



City of Cincinnati Retirement System Board of Trustees Meeting

Agenda

July 14, 2022 / 2:00 P.M.
City Hall, Council Chambers and via Zoom

Members

Tom Gamel	John Juech
Bill Moller	Kathy Rahtz
Don Stiens	Erica Winstead
Mark Menkhaus Jr.	Jeff Cramerding

Administration

Mike Barnhill
Ann Schooley

Call to Order

Approval of Minutes

- ✚ Meeting Minutes – June 9, 2022

Report from Benefits Committee

Informational - Executive Director's Report

- ✚ Market Update (Marquette)
- ✚ NCPERS Chief Officer Summit
- ✚ Election Update
- ✚ Horan Consulting Update
- ✚ CRS Staffing Update
- ✚ Counsel Update

Unfinished Business

- ✚ Outstanding Opinions (Board Approved Motion, October 3, 2019)
 - Item 1. Explain why City's changes to retiree healthcare are permitted under the CSA without Court approval.
 - Item 2. Explain why the Board cannot retain outside counsel on matters which the Solicitor's Office will not give counsel.
- ✚ 2021 Actuarial Valuations (Cheiron)

New Business

- ✚ 2022 Fiduciary Insurance
- ✚ CY2021 Annual Report

Adjournment

Next Meeting: Thursday, August 4, 2022, 2:00 P.M. City Hall Council Chambers and via Zoom



**City of Cincinnati Retirement System
Board of Trustees Meeting
Minutes
June 9, 2022/ 2:00 P.M.
City Hall – Council Chambers and remote**

Board Members Present

Bill Moller, Chair
Tom Gamel
Mark Menkhaus, Jr.
Kathy Rahtz
Don Stiens
John Juech
Jeff Cramerding

Administration

Mike Barnhill
Ann Schooley

CALL TO ORDER

Chair Moller called the meeting to order at 2:11 p.m. and a roll call of attendance was taken. Trustees Moller, Menkhaus, Gamel, Rahtz, Stiens, Juech, and Cramerding were present. Trustee Winstead was absent.

NEW BUSINESS

2021 Actuarial Valuations

Trustee Moller introduced the CRS actuarial firm, Cheiron, and noted that the draft 2021 valuations had not been circulated to the Board yet. The presentation slides summarizing the valuations are in the Board packet.

Kevin Woodrich and Janet Cranna from Cheiron presented the 2021 pension actuarial results. The funding for the pension plan improved from 70.5% to 71.6% (actuarial value of assets) or 78.2% (market value of assets). The population levels were relatively unchanged. Net cashflow continues to be negative, more than -7.5%, which is among the lowest of peer systems. City contributions continue to be well below both the actuarial determined contribution, and the “treadwater rate” (the amount of contribution required to keep the funding level from declining further). Mr. Woodrich explained that investment gains and loss are smoothed over a 5 year period. Ms. Cranna explained the actuarial valuation process. She reported that market investment returns for 2021 were 18.06%, but using 5yr smoothing, the actuarial return is reduced to 10.55%. The investment gains resulted in the actuarial determined employer contribution rate being reduced from 33.46% to 32.9%. Of this, 12.1% represents the normal cost rate, and 1.34% represents the ERIP rate.¹

¹ *Secretary note:* Since the actuary is including the ERIP rate calculation in its ratemaking process, and the

The unfunded liability decreased from \$746.6mm to \$728.3mm. Trustee Moller observed that the City's contributions are approximately half of the actuarially determined contribution rate. Ms. Cranna said that as a result, Cheiron expects the system's unfunded liability to increase going forward. Trustee Menkhaus requested a comparison of our ADC to peer ADCs. Ms. Cranna responded that it is difficult to make an apple to apples comparison. Mr. Barnhill added that NCPERS and Boston College collect public pension data on unfunded liabilities, and would bring back peer information to the Board. Mr. Woodrich presented a series of charts showing the impact of the 2021 investment returns on the projections for the system, as well as a projection showing the impact of a 2022 loss of 7.5%. If the 2022 return is -7.5%, and all assumptions prove correct, it would take over 100 years for the system to reach full funding. If the 2022 return is -15%, the projection shows that the system becomes insolvent in 2045. The point of these charts is to illustrate the large range of the impact of investment volatility on the system.

Ms. Cranna advised the Board that ASOP 4 has been revised and will go into effect for the CY2023 actuarial valuations. She summarized the changes to the actuarial rule, including calculation of the unfunded liability with a risk-reduced rate of return assumption (low-default risk obligation measure).

Trustee Stiens inquired whether the actuaries should use the return assumption estimated by the system's investment consultant, Marquette. Mr. Woodrich indicated that the Marquette return assumption is more of a short-term estimate, as opposed to the actuarial return assumption. Mr. Woodrich said it could provide results with a longer-term assumption provided by Marquette. Mr. Barnhill observed that the next actuarial experience study will take up the issue of the investment return assumption.

Gaelle Gravot and Margaret Tempkin from Cheiron presented the 2021 healthcare (Other Post-Employment Benefits) actuarial results. Ms. Gravot reported on changes to the participation rate assumptions—the actuaries expect that retiree participation in the health plans will be higher than expected going forward. The funding of the health plan improved from 126% to 145% (or 158% on a market value of assets basis). Ms. Gravot observed that 2020 and 2021 were unusual in that there were pandemic-related health claims, but these were offset by substantial deferral of care. Ms. Tempkin reported that the value of healthcare assets grew by \$62mm. Normal cost for the plan (the amount to collect to pay for benefits accruing during the year) is \$2.6mm. Note, the system does not collect this because the plan is overfunded. The plan had a net actuarial gain of \$36mm attributed primarily to health care claims and projected claim trends being less than expected. Ms. Tempkin presented projections slides showing that the health plan is expected to remain overfunded under various scenarios, including a -10% loss in 2022. Mr. Barnhill requested a chart showing the projection for time periods after 2045. Ms. Tempkin indicated that they will next turn to rate-setting for the 2023 year; this is the process for computing the rate for purposes of determining the retiree premium share amounts.

Trustee Moller stated that the Board would take up approval of the 2021 valuations at the next Board meeting.

APPROVAL OF MINUTES

Approval of the minutes of the Board meeting of May 5, 2022, was moved by Trustee Rahtz and seconded

City is paying that amount, the current rate of employer contribution is therefore $16.25\% + 1.34\% = 17.59\%$. We are expecting the next ERIP payment on 7/24/2022. With the passage of the amendment to the City's stabilization fund ordinance, that rate may increase further in the future. I will keep the Board posted on this.

by Trustee Gamel. The minutes were approved by unanimous roll call vote.

REPORT FROM PERFORMANCE EVALUATION COMMITTEE

Trustee Rahtz summarized the Performance Evaluation Committee meeting. The Committee reviewed progress on the 2022 Board objectives. The Committee approved the addition of a new objective related to security and risk review. The Committee also discussed CRS Rule 22 and its application to the various CRS contracts. The committee concluded that the contract list presented by Director Barnhill needs additional work (it needs to be narrowed to only those specified contractors “retained” by the Board).

The Board approved the Committee’s adoption of a new 2022 Board objective related to security and risk review by unanimous roll call vote.

REPORT FROM ELECTIONS COMMITTEE

Trustee Juech summarized the Elections Committee meeting. The Committee declared Kathy Rahtz to be the winner of the retiree seat; she was the only candidate to file.

With respect to the active seat, no candidates filed. Subsequent to the closing of nominations, various active employees expressed interest in running for this seat. The Committee voted to re-start the election process and directed CRS staff to adopt a new elections timeline for the active seat to start as soon as practicable.

The Board approved the Committee’s actions by unanimous roll call vote.

Informational – Executive Director’s Report

Mr. Barnhill provided the following report:

- Market Update. YTD returns are -7%. Equity markets are volatile.
- Passage of Emergency Executive Session Ordinance. The City Council passed an ordinance authorizing the CRS Board to meet in executive session to consider matters that involve confidential information, including health information. Mr. Barnhill expressed thanks to Trustee Cramerding and the Law Department for moving the ordinance so quickly.
- HIPAA Update. Following a disclosure of protected health information by the Risk Management division, CRS has participated in a city-wide effort to ensure compliance with HIPAA confidentiality and security mandates. This involved all staff participating in HIPAA training as well as completion of a lengthy questionnaire. CRS will continue to work on improving confidentiality and security for all of its confidential information.
- Stale-Dated Checks. CRS will start posting a list of stale-dated checks on its website.
- NCPERS Chief Officer Summit. Mr. Barnhill is attending an NCPERS meeting of public pension chief executive and chief investment officers. He will report back at the next meeting.
- CRS Reporting Requirements. Mr. Barnhill proposed a consolidated report format for the Board’s consideration. Trustee Moller observed that some of the CRS reporting requirements have undefined terms and requested information on best practices might be in terms of system reporting.
- 457 Plan Auto-Enrollment Legislation. The Ohio legislature passed a statute last year that requires automatic enrollment of state public employees in a 457 plan.

UNFINISHED BUSINESS

Outstanding Opinions:

Board Approved Motion, October 3, 2019

- Item 1. Explain why City's changes to retiree healthcare are permitted under the CSA without Court approval.
- Item 2. Explain why the Board cannot retain outside counsel on matters which the Solicitor's Office will not give counsel.

A. Schooley reported there is no update.

NEW BUSINESS

CRS Budget Update Items. Mr. Barnhill reported on a number of budget related items discussed in a memo in the Board's packet.

Position Upgrades. Mr. Barnhill is seeking to upgrade four positions that would have a budget impact of \$14k in 2022. The upgrade of these positions would not require a budget amendment for 2022 because of current vacancies. It will likely have an impact on the budget in 2023. The purpose of the upgrades to improve retention as well as recognize that the upgrades are warranted based on the functions the positions are responsible for. The Board discussed whether HR requires an analysis to be performed prior to a position upgrade. Trustee Juech observed that retention issues are widespread. Trustee Rahtz asked about the ongoing costs. Mr. Barnhill responded that ongoing increased costs would be \$28k, plus associated benefit costs. Trustee Gamel expressed concern about upgrading positions for the purposes of retention. Trustee Moller made a motion to approve the position upgrades contingent on an HR analysis of the positions at issue. The HR analysis would not be a classification study, but an analysis of the specific position. The motion was seconded by Trustee Rahtz and approved by the Board unanimously by roll call vote.

Extending Temporary Staff by 8 weeks. Since there is no budget impact here, the Board treated this as an information item that did not require action.

Horan Healthcare Consulting Proposal. The Risk Management Division has offered CRS access to its health care consulting contract with Horan. Mr. Barnhill summarized the consulting proposal submitted by Horan with a cost of \$51,650. The primary purpose of the contract is to evaluate stop loss insurance for the pre-65 health plan. Additional areas of consulting include (a) a disruption analysis from a member experience perspective when they transition from the active plan to the pre-65 plan to the medicare advantage plan, (b) other potential insurance options, including long term care, and (c) access to the open enrollment portal used by the City for active employees. This item would be an increase to the Board approved budget.

Trustee Rahtz moved, and Trustee Gamel seconded, to increase the professional services budget by \$51,650 to retain Horan. Trustee Gamel asked about the value add to the contract. Mr. Barnhill responded that stop loss insurance should be considered for the pre-65 health plan because the small pool of participants exposes the 115 Health Trust to claim spikes. The other items are also value add, and are on the list because these issues have been raised as concerns by various stakeholders.

The Board approved the motion by unanimous roll call vote (Trustee Juech left the meeting and did not vote).

Legal Counsel. Mr. Barnhill reported that he has had conversations with the Chief Solicitor about dedicating resources in the form of part or full time general counsel for CRS, and whether the Law Dept. would be willing to retain outside fiduciary counsel for the Board. The Chief Solicitor responded that the Law Dept is willing to consider both, contingent on CRS paying for the services. Mr. Barnhill sought direction from the Board as to whether to continue the discussions with the understanding that CRS would have to pay for these services. The Board discussed details regarding whether the general counsel would be full time or part time, and how it should be paid for. Trustee Moller suggested that the discussions be continued, and that Mr. Barnhill return with further details including costs.

Adjournment

Following a motion to adjourn by Trustee Gamel and seconded by Trustee Rahtz, the Board approved the motion by unanimous roll call vote. The meeting adjourned at 4:32 P.M.

Meeting video link: <https://archive.org/details/crs-board-of-trustees-6-9-22>

Next Meeting: July 14, 2022 at 2:00 p.m.

Secretary



Cincinnati Retirement System

City of Cincinnati
Retirement System
Executive Summary

May 31, 2022

Summary of Cash Flows

	Last Month
Beginning Market Value	\$2,364,575,313
Net Cash Flow	-\$13,100,280
Net Investment Change	\$14,373,507
Ending Market Value	\$2,365,848,541

Market Value

	Market Value (\$)	% of Portfolio	Policy %	Policy Difference (\$)
Total Fund Composite	2,365,848,541	100.0	100.0	0
Fixed Income Composite	328,071,842	13.9	14.0	-3,146,954
Private Debt Composite	16,628,019	0.7	3.0	-54,347,437
U.S. Equity Composite	693,974,516	29.3	30.5	-27,609,289
Non-U.S. Equity Composite	454,957,333	19.2	20.0	-18,212,375
Risk Parity Composite	54,732,556	2.3	2.5	-4,413,658
Volatility Risk Premium Composite	57,631,596	2.4	2.5	-1,514,617
Real Estate Composite	240,311,595	10.2	7.5	62,872,955
Infrastructure Composite	258,844,619	10.9	10.0	22,259,765
Private Equity Composite	253,692,153	10.7	10.0	17,107,299

Performance

	1 Mo	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	Inception	Inception Date
Total Fund Composite	0.6%	-2.6%	-6.3%	0.0%	10.3%	7.9%	8.8%	8.9%	May-85
Target Benchmark	0.3%	-3.5%	-7.0%	-1.7%	10.3%	8.3%	9.0%	--	May-85
Fixed Income Composite	0.1%	-5.7%	-8.6%	-7.7%	1.7%	2.4%	3.0%	5.2%	Nov-95
Bloomberg US Aggregate TR	0.6%	-5.9%	-8.9%	-8.2%	0.0%	1.2%	1.7%	4.5%	Nov-95
Private Debt Composite	0.0%	-0.2%	-0.2%	12.9%	--	--	--	-0.3%	Sep-20
Bloomberg US Aggregate TR	0.6%	-5.9%	-8.9%	-8.2%	0.0%	1.2%	1.7%	-6.0%	Sep-20
U.S. Equity Composite	0.5%	-4.8%	-11.1%	-2.8%	15.0%	11.2%	12.9%	9.5%	Feb-89
Russell 3000	-0.1%	-6.1%	-13.9%	-3.7%	15.6%	12.7%	14.0%	10.6%	Feb-89
Non-U.S. Equity Composite	1.7%	-5.1%	-10.2%	-11.6%	6.3%	3.3%	6.5%	5.8%	May-93
MSCI ACWI ex USA	0.7%	-5.5%	-10.7%	-12.4%	6.5%	4.4%	6.4%	--	May-93
Risk Parity Composite	-0.5%	-5.7%	-8.6%	-4.4%	5.8%	5.5%	--	4.0%	Jul-12
60% Wilshire 5000/40% BarCap Aggregate	0.2%	-5.9%	-11.7%	-4.9%	9.7%	8.5%	9.3%	9.0%	Jul-12
Volatility Risk Premium Composite	0.5%	-2.6%	--	--	--	--	--	-3.9%	Jan-22
CBOE Put Write Index	-1.8%	-2.1%	-4.3%	6.6%	9.4%	5.9%	7.4%	-1.9%	Jan-22
Real Estate Composite	1.0%	7.1%	8.3%	29.1%	12.3%	10.2%	11.2%	6.7%	Aug-07
NFI-ODCE	0.0%	2.3%	7.2%	24.3%	10.1%	8.7%	9.8%	5.6%	Aug-07
NPI	0.0%	1.7%	5.3%	19.0%	9.2%	8.3%	9.4%	7.0%	Aug-07
Infrastructure Composite	0.0%	2.6%	1.8%	9.9%	10.1%	7.4%	7.2%	8.2%	Aug-08
3 Month T-Bill +4%	0.4%	1.1%	1.8%	4.1%	4.6%	5.1%	4.6%	4.5%	Aug-08
Private Equity Composite	0.0%	0.4%	0.4%	21.3%	20.4%	18.4%	15.0%	9.1%	Jul-93
Cambridge Associates All PE	0.0%	0.0%	0.0%	15.2%	25.7%	21.9%	17.7%	16.6%	Jul-93

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Cincinnati Retirement System

**Actuarial Valuation
as of December 31, 2021**

Produced by Cheiron

June 2022

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June 7, 2022

Board of Trustees
Cincinnati Retirement System
801 Plum Street, Suite 328
Cincinnati, Ohio 45202

**Re: *Cincinnati Retirement System
Actuarial Valuation as of December 31, 2021***

Dear Members of the Board:

At your request, we have conducted our annual actuarial valuation of the Cincinnati Retirement System (CRS or System) as of December 31, 2021. The results of the valuation are contained in this report. The purpose of this report is to present the annual actuarial valuation of the Cincinnati Retirement System. This report is for the use of the Cincinnati Retirement System Board of Trustees and its auditors in preparing financial reports in accordance with applicable law and accounting requirements.

The results of this report are only applicable to the Fiscal Year Ending June 30, 2023, and rely on future plan experience conforming to the underlying assumptions. To the extent that actual plan experience deviates from the underlying assumptions, the results would vary accordingly.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the assumptions, changes in assumptions, and changes in plan provisions or applicable law.

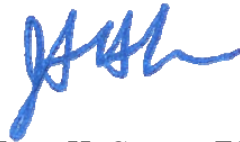
In preparing our report, we relied on information (some oral and some written) supplied by the Cincinnati Retirement System. This information includes, but is not limited to, plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics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

This report was prepared exclusively for the Cincinnati Retirement System for the purpose described herein. Other users of this report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to any such other users.

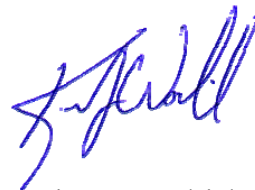
Board of Trustees
Cincinnati Retirement System
June 7, 2022
Page 2

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 opinions 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



Janet H. Cranna, FSA, FCA, MAAA, EA
Principal Consulting Actuary



Kevin J. Woodrich, FSA, MAAA, EA
Principal Consulting Actuary

cc: Bob Murray, ASA, EA

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

SECTION I – BOARD SUMMARY

Cheiron has performed the actuarial valuation of the Cincinnati Retirement System as of December 31, 2021. The purpose of this report is to disclose the following as of the valuation date:

- 1) The financial condition of the System;
- 2) Past trends in the financial progress of the System;
- 3) Compare the City’s current contribution rate of 16.25% of payroll to the Actuarially Determined Contribution (ADC) rate based on this valuation for Fiscal Year Ending June 30, 2023;
- 4) Identify and assess the risks to the System; and
- 5) Provide specific information and documentation required for the System’s financial reporting.

An actuarial valuation establishes and analyzes the System’s assets and liabilities on a consistent basis and traces the progress of both from one year to the next. It includes measurement of the System’s investment performance as well as an analysis of actuarial liability gains and losses.

This report does not include calculations under GASB Statements Nos. 67 and 68 which are provided in separate reports.

Results shown in this report for years prior to December 31, 2018 were provided by the prior actuary.

Valuation Basis

The December 31, 2021 actuarial valuation results were based on the same actuarial methods and assumptions as used in the December 31, 2020 actuarial valuation. The demographic assumptions were based on the January 1, 2012 to December 31, 2016 Experience Study prepared by the prior actuary, which were subsequently approved by the Board of Trustees. An investment return assumption of 7.50% was used as prescribed by item 29 of the Collaborative Settlement Agreement (CSA) signed October 5, 2015. Cheiron has reviewed the demographic and economic assumptions. While we consider these assumptions to be generally reasonable, we have not yet performed our own actuarial experience study.

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

SECTION I – BOARD SUMMARY

Key Results

The following Table I-1 summarizes the key results of the valuation with respect to the System’s membership, assets and liabilities, and contributions. The results are presented and compared for both the current and prior year.

Table I-1 Key Results			
Valuation as of:	December 31, 2020	December 31, 2021	% Change
<u>Membership Counts</u>			
a) Full Time Actives	2,631 ¹	2,580	(1.9%)
b) Part Time Actives ²	1,078	1,238	14.8%
c) Terminated Vesteds	222	247	11.3%
d) Members in Pay Status ³	<u>4,459</u>	<u>4,390</u>	<u>(1.5%)</u>
e) Total	8,390	8,455	0.8%
f) Annual Salaries of Full Time Actives	\$ 187,328,061	\$ 189,528,659	1.2%
g) Annual Salaries of DROP Members ³	\$ 18,111,116	\$ 14,694,718	(18.9%)
h) Annual Retirement Allowances	\$ 183,826,082	\$ 186,762,322	1.6%
<u>Assets and Liabilities</u>			
i) Present Value of Future Benefits	\$ 2,744,006,755	\$ 2,770,203,731	1.0%
j) Actuarial Liability	\$ 2,533,246,815	\$ 2,560,258,522	1.1%
k) Actuarial Value of Assets (AVA)	\$ 1,786,649,816	\$ 1,831,954,857	2.5%
l) Unfunded Actuarial Liability (UAL) [(j) - (k)]	\$ 746,596,999	\$ 728,303,665	(2.5%)
m) Funded Ratio on AVA basis [(k) ÷ (j)]	70.5%	71.6%	1.1%
n) Market Value of Assets (MVA)	\$ 1,820,915,000	\$ 2,001,579,000	9.9%
o) Funded Ratio on MVA basis [(j) ÷ (n)]	71.9%	78.2%	6.3%
<u>City's Actuarially Determined Contribution (ADC)</u>			
	<u>FYE June 30, 2022</u>	<u>FYE June 30, 2023</u>	
p) Gross Normal Cost Rate	12.15%	12.10%	(0.05%)
q) Plan Changes - ERIP ⁴	1.34%	1.34%	0.00%
r) UAL Amortization Rate (excluding ERIP)	28.17%	27.66%	(0.51%)
s) Administrative Expenses	0.80%	0.80%	0.00%
t) Expected Employee Contributions	<u>(9.00%)</u>	<u>(9.00%)</u>	0.00%
u) City's ADC as % of Payroll	33.46%	32.90%	(0.56%)
[(p) + (q) + (r) + (s) + (t)]			

¹ Excludes 123 participants who elected to participate in the ERIP and have Effective Dates of Retirement in 2021. For valuation purposes, these participants were included as Members in Pay Status.

² As of December 31, 2021, 372 of the 1,238 Part Time actives had reported last pay periods before December 2021.

³ Includes 184 and 234 members as of December 31, 2021 and 2020 respectively currently participating in DROP.

⁴ Starting January 1, 2022, City intends on paying ERIP with 15 level annual payments of \$2.8 million each January 1.

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

SECTION I – BOARD SUMMARY

Below we highlight significant results of this valuation.

- The return on the Market Value of Assets was 18.06% for the year ended December 31, 2021 which was higher than the assumed rate of return of 7.50%. In dollars, the total actuarial investment gain (the difference between actual and expected returns on a market value basis) was \$185.1 million.
- For various purposes, the System uses an Actuarial Value of Assets which smooths annual actuarial investment gains and losses over a period of five years. This means the \$185.1 investment gain described above will be phased in at a rate of approximately \$37.0 million per year over the next five years. The smoothed Actuarial Value of Assets is \$1,832.0 million (91.5% of the market value of \$2,001.6 million). The \$169.6 million difference between the Market Value of Assets and the Actuarial Value of Assets represents a net deferred investment gain that will be recognized in the future. This will help mitigate any unfavorable investment returns.
- The return on the Actuarial Value of Assets was 10.55%, resulting in an actuarial investment gain of \$52.3 million.
- The Actuarial Liability increased from \$2,533.2 million as of December 31, 2020 to \$2,560.3 million as of December 31, 2021.
- The funded ratio based on the Actuarial Value of Assets increased from 70.5% to 71.6% and the Unfunded Actuarial Liability (UAL) decreased from \$746.6 million to \$728.3 million. Based on the Market Value of Assets, the funded ratio increased from 71.9% to 78.2%.
- In accordance with the Collaborative Settlement Agreement, the City contributes 16.25% of payroll on behalf of full-time active members and members participating in the Deferred Retirement Option Program (DROP). The City contributes 3% of payroll for part-time active members. Based on these fixed contribution rates, the UAL is projected to be paid off in 31 years if assets achieve the assumed rate of return of 7.50%, including Fiscal Year ending 2022. Detailed projections of the System’s funded status and contributions are presented later in this section.
- The System also calculates an Actuarially Determined Contribution (ADC) rate, which pays off the UAL in 30 years in equal annual installments. It was calculated to be 32.90% of payroll for Fiscal Year ending June 30, 2023. Despite the fixed contribution rate of 16.25% being less than the Actuarial Determined Contribution rate, the UAL is projected to be paid off over the same 30 year period. This occurs because the ADC is a snapshot measurement which does not take into account expected future increases in total payroll over the next 30 years, the continued recognition of the net deferred investment gain nor the expected decrease in the projected value of benefits (i.e. normal cost) accrued by actives in the future due to new entrants earning a benefit under Group G.
- During the year, there was a total actuarial gain of \$39.4 million, consisting of an actuarial asset gain of \$52.3 million, and a liability experience loss of \$12.9 million (0.5% of liabilities).

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

SECTION I – BOARD SUMMARY

Recent Trends

Although most of the attention given to the valuation reflects the most recently computed unfunded actuarial liability, funded ratio, and contribution amounts, each valuation is merely a snapshot of the long-term progress of a pension fund. It is important to take a step back from the current year results and view them in the context of the System’s recent history as well as trends expected into the future. Below, we present a series of graphs that display historical trends for key factors in the valuations of the last 12 years.

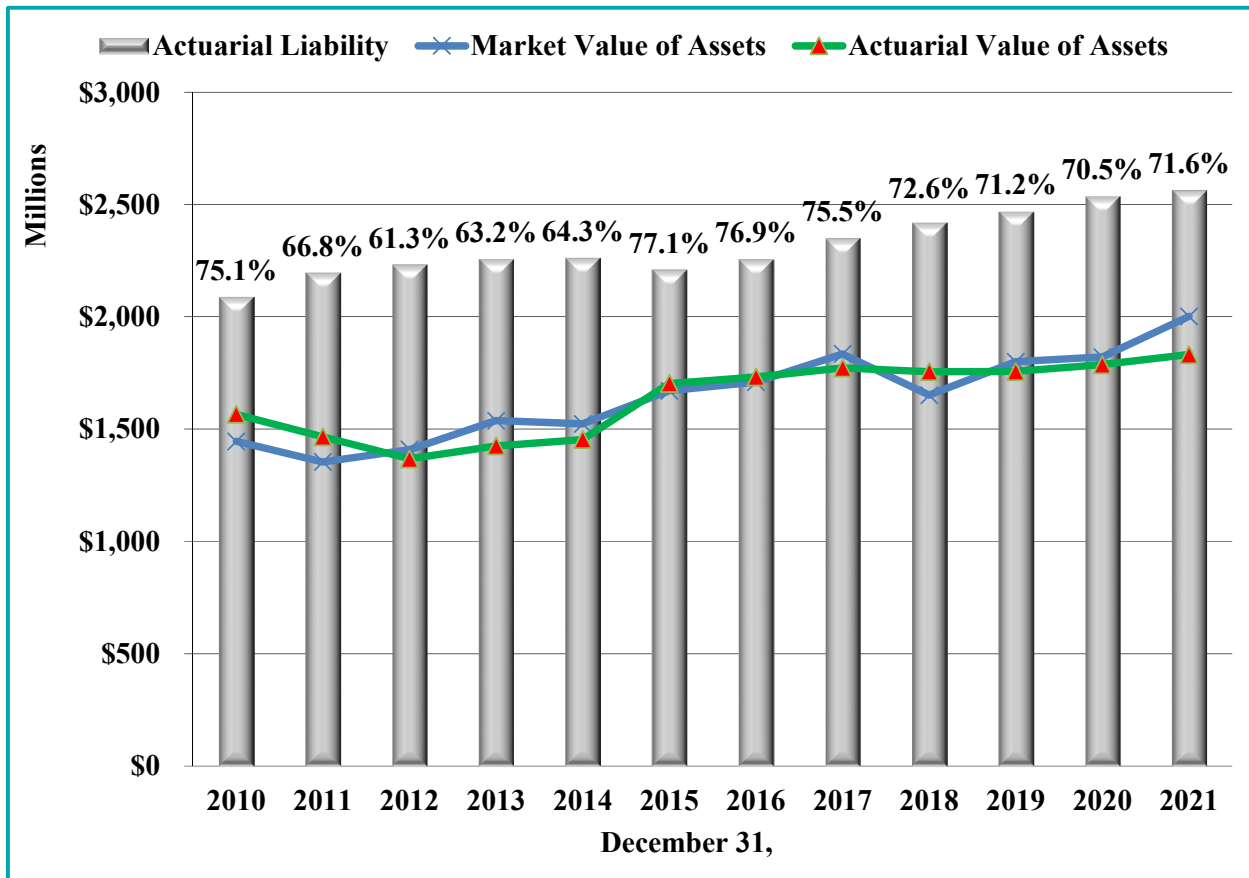
**CINCINNATI RETIREMENT SYSTEM
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SECTION I – BOARD SUMMARY

Assets and Liabilities

The gray bars represent the Actuarial Liability (AL). The blue line is the Market Value of Assets (MVA) and the green line is the Actuarial Value of Assets (AVA). The System’s funded ratio (ratio of actuarial assets to actuarial liability) is shown along the top of the bars.

The sharp increase in the funded ratio from December 31, 2014 to December 31, 2015 was due primarily to \$220 million in additional monies transferred from the healthcare assets to the pension assets as a result of the Collaborative Settlement Agreement. Until this most recent year, the funded ratio had been decreasing since December 31, 2015 due to the System’s experience as well as the City not making contributions sufficient to pay off the UAL. However, this year’s strong investment performance resulted in an increase in the funded ratio of the System.



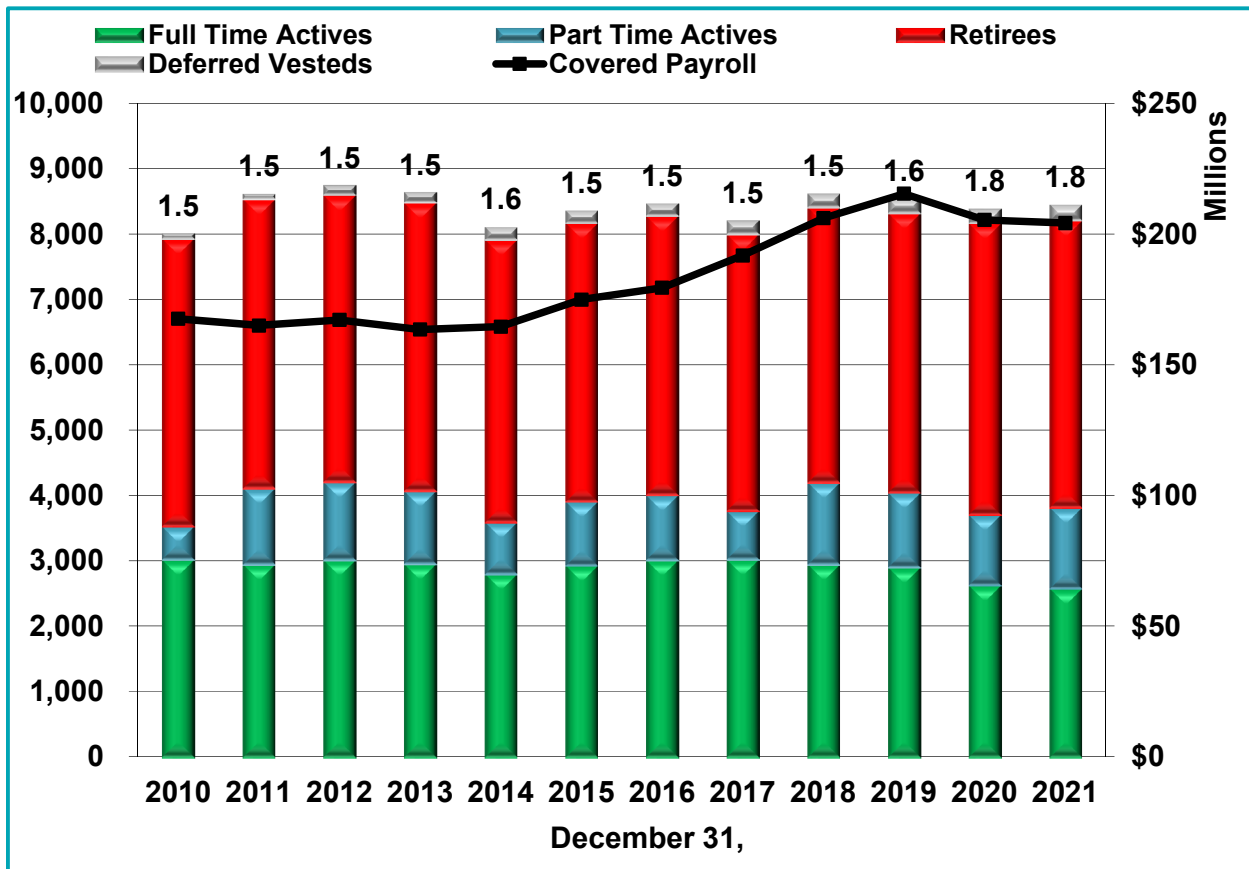
**CINCINNATI RETIREMENT SYSTEM
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SECTION I – BOARD SUMMARY

Membership Trends

The graph below shows the membership counts of the System for the last eleven valuations. The numbers which appear at the top of each bar (the “support ratio”) represent the ratio of the number of inactive members, including DROP members, to full time active contributing members at each valuation date, and provide a measure of the maturity of the System. The inactive-to-active ratio has remained stable over the period. As more of the liability moves from actives to inactive, the System matures and is subject to higher risk exposure from market volatility. This is because the impact of investment losses will have to be offset by future contributions. These contributions, in turn, will only be made on behalf of proportionately fewer active members compared to the total number of members.

The black line represents the payroll for active members over the period, and it corresponds with the scale on the right. The payroll for the 1,238 part-time actives of \$13.5 million was not included since the City does not contribute the full 16.25% of payroll for part-time actives.



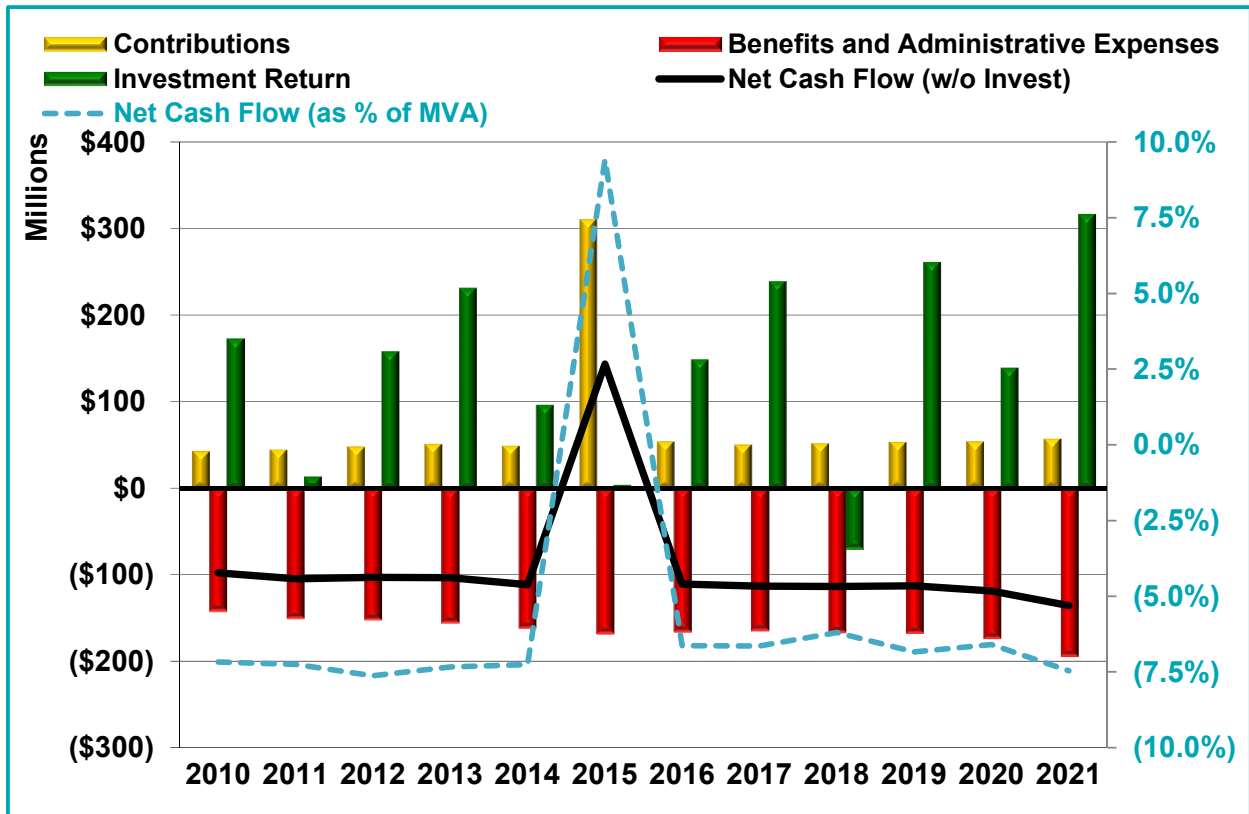
**CINCINNATI RETIREMENT SYSTEM
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SECTION I – BOARD SUMMARY

Cash Flows

The following graph shows the System’s net cash flow (contributions less benefit payments and expenses) at the end of each plan year. For the entire period shown, the net cash flow excluding investments has been negative except for 2015 when \$220 million was transferred into the System pursuant to the Collaborative Settlement Agreement. This illustrates that contributions have not been sufficient to cover benefits and expenses in any years over the past decade. A major implication of negative cash flow is that the difference each year must be met first from cash generated by investments and then paid out of the principal assets, representing additional risk for the System if investments need to be sold in a down market to cover benefit payments.

The dotted line shows the net cash flow as a percent of the market assets and goes with the axis on the right. For the 11 year period shown (ignoring 2015) the net cash flow as a percent of assets has ranged between -8% and -6%. This indicates that a plan is expected to defund with an increased risk of insolvency if the contributions do not catch up to cover a higher portion of the benefit payments and expenses.



CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021

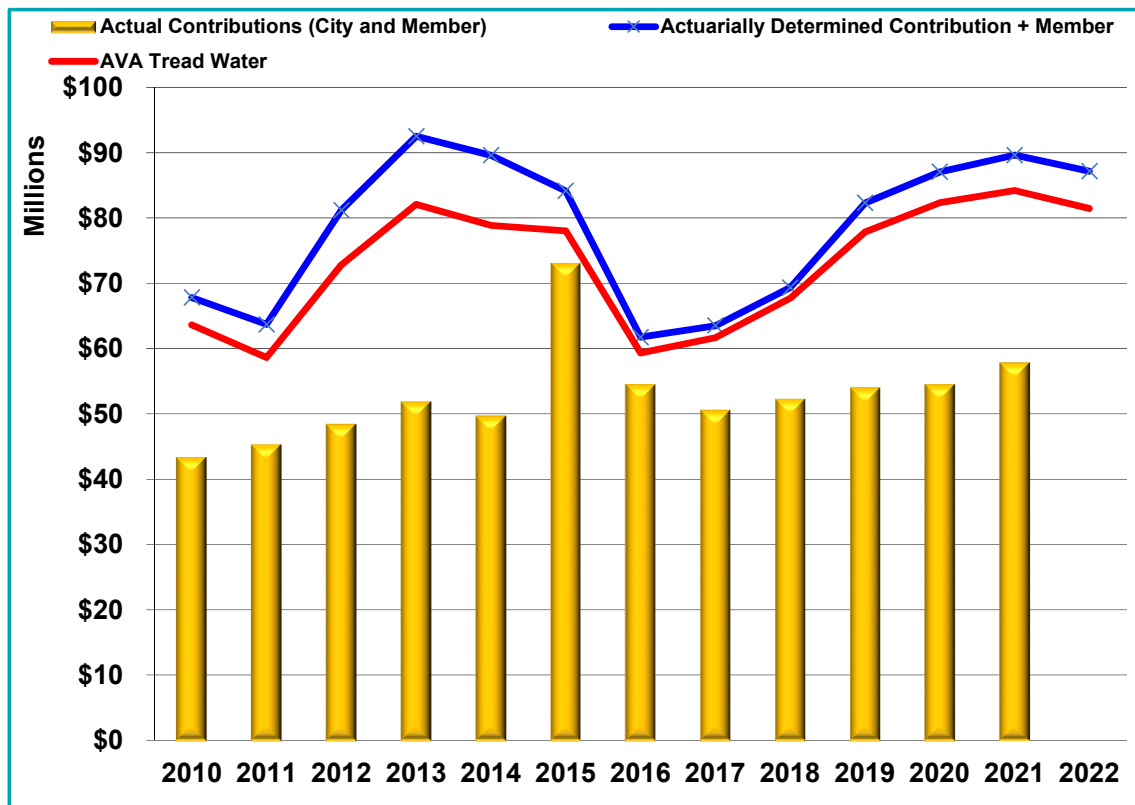
SECTION I – BOARD SUMMARY

Contributions

This graph shows the historical trends for the actual contribution amounts made by both the City and members (yellow bars). The blue line shows the actuarially determined contributions over the period. The Actuarially Determined Contribution (ADC) is comprised of four components: normal cost which represents the value of the benefits expected to be earned for the upcoming year, assumed administrative expenses, ongoing contributions for the ERIP and an open 30-year level dollar amortization of any unfunded actuarial liability (net of the present value of future amounts expected to be contributed for the ERIP).

The red line is the **Tread Water** line, which is the normal cost plus the interest on the UAL based on an actuarial value of assets basis. The tread water line shows the minimum contributions needed to avoid an increase in the UAL.

The graph shows that not only has the City been making contributions less than the Actuarially Determined Contribution, but that the contributions are significantly below the tread water line. When contributions are lower than the normal cost plus interest on the UAL, the unfunded actuarial liability can normally be expected to grow from one year to the next. However, the projections within this report show the System’s funded ratio increasing and UAL decreasing if all assumptions are realized. This is because both the ADC and Tread Water are snapshot measurements and do not account for future pay increases nor continued recognition of the net deferred investment gain. Please refer to the projections on the next page for more details, and to Section II for illustrations of the sensitivity of the System’s funded status to investment returns.



CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021

SECTION I – BOARD SUMMARY

Projected Future Outlook

The analysis of the projected financial trends is perhaps the most important component of the valuation. The graphs presented in this section show the expected progress of the System's funded status over the next 30 years, measured in terms of the expected funded ratios, and the projected contributions made by the members (9% of payroll) and by the City (16.25% of payroll for full-time active members and DROP members; 3.0% for part-time members). In addition, we have assumed that the City makes the \$2.8 million each year for the next 15 years to pay for the increase in liabilities due to the ERIP beginning January 1, 2022.

While the experience will not conform exactly to the assumptions every year, the trends reflect reasonable expectations. As a result, in addition to the baseline projection, we provided additional **stress testing** based on varying investment returns in the future. These scenarios are shown in Section II.

The projections assume a constant active population. As members retire, terminate and die based on the current valuation assumptions, it is assumed that new members will replace them based on characteristics (age/gender/salary) similar to recent new members.

**CINCINNATI RETIREMENT SYSTEM
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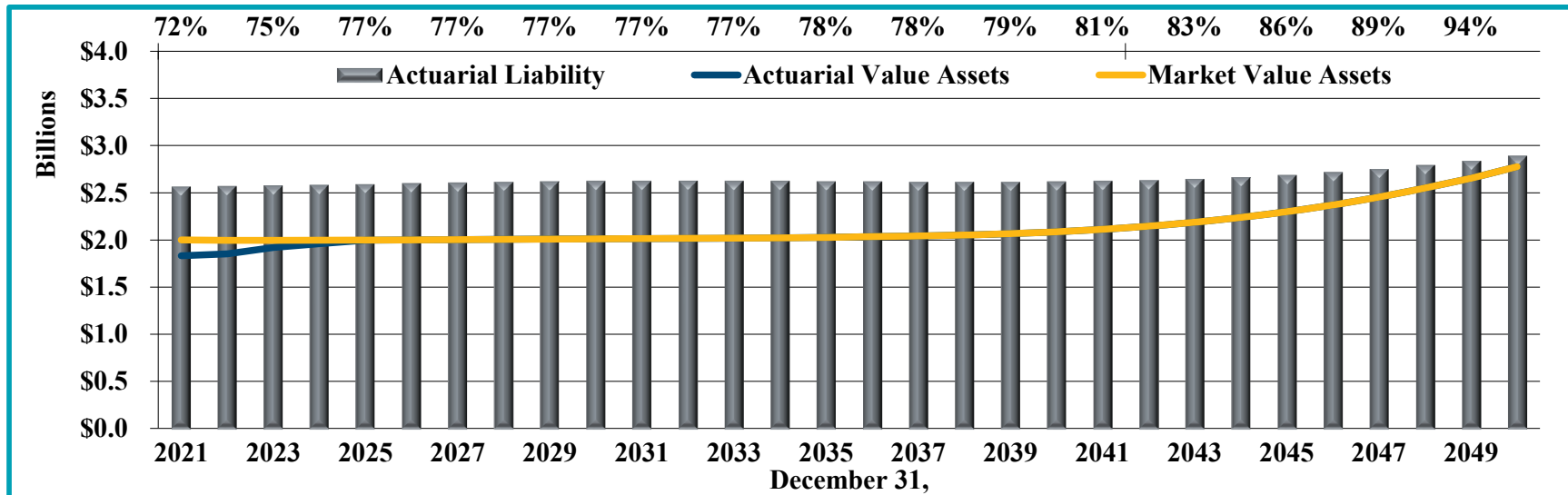
SECTION I – BOARD SUMMARY

Baseline Scenario

The baseline projection shows the outcome if all actuarial assumptions, including the long-term rate of return assumption of 7.50%, are exactly met.

The first graph compares the Market Value of Assets (gold line) and the Actuarial or smoothed Value of Assets (blue line) to the System’s Actuarial Liabilities (gray bars). In addition, at the top of the graph, we show the System’s funded ratio on an Actuarial Value of Assets basis (ratio of Actuarial Value of Assets to Actuarial Liabilities). The years shown in the graph signify the valuation date as of December 31 of the labeled year.

As shown earlier in the report, the investment return over the 2021 Plan Year was significantly higher than the assumed 7.50%. As a result, the System’s funded ratio on an Actuarial Value of Assets basis is projected to increase over the next 30 years, ultimately reaching 100% funded by 2052.

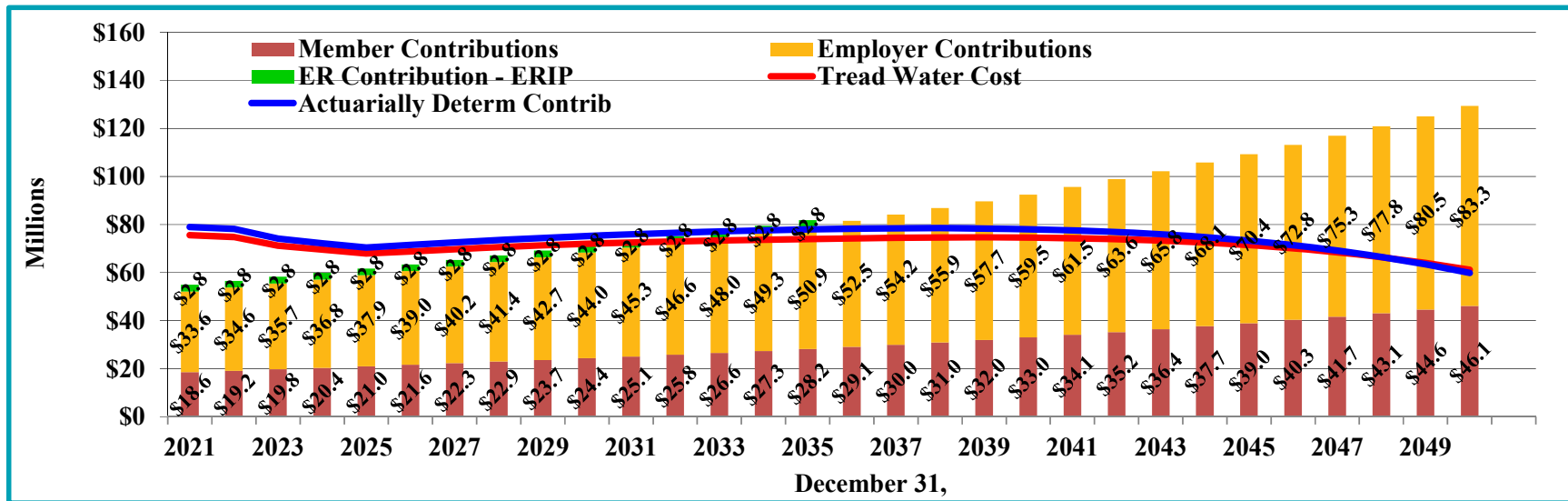


**CINCINNATI RETIREMENT SYSTEM
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SECTION I – BOARD SUMMARY

The second graph below shows the projected contributions compared to the actuarially determined contributions shown in dollars. The member contributions are in maroon and the City’s contributions are in gold. Similar to the historical graph before, the red line represents the Tread Water cost necessary to avoid decreasing funded status.

As shown below, the total contributions are expected to increase throughout the projection period as total payroll is expected to increase. As the System’s funded ratio increases, the Actuarially Determined Contributions and the Tread Water Cost are expected to decrease. For purposes of the projection, we assumed that the active population will remain constant. Projected payroll is based on the number of members valued as actives for this valuation and assumes that their positions are filled upon leaving employment with a new hire with an average starting salary of \$52,000 (indexed by wage inflation for years beyond 2022).



Please see Section II for additional scenarios illustrating the sensitivity of these projections under various economic scenarios.

**CINCINNATI RETIREMENT SYSTEM
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SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

Actuarial valuations are based on a set of assumptions about future economic and demographic experience. These assumptions represent a reasonable estimate of future experience, but the 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 System, provide some background information about those risks, and provide an assessment of those risks.

Identification of Risks

As we have discussed with the Board, the fundamental risk to the System is that the contributions needed to pay the benefits become unaffordable. While there are a number of factors that could lead to contribution amounts becoming unaffordable, we believe the primary risks are:

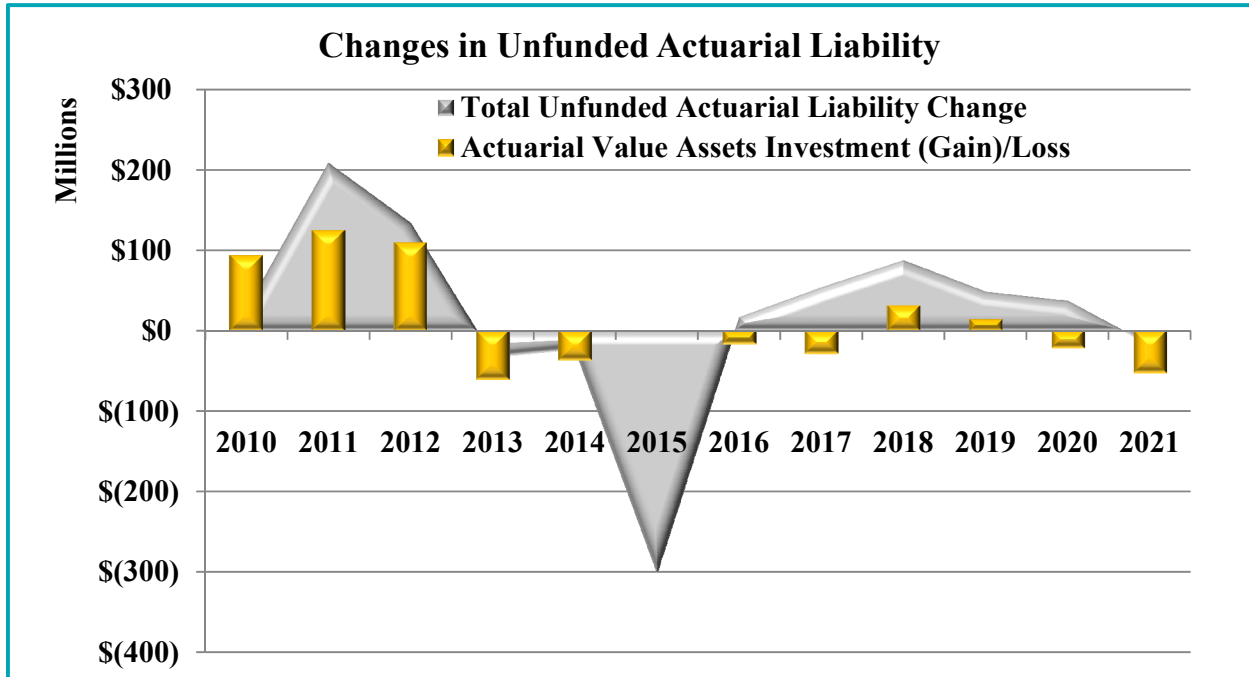
- Investment risk,
- Interest rate risk,
- Longevity and other demographic risks,
- Contribution risk; and
- Assumption change risk.

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

CINCINNATI RETIREMENT SYSTEM
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SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

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

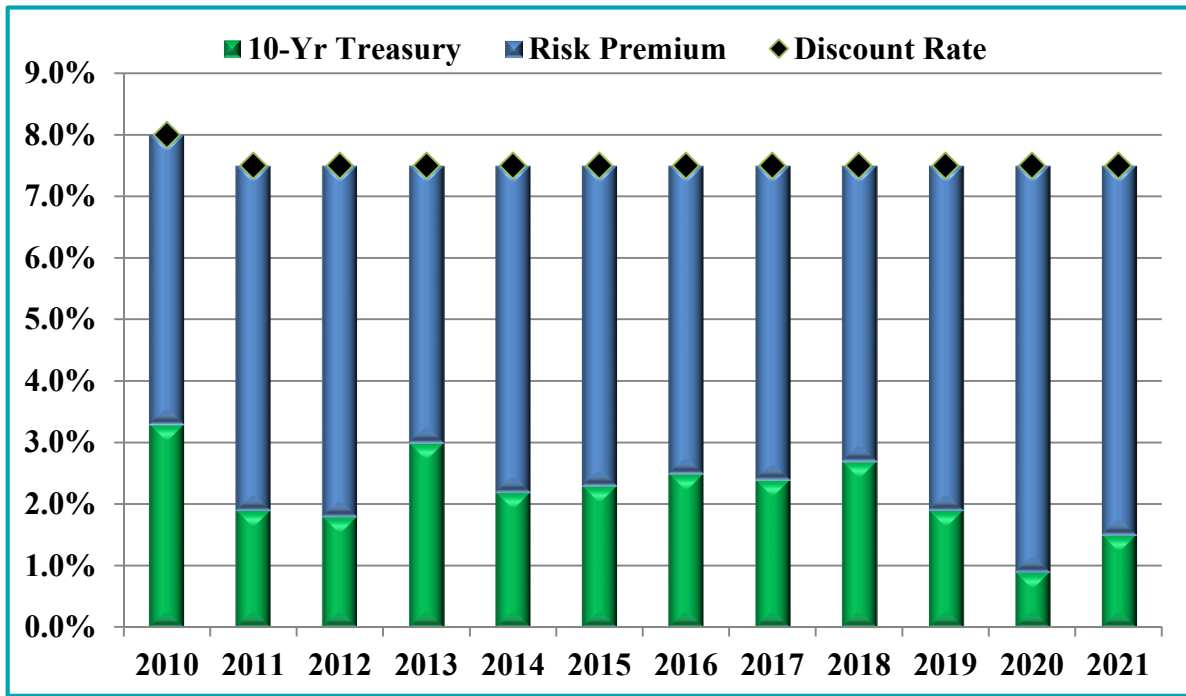


The graph above shows the impact of investment gains and losses on the smoothed Actuarial Value of Assets over the last 12 years compared to the System’s total change in Unfunded Actuarial Liability. There was an actuarial investment gain this year due to the favorable return and continued recognition of a net investment gain for prior years.

CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021

SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

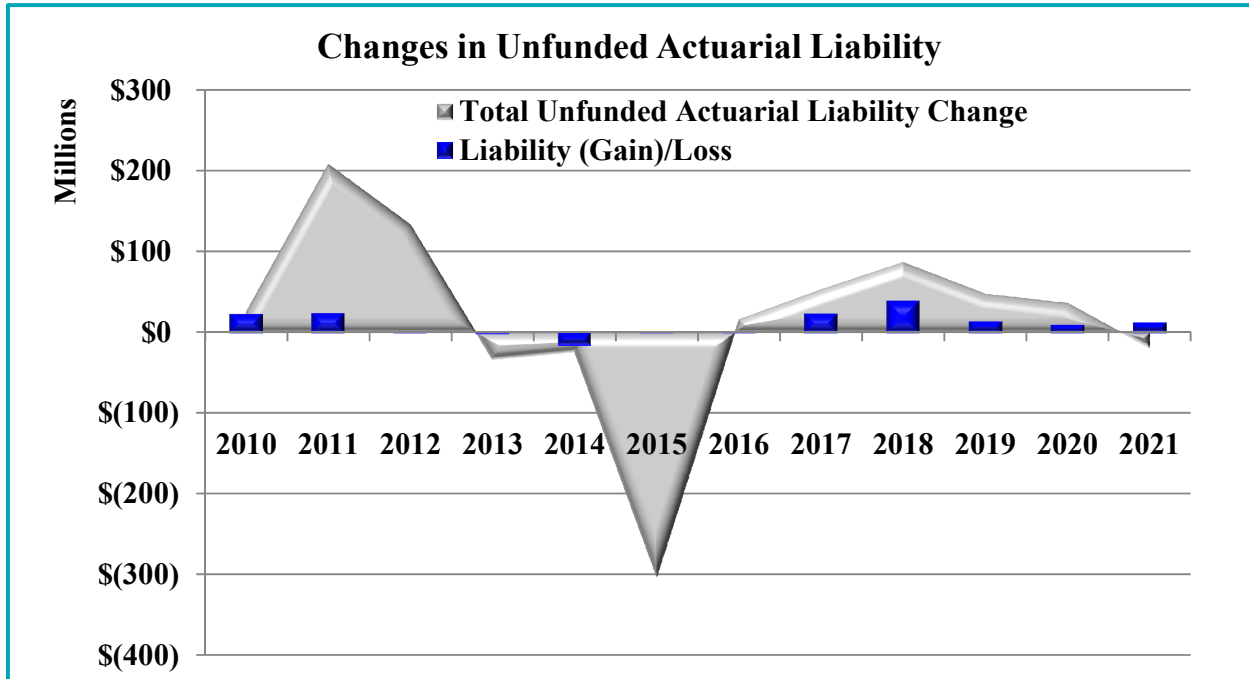
Interest rate risk is the potential for interest rates to be different than expected. For public plans, short term fluctuations in interest rates have little or no effect as the Plan’s liability is usually measured based on the expected return on assets. Longer-term trends in interest rates however can have a powerful effect. The chart below shows the yield on a 10-year Treasury security compared to the System’s assumed rate of return. The difference is a simple measure of the amount of investment risk taken. As interest rates have declined, plans faced a choice: maintain the same level of risk and reduce the expected rate of return; maintain the same expected rate of return and take on more investment risk; or some combination of the two strategies. As illustrated below, the yield on a 10-year Treasury security was the lowest in 2020.



CINCINNATI RETIREMENT SYSTEM
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SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

Longevity and other demographic risks are the potential for mortality or other demographic experience to be different than expected. Generally, longevity and other demographic risks emerge slowly over time and are often dwarfed by other changes, particularly those due to investment returns. The following graph shows the demographic gains and losses over the last 12 years compared to the total change in the UAL for each year. There was a small liability loss for the 2021 experience.



Contribution risk is the potential for actual future contributions to deviate from expected future contributions. There are different sources of contribution risk ranging from the sponsor choosing to not make contributions in accordance with the funding policy to material changes in the contribution base (e.g., covered employees, covered payroll, sponsor revenue) that affect the amount of contributions the Plan can collect.

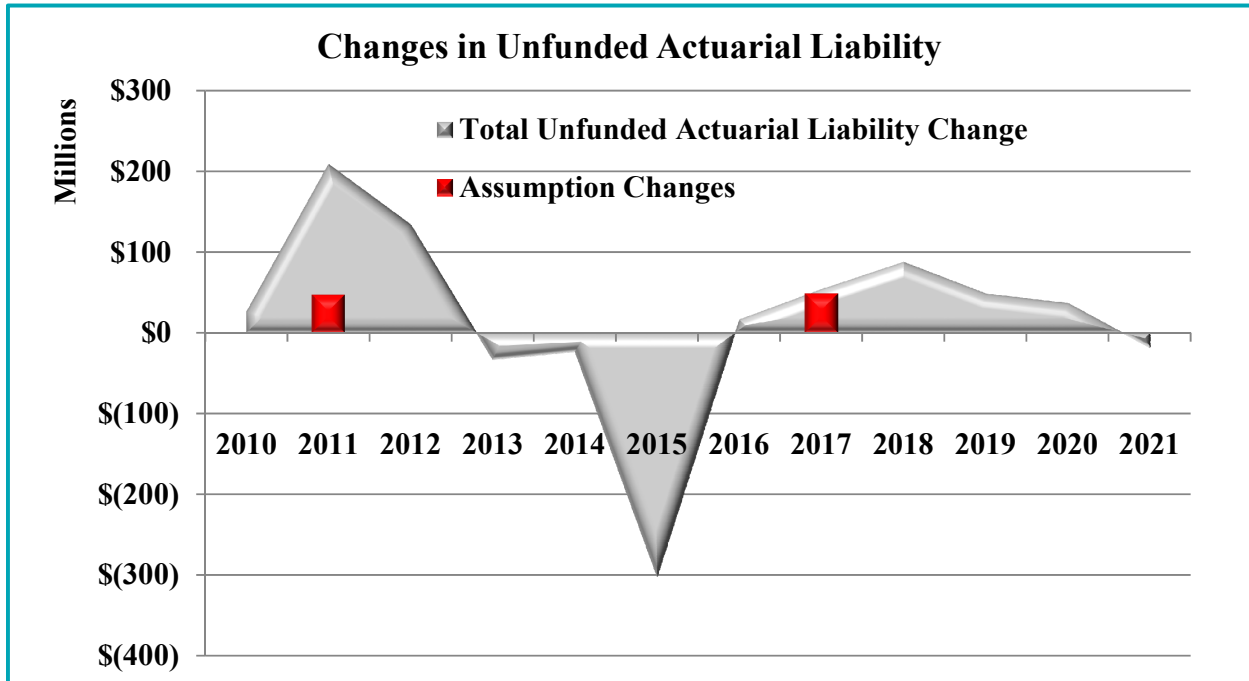
The normal cost plus the interest on the Unfunded Actuarial Liability is referred to as the “Tread Water Cost” because if contributions are less than the Tread Water Cost, the UAL is expected to grow; and if contributions are greater than the Tread Water Cost, the UAL is expected to decline. For this System, the City has consistently contributed less than the Tread Water Cost which has added to the growing UAL in the past. The graph on page 8 in the Board Summary illustrates this.

CINCINNATI RETIREMENT SYSTEM
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SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

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

As shown in the following graph, the assumption changes in 2011 and 2017 had a significant impact on the measure of the UAL. It is important to note that these changes include a downward revision to the estimate of future investment earnings and ultimately costs will be determined by actual investment earnings. As a result, future expectations of investment returns may continue to decline necessitating further reductions in the discount rate. There were no assumption changes made with this year's December 31, 2021 actuarial valuation.



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SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

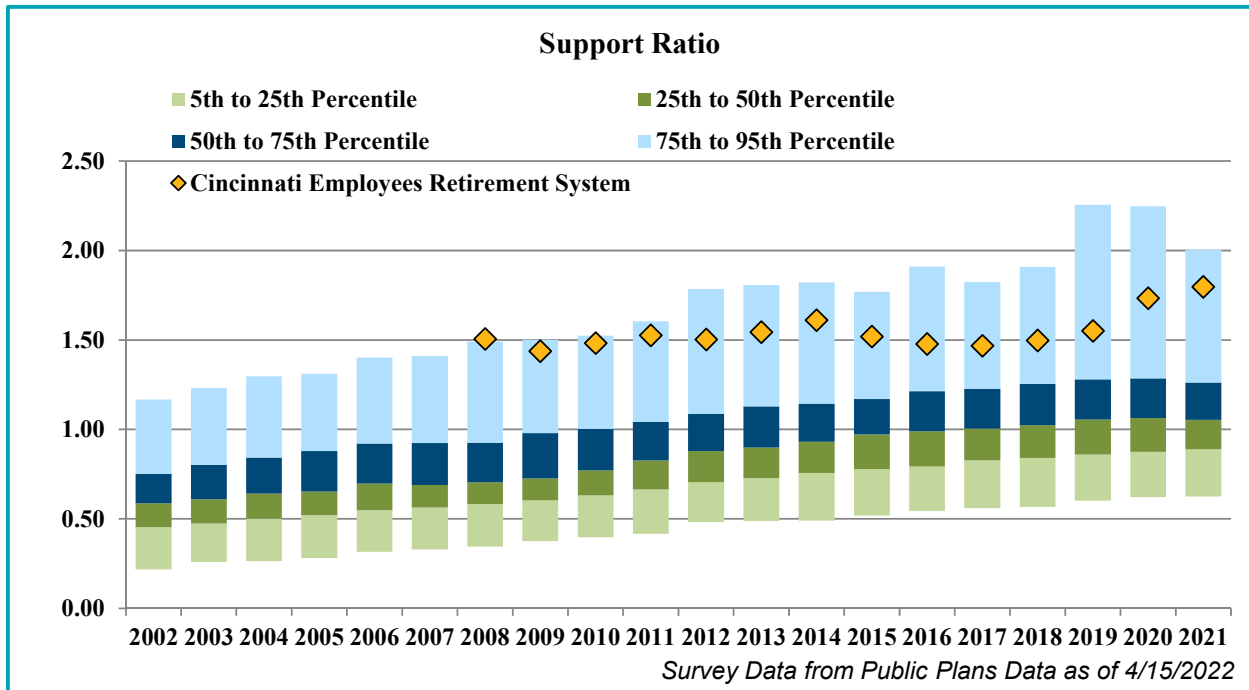
Plan Maturity Measures

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 this System compared to other plans and how the maturity has changed over time.

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

Inactives per Active (Support Ratio)

One simple measure of plan maturity is the ratio of the number of inactive members (those receiving benefits or entitled to a deferred benefit) to the number of 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 as well.



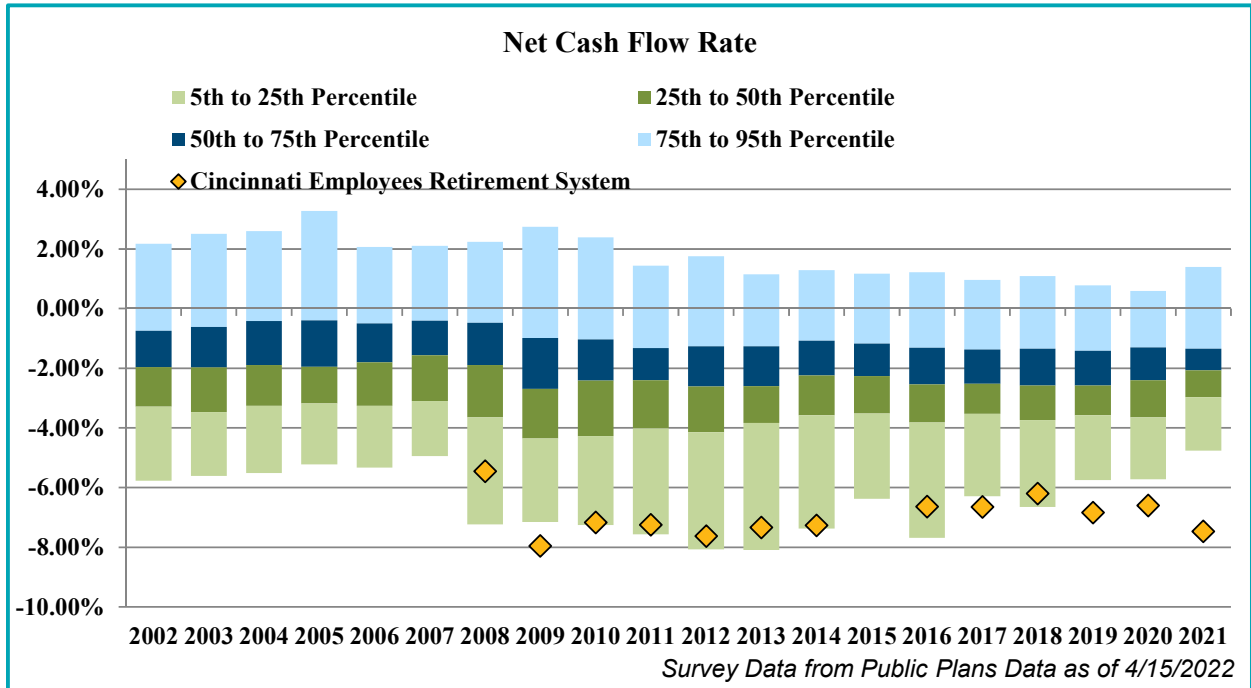
The graph above shows the distribution from the 5th to 95th percentile of support ratios for the plans in the Public Plans Database. The gold diamonds show how the Cincinnati Retirement System compares to the other plans. Whereas the support ratios for the plans as a whole have increased over the period as they mature, Cincinnati’s support ratio has remained relatively stable over the last decade prior to the past two years. The System’s support ratio continues to be in the upper quartile.

**CINCINNATI RETIREMENT SYSTEM
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SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

Net Cash Flow

The net cash flow of the plan as a percentage of the beginning of year assets indicates the sensitivity of the plan to short-term investment returns. Net cash flow is equal to contributions less benefit payments and administrative expenses. Mature plans can have large amounts of benefit payments compared to contributions, particularly if they are well funded. Investment losses in the short-term are compounded by the net withdrawal from the plan leaving a smaller asset base to try to recover from the investment losses. Large negative cash flows can also create liquidity issues.



The graph above shows how the Cincinnati Retirement System’s negative net cash flow as a percent of assets has compared to the other public plans in the database. With the exception of 2015, which reflects the large amount of monies transferred pursuant to the Collaborative Settlement Agreement, the System has been amongst the top 5 percentile in having the largest negative cash flow. This higher negative cash flow subjects the System to a higher amount of investment risk since assets must earn more to avoid the System’s assets from decreasing from one year to the next.

**CINCINNATI RETIREMENT SYSTEM
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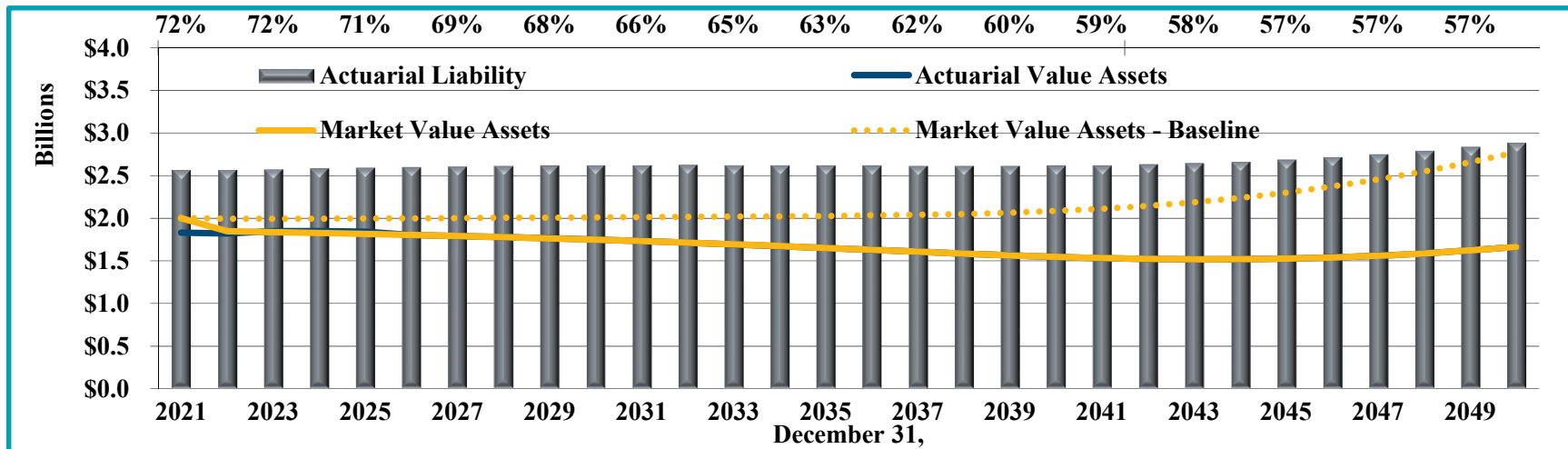
SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

Deterministic Scenarios/Stress Testing

We developed several hypothetical scenarios to illustrate the impact actual investment returns may have on future funded status and contribution rates. The scenarios are balanced between positive and negative scenarios and are intended to illustrate the importance of both the return itself as well as the timing of such returns.

The graphs on the following pages show the projections under each of these theoretical scenarios. The asset/liability graphs include a gold dotted line representing the baseline market value of assets and the contribution graphs include a blue dotted line representing the baseline ADC projections to facilitate the comparison between the particular scenario and the projections assuming all assumptions are met. The baseline projections are shown in the Board Summary.

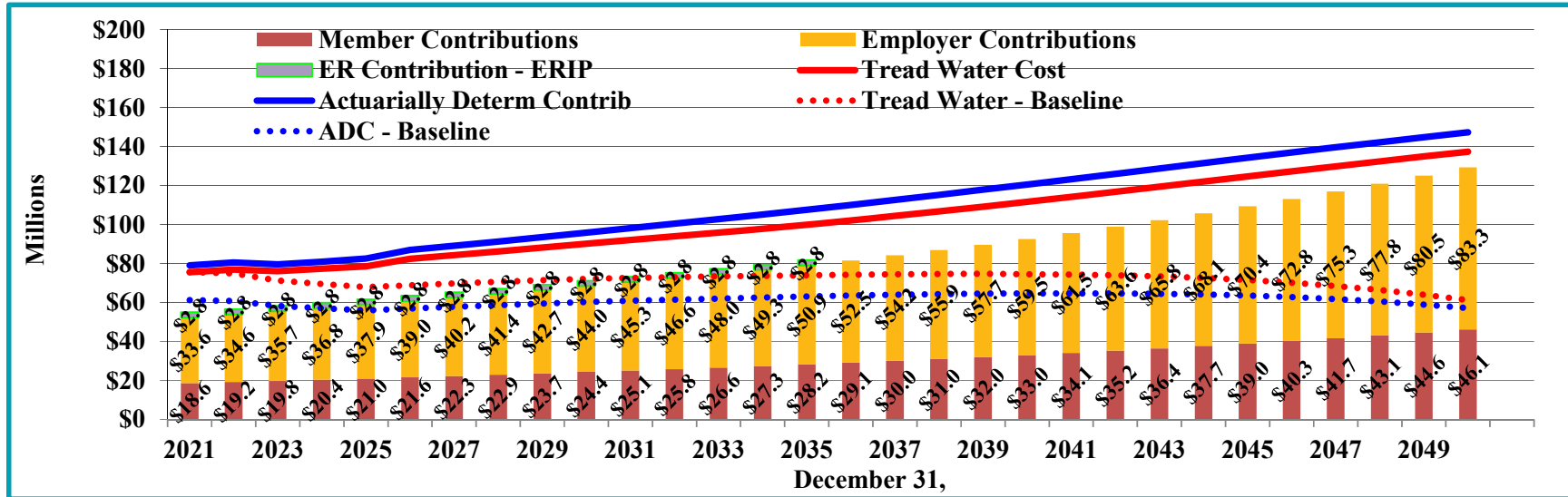
Investment Return of 0% for 2022 followed by 7.5% per year thereafter



As illustrated above, one year of a flat return (0%) for the Plan year ending December 31, 2022 followed by a 7.5% return per year thereafter has a significant impact on the solvency projection of the System. Under this projection, the System is projected to become 100% funded by 2073 as opposed to 2052 assuming a 7.50% return for 2022.

CINCINNATI RETIREMENT SYSTEM
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SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK



Under this scenario, the Actuarially Determined Contribution and Tread Water Cost are expected to increase over the next 30 years. The contributions (bars) are the same as the baseline since the City’s contributions are made based on a fixed rate.

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SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

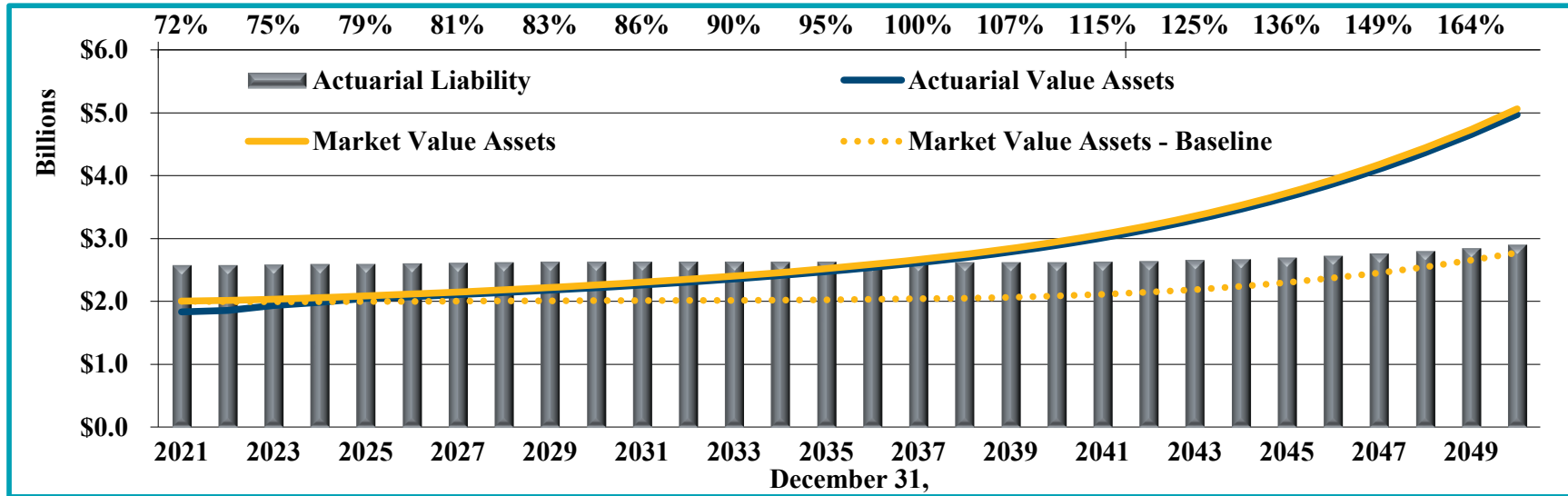
The table below further illustrates the impact that an unfavorable investment return for the year ending December 31, 2022 would have on the projected insolvency of the System’s assets assuming no changes to benefits or contribution rates and all assumptions are realized. All future years beyond 2022 were assumed to have an investment return of 7.5%.

Assumed 2022 Investment Return	Projected Insolvency Year	Projected to be 100% Funded
15.0%	None	2040
7.5%	None	2052
0.0%	None	2073
(7.5%)	None	>2129
(15.0%)	2045	None

**CINCINNATI RETIREMENT SYSTEM
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SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

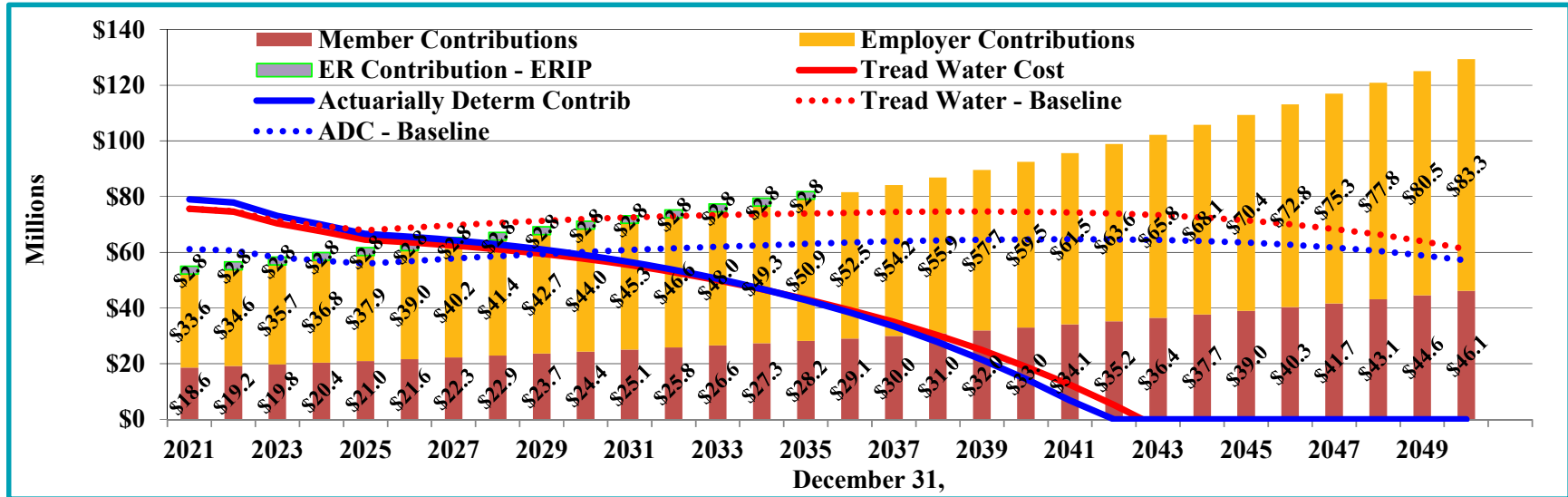
Investment Return of 8.5% per year



Conversely, the chart above shows the impact on the System’s projected assets if all future years’ investment returns are 8.5% per year. As shown above, the System is projected to be 100% funded by 2037, which is 15 years earlier when assuming an investment return of 7.5% per year.

CINCINNATI RETIREMENT SYSTEM
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SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

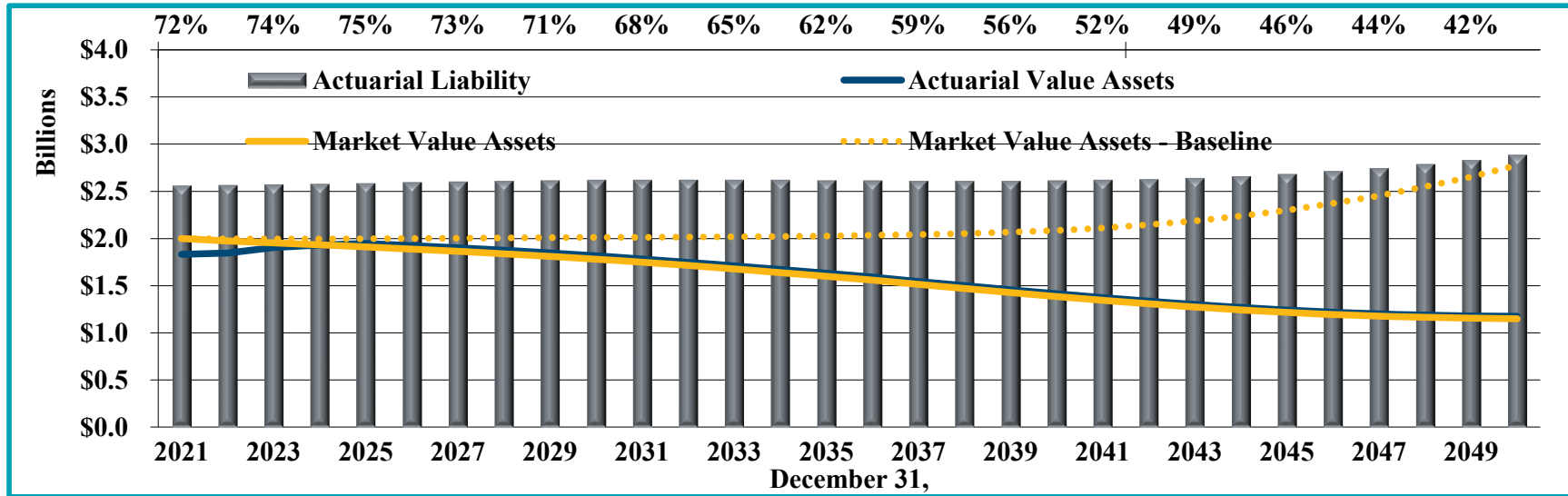


As anticipated, both the Actuarially Determined Contribution and Tread Water Cost are materially lower than if the assets were to return the assumed 7.5% per year.

CINCINNATI RETIREMENT SYSTEM
 ACTUARIAL VALUATION AS OF DECEMBER 31, 2021

SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

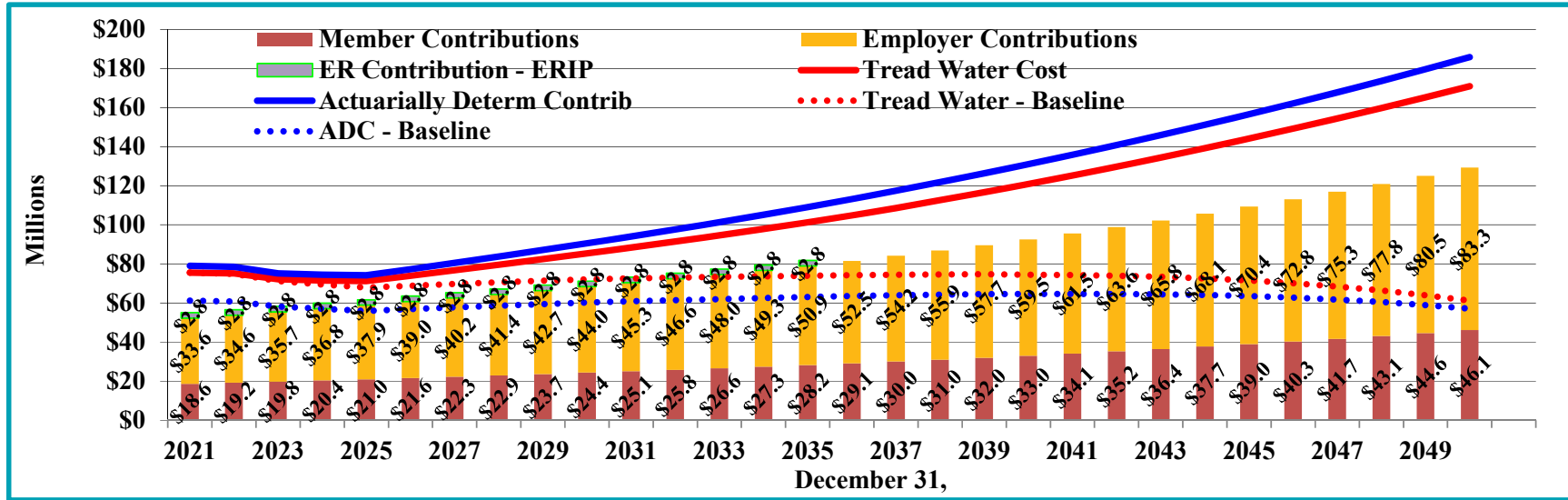
Investment Return of 6.5% per year



If the assets were to return 6.5% per year (1% less than the assumed 7.5%), the System would not attain 100% funded status until at least 2100.

CINCINNATI RETIREMENT SYSTEM
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SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK



As anticipated, both the Actuarially Determined Contribution and Tread Water Cost are materially higher than if the assets were to return the assumed 7.5% per year.

The scenarios shown above represent deterministic projections. These types of projections show the financial impact on the System under a set of fixed returns. Alternatively, stochastic projections graph the probability of the key metrics such as funded status based on a large number of scenarios (e.g. 1,000) based on the expected long-term return and risk characteristics of the portfolio. Whereas we have not included a stochastic analysis in this report, we would be happy to share this analysis if requested.

More Detailed Assessment

A more detailed assessment is always valuable to enhance the understanding of the risks identified above. While more detail would provide some additional value, we do not believe it is necessary to perform an in-depth analysis every year. We recommend the Board review the analysis provided above annually and consider a more detailed analysis periodically and when there is a substantial change in the financial position or maturity of the System.

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

SECTION III – ASSETS

The System uses and discloses two different asset measurements which are presented in this section of the report: market value and actuarial value of assets. The market value represents the value of the assets if they were liquidated on the valuation date. The actuarial value of assets is a value that smooths annual investment returns to reduce annual investment volatility and is used in determining the actuarial determined contribution.

In this section, we present detailed information on the System’s assets including:

- Statement of the cash flow during the year,
- Disclosure of investment performance for the year, and
- Development of the actuarial value of assets.

Changes in Market Value

The components of asset change from one year to the next include contributions (both City and Member), benefit payments, expenses, and investment income (realized and unrealized.)

The specific changes during 2021 are presented on the next page.

CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021

SECTION III – ASSETS

Table III-1
Reconciliation of the Market Value of Assets

Market Value of Assets - December 31, 2020	\$ 1,820,915,000
 <u>Additions</u>	
Contributions	
Employer	\$ 20,189,000
Member	37,605,000
Total Contributions	\$ 57,794,000
Investment Income	
Net Appreciation (Depreciation) in Fair Value of Investments	\$ 303,495,000
Interest	2,722,000
Dividends	6,346,000
Partnership Income	9,329,000
Other	30,000
Total Investment Income	\$ 321,922,000
Investment Expenses	\$ (5,294,000)
Total Additions	\$ 374,422,000
 <u>Deductions</u>	
Benefits Paid	\$ 191,899,000
Net Transfers	215,000
Administrative Expenses	1,644,000
Total Deductions	\$ 193,758,000
 Net Increase(Decrease)	 \$ 180,664,000
 Market Value of Assets - December 31, 2021	 \$ 2,001,579,000

**CINCINNATI RETIREMENT SYSTEM
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SECTION III – ASSETS

Investment Performance

The following table calculates the investment gain/loss and the return for the plan year on a Market Value basis. The return is an appropriate measure for comparing the actual asset performance to the long-term 7.50% assumption.

Table III-2 Market Value Investment Gains/(Losses)	
Market Value of Assets - December 31, 2020	\$ 1,820,915,000
Contributions	\$ 57,794,000
Benefits Paid	(191,899,000)
Net Transfers	(215,000)
Administrative Expenses	(1,644,000)
Expected Investment Earnings (7.50%)	131,562,149
Expected Market Value of Assets - December 31, 2021	\$ 1,816,513,149
Investment Gain / (Loss)	\$ 185,065,851
Market Value of Assets - December 31, 2021	\$ 2,001,579,000
Return	18.06%

**CINCINNATI RETIREMENT SYSTEM
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SECTION III – ASSETS

Actuarial Value of Assets

To determine on-going funding requirements, most pension systems utilize an actuarial value of assets that differs from the market value of assets. The actuarial value of assets represents an asset value based on averaging or smoothing year-to-year market value returns for purposes of reducing contribution volatility. For this System, the actuarial value of assets recognizes a portion of the difference between the actual market value of assets and the expected market value of assets. The amount recognized each year is 20% of the difference between actual market value and expected market value. The expected market value is determined using the System’s actual cash flows and assumed actuarial rate of return. The actuarial value of assets is constrained so that it cannot exceed 120% of the market value and cannot be less than 80% of the market value. The asset valuation method is described more fully in Appendix B.

The following table illustrates the calculation of the actuarial value of assets for the December 31, 2021 valuation.

Table III-3 Development of December 31, 2021 Actuarial Value of Assets					
a)	Market Value of Assets - December 31, 2021				\$ 2,001,579,000
b)	Deferred Gains or (Losses)				
	Plan Year	Market Value Gain or (Loss)	Percent Recognized	Percent Deferred	Amount Deferred
	2021	\$ 185,065,851	20%	80%	\$ 148,052,681
	2020	9,138,110	40%	60%	5,482,866
	2019	141,908,946	60%	40%	56,763,578
	2018	(203,374,909)	80%	20%	(40,674,982)
	2017	115,796,462	100%	0%	0
				Total Deferred:	\$ 169,624,143
c)	Preliminary Actuarial Value of Assets - December 31, 2021 [(a) - (b)]				\$ 1,831,954,857
d)	Corridor for Actuarial Value of Assets				
				80% of Market Value of Assets	\$ 1,601,263,200
				120% of Market Value of Assets	\$ 2,401,894,800
e)	Actuarial Value of Assets - December 31, 2021				\$ 1,831,954,857
f)	Actuarial Value of Assets as a % of Market Value of Assets [(e) ÷ (a)]				92%

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

SECTION III – ASSETS

Asset Gains / (Losses) on Actuarial Value Basis

The following table calculates the actuarial investment gain/loss and the return for the plan year on an Actuarial Value basis. This actuarial gain/loss is one component of the System’s overall actuarial experience gain/loss.

The Actuarial Value of Assets returned 10.55% for the year primarily due to the continued recognition of the net investment gains attributable to prior years, including the 18.06% market value return for 2021. This resulted in a \$52.3 million actuarial investment gain when compared to the 7.50% expected return as shown below. Since the Market Value of Assets currently exceeds the Actuarial Value of Assets by \$169.6 million, this represents a net deferred investment gain that will help mitigate the impact of any unfavorable returns in the future.

Table III-4 Actuarial Value Investment Gains/(Losses)	
Actuarial Value of Assets - December 31, 2020	\$ 1,786,649,816
Contributions	\$ 57,794,000
Benefits Paid	(191,899,000)
Net Transfers	(215,000)
Administrative Expenses	(1,644,000)
Expected Investment Earnings (7.50%)	128,992,261
Expected Actuarial Value of Assets - December 31, 2021	\$ 1,779,678,077
Investment Gain / (Loss)	\$ 52,276,780
Actuarial Value of Assets - December 31, 2021	\$ 1,831,954,857
Return	10.55%

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

SECTION III – ASSETS

Investment Performance

The market value of assets (MVA) returned 18.06% during 2021, which is more than the assumed 7.50% return. A return of 10.55% on the actuarial value of assets (AVA) is primarily the result of the asset smoothing method being utilized for the calculation of the actuarial value of assets. Since only 20% of this year’s gain from the performance of the System is recognized in a given year, in periods of very favorable performance, the AVA will not increase as rapidly as the MVA. In a period of unfavorable returns, the AVA will not decrease as fast as the MVA.c

**Table III-5
Annual Rates of Return**

<u>Plan Year</u>	<u>Investment Return Assumption</u>	<u>Market Value</u>	<u>Actuarial Value</u>
2012	7.50%	12.06%	0.25%
2013	7.50%	16.99%	12.11%
2014	7.50%	6.46%	10.18%
2015	7.50%	(0.11%)	7.51%
2016	7.50%	9.24%	8.50%
2017	7.50%	14.51%	9.19%
2018	7.50%	(3.93%)	5.66%
2019	7.50%	16.40%	6.69%
2020	7.50%	8.03%	8.78%
2021	7.50%	18.06%	10.55%
10-Year Compound Average		9.54%	7.89%
5-Year Compound Average		10.31%	8.16%

CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021

SECTION IV – LIABILITIES

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

- **Disclosure** of System liabilities at December 31, 2020 and December 31, 2021, and
- Statement of **changes** in these liabilities during the year.

Disclosure

Two 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.

- **Present Value of Benefits:** Used for analyzing the financial outlook of the System. This represents the amount of money needed today to fund all future benefits and expenses of the System, assuming members continue to accrue benefits and all assumptions are met.
- **Actuarial Liability:** Used for funding calculations. This liability is calculated taking the present value of benefits above and subtracting the present value of future member contributions and future employer normal costs under an acceptable actuarial funding method. This method is referred to as the **Entry Age Normal** funding method.

None of the liability figures disclosed in this report is meant to be a measure of the System's settlement liability.

The following table discloses each of these liabilities for the current and prior valuations. With respect to each disclosure, a subtraction of the appropriate value of the System's assets yields, for each respective type, a **net surplus** or an **unfunded liability**.

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

SECTION IV – LIABILITIES

Table IV-1		
Liabilities/Net (Surplus)/Unfunded		
	December 31, 2020	December 31, 2021
Present Value of Benefits		
Active Participants (Full Time)	\$ 646,829,434	\$ 667,461,999
Active Participants (Part Time)	4,785,102	5,236,765
Deferred Vesteds	26,667,625	25,338,032
Retirees	2,065,724,594	2,072,166,935
Present Value of Benefits (PVB)	\$ 2,744,006,755	\$ 2,770,203,731
City's Normal Cost*	\$ 7,399,458	\$ 7,391,618
Actuarial Liability		
Active Participants (Full Time)	\$ 436,069,494	\$ 457,516,790
Active Participants (Part Time)	4,785,102	5,236,765
Deferred Vesteds	26,667,625	25,338,032
Retirees	2,065,724,594	2,072,166,935
Actuarial Liability (AL)	\$ 2,533,246,815	\$ 2,560,258,522
Actuarial Value of Assets (AVA)	1,786,649,816	1,831,954,857
Net (Surplus)/Unfunded (AL – AVA)	\$ 746,596,999	\$ 728,303,665
Funded Status (AVA basis)	70.5%	71.6%

* Includes administrative expense and net of Employee Contributions

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

SECTION IV – LIABILITIES

Changes in Liabilities

Each of the liabilities disclosed in the prior table is expected to change at each valuation. The components of that change, depending upon which liability is analyzed, can include:

- New hires since the last valuation
- Benefits accrued since the last valuation
- Plan amendments changing benefits
- Passage of time which adds interest to the prior liability
- Benefits paid to retirees since the last valuation
- Members retiring, terminating, or dying at rates different than expected
- A change in actuarial or investment assumptions
- A change in the actuarial funding method

Unfunded liabilities will change because of all of the above and due to changes in the System’s assets resulting from the following:

- Employer contributions less than the full actuarial contribution
- Investment earnings different than expected
- A change in the method used to measure system assets

In each valuation, we report on those elements of change that are of particular significance, potentially affecting the long-term financial outlook of the System. Below we present key changes in liabilities since the last valuation.

Table IV-2 Change in Liabilities		
	Present Value of Benefits	Actuarial Liability
Liabilities as of 12/31/2020	\$ 2,744,006,755	\$ 2,533,246,815
Liabilities as of 12/31/2021	\$ 2,770,203,731	\$ 2,560,258,522
Liability Increase (Decrease)	\$ 26,196,976	\$ 27,011,707
Change Due to:		
Assumption Change	\$ 0	\$ 0
Plan Changes	0	0
Actuarial (Gain)/Loss	NC	12,922,088
Benefits Accumulated and Other Sources	26,196,976	14,089,619

NC = not calculated

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

SECTION IV – LIABILITIES

Table IV-3 shows the components of the actuarial liability experience (gain)/loss.

Table IV-3 Sources of Actuarial Liability (Gain)/Loss (\$ in Thousands)		
Source	(Gain) / Loss Amount	% of Liability
1. Salary	\$ 794.4	0.0%
2. Active experience (retirements, termination, etc.)	(6,619.8)	(0.3%)
3. New entrants	3,634.6	0.1%
4. Inactive mortality	(5,575.4)	(0.2%)
5. Inactive experience	3,582.2	0.2%
6. Rehired inactives	75.5	0.0%
7. Benefit payments different than expected	10,907.0	0.4%
8. DROP experience	4,408.6	0.2%
9. Miscellaneous / Change in Account Balances	1,715.0	0.1%
10. Total Liability (Gain) / Loss	\$ 12,922.1	0.5%

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

SECTION V – CONTRIBUTIONS

In the process of evaluating the financial condition of any pension system, 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 system. Typically, the actuarial process will use a funding technique that will result in a pattern of contributions that is both stable and predictable.

For this system, the funding method employed is the **Entry Age Actuarial Cost Method**. Under this method, there are three key components to calculating the Actuarially Determined Contribution (ADC): the **normal cost rate**, the **unfunded actuarial liability rate** (UAL rate), and the **administrative expense rate**. The normal cost rate represents the value of benefits being earned by the active members, as a percent of pay, for the upcoming year. The City's normal cost rate is calculated by taking the total normal cost rate for full-time actives less the member contribution rate of 9%. Based on the Board's funding benchmark, the unfunded actuarial liability rate represents the amount necessary, as a level dollar amount, to pay off the unfunded liability over an open 30-year period. The final piece of the ADC is the administrative expense rate of 0.80% of pay.

However, the City does not contribute based on the Actuarially Determined Contribution rate, nor should the ADC rate be construed as a recommended contribution rate. If the City were to contribute based on the ADC, the unfunded liability would not be expected to be fully paid off based on the open 30-year amortization period. In accordance with the Collaborative Settlement Agreement, the City currently contributes 16.25% of pay for full-time active and DROP members. A contribution totaling 3.00% of pay is made on behalf of part-time actives.

Lastly, we have assumed that the City will contribute \$2.8 million each year for the next 15 years to pay for the increase in liabilities due to the Early Retirement Incentive Program (ERIP) beginning January 1, 2022.

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

SECTION V – CONTRIBUTIONS

Table V-1 Development of Actuarially Determined Contribution Rate		
	December 31, 2020 (for Fiscal Year ending June 30, 2022)	December 31, 2021 (for Fiscal Year ending June 30, 2023)
1. Actuarial Liability		
a. Active Employees (Full Time)	\$ 436,069,494	\$ 457,516,790
b. Active Employees (Part Time)	4,785,102	5,236,765
c. Vested Terminated Members	26,667,625	25,338,032
d. Retired Members and Inactive Members	2,065,724,594	2,072,166,935
e. Total Present Value	<u>\$ 2,533,246,815</u>	<u>\$ 2,560,258,522</u>
2. Actuarial Value of Assets	<u>\$ 1,786,649,816</u>	<u>\$ 1,831,954,857</u>
3. Unfunded Actuarial Liability (UAL) (1) - (2)	<u>\$ 746,596,999</u>	<u>\$ 728,303,665</u>
4. Gross Normal Cost Rate	12.15%	12.10%
5. Amortization of Prior Plan Changes		
a. Present Value of Remaining Amortization Payments for ERIP	\$ 24,670,647	\$ 23,726,076
b. Years of Amortization Payments Remaining	15	14
c. ERIP Amortization Payment ¹	2,794,870	2,794,870
d. Total Active Payroll ²	209,255,710	208,017,324
e. Total Amortization Payment (as % of Payroll) [5c. ÷ 5d.]	1.34%	1.34%
6. UAL Amortization Payment		
a. UAL not due to Plan Changes	\$ 721,926,352	\$ 704,577,589
b. 30-Year UAL Amortization Payment ³	58,955,532	57,538,759
c. Total Active Payroll ²	209,255,710	208,017,324
d. Total Amortization Payment (as % of Payroll) [6b. ÷ 6c.]	28.17%	27.66%
7. Administrative Expenses	0.80%	0.80%
8. Expected Employee Contributions	(9.00%)	(9.00%)
9. City's Actuarial Determined Contribution Rate [4. + 5e. + 6d. + 7. + 8.]	33.46%	32.90%
10. City's Estimated ADC in Dollars [5d. x 9.]	\$ 70,017,000	\$ 68,438,000

¹ Adjusted with interest to following January 1.

² Adjusted with interest to mid-year based on General Wage Inflation of 3.75%.

³ Adjusted with interest to mid-year.

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

SECTION VI – ACCOUNTING STATEMENT INFORMATION

Table VI-1 shows the history of gains and losses and Table VI-2 shows the Schedule of Funding Progress.

Table VI - 1 Gain or (Loss) for Year Ending December 31, (\$ in Thousands)										
Type of Activity	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Investment Income	\$ (109,967)	\$ 60,722	\$ 36,688	\$ 413	\$ 16,400	\$ 28,361	\$ (31,660)	\$ (13,917)	\$ 21,573	\$ 52,277
Combined Liability Experience	(493)	1,134	15,199	(777)	(1,424)	(23,609)	31,318	(14,043)	(10,191)	(12,922)
Total Gain (Loss)	\$ (110,460)	\$ 61,856	\$ 51,887	\$ (364)	\$ 14,976	\$ 4,752	\$ (342)	\$ (27,960)	\$ 11,382	\$ 39,355
Non-Recurring Items	0	0	0	345,573	(27,754)	(48,308)	(39,236)	0	(24,671)	0
Composite Gain (Loss) during Year	\$ (110,460)	\$ 61,856	\$ 51,887	\$ 345,209	\$ (12,778)	\$ (43,556)	\$ (39,578)	\$ (27,960)	\$ (13,289)	\$ 39,355

Table VI - 2 Schedule of Funding Progress (\$ in Thousands)						
Actuarial Valuation Date	(a) Actuarial Value of Assets	(b) Entry Age Actuarial Liability	(b) - (a) Unfunded Actuarial Liability	(a) ÷ (b) Funded Ratio	(c) Covered Payroll	[(b) - (a)] ÷ (c) UAL as a % of Covered Payroll
12/31/2012	\$ 1,367,695	\$ 2,229,818	\$ 862,123	61.3%	\$ 167,148	515.8%
12/31/2013	1,424,933	2,254,121	829,188	63.2%	163,477	507.2%
12/31/2014	1,453,922	2,259,822	805,900	64.3%	164,575	489.7%
12/31/2015	1,703,002	2,207,484	504,482	77.1%	174,963	288.3%
12/31/2016	1,732,053	2,252,875	520,822	76.9%	179,463	290.2%
12/31/2017	1,772,494	2,346,906	574,412	75.5%	191,806	299.5%
12/31/2018	1,755,861	2,417,515	661,654	72.6%	206,122	321.0%
12/31/2019	1,756,533	2,466,349	709,816	71.2%	215,460	329.4%
12/31/2020	1,786,650	2,533,247	746,597	70.5%	205,439	363.4%
12/31/2021	1,831,955	2,560,259	728,304	71.6%	204,223	356.6%

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

SECTION VI – ACCOUNTING STATEMENT INFORMATION

Additional information as of December 31, 2021:

Valuation Date	December 31, 2021
Actuarial Cost Method	Entry Age
Amortization Method	Level Dollar Open
Amortization Period	30 Years
Asset Valuation Method	Five Year Smoothed Market Value
Actuarial Assumptions	
Investment Return (includes inflation)	7.50%
Projected Salary Increases (includes inflation)	3.75% - 7.50%
Inflation	2.75%
Cost-of-Living Adjustments	3.00%

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX A – MEMBERSHIP INFORMATION

The data for this valuation was provided electronically by the Cincinnati Retirement System staff. Cheiron did not perform a formal audit of the data. However, we did perform checks of the data for reasonableness and consistency in accordance with Actuarial Standards of Practice No. 23 – Data Quality.

Data reported in this Appendix is as of December 31, 2021.

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX A – MEMBERSHIP INFORMATION

Status Reconciliation of Participating Members							
	Active Full-Time	Active Part-Time	Terminated Vested	Retired	Disabled	Beneficiary	Total
As of December 31, 2020	2,631	1,078	222	3,714	142	603	8,390
New Hires	88	618					706
To Active Part-Time	(33)	33					0
To Active Full-Time	85	(85)					0
Terminated Vested	(40)	(6)	46				0
Terminated Non-Vested	(102)	(400)					(502)
Refund of Contributions							0
Retired	(43)		(16)	59			0
Disabled	(1)				1		0
Deceased with Beneficiary				(50)	(1)	51	0
Deceased without Beneficiary			(10)	(88)	(5)	(50)	(153)
Miscellaneous Changes	(5)		5	14	0	0	14
As of December 31, 2021	2,580	1,238	247	3,649	137	604	8,455

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX A – MEMBERSHIP INFORMATION

Active Member Count by Age and Service as of December 31, 2021										
Age	Years of Service									Total Count
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over	
Under 25	25	7	0	0	0	0	0	0	0	32
25-29	105	46	9	0	0	0	0	0	0	160
30-34	124	99	37	3	0	0	0	0	0	263
35-39	126	128	65	49	10	0	0	0	0	378
40-44	95	98	68	46	47	9	0	0	0	363
45-49	69	83	68	66	68	11	4	0	0	369
50-54	57	71	67	84	84	55	11	0	0	429
55-59	41	57	38	38	71	55	21	3	0	324
60-64	14	29	33	31	36	18	21	2	0	184
65-69	9	20	6	9	9	6	2	2	0	63
70 & Over	1	1	1	3	3	2	2	0	2	15
Total Count	666	639	392	329	328	156	61	7	2	2,580

Average Service: 12.0

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX A – MEMBERSHIP INFORMATION

Average Compensation of Active Members by Age and Service as of December 31, 2021											
Age	Years of Service									Avg. Comp.	
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over		
Under 25	\$50,003	\$47,275	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$49,407
25-29	60,539	61,849	55,429	0	0	0	0	0	0	0	60,628
30-34	69,584	66,664	71,917	55,156	0	0	0	0	0	0	68,648
35-39	72,389	74,435	80,893	65,380	71,312	0	0	0	0	0	73,607
40-44	64,398	73,505	75,826	73,007	78,403	74,396	0	0	0	0	72,150
45-49	70,200	71,102	86,252	82,245	80,820	80,584	80,284	0	0	0	77,891
50-54	66,677	73,319	79,851	73,442	80,127	86,329	79,787	0	0	0	76,648
55-59	74,645	75,654	74,202	73,181	76,306	81,333	83,347	89,253	0	0	76,797
60-64	79,808	71,200	74,276	78,497	66,575	82,906	75,654	66,280	0	0	74,331
65-69	89,263	74,824	84,814	70,618	62,950	74,881	56,827	95,761	0	0	75,640
70 & Over	28,235	52,847	50,427	45,743	79,759	74,999	54,672	0	74,744	0	61,123
Average	67,759	71,268	78,110	73,896	76,966	82,494	78,046	84,549	74,744	0	73,461

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX A – MEMBERSHIP INFORMATION

Summary of Inactive Membership Data as of December 31, 2021			
Group	Count	Total Annual Benefit	Average Annual Benefit
Retirees	3,649	\$ 167,644,651	\$ 45,943
Disableds	137	\$ 2,527,706	\$ 18,450
Survivor	<u>604</u>	<u>\$ 16,589,965</u>	<u>\$ 27,467</u>
Total	4,390	\$ 186,762,322	\$ 42,543

Annual Benefits by Age as of December 31, 2021			
Attained Age	Number of Members	Total Annual Benefits	Average Annual Benefit
< 40	4	\$ 119,014	\$ 29,753
40 - 44	2	35,607	17,804
45 - 49	21	802,490	38,214
50 - 54	162	7,481,460	46,182
55 - 59	426	19,040,995	44,697
60 - 64	759	32,774,925	43,182
65 - 69	950	42,082,406	44,297
70 - 74	861	38,269,339	44,448
75 - 79	493	20,554,503	41,693
80 - 84	377	14,927,600	39,596
85 - 89	206	6,848,703	33,246
90 - 94	103	3,141,612	30,501
95 - 99	23	658,789	28,643
100+	3	24,879	8,293
Total	4,390	\$ 186,762,322	\$ 42,543

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

A. Actuarial Assumptions

Rationale for Economic and Demographic Assumptions

The actuarial assumptions were adopted by the Board of Trustees on March 1, 2018 upon the recommendation of the prior actuary, based on an experience study performed for the period January 1, 2012 to December 31, 2016. The results of this study were presented in a report dated February 27, 2018 and are incorporated into this report by reference. An investment return assumption of 7.50% was used as prescribed by item 29 of the Collaborative Settlement Agreement (CSA) signed October 5, 2015.

Cheiron has reviewed the assumptions. While we consider these assumptions to be generally reasonable, we have not yet performed our own actuarial experience study.

1. Investment Rate of Return

7.50% per year, net of investment *expenses*

2. Inflation Assumption

2.75% per annum

3. Expenses

Estimated budgeted administrative expenses of 0.80% of payroll are added to the normal cost rate

4. Salary Increases

Salary increases are assumed to vary by service. Representative rates are as follows:

Service	Annual Increase
0	7.50%
5	5.00
10	4.50
15	4.00
21+	3.75

5. Mortality Rates

Active Members: RP-2014 Employees Mortality Table with generational projections using scale MP-2017.

Healthy Inactive Members: RP-2014 Mortality Table with generational projections using Scale MP-2017, set forward 2 years for both males and females.

Disabled Inactive Members: RP-2014 Disabled Retiree Mortality Table with generational projections using scale MP-2017.

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

6. Retirement Rates including DROP

Age	Annual Rates of Retirement Groups C, E, and F ¹				
	5 Years of Service	6 – 24 Years of Service	25 – 29 Years of Service	30 Years of Service	31+ Years of Service
50-54				55.0%	30.0%
55			6.0%	55.0	30.0
56			8.0	55.0	30.0
57			10.0	55.0	30.0
58			10.0	55.0	30.0
59			10.0	55.0	30.0
60	25.0%	25.0%	25.0	55.0	25.0
61	25.0	18.0	18.0	55.0	25.0
62	25.0	18.0	18.0	55.0	25.0
63	25.0	18.0	18.0	55.0	25.0
64	25.0	18.0	18.0	55.0	25.0
65	25.0	18.0	18.0	55.0	25.0
70	100.0	100.0	100.0	100.0	100.0

¹ For purposes of valuing CSA Employee members eligible for DROP benefits, an additional 10% is added to rates for 30 years of service and an additional 5% is added to rates for 31+ years of service

Age	Annual Rates of Retirement Group G				
	5 Years of Service	6 – 14 Years of Service	15 – 29 Years of Service	30 Years of Service	31+ Years of Service
57			6.0%	6.0%	6.0%
58			6.0	6.0	6.0
59			8.0	8.0	8.0
60			8.0	8.0	8.0
61			10.0	10.0	10.0
62			10.0	25.0	25.0
63			10.0	25.0	18.0
64			10.0	25.0	18.0
65			10.0	25.0	18.0
66			10.0	25.0	18.0
67	25.0%	25.0%	25.0	25.0	18.0
68	25.0	18.0	18.0	18.0	18.0
69	25.0	18.0	18.0	18.0	18.0
70	100.0	100.0	100.0	100.0	100.0

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

7. Termination Rates

Sample termination rates are as follows:

Age	Annual Rates of Termination			
	<1 Year of Service	1 – 2 Years of Service	3 – 4 Years of Service	5+ Years of Service
20	22.00%	10.00%	8.00%	4.00%
25	22.00	10.00	8.00	4.00
30	22.00	10.00	8.00	4.00
35	22.00	10.00	4.00	4.00
40	22.00	10.00	4.00	2.75
45	22.00	10.00	4.00	1.25
50	22.00	10.00	4.00	1.25
55	22.00	10.00	4.00	1.25
60	22.00	10.00	4.00	1.25
65	22.00	10.00	4.00	1.25
70	22.00	10.00	4.00	1.25

60% of vested members who terminate elect to leave their contributions in the Plan in order to be eligible for a benefit at their normal retirement; 40% of members elect to withdraw their contributions

8. Disability Rates

Sample disability rates are as follows:

Age	Annual Rates of Disability ¹
20	0.005%
25	0.010%
30	0.015%
35	0.025%
40	0.045%
45	0.075%
50	0.135%
55	0.210%
60	0.250%
65	0.250%

¹ Rates are 0% when member is eligible for normal retirement

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

9. Part-time Active Members

All part-time active members are assumed to receive a refund of their employee contributions with interest upon leaving the System

10. DROP Participation

60% of eligible CSA Employee members eligible for DROP benefits are assumed to decline participation and 40% are assumed to elect participation. Those electing to participate are assumed to remain in DROP for three years

11. DROP Crediting Rate

3.25% per annum

12. Percent Married

80% of members are assumed to be married for the purpose of valuing pre-retirement survivor benefits

13. Spouse Age Difference

Unless otherwise reported in the data, the male spouse is assumed to be three years older than the female spouse

14. Changes Since Last Valuation

None

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

B. Methods

1. Actuarial Funding Method

The funding method for the valuation of liabilities used for this valuation is the Entry Age Normal (EAN) method. Under this funding method, a normal cost rate is determined as a level percentage of pay for each active member. The normal cost rate multiplied by payroll equals the total normal cost for each member. The normal cost contributions (Employer and Member) will pay for projected benefits at retirement for each active member.

The actuarial liability is the difference between the present value of future benefits and the present value of future normal costs. The difference between this actuarial liability and the actuarial value of assets is the unfunded actuarial liability (UAL).

The portion of the actuarial liability in excess of plan assets, the UAL, is amortized to develop an additional cost that is added to each year's employer's normal cost. Under this funding method, actuarial gains and losses are directly reflected in the size of the unfunded actuarial liability. The amortization method is described below.

2. Amortization Method

The actuarially determined contribution (ADC) is determined as the sum of (a) the employer's normal cost rate, (b) the administrative expense rate, and (c) the UAL rate. Based on the Board's funding benchmark, the UAL rate represents the amount necessary to amortize the UAL (excluding liabilities due to the ERIP) over a 30 year open period as a level dollar amount. If the City were to contribute based on the ADC, the unfunded liability would not be expected to be fully paid off based on the open 30-year amortization period.

In addition, the City is paying for the Early Retirement Incentive Program in 15 level annual amounts beginning January 1, 2022.

3. Actuarial Value of Assets

The actuarial value of assets recognizes a portion of the difference between the actual market value of assets and the expected market value of assets, based on the assumed valuation rate of return. The amount recognized each year is 20% of the difference between actual market value and expected market value. In addition, the actuarial value of assets cannot be less than 80%, or more than 120%, of the market value of assets.

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

4. Valuation Software

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

5. Projection Model

This report includes deterministic projections of future contributions, assets, and funded status for the purpose of assisting the Board and CRS staff with the management of the System. We have used Cheiron's *P-Scan* model to develop these projections. The model is also used to stress test the impact of volatile asset returns over the projection period.

The *P-Scan* projection uses standard roll-forward techniques that implicitly assume a stable active population. Changes in the demographic characteristics of the active population will lead to different results.

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX C – SUMMARY OF PLAN PROVISIONS

1. Membership

All employees of the City of Cincinnati shall be members of the System except for the following:

- Members of the Police and Fireman’s Disability and Pension Fund of Ohio,
- Elected City officials,
- Employees for whom the City contributes to the Ohio Public Employees Retirement System,
- Members of the faculties, teaching staffs, research staffs, and administrative staff of the University of Cincinnati appointed to positions covered by the Teachers Insurance and Annuity Association Social Security Plan,
- Persons becoming employees after June 1, 1961, who are employed in any of the following employment classifications: bricklayer, carpenter, carpenter foreman, cement finisher, electrician, electrician foreman, painter, painter foreman, plasterer, plumber, sign painter, steamfitter and pipefitter, tinsmith, or composition roofer,
- Persons hired as police recruits who are not currently enrolled as a member of the System prior to their date of hire, and
- Current contributing members of the Ohio School Employees Retirement System (SERS) or the Ohio State Teachers Retirement System (STRS) who are hired by the City on a seasonal, temporary, or part-time basis.

Members of the System are divided into the following groups:

Group	Criteria
A, B	Any member who has retired prior to 7/1/2011
C	Any member who, as of June 30, 2011, was an active or deferred vested member and had either: a) Completed at least 30 years of service, or b) Reached age 60 and completed at least 5 years of service
D	Any active member who, between July 1, 2011 and December 31, 2013: 1) Either a) Completed at least 30 years of service, or b) Reached age 60 and completed at least 5 years of service; and 2) Retired prior to January 1, 2014
E	Any active member who: 1) Between July 1, 2011 and December 31, 2013 either: a) Completed at least 30 years of service, or b) Reached age 60 and completed at least 5 years of service; and 2) Retires on or after January 1, 2014

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX C – SUMMARY OF PLAN PROVISIONS

F	<p>Any active member whose most recent membership enrollment date was prior to January 1, 2010 and who is not in groups A through E</p> <p>Any deferred vested member whose most recent membership enrollment date was prior to January 1, 2010, is not in groups A through E, and has at least five years of service prior to the date separated from employment</p>
G	<p>Any member whose most recent membership enrollment date is on or after January 1, 2010, or</p> <p>Any member rehired on or after January 1, 2010, who has fewer than five years of service as of June 30, 2011, or</p> <p>Any retiree of the System who is receiving service retirement allowance and is re-employed on or after April 1, 2013</p>

Members in the System are further classified as follows:

Class	Criteria
<p>CSA Retiree (CSA participants corresponding to Retirees Class)</p>	<p>Group A and B members and their designated optionees</p>
<p>CSA Employee (CSA participants corresponding to Current Employees Class)</p>	<p>Group C, D, E and F members (and their designated optionees) that were vested and employed on July 1, 2011</p>
<p>CMC Employee (Non-CSA participants)</p>	<p>Group E and F members (and their designated optionees) that were either vested or employed on July 1, 2011 and no break in employment service since January 1, 2010 and prior to becoming vested</p>
<p>Non-CSA</p>	<p>Group G members and their designated optionees</p>

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX C – SUMMARY OF PLAN PROVISIONS

2. Service Retirement Benefit

Groups A, B, C and D

Normal Retirement Eligibility	Age 60 with 5 years of service or 30 years of service
Early Retirement Eligibility	Age 55 with 25 years of service
Benefit Formula Multiplier	Members hired prior to July 12, 1998 were given a one-time irrevocable option to choose either the benefit formula using a 2.22% multiplier or the benefit formula using a 2.50% multiplier. For members hired on or after July 12, 1998, benefits are calculated using a 2.50% multiplier
Average Highest Compensation	Average of the highest three consecutive years of compensation
Years of Service	Years or fractional years of full-time service rendered to the plan sponsor
Benefit	a) An annuity which is actuarially equivalent to the accumulated contributions of the member at the time of retirement b) A pension which together with the annuity produces a total annual retirement allowance equal to the product of the applicable benefit formula multiplier, the member's average highest compensation and the number of years of service Early Retirement Benefit is actuarially reduced from normal retirement age

Group E

Normal Retirement Eligibility	Age 60 with 5 years of service or 30 years of service
Early Retirement Eligibility	Age 55 with 25 years of service

Retirement benefit is composed of as many as three components:

Part A Benefit

For service earned through December 31, 2013

Part B Benefit

For service earned on and after January 1, 2014 up to a combined (Part A and Part B) 20 years of service

CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021

APPENDIX C – SUMMARY OF PLAN PROVISIONS

	<p><i>Part C Benefit</i> For service earned on and after January 1, 2014 in excess of a combined (Part A and Part B) 20 years of service</p>
Benefit Formula Multiplier	<p><i>Part A Benefit</i> Members hired prior to July 12, 1998 were given a one-time irrevocable option to choose either the benefit formula using a 2.22% multiplier or the benefit formula using a 2.50% multiplier. For members hired on or after July 12, 1998, benefits are calculated using a 2.50% multiplier</p> <p><i>Part B Benefit</i> Members hired prior to July 12, 1998 were given a one-time irrevocable option to choose either the benefit formula using a 2.22% multiplier or the benefit formula using a 2.50% multiplier. For members hired on or after July 12, 1998, benefits are calculated using a 2.50% multiplier</p> <p><i>Part C Benefit</i> 2.20% multiplier</p>
Average Highest Compensation	<p><i>Part A Benefit</i> Average of the highest three consecutive years of compensation</p> <p><i>Part B Benefit</i> Average of the highest five consecutive years of compensation</p> <p><i>Part C Benefit</i> Average of the highest five consecutive years of compensation</p>
Years of Service	Years or fractional years of full-time service rendered to the plan sponsor

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Benefit a) An annuity which is actuarially equivalent to the accumulated contributions of the member at the time of retirement

b) A pension which together with the annuity produces a total annual retirement allowance equal to the sum of Part A, Part B, and Part C benefits each of which is the product of the applicable benefit formula multiplier, the applicable average highest compensation and the applicable number of years of service

Early Retirement Benefit is actuarially reduced from normal retirement age

Group F

Normal Retirement Eligibility Age 60 with 5 years of service or 30 years of service

Early Retirement Eligibility Age 55 with 25 years of service

Retirement benefit is composed of as many as three components:

Part A Benefit

For service earned through June 30, 2011

Part B Benefit

For service earned on and after July 1, 2011 up to a combined (Part A and Part B) 20 years of service

Part C Benefit

For service earned on and after July 1, 2011 in excess of a combined (Part A and Part B) 20 years of service

Benefit Formula Multiplier *Part A Benefit*

Members hired prior to July 12, 1998 were given a one-time irrevocable option to choose either the benefit formula using a 2.22% multiplier or the benefit formula using a 2.50% multiplier. For members hired on or after July 12, 1998, benefits are calculated using a 2.50% multiplier

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Part B Benefit

Members hired prior to July 12, 1998 were given a one-time irrevocable option to choose either the benefit formula using a 2.22% multiplier or the benefit formula using a 2.50% multiplier. For members hired on or after July 12, 1998, benefits are calculated using a 2.50% multiplier

Part C Benefit

2.20% multiplier

Average Highest
Compensation

Part A Benefit

Average of the highest three consecutive years of compensation

Part B Benefit

Average of the highest five consecutive years of compensation

Part C Benefit

Average of the highest five consecutive years of compensation

Years of Service

Years or fractional years of full-time service rendered to the plan sponsor

Benefit

a) An annuity which is actuarially equivalent to the accumulated contributions of the member at the time of retirement

b) A pension which together with the annuity produces a total annual retirement allowance equal to the sum of Part A, Part B, and Part C benefits each of which is the product of the applicable benefit formula multiplier, the applicable average highest compensation and the applicable number of years of service

Early Retirement Benefit is actuarially reduced from normal retirement age

Group G

Normal Retirement Eligibility

Age 67 with 5 years of service or age 62 with 30 years of service

Early Retirement Eligibility

Age 57 with 15 years of service

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Benefit Formula Multiplier	Benefit is calculated using a 2.20% multiplier for all years of service up to 30 years and a 2.00% multiplier for all service in excess of 30 years
Average Highest Compensation	Average of the highest five consecutive years of compensation
Years of Service	Years or fractional years of full-time service rendered to the plan sponsor
Benefit	<p>a) An annuity which is actuarially equivalent to the accumulated contributions of the member at the time of retirement</p> <p>b) A pension which together with the annuity produces a total annual retirement allowance equal to the product of the applicable benefit formula multiplier, the member's average highest compensation and the number of years of service</p> <p>Early Retirement Benefit is actuarially reduced from normal retirement age</p>

All Groups

In no event shall the retirement allowance be greater than 90% of a member's average highest compensation.

In no event shall the retirement allowance be greater than that permitted by Section 415 of the Internal Revenue Code.

The average highest compensation used in the calculation of benefits depends on which benefit formula applies to the member. The formula that uses the 2.22% multiplier includes overtime compensation and the lump sum payment for unused vacation and sick-pay. The formulas that use all other multipliers do not include overtime or the lump sum payment.

3. Disability Retirement Benefit

Eligibility	5 years of service
Benefit	<p>90% of normal retirement benefit at disability date but not less than the smaller of:</p> <p>a) 25% of the average highest compensation</p> <p>b) 90% of the retirement benefit the member would have become entitled to had he continued in service to normal retirement age without further change in average highest compensation</p>

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX C – SUMMARY OF PLAN PROVISIONS

4. Deferred Vested Retirement Benefit

Eligibility	5 years of service
Benefit	Normal retirement benefit beginning at normal retirement age

5. Pre-retirement Death Benefit

- 1) Contributions with interest
- 2) Survivor Benefits according to the type of survivors if the member has at least 18 months of service

6. Post-retirement Death Benefit

- 1) \$5,000 lump sum for Groups A and B
- 2) If no Joint and Survivor Option is selected, the balance of member contributions not received back in retirement benefit payments prior to death

7. Optional Forms of Benefit

- 1) Joint and 100% Survivor Payment
- 2) Joint and 50% Survivor Payment
- 3) 66 2/3% Joint and Survivor Payment
- 4) 80% Joint and Survivor Payment

8. Cost-of-Living Adjustments (COLA)

Groups A and B	3% simple COLA based on the member's benefit on January 1, 2016 including all previously granted COLAs. Effective January 1, 2016, the COLA will be suspended for a 3-year period
----------------	---

In the 3rd year of the COLA suspension (calendar year 2018), members will receive a one-time payment that is the lesser of 3% of their base pension benefit or \$1,000. This payment will be made on January 1, or the anniversary date of the member's retirement according to when the member normally receives a COLA

Groups C, D, E, F and G	3% simple COLA based on the initial gross monthly benefit with a 3-year delay following each member's date of retirement
-------------------------	--

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Poverty Exception	Any member of the Retirees Class or Current Employees Class who retired or retires with at least 5 years of service and whose household income is below 150% of federal poverty guidelines will receive a 3% compounding COLA until such time income exceeds 150% of federal poverty guidelines, at which time the member will receive a 3% simple COLA
-------------------	---

9. Contributions

Members	Each member, commencing January 1, 1978, contributes at a rate of 7.0% of the salary used to compute retirement benefits until retirement. Beginning January 1, 2010, the employee contribution rate was increased 0.5% per year over 4 years to reach 9.0% of pay. The CSA establishes that the contribution rate for members shall not exceed 9.0% of pay for the term of the agreement
Employers	The sponsoring employer makes annual contributions based on members' salaries so that, when members become eligible for benefits, reserves will have been accumulated to provide the pension and other benefits payable by the plan on account of creditable service

10. Deferred Retirement Option Plan (DROP)

Eligibility	Current Employees Class members with at least 30 years of service
Maximum Participation Period	5 years
Minimum Participation Period	Participation in DROP for less than 2 years results in forfeiture of all interest earnings credited to the member's DROP account
Benefit	Monthly pension benefit calculated as if the eligible member actually retired on their DROP effective date, including any adjustments for an assigned optionee. The monthly pension benefit will be contributed to the member's DROP account in the CRS Pension Trust and paid out as a lump sum upon termination from the DROP
Employee Contributions	Members continue to contribute 9.0% of pay while participating in DROP. 75% of the contribution is credited to the member's DROP account and the remaining 25% of the contribution is paid to the CRS Pension Trust to offset the costs of administering the DROP

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Employer Contributions	Employer contributions to the CRS Pension Trust continue to apply in the same manner as for other actively employed members who are not participating in the DROP. Employer contributions are not credited to the member's DROP account
Interest	DROP account balances are credited each month at a rate equal to the 10-year U.S. Treasury Note Business Day Series adjusted quarterly with a cap of 5% but not less than 0%

11. Changes Since Last Valuation

None

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX D – GLOSSARY OF TERMS

1. Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as mortality, withdrawal, disability, and retirement; changes in compensation; inflation; rates of investment earnings, and asset appreciation or depreciation; and other relevant items.

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)

A measure of 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 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. As a simple example: assume you owe \$100 to a friend one year from now. Also, assume there is a 1% probability of your friend dying over the next year, in which case you won't be obligated to pay him. If the assumed investment return is 10%, the actuarial present value is:

$$\frac{\text{Amount}}{\text{Payment}} \times \frac{\text{Probability of}}{(1 - .01)} \times \frac{1/(1+\text{Investment Return})}{1/(1+.1)} = \$90$$

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.

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX D – GLOSSARY OF TERMS

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. This way long-term costs are not distorted by short-term fluctuations in the market.

8. Actuarially Equivalent

Of equal Actuarial Present Value, determined as of a given date with each value based on the same set of Actuarial Assumptions.

9. Amortization Payment

The portion of the pension plan contribution 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 Cost Method

A method under which the Actuarial Liability is calculated as the Actuarial Present Value of the Projected Benefits allocated to periods prior to the valuation year.

11. Funded Ratio

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

12. Investment Return Assumption

The assumed interest rate used for projecting dollar related values in the future.

13. Mortality Table

A set of percentages which estimate the probability of death at a particular point in time. Typically, the rates are annual and based on age and sex.

14. Normal Cost

That portion of the Actuarial Present Value of pension plan benefits and expenses, which is allocated to a valuation year by the Actuarial Cost Method.

**CINCINNATI RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX D – GLOSSARY OF TERMS

15. Projected Benefits

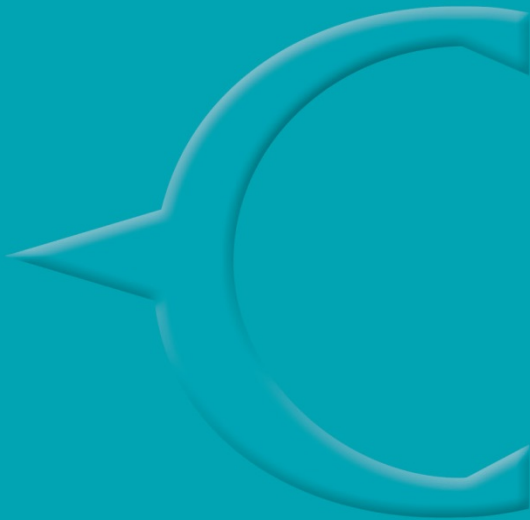
Those pension plan benefit amounts which are expected to be paid in the future under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and increases in future compensation and service credits.

16. Unfunded Actuarial Liability

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



Classic Values, Innovative Advice



City of Cincinnati

Other Postemployment Benefits Actuarial Valuation Report as of December 31, 2021

**Produced by Cheiron
June 2022**

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June 9, 2022

Board of Trustees
Cincinnati Retirement System
801 Plum Street, Suite 328
Cincinnati, Ohio 45202

Dear Members of the Board:

As requested, we have performed an actuarial valuation of the post-employment benefits provided by the Retirement System for Employees of the City of Cincinnati (CRS) as of December 31, 2021. The following report contains our findings and disclosures required by the Governmental Accounting Standards Board (GASB) standards. This is the third valuation of the Plan performed by Cheiron. Valuation results shown for valuations prior to 2018 were derived from the prior actuary's report.

The purpose of this report is to present the annual actuarial valuation of the City of Cincinnati Postemployment Benefit Plan. This report is for the use of the City 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.

The results of this valuation rely on future plan experience conforming to the underlying assumptions and methods outlined in this report. Future results may differ significantly from the current results presented in this report due to such factors as the following: Plan experience differing from that anticipated by the assumptions, changes in assumptions, and changes in Plan provisions or applicable law. Actuarial computations are calculated based on our understanding of GASB 74/75 and are for purposes of fulfilling employer financial accounting requirements. Determinations for purposes other than meeting employer financial accounting requirements may be significantly different from the results in this report. Additional accounting disclosures for the fiscal year ending June 30, 2022 related to GASB Statements 74 and 75 will be provided in a separate report.

Appendix A describes the Participant Data. Appendix B outlines Assumptions and Methods used in calculating the figures throughout the report. Appendix C contains our understanding of the substantive Plan provisions based on the information provided by the City.

In preparing our report, we relied without audit, on information (some oral and some written) supplied by Plan Administrators. This information includes, but is not limited to, the Plan provisions, employee data, and financial information. The demographic assumptions used in this report were based on the City's actuary's experience study adopted March 1, 2018. 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.

Board of Trustees

June 9, 2022

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This actuarial valuation reflects a full valuation in which claims, premiums, and census were updated.

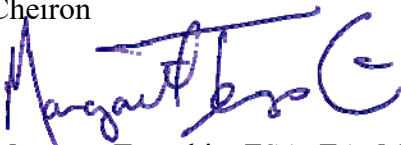
This report does not reflect future changes in benefits, penalties, or administrative costs that may be required as a result of the Patient Protection and Affordable Care Act of 2010, related legislation, or regulations.

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 collectively 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.

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

Sincerely,

Cheiron



Margaret Tempkin, FSA, EA, MAAA
Principal Consulting Actuary



Gaëlle Gravot, FSA, MAAA
Principal Consulting Actuary

**CITY OF CINCINNATI
POSTRETIREMENT HEALTH FUND
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

SECTION I – VALUATION SUMMARY

The City of Cincinnati has engaged Cheiron to provide an analysis of its post-employment benefit liabilities as of December 31, 2021. The primary purposes of performing this actuarial valuation are to:

- Estimate the Actuarially Determined Contribution (ADC) and the Actuarial Liability (AL) of the retiree health benefits using GASB 74 and 75 methodology,
- Provide disclosures for financial statements, and
- Provide projections for the ADC, Net OPEB Liability (NOL), and actuarial liabilities.

We have determined costs, liabilities, and trends for the substantive plan using actuarial assumptions and methods that we consider reasonable.

GASB’s OPEB Requirements

GASB’s Statement 74 refers to the financial reporting for post-employment benefit plans other than pension plans, and Statement 75 refers to the employer accounting for these plans. Statement 74 is generally applicable where an entity has a separate trust or fund for OPEB benefits. We understand that the City of Cincinnati has a trust used to fund future OPEB obligations.

Statement 75 requires the employer to book the actuarial cost (net of employee, retiree, and their dependents’ contributions) of the Plan as an expense on its financial statements. Additional disclosures required by GASB 74 and 75 include a description of the substantive plan, summary of significant accounting policies (which we have not included in this report), contributions, and a statement of funding progress, along with the methods and assumptions used for these disclosures.

The GASB 74 and 75 valuation sections are provided in a separate report.

Funding Policy

For the purpose of this valuation, the ADC is calculated as the normal cost determined under the Entry Age Normal Actuarial Cost Method, plus an open 30-year, level dollar amortization of the unfunded actuarial liability, plus 0.25% of total payroll for administrative expenses. This report determines the ADC for the FYE June 30, 2023.

**CITY OF CINCINNATI
POSTRETIREMENT HEALTH FUND
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

SECTION I – VALUATION SUMMARY

Table I-1 below summarizes the December 31, 2021 and December 31, 2020 actuarial valuation results.

Table I-1 Summary of Valuation Results		
Valuation Date	December 31, 2020	December 31, 2021
Discount Rate	7.50%	7.50%
Actuarial Liability (AL)	\$ 397,835,569	\$ 362,353,468
Actuarial Value of Assets	<u>502,357,775</u>	<u>525,773,721</u>
Unfunded actuarial liability (UAL)	\$ (104,522,206)	\$ (163,420,253)
Funded Ratio (AVA/AL)	126.27%	145.10%
Market Value of Assets	\$ 511,980,000	\$ 573,939,000
Funded Ratio (MVA/AL)	128.69%	158.39%
Fiscal Year Ending	June 30, 2022	June 30, 2023
Actuarially Determined Contribution	\$ 0	\$ 0
Calendar Year	2021	2022
Actual/Expected Net Benefit Payments	27,525,000	28,243,266

The Actuarial Liability decreased from \$397.8 million to \$362.4 million this year. In addition to the expected increase in liability of \$0.7 million due to normal cost, benefit payments, and interest, the Plan experienced other changes in liability attributable to a \$7.8 million increase due to the population changes. The Plan experienced liability gains, decreasing the liability by \$52.2 million due to changes in healthcare premiums, trends, and claims. In addition, the participation assumption for future retirees remaining in the Plan after retirement was adjusted upward leading to a liability loss of \$8.2 million. The combination of these changes resulted in a \$36.2 million decrease in liability. There were no changes in benefit plans since the prior valuation.

During the year ending December 31, 2021, the Plan's assets gained \$52.6 million on a market value basis. The return on market asset value was 18.06%, compared to the assumed return of 7.50%. The Plan's asset smoothing technique recognizes only a portion of the gains and losses for each year, and the return on the actuarial asset value was 10.53%. This return was above the assumed rate of return of 7.50% and resulted in an actuarial gain on investments for the Plan.

**CITY OF CINCINNATI
POSTRETIREMENT HEALTH FUND
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

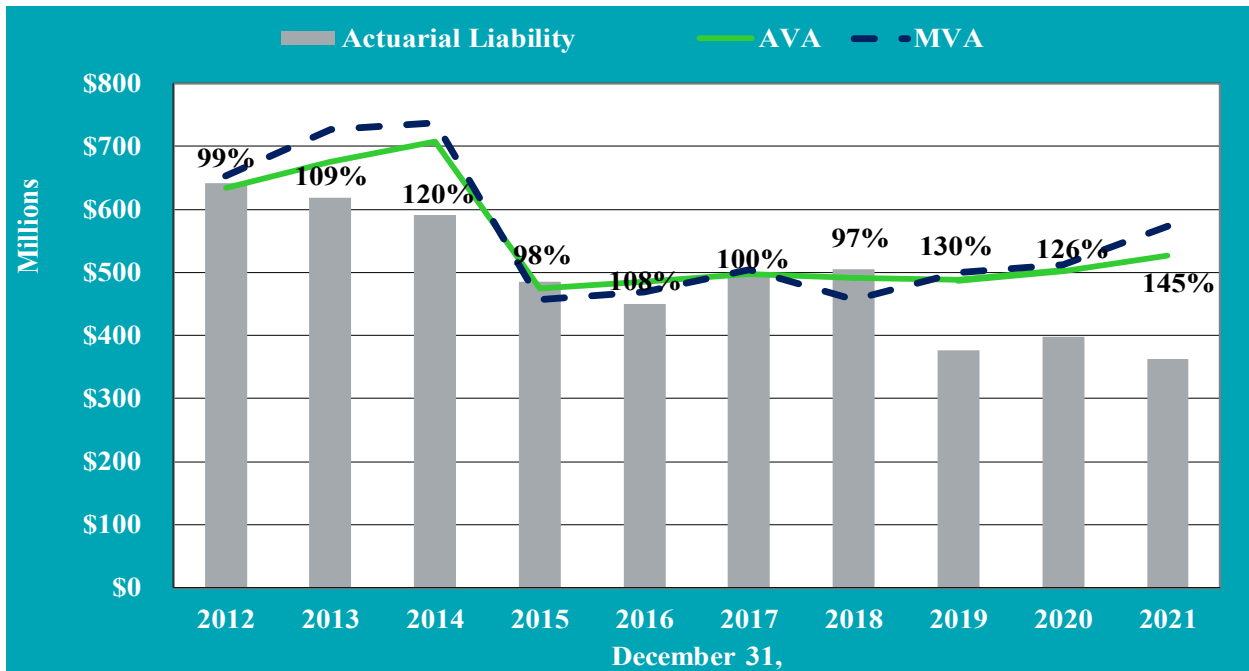
SECTION I – VALUATION SUMMARY

Historical Trends

This chart shows the historical trend of assets and the actuarial liability for the City’s OPEB Plan. The historical actuarial liabilities shown below are based on the funding valuation report for the Plan and not the actuarial liabilities developed under GASB 74/75. Cheiron performed valuations starting with 2018.

The grey bars represent the actuarial liability used to determine the Actuarially Determined Contribution (ADC). The liabilities prior to 2018 were based on actuarial reports produced by the prior actuary. In 2016, the Plan was closed to members hired after December 31, 2015. In 2019, the Plan adopted a fully insured Medicare Advantage Plan as of January 1, 2020, dropping the liability by \$127 million. In 2021, the liability decreased again due to favorable claims experience.

The Market Value of Assets is represented by the dark blue dotted line and the Actuarial Value of Assets is represented by the green solid line. The Actuarial Value of Assets (AVA) is developed by smoothing five years of investment returns, as seen on page 5. The percentages above the bars represent the funded ratio based on the AVA. The funded percentage increased to 145% as of January 1, 2022 due to the large return in the market value and experience gain.



**CITY OF CINCINNATI
POSTRETIREMENT HEALTH FUND
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

SECTION II – ASSETS

Assets

The Plan’s last valuation of liabilities was performed as of December 31, 2020. Table II-1 below shows the reconciliation of assets for the current and prior fiscal years. This section reconciles the assets of December 31, 2021 that were used to develop the FYE 2023 ADC.

Table II-1 Changes in Market Value of Assets *		
	December 31, 2020	December 31, 2021
Market Value of Assets - as of beginning of Fiscal Year	\$ 500,122,000	\$ 511,980,000
<u>Additions</u>		
Employer Contributions	\$ 0	\$ 0
Participant Contributions	0	0
Total contributions	\$ 0	\$ 0
Investment Return		
Net Realized Appreciation and Unrealized Appreciation	32,936,000	86,219,000
Interest and Dividends	5,025,000	2,576,000
Partnership Income	2,181,000	2,650,000
Other Income	9,000	9,000
Total income from investment activities	\$ 40,151,000	\$ 91,454,000
Investment Expenses	(1,084,000)	(1,504,000)
Total Investment Return	\$ 39,067,000	\$ 89,950,000
<u>Deductions</u>		
Benefit Payments Made	\$ 26,731,000	\$ 27,525,000
Administrative Expenses	478,000	466,000
Total Deductions	\$ 27,209,000	\$ 27,991,000
<u>Total</u>		
Net Increase (Decrease)	\$ 11,858,000	\$ 61,959,000
Market Value of Assets - as of end of Fiscal Year	\$ 511,980,000	\$ 573,939,000
Market Return for Period	8.03%	18.06%

* The January 1, 2020 asset value was adjusted by \$1 to account for rounding in the pension/OPEB asset allocation.

**CITY OF CINCINNATI
POSTRETIREMENT HEALTH FUND
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

SECTION II – ASSETS

Actuarial Value of Assets

The actuarial value of assets is the current market value, adjusted by a five-year smoothing of gains and losses on a market value basis. Each year's gain or loss is determined as the difference between the actual market return and the expected market return using the assumed rate of investment return. The actuarial value is adjusted to remain within 20% of the market value. Table II-2 below illustrates the calculation of the market value gains and losses.

Table II-2 Development of Unrecognized Gain/(Loss) on Investments as of December 31, FYE					
	Fiscal Year Ending 12/31/2017	Fiscal Year Ending 12/31/2018	Fiscal Year Ending 12/31/2019	Fiscal Year Ending * 12/30/2020	Fiscal Year Ending 12/31/2021
1. Market Value of Assets as of December 31, Beginning of Fiscal Year	\$ 468,973,000	\$ 504,394,000	\$ 457,249,000	\$ 500,122,000	\$ 511,980,000
Fiscal Year Cash Flow					
2. Employer Contributions for the Plan Year Ending December 31, FYE	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
3. Participant Contributions for the Plan Year Ending December 31, FYE	0	0	0	0	0
4. Benefit Payments through December 31, FYE	(30,021,000)	(27,450,000)	(29,253,000)	(26,731,000)	(27,525,000)
5. Administrative Expenses through December 31, FYE	(396,000)	(399,000)	(440,000)	(478,000)	(466,000)
6. Net Cash Flow	\$ (30,417,000)	\$ (27,849,000)	\$ (29,693,000)	\$ (27,209,000)	\$ (27,991,000)
Investment Performance					
7. Interest of 7.50% on Market Value of Assets to December 31, FYE	\$ 35,172,976	\$ 37,829,550	\$ 34,293,675	\$ 37,509,225	\$ 38,398,500
8. Interest on employer contributions assuming received at the end year to December 31, FYE	0	0	0	0	0
9. Interest on participant contributions assuming received uniformly throughout the year to December 31, FYE	0	0	0	0	0
10. Interest on benefit payments assuming payments made uniformly throughout the year to December 31, FYE	(1,125,788)	(1,029,375)	(1,096,988)	(1,002,413)	(1,032,188)
11. Interest on administrative expenses assuming payments made uniformly throughout the year to December 31, FYE	(14,850)	(14,963)	(16,500)	(17,925)	(17,475)
12. Expected Investment Performance (7 + 8 + 9 + 10 + 11)	\$ 34,032,338	\$ 36,785,212	\$ 33,180,187	\$ 36,488,887	\$ 37,348,837
13. Expected Market Value of Assets as of December 31, FYE (1 + 6 + 12)	\$ 472,588,338	\$ 513,330,212	\$ 460,736,187	\$ 509,401,887	\$ 521,337,837
14. Market Value of Assets as of December 31, FYE	\$ 504,394,000	\$ 457,249,000	\$ 500,123,000	\$ 511,980,000	\$ 573,939,000
15. Market Value of Assets Investment Gain/(Loss) (14 - 13)	\$ 31,805,662	\$ (56,081,212)	\$ 39,386,813	\$ 2,578,113	\$ 52,601,163

* The January 1, 2020 asset value was adjusted by \$1 to account for rounding in the pension/OPEB asset allocation.

**CITY OF CINCINNATI
POSTRETIREMENT HEALTH FUND
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

SECTION II – ASSETS

Table II-3 illustrates the calculation of actuarial value of assets for the December 31, 2021 valuation.

Table II-3 Development of Actuarial Value of Assets as of December 31, 2021		
1. Actuarial Value of Assets as of December 31, 2020	\$	502,357,775
2. Net Cash Flow (Contributions - Benefit Payments - Expenses)	\$	(27,991,000)
3. Expected Investment Performance	\$	37,348,837
	Initial Unrecognized	
<u>Recognition of gain/(loss)</u>	<u>Gain/(Loss)</u>	<u>Recognition</u>
4. 20% of gain/(loss) as of December 31, 2017	\$ 31,805,662	\$ 6,361,132
5. 20% of gain/(loss) as of December 31, 2018	\$ (56,081,212)	\$ (11,216,242)
6. 20% of gain/(loss) as of December 31, 2019	\$ 39,386,813	\$ 7,877,363
7. 20% of gain/(loss) as of December 31, 2020	\$ 2,578,113	\$ 515,623
8. 20% of gain/(loss) as of December 31, 2021	\$ 52,601,163	\$ 10,520,233
9. Recognized gain/(loss) as of December 31, 2021 (sum of 4 - 8)	\$	14,058,109
10. Actuarial Value of Assets as of December 31, 2021 (1 + 2 + 3 + 9)	\$	525,773,721
Market Value of Assets as of December 31, 2021	\$	573,939,000
Corridor for Actuarial Value of Assets		
80% of Market Value	\$	459,151,200
120% of Market Value	\$	688,726,800
Actuarial Value of Assets as of December 31, 2021	\$	525,773,721
Actuarial Value as a percent of Market Value		91.6%
Return on Actuarial Value of Asset		10.53%

**CITY OF CINCINNATI
POSTRETIREMENT HEALTH FUND
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

SECTION III – VALUATION RESULTS

This section of the report calculates the current and expected future contribution requirements under the City’s funding policy. This valuation calculates the contribution for the fiscal year 2022-23.

The liabilities presented in this section are based on the assumption of an ongoing plan and would not be appropriate for measuring the settlement value of Plan obligations.

Information about the actuarial liabilities of the Plan as of December 31, 2021 and December 31, 2020 is shown in Table III-1 below.

Table III-1 Actuarial Liability		
Valuation Date	December 31, 2020	December 31, 2021
Discount Rate	7.50%	7.50%
Actuarial Liability		
Current active members	\$ 94,654,820	\$ 103,004,022
Current retirees, beneficiaries, and dependents	<u>303,180,749</u>	<u>259,349,446</u>
Total Actuarial Liability (AL)	\$ 397,835,569	\$ 362,353,468
Actuarial Value of Assets (AVA)	<u>502,357,775</u>	<u>525,773,721</u>
Unfunded Actuarial Liability (UAL)	\$ (104,522,206)	\$ (163,420,253)
Funded Ratio (AVA/AL)	126.27%	145.10%
Market Value of Assets (MVA)	\$ 511,980,000	\$ 573,939,000
Unfunded Actuarial Liability (UAL)	\$ (114,144,431)	\$ (211,585,532)
Funded Ratio (MVA/AL)	128.69%	158.39%
Normal Cost	\$ 2,529,317	\$ 2,609,568

Starting June 30, 2017, the City’s GASB reporting requirements fall under GASB 74 and 75, and the unfunded liability is booked on the balance sheet. The above liability is shown for funding purposes only; the GASB 74 and 75 liability will be a roll-forward of this liability to the fiscal year ending June 30, 2022 and will be provided in a separate report.

**CITY OF CINCINNATI
POSTRETIREMENT HEALTH FUND
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

SECTION III – VALUATION RESULTS

Table III-2 below shows the Actuarial Liability for actives and retirees, the normal cost, the Actuarial Asset Value, and the resulting unfunded actuarial liability (UAL) as of December 31, 2021 and December 31, 2020 at a 7.5% discount rate. Note that this development of the AL and UAL are based on the measurement date of December 31, 2021, and will be used in the determination of the Actuarially Determined Contribution for the 2022-23 fiscal year.

Table III-2		
Actuarial Liability, Normal Cost & Actuarial Asset Value as of		
	December 31, 2020	December 31, 2021
Actuarial Liability		
Active Liability		
-Active Employees	\$ 74,901,798	\$ 77,121,307
-DROP Participants	<u>19,753,022</u>	<u>25,882,715</u>
Total Active Liability	\$ 94,654,820	\$ 103,004,022
Inactive Liability		
-Retired Employees	\$ 273,413,330	\$ 236,070,963
-Beneficiary	18,130,226	15,090,207
-Disabled	5,262,696	4,056,624
-Deferred Beneficiaries	3,097,453	2,083,785
-Deferred Members	<u>3,277,044</u>	<u>2,047,867</u>
Total Inactive Liability	\$ 303,180,749	\$ 259,349,446
Total Liability	\$ 397,835,569	\$ 362,353,468
Actuarial Value of Assets	<u>502,357,775</u>	<u>525,773,721</u>
Unfunded Actuarial Liability (UAL)	\$ (104,522,206)	\$ (163,420,253)
Normal Cost	\$ 2,529,317	\$ 2,609,568

**CITY OF CINCINNATI
POSTRETIREMENT HEALTH FUND
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

SECTION III – VALUATION RESULTS

Reconciliation

Table III-3 provides an estimate of the major factors contributing to the change in liability since the last actuarial valuation report (AVR).

Table III-3 Reconciliation of Actuarial Liability		
Actuarial Liability at December, 31, 2020	\$	397,835,569
Normal Cost		2,529,317
Expected Benefits paid throughout the year		(30,699,244)
Interest		28,876,145
Expected Actuarial Liability at December, 31, 2021	\$	398,541,787
Actuarial Liability at December, 31, 2021		362,353,468
Gain or (Loss)	\$	36,188,319
Gain or (Loss) due to:		
Benefit changes	\$	-
Census changes		(7,752,973)
Demographic changes		-
Health Care Claims and Trend changes		52,207,447
Participation Assumption changes		(8,266,155)
Total changes	\$	36,188,319

Below is a brief description of each of the above components:

- *Benefits Changes* refers to changes in the Plan or eligibilities. There were no benefit changes since the prior valuation.
- *Census Changes* refers to differences in the valuation census due to members terminating, retiring, dying, and becoming disabled at rates different than expected.
- *Demographic assumption changes* refer to the changes in demographic assumptions. There were no demographic assumption changes this year.
- *Healthcare Claims and Trend changes* refer to the change in projected healthcare cost vs. actual healthcare cost redeveloped at 2021. In addition, the trends were reset to reflect the current marketplace.
- *Participation Assumption changes* refers to the change in the assumption for future retirees to elect and remain in the healthcare plan. The assumption was adjusted upward for Group 2 to reflect fewer members dropping coverage while in retirement.

**CITY OF CINCINNATI
POSTRETIREMENT HEALTH FUND
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

SECTION III – VALUATION RESULTS

Actuarially Determined Contribution (ADC)

The ADC consists of three parts: (1) the *normal cost*, which represents the annual cost attributable to service earned in a given year, (2) the assumed administrative expense, and (3) the amortization of the UAL. In Table III-4 below, we show the computed FYE 2022 and FYE 2023 ADC based on a 7.5% assumed discount rate (based on a long-term view of returns on the asset allocation).

Table III-4				
Calculation of Actuarially Determined Contribution (ADC)				
For Fiscal Year Ending	6/30/2022		6/30/2023	
Normal Cost	\$	2,529,000	\$	2,610,000
Administrative Expenses ¹		482,000		514,000
Amortization of UAL		<u>(8,536,000)</u>		<u>(13,346,000)</u>
Total ADC (not less than \$0)	\$	0	\$	0
Calendar Year	2021		2022	
Covered Payroll	\$	140,670,666	\$	139,123,528
ADC as a percentage of pay		0.00%		0.00%
Total Compensation	\$	192,988,736	\$	205,675,789
ADC as a percentage of compensation		0.00%		0.00%
Actual/Expected Net Benefit Payments	\$	27,525,000	\$	28,243,266

¹ Administrative Expense of 0.25% of total compensation.

**CITY OF CINCINNATI
POSTRETIREMENT HEALTH FUND
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

SECTION III – VALUATION RESULTS

Projected Cash Flow

The following table presents a 30-year payout projection of employer payments for the City’s OPEB Plan. Market value of assets are assumed to earn 7.50% returns.

Table III-5 Projected Cash Flow Assuming 7.5% Discount Rate					
Fiscal Year Ending December 31,	Expected Market Value Assets	Expected Employer Benefit Payments	Expected Actuarial Liability	Fiscal Year Ending June 30,	Expected Actuarial Determined Contribution
2022	\$ 587,701,000	\$ 28,243,000	\$ 361,657,000	2022	\$ 0
2023	602,287,000	28,441,000	363,139,000	2023	0
2024	617,871,000	28,535,000	364,332,000	2024	0
2025	630,808,000	32,214,000	361,938,000	2025	0
2026	644,471,000	32,451,000	359,102,000	2026	0
2027	659,103,000	32,503,000	355,983,000	2027	0
2028	674,826,000	32,511,000	352,591,000	2028	0
2029	692,213,000	32,042,000	349,375,000	2029	0
2030	711,183,000	31,774,000	346,131,000	2030	0
2031	731,654,000	31,698,000	342,660,000	2031	0
2032	753,947,000	31,421,000	339,137,000	2032	0
2033	778,359,000	31,038,000	335,687,000	2033	0
2034	804,413,000	31,215,000	331,710,000	2034	0
2035	832,204,000	31,414,000	327,125,000	2035	0
2036	862,141,000	31,362,000	322,142,000	2036	0
2037	894,432,000	31,292,000	316,801,000	2037	0
2038	929,025,000	31,408,000	310,855,000	2038	0
2039	966,135,000	31,484,000	304,298,000	2039	0
2040	1,005,825,000	31,679,000	296,957,000	2040	0
2041	1,048,626,000	31,550,000	289,076,000	2041	0
2042	1,094,908,000	31,288,000	280,771,000	2042	0
2043	1,144,882,000	31,074,000	271,982,000	2043	0
2044	1,198,797,000	30,888,000	262,659,000	2044	0
2045	1,257,179,000	30,479,000	252,978,000	2045	0
2046	1,320,345,000	30,086,000	242,891,000	2046	0

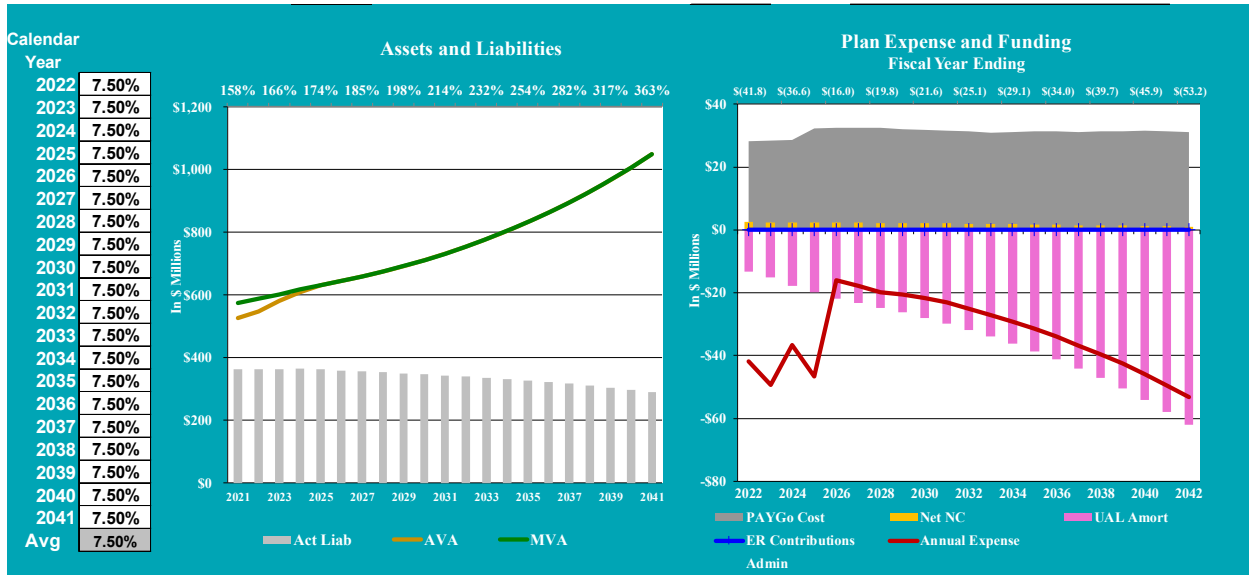
**CITY OF CINCINNATI
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SECTION III – VALUATION RESULTS

Future Outlook

Base Line Projections

The two graphs on this page show the expected progress of the Plan over the next 15 years assuming the Plan’s assets earn 7.50% on their market value and that all other assumptions are met. The graph titled “Assets and Liabilities” shows the projected funded status over the next 15 years. The Plan is projected to be in a surplus position. The graph titled “Plan Expense and Funding” shows the expected net benefit stream as well as the expected expense for GASB 75, if all assumptions are met. The Plan’s expected net benefit payments are relatively stable over the entire period. The bump in benefit payments in 2024 represents the current DROP participants assumed to retire.

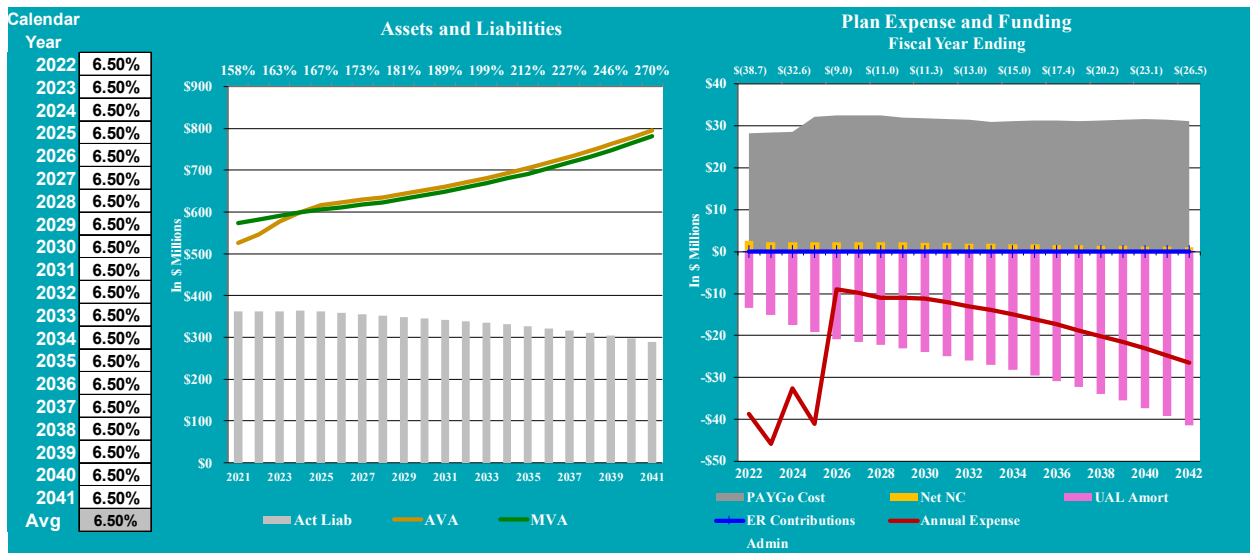


**CITY OF CINCINNATI
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SECTION III – VALUATION RESULTS

6.5% Return Projections

The two graphs on this page show the expected progress of the Plan over the next 15 years assuming the Plan’s assets earn 6.50% on their market value and that all other assumptions are met. The graph titled “Assets and Liabilities” shows the projected funded status over the next 15 years. The Plan is projected to be in a less surplus position than the 7.50% projections. The projection of the Plan’s funded status is highly driven by the investment returns. The graph titled “Plan Expense and Funding” shows the expected net benefit stream as well as the expected expense for GASB 75, if all other assumptions are met. The Plan’s expected net benefit payments are relatively stable over the entire period. The bump in benefit payments in 2024, represent the current DROP participants assumed to retire.



**CITY OF CINCINNATI
POSTRETIREMENT HEALTH FUND
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

SECTION IV – SENSITIVITY OF RESULTS

The liabilities produced in this report are sensitive to the assumptions used. Table IV-1 shows liabilities under the actuarial funding scenario using a 1% increase and a decrease in healthcare trend rates to provide some measure of sensitivity. In all cases, we are using the full actuarial funding assumption of 7.50% for the discount rate.

Table IV-1 Health Care Trend Rate Sensitivity			
Health Care Trend Rates	-1%	Base	+1%
Actuarial Liability			
Current active members	\$ 87,782,095	\$ 103,004,022	\$ 120,912,674
Current retirees, beneficiaries, and dependents	<u>238,744,258</u>	<u>259,349,446</u>	<u>282,955,167</u>
Total Actuarial Liability (AL)	\$ 326,526,353	\$ 362,353,468	\$ 403,867,841
Actuarial Value of Assets	<u>525,773,721</u>	<u>525,773,721</u>	<u>525,773,721</u>
Unfunded Actuarial Liability (UAL)	\$ (199,247,368)	\$ (163,420,253)	\$ (121,905,880)
Normal Cost	\$ 2,115,316	\$ 2,593,125	\$ 3,216,623

Table IV-2 shows liabilities under the actuarial funding scenario using a 1% increase and a decrease in discount rates to provide some measure of sensitivity.

Table IV-2 Discount Rate Sensitivity			
Discount Rate	6.50%	7.50%	8.50%
Actuarial Liability			
Current active members	\$ 117,974,536	\$ 103,004,022	\$ 89,808,158
Current retirees, beneficiaries, and dependents	<u>282,746,682</u>	<u>259,349,446</u>	<u>239,235,798</u>
Total Actuarial Liability (AL)	\$ 400,721,218	\$ 362,353,468	\$ 329,043,956
Actuarial Value of Assets	<u>525,773,721</u>	<u>525,773,721</u>	<u>525,773,721</u>
Unfunded Actuarial Liability (UAL)	\$ (125,052,503)	\$ (163,420,253)	\$ (196,729,765)
Normal Cost	\$ 3,352,519	\$ 2,593,125	\$ 2,015,716

**CITY OF CINCINNATI
POSTRETIREMENT HEALTH FUND
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

SECTION V – ACCOUNTING DISCLOSURES

The Government Finance Officers Association (GFOA) maintains a checklist of items to be included in the Annual Comprehensive Financial Report (ACFR) in order to receive recognition for excellence in financial reporting. In accordance with those statements, we have prepared the following disclosures.

Schedule of Funding Progress

The schedule of funding progress compares the assets used for funding purposes to the comparable liabilities to determine how well the Plan is funded and how this status has changed over the past several years. The actuarial liability is compared to the actuarial value of assets to determine the funding ratio. The actuarial liability under GASB is determined assuming that the Plan is ongoing and participants continue to terminate employment, retire, etc., in accordance with the actuarial assumptions.

Years prior to 2018 were taken from the prior actuary's report.

Table V-1 Schedule of Funding Progress for Fiscal Year Ending December 31, (\$ in Thousands)						
Valuation Year	Actuarial Asset Value (a)	Actuarial Liability (b)	Unfunded Actuarial Liability (c)=(b-a)	Funded Ratio (d)=(a)/(b)	Covered Payroll* (e)	UAL as a Percentage of Covered Payroll (f) = (c)/(e)
2012	634,173	641,876	7,703	98.8%	167,148	5%
2013	674,709	618,508	(56,201)	109.1%	163,477	(34)%
2014	706,959	590,902	(116,057)	119.6%	164,575	(71)%
2015	474,746	484,833	10,087	97.9%	174,963	6%
2016	485,845	450,026	(35,819)	108.0%	168,785	(21)%
2017	497,233	496,188	(1,045)	100.2%	172,156	(1)%
2018	490,887	504,757	13,870	97.3%	168,420	8%
2019	488,000	376,561	(111,439)	129.6%	164,684	(68)%
2020	502,358	397,836	(104,522)	126.3%	140,671	(74)%
2021	525,774	362,353	(163,420)	145.1%	139,124	(117.5)%

* Covered Payroll represents the payroll of those members eligible for postretirement healthcare benefits. The Plan was closed December 31, 2015.

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SECTION V – ACCOUNTING DISCLOSURES

Historical Asset Information

The historical asset information, Table V-2, shows the dollar-weighted rate of return for each of the actuarial value of assets and the market value of assets.

Years prior to 2018 were taken from the prior actuary’s report.

Table V-2 Historical Asset Information (\$ in Thousands)				
Valuation Year	Actuarial Value of Assets		Market Value of Assets	
	Amount	Dollar-weighted Rate of Return	Amount	Dollar-weighted Rate of Return
2009	\$746,029	0.40%	\$621,691	19.13%
2010	726,412	2.43%	657,319	13.10%
2011	668,392	-1.65%	616,464	0.87%
2012	634,173	0.15%	652,864	11.95%
2013	674,709	12.02%	726,098	16.81%
2014	706,959	10.01%	737,722	6.38%
2015	474,746	7.39%	456,918	-0.11%
2016	485,845	8.67%	468,973	9.24%
2017	497,233	8.88%	504,394	14.51%
2018	490,887	4.45%	457,249	-3.93%
2019	488,000	5.63%	500,123	16.40%
2020	502,358	8.76%	511,981	8.03%
2021	525,774	10.53%	573,939	18.06%

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APPENDIX A – MEMBERSHIP INFORMATION

The census data used to develop the Actuarial Liability (AL) as of December 31, 2021 and December 31, 2020 was provided by the Cincinnati Retirement System staff.

Group	December 31, 2020	December 31, 2021
Active Participants		
Active Full Time Employees	1,767	1,673
Active Part Time Employees	279	210
Active DROP Employees	<u>209</u>	<u>185</u>
Total	2,255	2,068
Covered Payroll	\$140,670,666	\$139,123,528
Total Compensation	\$192,988,736	\$205,675,789
Active Full Time Employees - ineligible for retiree health benefits	883	1,194
Active Part Time Employees - ineligible for retiree health benefits	<u>327</u>	<u>344</u>
Total - ineligible for retiree health benefits	1,210	1,538
Inactive Participants		
Number of retirees and surviving spouses currently receiving retiree health benefits	3,683	3,511
Spouses currently receiving retiree health benefits	<u>1,427</u>	<u>1,398</u>
Total	5,110	4,909
Retired members and surviving spouses not currently receiving retiree health benefits but may elect coverage in the future	<u>224</u>	<u>351</u>
Total	5,334	5,260
Terminated vested members eligible for retiree health benefits	25	20
Terminated vested members not eligible for retiree health benefits	<u>200</u>	<u>219</u>
Total	5,559	5,499

Note: In addition, there are 7,399 inactive participants hired before December 31, 2015 who are former employees with an employee account balance in the pension plan, but are assumed not to be vested. No retiree health benefit liability is assumed for these individuals.

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APPENDIX A – MEMBERSHIP INFORMATION

Active Member Data as of December 31, 2021

COUNTS BY AGE/SERVICE										
Age	Service									Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 25	28	2	0	0	0	0	0	0	0	30
25 to 29	30	22	1	0	0	0	0	0	0	53
30 to 34	14	67	31	2	0	0	0	0	0	114
35 to 39	18	108	83	33	3	0	0	0	0	245
40 to 44	7	67	81	45	36	2	0	0	0	238
45 to 49	7	60	68	66	55	21	0	0	0	277
50 to 54	10	51	82	74	76	60	11	0	0	364
55 to 59	9	43	44	45	68	60	19	2	0	290
60 to 64	5	35	33	27	35	25	13	3	0	176
65 to 69	10	16	10	12	9	7	0	2	0	66
70 & up	12	3	3	3	3	2	2	0	2	30
Total	150	474	436	307	285	177	45	7	2	1,883

AVERAGE SALARY BY AGE/SERVICE										
Age	Service									Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 25	11,977	*								13,140
25 to 29	19,009	56,053	*							35,205
30 to 34	*	59,369	68,512	*						57,007
35 to 39	*	64,537	74,597	69,173	*					65,326
40 to 44	*	63,753	72,351	74,311	76,852	*				69,368
45 to 49	*	63,100	81,145	79,150	79,217	81,597				74,794
50 to 54	*	60,412	75,057	72,007	77,163	80,599	*			72,475
55 to 59	*	64,586	65,648	64,816	73,149	78,832	*	*	*	69,554
60 to 64	*	51,187	70,719	77,038	64,917	73,331	*	*	*	66,246
65 to 69	*	*	*	*	*	*	*	*	*	55,819
70 & up	*	*	*	*	*	*	*	*	*	33,564
Total	\$ 15,013	\$ 61,124	\$ 73,323	\$ 72,323	\$ 74,475	\$ 78,435	\$ 81,572	\$ 81,839	\$ 72,042	\$ 66,327

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APPENDIX A – MEMBERSHIP INFORMATION

Inactive Member Data as of December 31, 2021

Health Care Plan	Under 65	Over 65	Total
Secure Plan	4	63	67
Select Plan	477	3,524	4,001
Model Plan	<u>676</u>	<u>165</u>	<u>841</u>
Total	1,157	3,752	4,909

Attained Age	Number of Retirees/ Surviving Spouses	Number of Covered Spouses
< 40	0	1
40 - 44	0	0
45 - 49	4	10
50 - 54	46	46
55 - 59	199	143
60 - 64	464	244
65 - 69	684	339
70 - 74	807	321
75 - 79	513	162
80 - 84	375	95
85 - 89	243	29
90 - 94	122	5
95 - 99	46	3
100+	8	0
Total	3,511	1,398

Reconciliation of Members with Medical Coverage								
	Active	DROP	Disabled	Survivors	Beneficiaries	Retired	Term Vested	Total
December 31, 2020	2,046	209	124	56	452	3,051	25	5,963
Retirement those that Elect Medical Coverage	(27)	(42)				73	(4)	0
DROP	(17)	19					(2)	0
Termination, Eligible Medical Coverage	(4)	0					4	0
Termination/Retirement, No Medical Coverage	(150)	(2)						(152)
Deaths / Drop Coverage	0	0	(20)	(11)	(72)	(178)	0	(281)
Data Changes	35	1	1	(6)	39	2	(3)	69
December 31, 2021	1,883	185	105	39	419	2,948	20	5,599

Please note that the above data was used to project the figures in this report.

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APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

The assumptions for this valuation were selected based on recent experience and expectations for the future. The current year’s assumptions were detailed in the prior actuary’s experience study adopted March 1, 2018. We have not performed our own experience study but reviewed the reports and letters of the prior actuary and believe the assumptions to be reasonable. The 7.50% discount rate used for valuation purposes as of December 31, 2021, is prescribed under paragraph 29 of the CSA. The actuarial cost method, the asset valuation method, and the amortization method used for funding purposes were selected by CRS during prior periods.

Economic Assumptions

- 1. Discount Rate** 7.50% per year
- 2. Expected Return on Assets** 7.50% per year, net of investment expenses
- 3. Administrative Expenses** 0.25% of total payroll
- 4. Inflation Assumption** CPI: 2.75% per year
Medical CPI: 3.25% per year
- 5. Salary Increase Rate** Salary increases are assumed to vary by service.
Representative rates are shown as follows:

Service	Annual Increase
0	7.50%
5	5.00
10	4.50
15	4.00
21+	3.75

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APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

6. Per Person Health Care Cost Trends

Annual per capita health care claims costs are expected to increase in future years as a result of medical inflation, utilization, demographic changes, leverage in the plan design, and improvements in technology adjusted for any implicit and/or explicit cost containment features. Initial health care cost trend rates were selected based on an analysis of national average health trend surveys specific to similarly structured plans for both Medicare ineligible and Medicare-eligible participants. The assumed rates of increases in expected retiree health care claims costs and contributions vary by year, retiree health plan, and payment age, as shown in the table below:

Trends for current actives, non-Medicare retirees, and Part A only Medicare retirees:

Calendar Year	All Plans	Non-Model Plans	Model Plans
	Payment Age < 65	Payment Age 65+	Payment Age 65+
2021	8.00%	4.97%	4.84%
2022	7.75%	7.27%	7.30%
2023	7.50%	6.56%	6.55%
2024	7.00%	6.57%	6.58%
2025	6.66%	6.30%	6.31%
2026	6.32%	6.04%	6.04%
2027	5.99%	5.77%	5.78%
2028	5.65%	5.51%	5.51%
2029	5.31%	5.24%	5.24%
2030	4.97%	4.97%	4.97%
2031	4.97%	4.97%	4.97%
2032	4.63%	4.63%	4.63%
2033	4.45%	4.45%	4.45%
2034	4.35%	4.35%	4.35%
2035	4.28%	4.28%	4.28%
2036+	4.00%	4.00%	4.00%

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Trends for current Medicare retirees:

Calendar Year	Non-Model Plans Payment Age 65+	Model Payment Age 65+	Medicare A Only Payment Age 65+
2021	8.00%	5.55%	5.54%
2022	7.75%	7.14%	7.14%
2023	7.50%	6.57%	6.57%
2024	7.00%	6.52%	6.52%
2025	6.66%	6.26%	6.26%
2026	6.32%	6.00%	6.01%
2027	5.99%	5.75%	5.75%
2028	5.65%	5.49%	5.49%
2029	5.31%	5.23%	5.23%
2030	4.97%	4.97%	4.97%
2031	4.97%	4.97%	4.97%
2032	4.63%	4.63%	4.63%
2033	4.45%	4.45%	4.45%
2034	4.35%	4.35%	4.35%
2035	4.28%	4.28%	4.28%
2036+	4.00%	4.00%	4.00%

Trends for retiree contributions:

Calendar Year	All Plans Payment Age < 65	Non-Model Plans Payment Age 65+	Model Plans Payment Age 65+
2021	8.00%	4.97%	5.15%
2022	7.75%	7.27%	7.23%
2023	7.50%	6.56%	6.56%
2024	7.00%	6.57%	6.55%
2025	6.66%	6.30%	6.29%
2026	6.32%	6.04%	6.03%
2027	5.99%	5.77%	5.76%
2028	5.65%	5.51%	5.50%
2029	5.31%	5.24%	5.24%
2030	4.97%	4.97%	4.97%
2031	4.97%	4.97%	4.97%
2032	4.63%	4.63%	4.63%
2033	4.45%	4.46%	4.46%
2034	4.35%	4.35%	4.35%
2035	4.28%	4.28%	4.28%
2036+	4.00%	4.00%	4.00%

7. Changes Since the Last Valuation

Trends were updated to reflect the current marketplace.

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APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Demographic Assumptions

1. Retirement Rates

Retirement rates for each group vary by age and service with the City. Sample rates are shown in the tables below.

Annual Rate of Retirement Groups C, D, E, and F*					
Age	5 Years of Service	6-24 Years of Service	25-29 Years of Service	30 Years of Service	31+ Years of Service
50-54				55.0%	30.0%
55			6.0%	55.0	30.0
56			8.0	55.0	30.0
57-59			10.0	55.0	30.0
60	25.0%	25.0%	25.0	55.0	25.0
61-69	25.0	18.0	18.0	55.0	25.0
70	100.0	100.0	100.0	100.0	100.0

* For purposes of valuing CSA Employee members eligible for DROP benefits, an additional 10% is added to rates for 30 years of service and an additional 5% is added to rates for 31+ years of service.

Annual Rate of Retirement Group G					
Age	5 Years of Service	6-14 Years of Service	15-29 Years of Service	30 Years of Service	31+ Years of Service
57-58			6.0%	6.0%	6.0%
59-60			8.0	8.0	8.0
61			10.0	10.0	10.0
62			10.0	25.0	25.0
63-66			10.0	25.0	18.0
67	25.0%	25.0%	25.0	25.0	18.0
68-69	25.0	18.0	18.0	18.0	18.0
70	100.0	100.0	100.0	100.0	100.0

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2. Rates of Withdrawal

Withdrawal rates for each group vary by age and service with the City. Sample rates are shown in the tables below.

Annual Rate of Withdrawal				
Age	Less than One Year of Service	Between One and Three Years of Service	Between Three and Five Years of Service	Five or More Years of Service
20	22.00%	10.00%	8.00%	4.00%
25	22.00	10.00	8.00	4.00
30	22.00	10.00	8.00	4.00
35	22.00	10.00	4.00	4.00
40	22.00	10.00	4.00	2.75
45	22.00	10.00	4.00	1.25
50	22.00	10.00	4.00	1.25
55	22.00	10.00	4.00	1.25
60	22.00	10.00	4.00	1.25
65	22.00	10.00	4.00	1.25
70	22.00	10.00	4.00	1.25

3. Rates of Disability

Disability rates for each group vary by age. Sample rates are shown in the table below.

Age	Annual Rate of Disability*
20	0.005%
25	0.010
30	0.015
35	0.025
40	0.045
45	0.075
50	0.135
55	0.210
60	0.250
65	0.250

* Rates are 0% when a member is eligible for normal retirement.

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APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

4. Rates of Mortality

Preretirement Mortality: RP-2014 Healthy Dataset Mortality table set forward two years for males and females with fully generational projected mortality improvements using MP-2017.

Postretirement Mortality: RP-2014 Total Dataset Mortality table set forward two years for males and females with fully generational projected mortality improvements using MP-2017.

Disabled Mortality: RP-2014 Disabled Mortality table with fully generational projected mortality improvements using MP-2017.

5. DROP Participation

60% of eligible CSA Employee members eligible for DROP benefits are assumed to decline participation, and 40% are assumed to elect participation. Those electing to participate are assumed to remain in the DROP for three years.

6. Vested Withdrawal

60% of vested members who terminate elect to leave their contributions in the Plan in order to be eligible for a benefit at their normal retirement date, while the remaining 40% elect to withdraw their contributions.

7. Spousal Coverage

Actual census data, payment form elections, and current health care plan elections for spouses of current retirees were used. For spouses of eligible future retirees, a 100% spouse coverage election rate is assumed for those members choosing a joint & survivor payment form, and a 15% spouse coverage election rate is assumed for those members selecting a single-life annuity payment form. Under a joint & survivor payment form, retiree health benefits are available until the death of the last annuitant.

8. Dependent Age

For current retirees, the actual spouse date of birth was used when available. For future retirees, husbands are assumed to be three years older than wives.

9. Health Plan Administrative Expenses

Health plan administrative expenses are included in the per capita claims costs.

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10. Percent of Members Electing Coverage

Actual census data and current Plan elections provided by CRS were used for those currently receiving retiree health benefits. Group 1 members who retired prior to September 1, 2007, and currently qualify for the Secure Plan, are assumed to re-qualify in all future years. All current participants not qualifying for the Secure Plan are covered either by the Select Plan or the Model Plan. Current participants are assumed to maintain their current retiree health benefits coverage until they are no longer eligible. The active members of Group C with at least 15 years of creditable service shall be entitled to retiree health benefits under the Select Plan as Group 1 members. All other eligible future retirees electing retiree health benefits are assumed to be covered by the Model Plan. 95% of eligible future retirees in Group 1 are assumed to elect retiree health benefits. Eligible future retirees in Group 2 are required to pay the portion of their cost as determined by the point system, so retiree health benefit election rates are assumed to reduce as the level of cost-sharing increases. The point system is based upon the sum of the member’s full years of service and the member’s age at separation from service. The assumed contribution rates and rates of participation for Group 1 and Group 2 members are as follows:

Group	Assumed Rate of Participation		Retiree Contribution as a Percentage of Cost	
	Pre-65 Retirement	Post-64 Retirement	Select Plan	Model Plan
Group 1	95%	95%	5%	10%
Group 2 with 90+ Points	90% grading to 70% over 20 years	75%	5%	10%
Group 2 with 80 – 89 Points	90% grading to 70% over 20 years	75%	25%	25%
Group 2 with 70 – 79 Points	50% grading to 25% over 20 years	25%	50%	50%

Note that the Group 2 rates of participation assumptions differ from the ones in the prior actuary’s experience study adopted March 2018. We changed these assumptions due the recent experience varying greatly from the experience study results.

It is assumed that 100% of eligible future disabled retirees will elect retiree health benefits.

11. Percent Electing Medical Expense Reimbursement Program (MERP)

Based upon current participation in the MERP, 0% of current and future retiree health benefits participants are assumed to elect the MERP. As credible experience for MERP participation is not yet available, the assumed rate of participation is an estimate and actual results may be materially different. As such, this assumption will need to be reviewed as credible experience evolves.

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APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

12. New Retiree Listing

Members who have newly retired but have not been completely processed for benefits were assumed to elected post-retirement medical. For those in Pension Group C, we have assumed they elect the Select Plan while all others elect the Model Plan.

13. Changes Since the Last Valuation

The percentage of future pre-Medicare retirees electing medical coverage was adjusted upwards from grading down to 45% to grading down to 70% for Group 2 with 80+ points, and 50% grading to 25% for 70-79 points, from 40% to 0%. The percentage of future Medicare retirees electing medical coverage was adjusted upward from 45% to 75% for Group 2 with 80+ points and from 0% to 25% for Group 2 with 70-79 points.

Claim and Expense Assumptions

The claims costs are developed based on claims experience projected to 2022 for the self insured benefits and actual premiums in effect for 2022 for the fully insured ones. Contractual administrative expenses for 2022 are included. The resulting per person per month (PPPM) cost is then adjusted using age curves.

1. Average Annual Claims and Expense Assumptions & Methodology

The Calendar Year (CY) 2022 claims costs were developed using actual CY 2020 and CY 2021 Medical and Rx claim experience. Claims were divided by benefit type (i.e., medical vs. Rx) and population category (i.e., non-Medicare eligible (NME) vs Medicare Eligible (ME)) for each plan, and standardized to the Select Plan design for the 2021 enrollment. Rx claim costs were defined as Plan paid amounts minus pharmacy rebates. Large claims above \$100,000 for Medical were removed from the experience prior to calculating the experience Per Adult Per Month (PAPM) cost.

We calculated the benefit relativity factors of the Select, Model, and Secure plan using the OptumInsight Comprehensive Pricing Tool for NME and OptumInsight Comprehensive Medicare Coordination Model for ME participants. Using the same model, we calculated the change in demographics between the 2020 and 2021 enrollments.

Using the benefit relativity and demographic factors, the experience PAPM costs of each plan and year were adjusted to the Select plan design for the 2021 population. The adjusted experience PAPM costs were then blended using:

- 40% of CY 2019, 10% of CY 2020 and 50% of CY 2021 experience for Medical NME,
- 20%/40%/40% of CY 2019/2020/2021, respectively, for Rx NME,
- 0%/50%/50% of CY 2019/2020/2021, respectively, for Rx ME, and
- 100% CY 2021 for Medical ME (Part A only members).

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Rates were trended to CY 2022 using an 8% annual trend. Large claims were trended separately assuming a 5% annual trend and added to the projected PAPM costs. To convert paid claims into incurred claims, we applied an extra 2.5 months of trend to medical and ½ month of trend to Rx. The CY 2022 projected Rx cost for ME was further adjusted to reflect the expected receivable payments from CMS (Part D Direct subsidy, Federal Reinsurance, Low Income Cost Share subsidy, Low Income Premium subsidy) and PhrMa (Gap Discount). These receivables were projected using CY 2019, 2020, and 2021 experience with payments through March 2022, adjusted for expected reconciliation payments for CY 2021.

Finally, we applied the benefit relativity factors to the Select projected costs PAPM to derive the Model and Secure projected costs PMPM. The PAPM costs for the ME Part A only population are expressed based on the entire ME population and added to the Medicare Advantage (MA) premium rates.

Claims curves were developed using the resulting projected PAPM claims costs, the premium rates for the fully insured MA plans, and our proprietary age curves. The costs of retirees over 65 who are eligible for Medicare Part A and didn't sign up for Part B are spread across the entire ME population.

No child load was added to the NME pre-65 claims since the associated cost is assumed to be implicitly reflected in the Per Adult Per Month costs.

Expenses were projected for NME vs ME, based on actual CY 2021 expenses provided by CRS, trended to CY 2022 using a 4% trend.

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Calendar Year 2022 Average Claim and Expense Assumptions (Future Retirees and Current NME Inactives)						
Age	Select Medicare Eligible		Model Medicare Eligible		Secure Medicare Eligible	
	Male	Female	Male	Female	Male	Female
40	\$5,558	\$8,984	\$5,502	\$8,881	\$0	\$0
45	7,295	9,679	7,221	9,574	0	0
50	9,461	11,229	9,365	11,107	0	0
55	12,057	13,567	11,932	13,418	0	0
60	15,081	15,907	14,923	15,731	0	0
64	17,809	16,629	17,621	16,451	0	0
65	\$2,967	\$2,842	\$3,030	\$2,900	\$2,267	\$2,205
70	3,408	3,043	3,486	3,109	2,558	2,315
75	3,577	3,177	3,674	3,258	2,517	2,291
80	3,596	3,247	3,715	3,345	2,314	2,186
85	3,559	3,261	3,698	3,374	2,073	2,043

Calendar Year 2022 Average Claim and Expense Assumptions (Current Inactives Medicare A & B Eligible)						
Age	Select Non Medicare Eligible		Model Non Medicare Eligible		Secure Non Medicare Eligible	
	Male	Female	Male	Female	Male	Female
40	\$2,759	\$2,610	\$2,750	\$2,602	\$3,001	\$2,833
45	3,973	3,759	3,960	3,747	4,322	4,080
50	5,042	4,771	5,026	4,755	5,485	5,178
55	5,525	5,228	5,507	5,211	6,010	5,675
60	5,209	4,929	5,192	4,913	5,667	5,350
64	4,382	4,147	4,368	4,133	4,767	4,501
65	\$2,655	\$2,556	\$2,646	\$2,548	\$2,888	\$2,775
70	3,032	2,719	3,023	2,711	3,307	2,960
75	3,118	2,791	3,110	2,783	3,431	3,060
80	3,052	2,793	3,045	2,786	3,398	3,091
85	2,938	2,747	2,933	2,741	3,311	3,068

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Calendar Year 2022 Average Claim and Expense Assumptions (Current Inactives Medicare B Only Eligible)						
Age	Select		Model		Secure	
	Non Medicare Eligible Male	Non Medicare Eligible Female	Non Medicare Eligible Male	Non Medicare Eligible Female	Non Medicare Eligible Male	Non Medicare Eligible Female
40	\$6,000	\$5,528	\$6,739	\$6,193	\$5,711	\$5,273
45	8,641	7,961	9,705	8,919	8,224	7,594
50	10,966	10,104	12,317	11,319	10,438	9,637
55	12,018	11,073	13,498	12,404	11,439	10,561
60	11,330	10,440	12,726	11,695	10,784	9,957
64	9,532	8,782	10,706	9,838	9,072	8,377
65	\$5,774	\$5,414	\$6,486	\$6,065	\$5,496	\$5,164
70	6,793	5,958	7,652	6,697	6,451	5,668
75	7,704	6,654	8,753	7,537	7,264	6,290
80	8,494	7,336	9,743	8,378	7,947	6,889
85	9,153	7,892	10,582	9,074	8,507	7,370

2. Retiree Health Care Plan Contributions

Assumed adult per capita health care contribution rates were developed for those participants in the Select and Model Plans who are required to contribute a portion of retiree health benefit costs as defined in Schedule C. Contributions were determined to fully fund retiree health benefit costs in 2022 based upon Medicare eligibility status. Rates are based on retiree cost experience, enrollment, and trended based on the assumptions. The following chart details the full (100%) adult per capita contribution assumptions. These amounts include medical, drug, and third-party administrative costs.

Health Plan	Retiree		Spouse	
	Payment Age		Payment Age	
	< 65	Payment Age 65+	< 65	Payment Age 65+
Secure Plan	\$0	\$0	\$0	\$0
Select Plan	\$15,617	\$3,573	\$15,617	\$3,573
Model Plan	\$15,084	\$3,570	\$15,084	\$3,570

As members hired after December 31, 2015 are ineligible to receive retiree health benefits, the contributions assumed for years beyond 2021 are based upon the projected retiree health care costs associated with each projection year’s closed group of participants, reflecting the impact of aging and health care inflation.

3. Medicare Part D Subsidy

The City offers an EGWP Part D plan to its Medicare retirees; it, therefore, does not participate in the Retiree Drug Subsidy program.

**CITY OF CINCINNATI
POSTRETIREMENT HEALTH FUND
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

4. Medicare Part B Premium Subsidy

Assumed that Medicare eligible retirees pay the Medicare Part B premiums.

5. Medicare Coverage and Eligibility

Retiree health benefit participants age 65 and older who are eligible for premium-free Medicare Part A benefits are assumed to be enrolled in Medicare Part A. For those retiree health benefit participants who are not eligible for premium-free Medicare Part A coverage, CRS is assumed to remain the primary payer. For a portion of the Medicare-eligible group, the premium-free Medicare Part A eligibility status is provided by CRS. As the premium-free Medicare Part A eligibility status is determined from a wide range of sources with varying and, at times, limited content, the premium-free Medicare Part A eligibility status data is incomplete. Adjustments have been made to account for this incompleteness. As the true status of those who are, or will be eligible for premium-free Medicare Part A is uncertain, actual results may be materially different. For all unidentified current retirees, hired prior to April 1, 1986, and not assumed eligible for premium-free Medicare Part A coverage through their spouse, as well as those active employees hired prior to April 1, 1986, 10% are assumed to not qualify for premium-free Medicare Part A coverage. The assumption of 10% is based upon estimates from the current retiree population. 100% of deferred vested members are assumed to obtain the 40 or more quarters of Medicare-covered employment required for premium-free Medicare Part A coverage as a result of their subsequent employment. Retiree health benefit participants age 65 and older are assumed to be enrolled in Medicare Part B.

6. Marital and Spouse Assumptions

For participants who are not receiving benefits, 100% of participants are assumed to be married to a spouse of the opposite gender. Husbands are assumed to be three years older than their wives. For participants who are receiving benefits, the actual spouse age is used where available. If relevant spouse information is not available, husbands are assumed to be three years older than their wives.

7. Part-Time Employees

On July 1, 1991, the Plan was amended to include part-time employees. Part-time employees hired on or before December 31, 2015, have been included in the valuation.

8. Geography

Implicitly assumed to remain the same as current retirees.

9. Changes Since the Last Valuation

The claim curves were updated to reflect the current experience, premiums, and marketplace.

**CITY OF CINCINNATI
POSTRETIREMENT HEALTH FUND
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Methodology

The Entry Age Normal Actuarial Cost method is used to determine costs. Under this funding method, a normal cost rate is determined as a level percent of pay for each active Plan member and then summed to produce the total normal cost for the City.

The Actuarial Accrued Liability is that portion of the present value of projected benefits that will not be paid by future employer normal costs or member contributions. It represents the value of the past normal costs with interest to the valuation date. The difference between this liability and funds accumulated as of the same date is referred to as the unfunded actuarial liability.

The portion of the Actuarial Liability in excess of OPEB Trust's assets is amortized to develop additional costs or savings which is added to each year's employer normal cost to produce the Actuarial Defined Contribution (ADC). Under this cost method, actuarial gains and losses are directly reflected in the size of the ADC.

The unfunded actuarial liability is amortized over an open 30-year period. The amortization is a level dollar amortization. CY 2022 claims and expenses were developed as described in Appendix B, Claims and Expenses Assumptions section above.

Actuarial Value of Assets

For purposes of determining the contribution rate to the Plan, we use an actuarial value of assets. The asset adjustment method dampens the volatility in asset values that could occur because of fluctuations in market conditions. Use of an asset smoothing method is consistent with the long-term nature of the actuarial valuation process.

The actuarial value of assets is the current market value, adjusted by a five-year smoothing of gains and losses on a market value basis. Each year's gain or loss is determined as the difference between the actual market return and the expected market return using the assumed rate of investment return. The actuarial value is adjusted to remain within 20% of the market value.

**CITY OF CINCINNATI
POSTRETIREMENT HEALTH FUND
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Summary of Key Substantive Plan Provisions

Pension Benefit Eligibility

All active employees of the City except for the following:

- Members of the Police and Firemen’s Disability and Pension Fund of Ohio.
- Elected City officials.
- Employees for whom the City contributes to PERS.
- Persons hired as police recruits who are not currently enrolled as a member of the System prior to their date of hire.
- Current contributing members of the School Employees Retirement System (SERS) or the State Teachers Retirement System (STRS) who are hired by the City on a seasonal, temporary, or part-time basis.

Members of the System are divided into the following groups:

Group	Criteria
A, B	Any member who has retired prior to 7/1/2011
C	Any member who, as of June 30, 2011, was an active or deferred vested member and had either: a) Completed at least 30 years of service, or b) Reached age 60 and completed at least 5 years of service.
D	Any active member who, between July 1, 2011 and December 31, 2013: 1) Either a) Completed at least 30 years of service, or b) Reached age 60 and completed at least 5 years of service; and 2) Retired prior to January 1, 2014.
E	Any active member who: 1) Between July 1, 2011 and December 31, 2013, either: a) Completed at least 30 years of service, or b) Reached age 60 and completed at least 5 years of service; and 2) Retires on or after January 1, 2014.
F	Any active member whose most recent membership enrollment date was prior to January 1, 2010 and who is not in groups A through E. Any deferred vested member whose most recent membership enrollment date was prior to January 1, 2010, is not in groups A through E, and has at least five years of service prior to the date they separate from employment.
G	Any member whose most recent membership enrollment date is on or after January 1, 2010, or Any member rehired on or after January 1, 2010, who has fewer than 5 years of service as of June 30, 2011, or Any retiree of the System who is receiving a service retirement allowance and is re-employed on or after April 1, 2013.

**CITY OF CINCINNATI
POSTRETIREMENT HEALTH FUND
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Members of the System are further classified as:

Class	Criteria
<p>CSA Retiree</p> <p>(CSA participants corresponding to Retirees Class)</p>	Group A and B members and their designated optionees.
<p>CSA Employee</p> <p>(CSA participants corresponding to Current Employees Class)</p>	Group C, D, E, and F members (and their designated optionees) that were vested and employed on 7/1/2011.
<p>CMC Employee</p> <p>(Non-CSA participants)</p>	Group E and F members (and their designated optionees) that were either vested or employed on 7/1/2011 and no break in employment service since 1/1/2010 and prior to becoming vested.
<p>Non-CSA</p>	Group G members and their designated optionees.

**CITY OF CINCINNATI
POSTRETIREMENT HEALTH FUND
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APPENDIX C – SUMMARY OF PLAN PROVISIONS

Years of Service: Years or fractional years of full-time service rendered to the Plan Sponsor.

Normal Retirement:

Groups A, B, C, D, E, and F:

Age 60 with 5 years of service or 30 years of service.

Group G:

Age 67 with 5 years of service or age 62 with 30 years of service.

Early Retirement:

Groups A, B, C, D, E, and F:

Age 55 with 25 years of service.

Group G:

Age 57 with 15 years of service.

Deferred Retirement Option Plan (DROP):

Current Employees Class members with at least 30 years of service may participate in the DROP.

Disability Retirement Eligibility:

5 years of service.

Deferred Vested Retirement Eligibility:

5 years of service.

Retiree Health Benefits Eligibility:

Per Ordinance 336-2016 adopted by the City Council on October 26, 2016, employees hired after December 31, 2015, are not eligible to receive retiree health benefits.

Group 1: Those members of Group C or those members hired before January 9, 1997. For those members of Group C or those members who retire under the System prior to January 1, 2016 (including their survivors receiving pension benefits), a minimum of 15 years of service is required. For those members who retire under the System after December 31, 2015 (including their survivors receiving pension benefits), a minimum attained the age of 60 with 20 years of service or 30 years of service regardless of age is required.

Group 2: Those participants hired on or after January 9, 1997. For those members who retire under the System prior to January 1, 2016 (including their survivors receiving pension benefits), a minimum of 15 years of service is required. For those members who retire under the System after December 31, 2015 (including their survivors receiving pension benefits), a minimum attained the age of 60 with 20 years of service or 30 years of service regardless of age is required. Group 2 participants entitled to a deferred retirement allowance are eligible for health benefits upon attainment of the Medicare eligibility age.

**CITY OF CINCINNATI
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APPENDIX C – SUMMARY OF PLAN PROVISIONS

Deferred Retirement Option Plan (DROP): Eligible Current Employees Class members may effectively retire and freeze their accrual of years of service with the System and defer receipt of retirement benefits, including retiree health benefits, for a period not to exceed five years while continuing City employment. For valuation purposes, current DROP participants are assumed to be active members, receiving health care benefits as an active employee. Service does not accrue while participating in the DROP and retiree health benefits are assumed to begin upon exit from active employment.

Members and Beneficiaries Assumed to be Eligible for Deferred Retiree Health Benefits as of December 31, 2016: Per Ordinance 336-2016 adopted by the City Council on October 26, 2016, members of Group C and their associated beneficiaries are eligible for retiree health benefits under the Select Plan based upon a minimum of 15 years of service. All other eligible members and their associated beneficiaries are eligible for retiree health benefits under the Model Plan based upon a minimum attained age of 60 with 20 years of service or 30 years of service regardless of age.

Dependents: A retiree may elect to cover an eligible spouse and/or eligible dependent children by paying the applicable retiree contribution rate for the specified enrollment tier.

Retiree Health Benefits

The System offers health care benefits (medical, prescription drugs, dental, and vision coverage) to eligible retirees, beneficiaries, and their dependents before and during Medicare eligibility.

Under the provisions of Ordinance 85-2011, beginning January 1, 2012, members who retired prior to September 1, 2007, and who establish their annual household income to be less than \$30,000, are eligible to receive medical and prescription drug coverage under the Secure Plan. Those members who retired prior to September 1, 2007, who do not qualify for coverage under the Secure Plan may elect medical and prescription drug coverage through either the Select Plan or Model Plan based upon eligibility.

Those members of Group C or those members who retired on or after September 1, 2007 (including those employees who retired under a special incentive plan in 2007) but prior to January 1, 2016, may elect medical and prescription drug coverage through the Select Plan. Those members not eligible for the Secure Plan or the Select Plan may elect coverage under the Model Plan.

Active Service Death Benefits

A surviving spouse, eligible dependent child, and orphan receiving survivor pension benefits as a result of death during employment of an eligible active member is eligible to receive retiree health benefits based upon the eligibility and terms applicable to the associated member.

**CITY OF CINCINNATI
POSTRETIREMENT HEALTH FUND
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APPENDIX C – SUMMARY OF PLAN PROVISIONS

Medicare Part B Premium Reimbursement

Under the provisions of Ordinance 85-2011, beginning January 1, 2012, CRS no longer reimburses the Medicare Part B premiums for retirees and spouses.

Retiree Contributions

Participants covered by the Secure Plan do not contribute towards the cost of medical and prescription drug coverage. Group 1 participants covered by the Select Plan contribute an amount equal to five percent of the full cost of medical and prescription drug benefits of the retiree group with costs adjusted based upon the Medicare eligibility age (age 65). Group 1 participants covered by the Model Plan contribute an amount equal to ten percent of the full cost of medical and prescription drug benefits of the retiree group with costs adjusted based upon the Medicare eligibility age (age 65). Group 2 participants will pay the portion of the full cost of medical and prescription drug benefits of the coverage option for which they are eligible as determined by the point system.

Retiree Contribution as a Percentage of Cost		
Points	Select Plan	Model Plan
90+	5%	10%
80-89	25%	
70-79	50%	

Dental Benefits

Under the provisions of Ordinance 85-2011, beginning January 1, 2012, all members electing to participate in the dental plan will be required to pay the full cost of dental coverage. As such, it is assumed CRS has no liability under GASB 74 and 75 for dental benefits.

Vision Benefits

Under the provisions of Ordinance 85-2011, beginning January 1, 2012, all members electing to participate in the vision plan will be required to pay the full cost of vision coverage. As such, it is assumed CRS has no liability under GASB 74 and 75 for vision benefits.

Changes Since Prior Valuation

None

**CITY OF CINCINNATI
POSTRETIREMENT HEALTH FUND
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APPENDIX C – SUMMARY OF PLAN PROVISIONS

Summary of 2021 Benefit Plans

Currently, the City of Cincinnati Postretirement Health Fund offers three plans for retired employees. Benefits are payable under the Plan for medical care obtained from the City’s health care vendors. Medicare Part A eligible retirees who didn’t buy into Part B get the same medical benefits as the non-Medicare retirees.

City of Cincinnati Non-Medicare Retirees

Provider Network:	Anthem BCBS	Anthem BCBS	Anthem BCBS
<u>In-Network (INN) Benefits</u>	Select Plan	Model Plan	Secure Plan
Deductible (Individual / Family)	\$300 / 600	\$500 / 1,000	\$0 / 0
Coinsurance	20%	20%	20%
Copays			
Office Visit (OV)-Primary Care (PCP)	DC	DC	DC
OV - Specialist Care Provider (SCP)	DC	DC	DC
Urgent Care (UC)	DC	DC	DC
Hospital Emergency Room (ER)	DC	DC	DC
Outpatient Surgery	DC	DC	DC
Hospital Inpatient	DC	DC	DC
Out-of-Pocket Max (Individual / Family)	\$1,500 / 3,000	\$2,000 / 4,000	\$500 / 1,000
<u>Out-of-Network (OON) Benefits</u>			
Deductible (Individual / Family)	\$600 / 1,200	\$1,000 / 2,000	\$0 / 0
Coinsurance	50%	50%	50%
Hospital Emergency Room (ER)	INN DC	INN DC	INN DC
Out-of-Pocket (OOP) Max (Individ / Family)	\$3,000 / 6,000	\$4,000 / 8,000	\$1,000 / 2,000
Lifetime Maximum	Unlimited	Unlimited	Unlimited
Annual Maximum	Unlimited	Unlimited	Unlimited
<u>Prescription Drugs</u>	Non Medicare Coverage Only	Non Medicare Coverage Only	Non Medicare Coverage Only
Retail (30 Days) - Generic/Formulary /Non-Form. Copay	\$10 / 20 / 30	\$10 / 20 / 30	\$5 / 15 / 30
Mail Order (90 Days) - Generic/Formulary /Non-Form. Copay	\$20 / 40 / 60	\$20 / 40 / 60	\$10 / 30 / 60
Out-of-Pocket Max (Individual / Family)	None	None	\$500
<u>Detail Benefits</u>			
Mental Health (MH) / Substance Abuse (SA):			
- SA Lifetime Visit Limit (Inpatient / Outpatient)	Unlimited	Unlimited	Unlimited
- SA Lifetime OOP Maximum	Unlimited	Unlimited	Unlimited
- MH Per Year Visit Limit (Inpatient / Outpatient)	Unlimited	Unlimited	Unlimited
Home Health (INN / OON):	DC / DC up to 30 visits	DC / DC up to 30 visits	DC / DC up to 30 visits
Allergy Care:	DC	DC	DC
Rehabilitation (i.e., speech, occup. physical):	DC up to 60 visits	DC up to 60 visits	DC up to 60 visits
Chiropractors:	DC	DC	DC
Medical Supplies and Equipment:	DC	DC	DC
Maternity Care:	DC	DC	DC
Skilled Nursing Facility	DC	DC	DC
Hearing Aids:	DC	DC	DC
Preventive Care:	DC	DC	DC
Medicare Integration:	Exclusion ²	Exclusion ²	Exclusion ²

¹ DC=Deductible and coinsurance applies.

² Medicare Pays first then the Plan applies the Plan’s rules for non-Medicare covered benefits. Only Medicare Eligibles who have not bought into Medicare Part B are covered under the NME plan

Vendors

Medical Claims Administrator:	Anthem BCBS
Medical Network:	Anthem BCBS
Pharmacy Benefit Manager:	CVS / CareMark
Stop-Loss Insurer:	N/A

**CITY OF CINCINNATI
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APPENDIX C – SUMMARY OF PLAN PROVISIONS

City of Cincinnati Medicare Advantage Plans - For Medicare Part A&B and Part B only eligibles

Provider Network:	Anthem BCBS	Anthem BCBS	Anthem BCBS
<u>In-Network (INN) Benefits</u>	Select Plan	Model Plan	Secure Plan
Deductible (Individual)	\$300	\$500	\$0
Coinsurance	4%	4%	4%
Copays			
Office Visit (OV)-Primary Care (PCP)	DC	DC	DC
OV - Specialist Care Provider (SCP)	DC	DC	DC
Preventive Care:	\$0 / C	\$0 / C	\$0 / C
Urgent Care (UC)	DC	DC	DC
Hospital Emergency Room (ER)	\$50	\$50	\$50
Skilled Nursing Facility (SNF)	\$5/day for days 1-20, DC for days 21-100	\$5/day for days 1-20, DC for days 21-100	\$5/day for days 1-20, DC for days 21-100
Outpatient Surgery	DC	DC	DC
Hospital Inpatient	DC	DC	DC
Home Health (INN / OON):	\$0 / DC	\$0 / DC	\$0 / DC
Mental Health (MH) / Substance Abuse (SA):	DC	DC	DC
Out-of-Pocket Max (Individual / Family)	\$1,500	\$2,000	\$500
<u>Out-of-Network (OON) Benefits</u>			
Deductible (Individual)	Combined with INN	Combined with INN	Combined with INN
Coinsurance	10%	10%	10%
Hospital Emergency Room (ER)	INN DC	INN DC	INN DC
Out-of-Pocket (OOP) Max (Individual)	\$3,000	\$4,000	\$1,000
Lifetime Maximum	Unlimited	Unlimited	Unlimited
Annual Maximum	Unlimited	Unlimited	Unlimited
<u>Prescription Drugs</u>	Medicare Coverage Only	Medicare Coverage Only	Medicare Coverage Only
Retail (30 Days) - Generic/Formulary /Non-Form. Copay	\$10 / 20 / 30	\$10 / 20 / 30	\$5 / 15 / 30
Mail Order (90 Days) - Generic/Formulary /Non-Form. Copay	\$20 / 40 / 60	\$20 / 40 / 60	\$10 / 30 / 60
Out-of-Pocket Max (Individual)	None	None	\$500

¹ DC=Deductible and coinsurance applies.

² C=Coinsurance applies.

**CITY OF CINCINNATI
POSTRETIREMENT HEALTH FUND
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX D – GLOSSARY OF TERMS

1. Actuarial Assumptions

Assumptions as to the occurrence of future events affecting OPEB costs, such as mortality, withdrawal, and retirement; changes in compensation; rates of investment earnings and asset appreciation or depreciation; procedures used to determine the actuarial value of assets; and other relevant items.

2. Actuarial Cost Method

A procedure for determining the actuarial present value of OPEB 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. Actuarially Determined Contribution

A target or recommended contribution for the reporting period, determined in conformity with Actuarial Standards of Practice based on the most recent measurement available when the contribution for the reporting period was adopted.

4. Actuarial Gain (Loss)

A measure of 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.

5. Actuarial Liability

The portion of the actuarial present value of projected benefits will not be paid by future normal costs. It represents the value of the past normal costs with interest to the valuation date.

6. 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. As a simple example: assume you owe \$100 to a friend one year from now. Also, assume there is a 1% probability of your friend dying over the next year, in which case you will not be obligated to pay him. If the assumed investment return is 10%, the actuarial present value is:

$$\frac{\text{Amount}}{\$100} \times \frac{\text{Probability of Payment}}{(1 - .01)} \times \frac{1/}{(1+0.10)} = \frac{\text{Present Value}}{\$90}$$

**CITY OF CINCINNATI
POSTRETIREMENT HEALTH FUND
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX D – GLOSSARY OF TERMS

7. Actuarial Valuation Date

The date as of which an actuarial valuation is performed. This date may be up to 24 months prior to the measurement date and up to 30 months prior to the employer’s reporting date.

8. Actuarial Value of Assets

The value of cash, investments, and other property belonging to an OPEB 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. This way long-term costs are not distorted by short-term fluctuations in the market.

9. Amortization Payment

The portion of the OPEB 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. Normal Cost

That portion of the actuarial present value of OPEB plan benefits and expenses which is allocated to a valuation year by the actuarial cost method.

12. Unfunded Actuarial Liability

The excess of the actuarial liability over the actuarial value of assets.

13. Funded Percentage

The ratio of the actuarial value of assets to the actuarial liabilities.

14. Mortality Table

A set of percentages which estimate the probability of death at a particular point in time. Typically, the rates are annual and based on age and sex.

**CITY OF CINCINNATI
POSTRETIREMENT HEALTH FUND
ACTUARIAL VALUATION AS OF DECEMBER 31, 2021**

APPENDIX D – GLOSSARY OF TERMS

15. Discount Rate

The assumed interest rate used for converting projected dollar-related values to a present value as of the valuation date.

16. Medical Trend

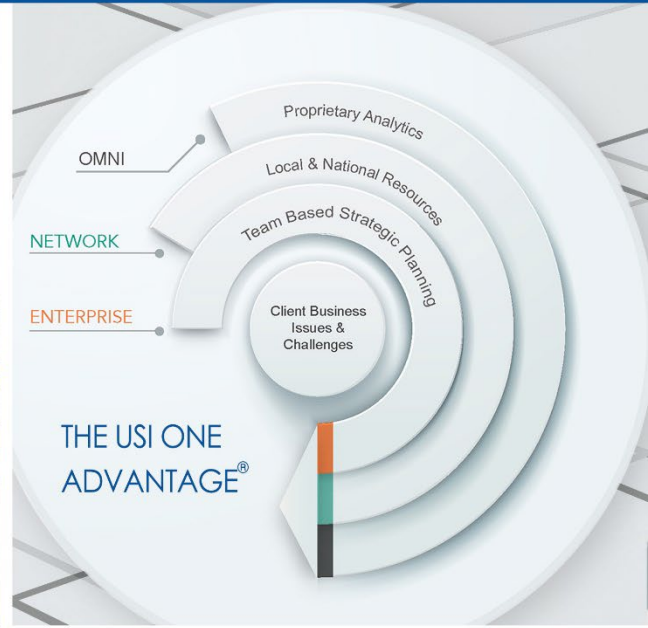
The assumed increase in dollar-related values in the future due to the increase in the cost of health care.

17. Entry Age Actuarial Cost Method

The actuarial cost method required for GASB 74 and 75 calculations. Under this method, 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. The portion of this actuarial present value allocated to a valuation year is called the Service Cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future service costs is called the total OPEB liability.

Property & Casualty Insurance Proposal

City of Cincinnati Retirement System



Gene Mapes
Sales Executive

Account Manager: Maureen Griffith
Date Prepared: July 5, 2022



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This proposal is merely a descriptive summary of coverage provided by the insurance companies being proposed and should be used for reference purposes only; it is not a binder and does not amend or alter the insurance contract. Please refer to the policy contract for specific terms, conditions, limitations, and exclusions.

Proposal date: 06/29/2022 Prepared for City of Cincinnati Retirement System
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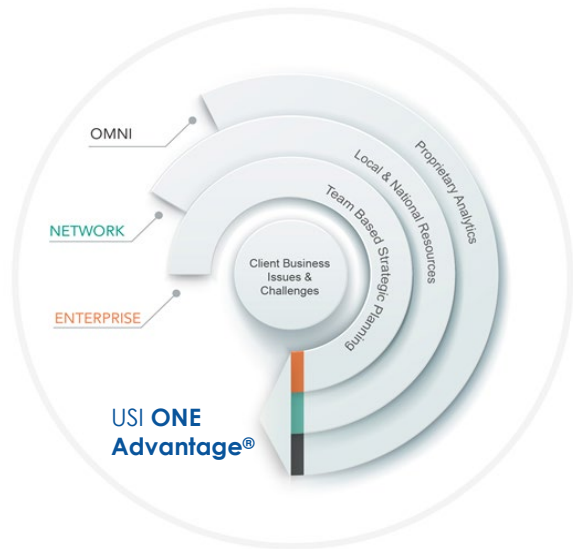


About USI Insurance Services

USI is one of the largest brokerage and consulting firms in the world, delivering property and casualty, employee benefits, personal risk, program and retirement solutions to large risk management clients, middle market companies, smaller firms, and individuals. Headquartered in Valhalla, New York, USI connects together over 8,000 industry leading professionals across approximately 200 offices to serve clients’ local, national and international needs. USI has become a premier insurance brokerage and consulting firm by leveraging the USI ONE Advantage®, an interactive platform that integrates proprietary and innovative client solutions, networked local resources and expertise, and enterprise-wide collaboration to deliver customized results with positive, bottom line impact. USI attracts [best-in-class industry talent](#) with a long history of deep and continuing investment in our [local communities](#). For more information, visit [usi.com](#).

The USI ONE Advantage

What truly distinguishes USI as a leading middle market insurance brokerage and consulting firm is the USI One Advantage, a game-changing value proposition that delivers clients a robust set of risk management and benefit solutions and exclusive resources with financial impact. USI ONE™ represents **Omni, Network, Enterprise**—the three key elements that create the USI ONE Advantage and set us apart from the competition.



Omni – USI’s Proprietary Analytics

Omni, which means “all,” is USI’s one-of-a-kind solutions platform—real time, interactive, dynamic and evolving, and customized for each client. Built in-house by USI subject matter experts, Omni captures the experience of more than 100,000 clients, thousands of professionals and over 100 years of business activity through our acquired agencies into targeted, actionable solutions.

Network – USI’s Local and National Resources

USI has made a very large investment in local resources and technical expertise, with more than 6,000 professionals networked nationally to build strong vertical capabilities and integrated account teams. Our local and regional experts ensure account team availability, hands-on service, and ongoing diligent follow-through so we can deliver on the solutions we customize for our clients.

Enterprise – USI’s Team Based Strategic Planning

USI’s enterprise planning is a disciplined, focused, analysis centered on our client’s issues and challenges. Highly consultative meetings integrate USI’s Omni analytics with our broad resource network to build a risk management strategy aligned with client business needs. Our enterprise process is a proven method for identifying, quantifying and minimizing client risk exposures.

The USI ONE Advantage—our **Omni** knowledge engine, with our **Network** of local and national resources, delivered to our clients through our **Enterprise** planning process gives USI fundamentally different solutions, the resources to deliver, and a process to bring superior results to our clients.

This proposal is merely a descriptive summary of coverage provided by the insurance companies being proposed and should be used for reference purposes only; it is not a binder and does not amend or alter the insurance contract. Please refer to the policy contract for specific terms, conditions, limitations, and exclusions.

Proposal date: 06/29/2022 Prepared for City of Cincinnati Retirement System
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Service Team

USI Insurance Services, LLC

312 Elm St. 24th Floor, Cincinnati, OH 45202

(513) 657-3116 www.usi.com

Producers

Your **Sales Executive** is **Gene Mapes**

Direct Number: (513) 964-1022

E-Mail: gene.mapes@usi.com

Account Management Team

Your **CL Account Manager** is **Maureen Griffith**

Direct Number: (513) 964-1020

E-Mail: maureen.griffith@usi.com

Your **CL Account Representative** is **Garett Reinhart**

Direct Number: (513) 964-1039

E-Mail: garett.reinhart@usi.com

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Proposal date: 06/29/2022 Prepared for City of Cincinnati Retirement System
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Schedule of Named Insureds

Named insured	Applicable policies
The City of Cincinnati Retirement System	All

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Executive Liability – Fiduciary Liability

Carrier:	Federal Insurance – a Chubb subsidiary (A.M. Best rated: A++ XV)
Policy Type:	Claims Made
Limits of Liability:	\$5,000,000 each claim/\$5,000,000 annual aggregate
Deductible:	\$100,000 each claim
Retroactive Date:	Full Prior Acts with no Prior and Pending Litigation Exclusion Date applicable
Defense Treatment:	Inside the Limit of Liability
Extended Reporting Period:	1 year at 150% of annual premium
Conditions:	<ul style="list-style-type: none">• Carrier Duty to Defend Form• True Worldwide Coverage Territory• EPCRS Sanctions Endorsement - \$100,000 limit - Amends exclusion 6a on the policy to provide coverage for any sanctions imposed upon an Insured as a fiduciary and any compliance fees incurred by an Insured imposed under the Employee Plans• Compliance Resolution System. Knowledge date of 7/7/2012 applies• Amend Definition of Insured Endorsement - amends definition to include any past, present or future committee member of a trust or plan (in their fiduciary capacity of a trust or plan)• Amend Benefits Due Exclusion Endorsement - amends exclusion 6c on the policy to provide coverage for benefits due under a plan or trust where a claim against Insured alleges a loss to the plan or trust and/or accounts by reason of a change in value of the investments held by plan or trust• Amend Conduct Exclusions - amends the exclusions to carve back coverage “final judgment or until adjudicated adverse to the insured” wording• Amend Definition of Claim - Adds “a written demand for arbitration proceeding commenced by receipt of a demand for arbitration or similar document” to the definition• Amend Representations and Severability with Absolute Non-Rescindable Coverage – Adds Severability of Application (knowledge of one insured will not be imputed to any other insured); Non rescindability added• Add Investigation and Settlement Endorsement - 100% Carrier payment including Defense and Indemnity applies once the Insured declines the first offer to settle claim Ohio Amendatory• Amend Recourse Clause Endorsement - Carrier will have no right of recourse against an Insured, if the premium for this policy, was purchased by the Insured who is a natural person serving as a past, present or future trustee or employs of a trust or plan• HIPAA Extension - \$1,500,000 for civil money penalties imposed on Insured for violations of HIPAA (inclusive of HITECH exposures)

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- Spousal Extension Endorsement - adds coverage for Domestic Partners
- Public Entity Fiduciary Liability Endorsement - clarifies that the PPACA Civil Money Penalties - \$250,000 sublimit
- PPA Civil Money Penalties Endorsement - \$250,000 sublimit
- Pre-Approved Fund Counsel Endorsement
- Benefit Overpayment Coverage Endorsement - \$100,000 sublimit
- Amend Investigation and Settlement Endorsement
- Amend Arbitration and Allocation Endorsement

Excluded coverage or other coverages sought may be available.

Other exclusions and policy limitations may apply. Please refer to the actual policies for specific terms, conditions, limitations, exclusions and sub-limits that will govern in the event of a loss.

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Executive Liability – Fiduciary Liability - Excess

Carrier:	Hudson Insurance (A.M. Best Rated A XV)
Policy Type:	Follow Form Excess
Limits of Liability:	A \$2,000,000 excess of \$5,000,000 with Federal Insurance B \$5,000,000 excess of \$5,000,000 with Federal Insurance
Deductible:	Underlying Limit
Retroactive Date:	Follow Underlying
Defense Treatment:	Inside the Limit of Liability
Extended Reporting Period:	1 year at 150% of annual premium
Conditions:	<ul style="list-style-type: none">• Specific Litigation Exclusion:<ul style="list-style-type: none">▪ David Bock, et al v. City of Cincinnati; Nick Sunyak v. City of Cincinnati▪ Ohio Council 8 et al. v. City of Cincinnati

Excluded coverage or other coverages sought may be available.

Other exclusions and policy limitations may apply. Please refer to the actual policies for specific terms, conditions, limitations, exclusions and sub-limits that will govern in the event of a loss.

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Premium Overview

Coverage	Expiring premium	Renewal Premium
Fiduciary - \$5M primary	(1) \$58,981	(1) \$64,404
Excess Fiduciary - \$2M excess	\$11,796	\$13,232
Total Premium	\$70,777	\$77,636
Option 1 – Additional \$3M excess	n/a	(2) \$18,973
Total with Option 1	n/a	\$96,609
Option 2 – Additional \$5M excess \$10M	n/a	Pending
Comments:		
<ol style="list-style-type: none"> 1. A component of the renewal rating process involves the size of plan assets. In this case, Cincinnati’s plan assets rose from \$2,120,171,000 to \$2,565,503,000 an increase of 21%. 2. A warranty letter will need to be completed if accepting the higher excess limit. 		

Above premiums do not includes taxes or fees, if any

Binding Requirements:

- Client Authorization to Bind signed by the insured
- Chubb: Please provide an explanation as to why the City has not been making the actuarial determined employer contributions over the past decade. Is the City planning to increase the contribution rate in the near future?

Payment Terms:

- Annual – Payment in full

Note:

In evaluating your exposure to loss, we have been dependent upon information provided by you. If there are other areas that need to be evaluated prior to binding of coverage, please bring these areas to our attention. Should any of your exposures change after coverage is bound, such as your beginning new operation, hiring employees in new states, buying additional property, etc., please let us know so proper coverage(s) can be discussed.

Higher limits may be available. Please contact us if you would like a quote for higher limits.

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Agency Bill Payment Options

We sincerely appreciate the opportunity to service your insurance needs. We believe good credit relationships are established by making our clients aware in advance of the terms of our payment procedures.

OUR BASIC PAYMENT PLAN IS THAT ALL PAYMENTS ARE DUE ON OR BEFORE THE EFFECTIVE DATE OF COVERAGE. THERE ARE THREE METHODS OF PAYMENT AVAILABLE:

-CASH ON EFFECTIVE DATE
-PREMIUM FINANCING BY A PREMIUM FINANCE COMPANY
-INSURANCE COMPANY PAYMENT PLAN, IF AVAILABLE

Please note that USI Insurance Services LLC and its subsidiaries and affiliates do not provide customer financing.

In some instances, you will receive invoices covering additions or changes to your coverage, endorsements. These invoices are payable upon receipt. You will receive a monthly statement of your account as a reminder as we realize that it is occasionally possible to miss a payment through oversight. Accounts with payments past due are subject to cancellation for non-payment. This is a serious situation as your insurer may refuse to reinstate coverage even if payment is made later. Accounts are subject, but not limited to, reasonable attorney fees, interest, collection fees and/or court costs incurred in connection with collection of past due balances.

PAYMENTS: Please remember to return the remittance copy of the invoice with your payment in the provided envelope. Otherwise, all payments will be applied to your oldest balance or left as unapplied if we cannot identify the applicable invoice being paid.

CREDITS: Credit invoices may be applied against other invoices due us. Please indicate in your remittance or contact us as to where to apply credit invoices on your account.

These payment procedures will apply for any and all policy renewals or future business written.

If you have any questions concerning our payment procedures or any other matters pertaining to account payments, please contact your insurance representative.

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USI Disclosures

Information Concerning Our Fees: As a licensed insurance producer, USI is authorized to confer with or advise our clients and prospective clients concerning substantive benefits, terms or conditions of insurance contracts, to sell insurance and to obtain insurance coverages for our clients. Our compensation for placement of insurance coverage, unless otherwise specifically negotiated and agreed to with our client, is customarily based on commission calculated as a percentage of the premium collected by the insurer and is paid to us by the insurer. We may also receive from insurers and insurance intermediaries (which may include USI affiliated companies) additional compensation (monetary and non-monetary) based in whole or in part on the insurance contract we sell, which is contingent on volume of business and/or profitability of insurance contracts we supply to them and/or other factors pursuant to agreements we may have with them relating to all or part of the business we place with those insurers or through those intermediaries. Some of these agreements with insurers and/or intermediaries include financial incentives for USI to grow its business or otherwise strengthen the distribution relationship with the insurer or intermediary. Such agreements may be in effect with one or more of the insurers with whom your insurance is placed, or with the insurance intermediary we use to place your insurance. You may obtain information about the nature and source of such compensation expected to be received by us, and, if applicable, compensation expected to be received on any alternative quotes pertinent to your placement upon your request.

Document Delivery DISCLOSURE: USI strives to make your interactions with us easy and efficient. Therefore, we intend to deliver your policy and all policy-related documents electronically through our InsurLink client portal or through email. If you do not wish to receive these documents electronically or if you would like a paper copy of any or all documents at no cost to you, please notify your client service representative in writing. If your email or electronic contact information changes, please notify your client service representative in writing.

Reviewing Client Contracts DISCLOSURE: As a service to our clients, upon their request, USI will review those portions of your contract regarding the insurance and indemnity requirements as they relate to your insurance program and provide comments and/or recommendations based upon such review. This service should not be taken as legal advice and it does not replace the need for review by the insured's own legal counsel.

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USI Privacy Notice

Our Privacy Promise to You

USI provides this notice to you, our customer, so that you will know what we will do with the personal information, personal financial and health information (collectively referred to as the “protected information”) that we may receive from you directly or receive from your health care provider or receive from another source that you have authorized to send us your protected information. We at USI are concerned about your privacy and assure you that we will do what is required of us to safeguard your protected information.

What types of information will we be collecting?

USI collects information from you required both for our business and pursuant to regulatory requirements. Without it, we cannot provide our products and services for you. We will be collected protected information about you from:

- Applications or other forms, such as name, address, Social Security number, assets and income, employment status and dependent information;
- Your transactions with us or your transactions with others, such as account activity, payment history, and products and services purchased;
- Consumer reporting agencies, such as credit relationships and credit history. These agencies may retain their reports and share them with others who use their services;
- Other individuals, businesses and agencies, such as medical and demographic information; and
- Visitors to our websites, such as information from on-line forms, site visitorship data and on-line information collection devices, commonly called “cookies.”

What will we do with your protected information?

The information USI gathers is shared within our company to help us maximize the services we can provide to our customers. We will only disclose your protected information as is necessary for us to provide the insurance products and services you expect from us. USI does not sell your protected information to third parties, nor does it sell or share customer lists.

We may also disclose all of the information described above to third parties with which we contract for services. In addition, we may disclose your protected information to medical care institutions or medical professionals, insurance regulatory authorities, law enforcement or other government authorities, or to affiliated or nonaffiliated third parties as is reasonably necessary to conduct our business or as otherwise permitted by law.

Our Security Procedures

At USI, we have put in place the highest measures to ensure the security and confidentiality of customer information. We will handle the protected information we receive by restricting access to the protected information about you to those employees and agents of ours who need to know that information to provide you with our products or services or to otherwise conduct our business, including actuarial or research studies. Our computer database has multiple levels of security to protect against threats or hazards to the integrity of customer records, and to protect against unauthorized access to records that may harm or inconvenience our customers. We

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maintain physical, electronic, and procedural safeguards that comply with federal and state regulations to safeguard all of your protected information.

Our Legal Use of Information

We retain the right to use ideas, concepts, know-how, or techniques contained in any nonpublic personal information you provide to us for our own purposes, including developing and marketing products and services.

Your Right to Review Your Records

You have the right to review the protected information about you relating to any insurance or annuity product issued by us that we could reasonably locate and retrieve. You may also request that we correct, amend or delete any inaccurate information by writing to us at the above address.

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Insurance Carrier Ratings

As a service to our clients, USI is furnishing an assessment by a financial rating service of the insurance companies included in our proposal. We are including the legends used by this service.

All ratings are subject to periodic review, therefore, it is important to obtain updated ratings from each service. Should you desire further information concerning the financial statements of any of the insurance companies being proposed, so that you can make your own assessment of the financial strength of the companies being offered, it is available from USI at your request.

USI has made no attempt to determine independently the financial capacity of the insurance companies that we are including in our proposal as we believe the nationally recognized services are better equipped to comment.

A. M. BEST RATINGS

A++ & A+	Superior	D	Poor
A & A-	Excellent	E	Under Regulatory Supervision
B++ & B+	Good	F	In Liquidation
B & B-	Fair	S	Rating Suspended
C++ & C+	Marginal	NR	Not Rated

FINANCIAL SIZE CATEGORY

(In \$ Thousands)

Class I	Less than		1,000
Class II	1,000	to	2,000
Class III	2,000	to	5,000
Class IV	5,000	to	10,000
Class V	10,000	to	25,000
Class VI	25,000	to	50,000
Class VII	50,000	to	100,000
Class VIII	100,000	to	250,000
Class IX	250,000	to	500,000
Class X	500,000	to	750,000
Class XI	750,000	to	1,000,000
Class XII	1,000,000	to	1,250,000
Class XIII	1,250,000	to	1,500,000
Class XIV	1,500,000	to	2,000,000
Class XV	2,000,000	to	or greater

RATING "NOT ASSIGNED" CLASSIFICATIONS

NR-1 Insufficient Data	NR-2 Insufficient Size and/or Operating Experience
NR-3 Rating Procedure Inapplicable	NR-4 Company Request
NR-5 Not Formally Followed	

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