.2)
<i>Non-Vested Inactive Members</i>			
Count	3,180	3,549	11.6 %
Average Age	42.2	42.4	0.2
Member Contribution Balances	\$ 18,950,930	\$ 20,893,001	10.2 %
MEMBERS IN PAY STATUS			
<i>Retirees</i>			
Count	9,004	9,155	1.7 %
Average Age	70.5	70.8	0.3
Total Annual Benefits	\$ 219,883,236	\$ 227,558,319	3.5 %
Average Annual Benefits	\$ 24,421	\$ 24,856	1.8 %
<i>QDROs</i>			
Count	84	90	7.1 %
Average Age	64.5	64.7	0.2
Total Annual Benefits	\$ 838,871	\$ 906,905	8.1 %
Average Annual Benefits	\$ 9,987	\$ 10,077	0.9 %
<i>Disabled Members</i>			
Count	267	255	(4.5)%
Average Age	67.9	68.2	0.4
Total Annual Benefits	\$ 4,468,306	\$ 4,296,553	(3.8)%
Average Annual Benefit	\$ 16,735	\$ 16,849	0.7 %
<i>Beneficiaries</i>			
Count	1,311	1,373	4.7 %
Average Age	70.5	70.8	0.3
Total Annual Benefits	\$ 18,758,136	\$ 20,124,189	7.3 %
Average Annual Benefits	\$ 14,308	\$ 14,657	2.4 %
<i>Children</i>			
Count	24	22	(8.3)%
Average Age	15.5	13.9	(1.6)
Total Annual Benefits	\$ 154,354	\$ 132,463	(14.2)%
Average Annual Benefits	\$ 6,431	\$ 6,021	(6.4)%

**DENVER EMPLOYEES RETIREMENT PLAN
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APPENDIX A – MEMBERSHIP INFORMATION

Membership Data Reconciliation							
	Active	Terminated Vested	Terminated Non-Vested	Retiree	Disability	Beneficiary	Total
As of January 1, 2022	8,751	3,550	3,180	9,088	267	1,335	26,171
New Entrants/QDROs	1,724			8			1,732
Rehires	95	(37)	(54)	(4)			0
Terminated Vested	(379)	379					0
Terminated Non-Vested	(725)		725				0
Return of Contributions			(637)				(637)
Retired	(225)	(169)		394			0
Disabled		(3)		(2)	5		0
Deceased w/ Beneficiary	(12)	(14)	(1)	(86)	(7)	122	2
Deceased w/o Beneficiary	(1)	(4)		(154)	(10)	(55)	(224)
Benefits Expired						(6)	(6)
Data Corrections		1	336	1		(1)	337
As of January 1, 2023	9,228	3,703	3,549	9,245	255	1,395	27,375

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APPENDIX A – MEMBERSHIP INFORMATION

Age and Service Distribution for Active Members									
Attained Age	Years of Service as of January 1, 2023							Count	Payroll
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+		
< 25	287							287	16,425,598
25 - 29	776	77	1					854	59,891,734
30 - 34	861	368	39	7				1,275	102,147,333
35 - 39	676	424	127	69				1,296	117,368,361
40 - 44	483	372	149	187	69	7		1,267	121,843,846
45 - 49	377	253	129	188	193	61	5	1,206	119,276,920
50 - 54	305	228	118	171	221	193	74	1,310	134,181,120
55 - 59	192	162	94	119	109	98	86	860	85,746,731
60 - 64	136	123	80	77	88	55	51	610	59,450,754
65 - 69	40	60	26	21	24	13	22	206	21,207,805
70 +	7	16	6	14	4	6	4	57	5,685,868
Total	4,140	2,083	769	853	708	433	242	9,228	843,226,068

Historical Summary of Active Member Data								
January 1,	Active Members		Projected Payroll		Projected Average Payroll		Average	
	Number	% Increase	\$ Amount	% Increase	\$ Amount	% Increase	Age	Service
2014	8,304	1.6%	540,229,189	1.6%	65,057	0.1%	45.9	11.3
2015	8,489	2.2%	568,562,500	5.2%	66,976	3.0%	45.5	10.9
2016	8,636	1.7%	586,819,180	3.2%	67,950	1.5%	45.1	10.6
2017	8,981	4.0%	623,098,077	6.2%	69,380	2.1%	44.5	10.0
2018	9,094	1.3%	646,777,231	3.8%	71,121	2.5%	44.3	9.7
2019	9,210	1.3%	692,150,700	7.0%	75,152	5.7%	44.2	9.3
2020	9,401	2.1%	737,532,660	6.6%	78,453	4.4%	44.1	9.1
2021	8,958	-4.7%	723,324,272	-1.9%	80,746	2.9%	44.0	9.2
2022	8,751	-2.3%	729,704,460	0.9%	83,385	3.3%	44.3	9.2
2023	9,228	5.5%	843,226,068	15.6%	91,377	9.6%	44.0	8.6

Amounts for January 1, 2018 and earlier were calculated by the prior actuary

**DENVER EMPLOYEES RETIREMENT PLAN
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APPENDIX A – MEMBERSHIP INFORMATION

Schedule of Retirees, Disabled, and Beneficiaries								
Valuation Date	Added to Rolls		Removed from Rolls		Rolls at Valuation Date		Average Annual Benefit	Increase in Average Benefit
	Count	Allowances	Count	Allowances	Count	Annual Benefits		
2014	658	15,872,322	221	3,126,984	8,482	159,503,726	18,805	3.0%
2015	597	13,833,209	264	4,026,993	8,815	169,735,929	19,255	2.4%
2016	560	12,947,276	301	3,846,224	9,074	179,304,283	19,760	2.6%
2017	558	13,549,263	330	4,951,335	9,302	188,483,949	20,263	2.5%
2018	610	15,814,329	268	3,358,163	9,644	201,456,870	20,889	3.1%
2019	600	15,257,198	299	4,791,186	9,945	211,922,882	21,309	2.0%
2020	553	13,314,532	345	5,448,419	10,153	220,253,735	21,693	1.8%
2021	719	21,775,238	334	4,866,064	10,538	237,264,216	22,515	3.8%
2022	521	12,360,592	369	6,102,399	10,690	244,102,903	22,835	1.4%
2023	527	13,848,021	322	5,274,776	10,895	253,018,430	23,223	1.7%

Amounts for January 1, 2018 and earlier were calculated by the prior actuary

**DENVER EMPLOYEES RETIREMENT PLAN
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**APPENDIX B – STATEMENT OF CURRENT ACTUARIAL
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Contribution Allocation Procedure

The contribution allocation procedure primarily consists of an actuarial cost method, an asset valuation method, and an amortization method as described below. The actuarial cost method, amortization method, and asset valuation method were all changed as of the January 1, 2019 valuation as described below.

1. Actuarial Cost Method

The cost method for the valuation of liabilities used for this valuation is the Entry Age Normal (EAN) method. The actuarial present value of the projected benefits of each active member is allocated as a level percentage of each individual's projected pay to the period between their date of hire and their assumed maximum retirement age. The normal cost for the Plan is the sum of the individual normal costs for each member. The EAN Actuarial Liability is the difference between the Plan's total present value of future benefits and the present value of future normal costs. The unfunded actuarial liability is the difference between the Actuarial Liability and the Actuarial Value of Assets.

2. Amortization Method

The UAL (or Surplus Funding) is amortized as a percentage of the projected salaries of DERP members, adjusted for attrition for DHHA employees since the Plan is closed to them. Effective with the January 1, 2019 valuation, the UAL as of January 1, 2019 was amortized over a closed 20-year period. The additional UAL attributable to the change in funding method was amortized over a separate 20-year period. All future gains and losses will be amortized over new 20-year periods, called layers.

The amortization payment to cover the increase in the UAL due to lowering the discount rate from 7.50% to 7.25% as of January 1, 2021 was being phased-in over a three-year period with the final year of the phase-in occurring with the January 1, 2023 valuation.

3. Asset Valuation Method

As of January 1, 2019, the Actuarial Value of Assets is determined as the Market Value of Assets less any unrecognized investment gains or losses in each of the last five years. In general, the gains and losses are equal to the difference between the actual market return and the expected market return and are recognized over a five-year period or 20% per year.

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Valuation Software

Cheiron utilizes ProVal, an actuarial valuation software leased from Winklevoss Technologies (WinTech) to calculate liabilities and project benefit payments. We have relied on WinTech as the developer of ProVal. We have examined the reasonableness of the input data and assumptions, reviewed sample calculations for accuracy, reconciled the actuarial gain loss, and find the aggregate results reasonable and appropriate. We are not aware of any material inconsistencies, unreasonable output resulting from the aggregation of assumptions, material limitations, or known weaknesses that would affect this actuarial valuation.

Deterministic projections in this presentation 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.

Stochastic projections in this presentation were developed using R-Scan, our proprietary tool for assessing the probability of different outcomes based on the range of potential investment returns. The stochastic projections of investment returns are based on an assumption that each future year's investment return is independent from all other years and is identically distributed according to a lognormal distribution. This assumption may result in an unrealistically wide range of compound investment returns over longer periods.

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Actuarial Assumptions

The return assumption was adopted by the Board at their July 21, 2023 meeting, based on information presented by Cheiron and the Plan's investment consultant (Meketa). The other assumptions used in this report reflect the results of an Experience Study performed by Cheiron covering the period from January 1, 2018 through December 31, 2022, and adopted by the Board at their July 21, 2023 meeting for the January 1, 2023 actuarial valuation. More details on the rationale for these assumptions can be found in the Actuarial Experience Study Report dated May 16, 2023.

1. Investment Rate of Return

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

2. Administrative Expenses

No explicit assumption because assumed rate of return is net of administrative expenses.

3. Cost-of-Living / Inflation

2.50%

4. Post Retirement COLA

0.00% per year

5. Internal Revenue Code Section 415 Limit

The Internal Revenue Code Section 415 maximum benefit limitation for 2023 is reflected in the valuation and increased annually for future years by the assumed CPI of 2.50%.

6. Internal Revenue Code Section 401(a)(17)

The Internal Revenue Code Section 401(a)(17) maximum compensation limitation for 2023 is reflected in the valuation and increased annually for future years by assumed CPI of 2.50%.

7. Interest on Member Contributions

The annual credited interest rate on non-vested member contributions is assumed to be 1.0%.

8. Unused Sick and Vacation Hours

For members hired prior to January 1, 2010, unused sick and vacation hours are converted into pay at retirement, death, disability or termination. That converted amount is included in the Average Monthly Salary (AMS). The valuation accounts for this by assuming the AMS will be increased by 7.00% for active retirement and disability benefits and increased by 3.50% for active ordinary death and termination benefits for eligible members.

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9. Family Composition

Percentage married for all active members who retire, become disabled, or die during active service is shown in the table below. Spouses are assumed to be one year younger for males and one year older for females for active members and retirees whose beneficiary has a missing date of birth.

Percentage Married	
Gender	Percentage
Males	70%
Females	50%

10. Increases in Pay

Wage inflation component: 3.00%

Additional longevity and promotion component:

Service	Non-DHHA	Age	DHHA
0	7.00%	≤ 34	2.00%
1	5.50%	35-39	0.75%
2	3.50%	40-44	0.50%
3	3.25%	45-59	0.25%
4	3.00%	60+	0.00%
5	2.75%		
6	2.50%		
7	2.25%		
8	2.00%		
9	1.50%		
10	1.50%		
11	1.25%		
12	1.25%		
13	1.00%		
14	0.75%		
15	0.50%		
16	0.50%		
17	0.25%		
18	0.25%		
19	0.25%		
20+	0.00%		

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11. Rates of Termination

Termination rates are shown in the following table below.

Service	Non-DHHA	Age	DHHA
0	22.0%	≤ 29	10.0%
1	16.0%	30-39	5.0%
2	14.5%	40-49	4.0%
3	12.0%	50-54	2.5%
4	11.5%	55+	0.0%
5	10.0%		
6	9.0%		
7	9.0%		
8	8.0%		
9	7.5%		
10	6.5%		
11	5.5%		
12	5.0%		
13	4.5%		
14	4.0%		
15	4.0%		
16	3.0%		
17	3.0%		
18	3.0%		
19	3.0%		
20+	2.0%		

**Termination rates do not apply once member is eligible for retirement*

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12. Rates of Disability

Disability rates are based on a standard non-industrial disability state table. Rates at representative ages are shown in the table below.

Age	Rates
20	0.030%
25	0.030%
30	0.030%
35	0.030%
40	0.040%
45	0.060%
50	0.098%
55	0.143%
60	0.188%
65	0.233%

10% of disabilities are assumed to be duty-related and 90% are assumed to be non-duty related.

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13. Rates of Mortality

Mortality rates were adjusted to include margin for future longevity improvement as described below:

Active Mortality

Sex Distinct Public General 2010 – PUBG-2010 – Employee Mortality Table, without adjustment with generational projection using scale MP-2021.

10% of deaths are assumed to be duty-related and 90% are assumed to be non-duty related.

Healthy Retirees and Deferred Vested Members

Sex Distinct RP-2014 Healthy Annuitant Mortality Table with a 110% multiplier applied to males and a 105% multiplier applied to females, and generational projection using scale MP-2021.

Beneficiaries

Sex Distinct Public General 2010 Below-Median Income – PUBG-2010(B) – Contingent Survivor Mortality Table, with a 115% multiplier applied to males and a 112.5% multiplier applied to females without adjustment with generational projection using scale MP-2021.

Disabled Retirees

Sex Distinct RP-2014 Disabled Retiree Mortality Table with a 110% multiplier applied to males and a 120% multiplier applied to females, and generational projection using scale MP-2021.

14. Form of Benefit Payment and Timing

When active members retire or become disabled, they are assumed to choose a life annuity. Benefits are assumed to be paid at the beginning of the month.

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15. Rates of Retirement

Non-DHHA Rates of Retirement

Normal and Early Retirement Rates		
Age	Tiers 1 & 2	Tier 3
55	5.0%	0.0%
56	5.0%	0.0%
57	6.0%	0.0%
58	6.0%	0.0%
59	6.0%	0.0%
60	6.0%	10.0%
61	10.0%	7.5%
62	10.0%	7.5%
63	10.0%	10.0%
64	10.0%	15.0%
65	20.0%	20.0%
66	18.0%	25.0%
67	18.0%	25.0%
68	18.0%	20.0%
69	25.0%	20.0%
70	30.0%	20.0%
71	30.0%	20.0%
72	100.0%	100.0%

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**APPENDIX B – STATEMENT OF CURRENT ACTUARIAL
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Eligible for Rule of 75 or Rule of 85

Rule of 75/85 Retirement Rates			
Non-DHHA			
Age	Tier 1	Tiers 2 & 3	DHHA
NAR	27.0%	20.0%	20.0%
NAR+1	20.0%	15.0%	12.5%
NAR+2	15.0%	15.0%	12.5%
NAR+3	20.0%	20.0%	12.5%
NAR+4	20.0%	20.0%	12.5%
NAR+5	20.0%	20.0%	12.5%
NAR+6	27.0%	27.0%	20.0%
NAR+7	30.0%	30.0%	15.0%
NAR+8	30.0%	30.0%	15.0%
NAR+9	35.0%	35.0%	25.0%
NAR+10	40.0%	40.0%	25.0%
NAR+11	100.0%	100.0%	100.0%

Normal Age at Retirement (NAR) is defined as the first age at which a member is eligible to retirement under the Rule of 75 or Rule of 85.

All DHHA members are assumed to retire under “Rule of” retirement.

The retirement assumption is 100% after attainment of age 72 (age 75 for the DHHA group) or NAR+11.

Inactive members are assumed to retire at the age when they are first eligible.

16. Retiree Medical Election Percentages

The assumptions for members who elect retiree medical benefits are as follows:

Retirees	85%
Deferred Vested	25%
Beneficiaries	70%
Disabled	80%

17. Maximum Retiree Medical Benefit

The retiree medical benefit is limited to the monthly health premium.

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18. Changes Since Last Valuation

The Investment Rate of Return was decreased from 7.25% to 7.00%.

Based on the findings of the 2018-2022 experience study, several demographic assumptions were updated to better reflect the experience of the Plan. For details on the assumption changes, please see the Actuarial Experience Study for January 1, 2018 through December 31, 2022 issued in July 2023.

**DENVER EMPLOYEES RETIREMENT PLAN
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APPENDIX C – SUMMARY OF PLAN PROVISIONS

All actuarial calculations are based on our understanding of the statutes governing the Denver Employees Retirement Plan, as amended and restated under Denver Municipal Code Section 18-391 through 18-430.7, with provisions adopted by the Retirement Board, effective through December 31, 2022. The benefit and contribution provisions of the Plan are summarized briefly below. This summary does not attempt to cover all the detailed provisions of the Plan.

There have been no changes to the plan provisions since the prior valuation.

1. Effective Date

January 1, 1963

2. Plan Year

January 1 through December 31

3. Type of Plan

Qualified, 401(a) governmental defined benefit retirement plan; for GASB purposes it is multi-employer cost sharing plan.

4. Eligibility Requirements

Elected Officials, Appointed Officials, and Employees as defined in Denver Municipal Code Sections 18-402 and 18-406. The Plan is closed to new Denver Health and Hospital Authority employees.

5. Credited Service

Service measured in months from date of employment to date of retirement or prior Termination.

6. Compensation

Gross pay, compensation, and salary shall mean the amount of remuneration, including wages, salaries, other amounts received for personal services actually rendered in the course of employment with the employer, and other amounts actually included or that could be included in gross income of an due to an employee, including employees on disability leave as provided for in division 4 of article V of chapter 18 of the Denver Municipal Code, or otherwise, from the employer in the full amount as calculated before any reductions or deductions are made for any purpose, including reductions or deductions by reason of sections 125, 132(f)(4) or 457 of the Internal Revenue Code, but not including distributions made from a plan of the employer designated to be eligible under section 457.

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APPENDIX C – SUMMARY OF PLAN PROVISIONS

Employer provided fringe benefits receiving special tax benefits, such as premiums for group term life insurance (to the extent excludible from gross income), shall be excluded from the definition of compensation. The calendar year shall be the limitation year (determination period) for purposes of section 415 of the Internal Revenue Code.

7. Highest Average Salary (HAS)

Highest average salary during 36 (60 for members hired on or after July 1, 2011) consecutive calendar months of covered service.

8. Normal Retirement

Eligibility: For employees hired prior to July 1, 2011, attainment of age 65, or attainment of age 55 with age plus credited service equal to 75. For Employees hired July 1, 2011, or after, attainment of age 65 with five years of service, or attainment of age 60 with age plus credited service equal to 85.

Benefit: 1.5% (2.0% if hired before September 1, 2004) of HAS times credited service.

Normal Form: Single Life Annuity.

9. Early Retirement

Eligibility: Attainment of age 55 (60 for members hired on or after July 1, 2011) and completion of five years.

Benefit: Benefit accrued to date of retirement, reduced by 3% (6% for members hired on or after July 1, 2011) per year from age 65 to reflect commencement of benefit at an earlier age.

10. Temporary Early Retirement

Pending approval of a disability application, a retirement benefit is available to an active, vested member who is at least age 55 (60 for members hired on or after July 1, 2011). This benefit is designed to provide income to the member during the process of fulfilling the disability application requirements. There is a three-year limit on this retirement benefit.

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APPENDIX C – SUMMARY OF PLAN PROVISIONS

11. Deferred Retirement

Eligibility: Any vested employee who terminates service for any reason other than retirement, disability or death.

Benefit: Based on the formula in effect at the time of separation from service. Payment may commence any month after the member's 55th if hired prior to July 1, 2011, or after the member's 60th birthday for members hired on or after July 1, 2011.

12. Service Connected Disability

Eligibility: Any employee who becomes totally and permanently disabled as defined in Denver Municipal Code Section 18-408(d), which arises out of and in the course of the member's employment with the employer.

Benefit: Based on the greater of 20 years of service or actual service plus 10 years. Total credited service cannot exceed the credited service the member would have earned as of age 65.

Normal Form: Single Life Annuity.

13. Non-Service Connected Disability

Eligibility: Any vested employee who becomes totally and permanently disabled as defined in Denver Municipal Code Section 18-408(e) which does not occur as a result of a service connected disability.

Benefit: The higher of 75% of the amount calculated for a service-connected disability or the amount calculated for an early retirement.

Normal Form: Single Life Annuity.

14. Death in the Life of Duty

The active member's surviving spouse is awarded the retirement benefit the member would have been entitled at their normal retirement date based on the higher of 15 years of service or actual credited service plus five years. Total credited service cannot exceed the credited service the member would have earned at age 65. If there is no surviving spouse but the member has children under age 21, then the benefit shall be paid until the youngest child becomes age 21. If there is no surviving spouse and no children under age 21, then the benefit shall be paid to a designated beneficiary.

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15. Other Pre-Retirement Death

The active member's surviving spouse is awarded 75% of the benefit that would have been entitled had the death been service connected. If an active member who has attained the age of fifty five (55) or the age of sixty (60) if hired on or after July 1, 2011 dies prior to the actual retirement date, the member shall be deemed to have retired on the first day of the month following the month in which death occurs and the surviving spouse will receive an annuity as if the member had elected the 100% joint and survivor option if this will result in a greater benefit to the spouse than the above provision.

16. Post-Retirement Death

- a. For Normal Retirement (with at least five years of service), Disability Retirement (after age 65), and for Temporary Early Retirement (pending approval of disability) the lump-sum death benefit is \$5,000.
- b. For Disability Retirement before age 65, the death benefit is 150% of the member's annualized average monthly salary, limited to \$50,000. This benefit reduces to \$5,000 upon the disabled member reaching age 65.
- c. If hired prior to July 1, 2011, for Early Retirement, the lump-sum at age:

Age	Lump Sum
64	\$4,750
63	\$4,500
62	\$4,250
61	\$4,000
60	\$3,750
59	\$3,500
58	\$3,250
57	\$3,000
56	\$2,750
55	\$2,500

- d. If hired on or after July 1, 2011, for Early Retirement, the lump-sum at age:

Age	Lump Sum
64	\$4,500
63	\$4,000
62	\$3,500
61	\$3,000
60	\$2,500

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- e. In lieu of a single lump-sum payment that would be paid upon death, a retired member may elect to receive the appropriate death benefit limited to five thousand dollars (\$5,000) in the form of periodic payments.

17. Optional Forms

Joint and Survivor Options – Any employee retiring under the normal retirement provision may elect a joint and survivor benefit. The member's benefit is actuarially reduced based on their election: 100%, 75% or 50%. Once the benefit commences, this election cannot be changed. If the spouse or designated beneficiary predeceases the member, the benefit paid to the member shall be increased to the full single straight life annuity as if no joint and survivor benefit had been selected.

18. Deferred Retirement Option Plan

- a. DROP – From January 1, 2001, through April 30, 2003, in lieu of immediate termination of employment and receipt of a normal retirement benefit, eligible members were permitted to continue employment for four years and have their normal retirement benefit paid into the deferred retirement option plan (DROP) account, after which time the participant either terminated employment or continued to be employed and resumed regular membership with the retirement plan.
- b. DROP II – From May 1, 2003, through September 1, 2003, in lieu of immediate termination of employment and receipt of a normal retirement benefit, eligible members were permitted to continue employment for five years and have their normal retirement benefit paid into the DROP II account after which time all participants terminated employment.

19. Other Ancillary Benefits

Social Security Make Up Benefit – For members hired before July 1, 2011, and retiring on or after January 1, 1996, an additional retirement benefit equals to the applicable percentage (per Denver Municipal Code Section 18-409(i)) of the member's estimated primary Social Security benefit, multiplied by credited service with the City/DHHA during which the contributions were made to Social Security (up to a maximum of 35 years of credited service), divided by 35. This additional benefit is payable beginning on the first day of the month after the member's 62 birthday or the member's retirement date, whichever is later, but will not be paid before retirement benefits have begun from the Plan. Members retiring under a disability form of retirement are not eligible for this benefit.

20. Medical Benefits

Retiree Medical Plan Benefits – Participants and their surviving spouses or dependents receiving retirement benefits are eligible to elect to receive plan-provided retiree medical coverage and a plan-provided subsidy (benefit) to help provide for the payment of health insurance premiums. The Plan contributes \$6.25 per month for each year of service for members who are Medicare eligible. The Plan contributes \$12.50 per month for each year of service for members not eligible for Medicare.

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In the event of the election of a Joint and Survivor option, the benefit is calculated based on the age of the member. If the member predeceases the joint and survivor beneficiary, then the full benefit is transferred to the surviving spouse or dependent regardless of the joint and survivor election percentage.

The monthly benefit is limited to the monthly premium amount for the coverage elected. If a member dies and leaves a beneficiary who is not a spouse or dependent, that beneficiary can elect to participate in the group health plan but must pay the full cost. No plan contribution can be made for non-spouse or non-dependent beneficiaries.

21. Refunds

Eligibility: All members leaving covered employment with less than five years of service are eligible. Vested members (those with five or more years of service) may not withdraw their accumulated contributions plus interest in lieu of the deferred benefits otherwise due.

Benefit: Members who withdraw receive a lump-sum payment of his/her employee contributions, plus the interest credited on these contributions. Interest is currently credited at 1.00%.

22. Member Contributions

8.45% of compensation, effective January 1, 2023 (decreased from 8.85% effective January 1, 2022).

23. Employer Contributions

17.95% of compensation, effective January 1, 2023 for each member (increased from 16.75% effective January 1, 2022).

24. Cost-of-Living Increases

Given on an ad hoc basis. There have been no cost of living increases since 2002.

25. Changes Since Prior Valuation

Member Contribution Rate was decreased from 8.85% to 8.45%.

Employer Contribution Rate was increased from 16.75% to 17.95%.

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APPENDIX D – 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 that 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.

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.

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APPENDIX D – GLOSSARY

9. Amortization Payment

The portion of the pension plan contribution, which 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 Liability.

12. Normal Cost

That portion of the actuarial present value of pension plan benefits and expenses that 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 Actuarial Value of Assets.



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