



## **City of Cincinnati Retirement System Board of Trustees Meeting**

### **Agenda**

**March 23, 2023 / 2:00 P.M.  
City Hall, Council Chambers and via Zoom**

#### **Members**

Bill Moller, Chair  
Tom Gamel, Vice Chair  
Kathy Rahtz  
Mark Menkhaus, Jr.  
Monica Morton  
John Juech  
Tom West  
Seth Walsh

#### **CRS Staff**

Karen Alder  
Mike Barnhill, Contractor

#### **Law**

Ann Schooley  
Linda Smith

#### **Call to Order**

#### **Public Comment**

#### **Old Business**

- ✚ CRS Experience Study (CY2017-CY2021): Adoption of Actuarial Recommendations
  - Cheiron Impact of Demographic Assumptions including impact of Actuarial Liability, Funded Status, Gross Normal Cost, and City's Actuarial Determined Contribution rate dated 3/13/23
  - Cheiron Impact of Economic Assumptions at 7.5%, 7.25%, and 7.00% dated 3/13/23
  - Cheiron Letter dated 3/15/23, Increase to City Contribution Rate to Reach Full Funding by 2045
  - Cheiron Letter dated 3/16/23, Incremental Increases to City Contribution Rate to Reach Full Funding by 2045

#### **Adjournment**

**Next Meeting:** Thursday, April 6, 2023, 2:00 P.M. City Hall Council Chambers and via Zoom

# Impact of Demographic Assumptions



Assumption Change	12/31/2021 Actuarial Liability (\$mil)	12/31/2021 Funded Status (AVA)	Gross Normal Cost (% of Pay)	City's Actuarially Determined Contrib. Rate
None	\$ 2,560.3	71.6%	12.10%	32.86%
Mortality	42.8	(1.2%)	0.28%	1.96%
Retirement	1.2	(0.1%)	0.06%	0.11%
Termination	(8.0)	0.3%	(0.55%)	(0.86%)
Disability	(0.4)	0.0%	(0.03%)	(0.05%)
Other (Marital / Spousal Age)	(0.4)	0.0%	(0.01%)	(0.02%)
Salary	<u>(0.3)</u>	<u>0.0%</u>	<u>0.66%</u>	<u>0.46%</u>
Total	\$ 2,595.2	70.6%	12.51%	34.46%

All based on discount rate of 7.5% per year.



Classic Values, Innovative Advice.

March 13, 2023

# Impact of Economic Assumptions



Demographic Assumptions / Discount Rate*	December 31, 2021 Actuarial Liability (\$mil)	December 31, 2021 Funded Status (AVA)	Gross Normal Cost (% of Pay)	City's Actuarially Determined Contribution Rate
Proposed / 7.50%	\$ 2,595.2	70.6%	12.51%	34.46%
Proposed / 7.25%	\$ 2,657.5	68.9%	13.24%	36.89%
Proposed / 7.00%	\$ 2,722.4	67.3%	14.01%	39.36%

*Inflation kept at 2.75% in all scenarios above.*

# Reliance



The purpose of this presentation is to present the results of the 2022 experience study for the Cincinnati Retirement System and to recommend assumptions for future valuations. This presentation is for the use of the Cincinnati Retirement System in selecting assumptions for ongoing actuarial valuations.

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

The results of this presentation rely on future plan experience conforming to the underlying assumptions and methods outlined in this presentation. To the extent that the actual plan experience deviates from the underlying assumptions and methods, or there are any changes in plan provisions or applicable laws, the results would vary accordingly.

Cheiron utilizes and relies upon ProVal, an actuarial valuation software leased from Winklevoss Technologies for the intended purpose of calculating liabilities and projected benefit payments. As part of the review process for this presentation, we have performed a number of tests to verify that the results are reasonable and appropriate. We are not aware of any material inconsistencies, unreasonable output resulting from the aggregation of assumptions, material limitations or known weaknesses that would affect this presentation. This presentation 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.

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

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

Kevin Woodrich, FSA, EA, MAAA  
Principal Consulting Actuary

Janet Cranna, FSA, EA, MAAA  
Principal Consulting Actuary

March 13, 2023



Classic Values, Innovative Advice.

***Via Electronic Mail***

March 13, 2023

Ms. Karen Alder  
Cincinnati Retirement System  
801 Plum Street, Suite 328  
Cincinnati, Ohio 45202

***Re: Schedule of Funded Ratios under Proposed Assumptions***

Dear Karen:

As requested, we have prepared the Schedule of Funded Ratios in compliance with the Collaborative Settlement Agreement based on the projection model accompanying the December 31, 2021 actuarial valuation under three scenarios. The funded ratios reflect the actuarial liabilities divided by the actuarial value of assets projected as of each of the December 31 measurement dates shown below. Scenarios B and C reflect the proposed demographic assumptions from our experience study presented at the March 2, 2023 Board meeting. All the scenarios assume that City contributions will remain at their current level of 16.25% of full-time payroll and the City will continue to contribute \$2.7 million annually through 2034 for the Early Retirement Incentive Program. We have shown the projected funded ratios on the attachment under three scenarios:

- Scenario A: Same assumptions as shown in the December 31, 2021 valuation report
- Scenario B: Proposed demographic assumptions and a discount rate at 7.50%
- Scenario C: Proposed demographic assumptions and a discount rate of 7.25%

The projected funded ratios in the attachment assume that all the assumptions are realized. As advised by the System, we have reflected an assumed investment return of -10% for 2022 and 7.50% (or 7.25% for Scenario C) for all future years thereafter. Future projections may differ significantly from those presented in this letter 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 these projections, we relied on the same census data, assumptions (unless stated otherwise) and methods used in performing the December 31, 2021 valuation. All the caveats in that report still apply.

If you have any questions, please let us know.

Sincerely,  
Cheiron



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



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

Attachment

ATTACHMENT

December 31,	Funded Ratio as of December 31,		
	Scenario A (Current Assumptions)	Scenario B (Proposed Assumptions / 7.50%)	Scenario C (Proposed Assumptions / 7.25%)
2022	69.6%	68.6%	66.8%
2023	68.4%	67.3%	65.5%
2024	66.0%	64.8%	63.0%
2025	63.5%	62.2%	60.3%
2026	59.5%	58.2%	56.2%
2027	58.1%	56.7%	54.6%
2028	56.7%	55.1%	52.9%
2029	55.1%	53.5%	51.1%
2030	53.5%	51.7%	49.1%
2031	51.8%	49.8%	47.1%
2032	50.0%	47.9%	44.9%
2033	48.1%	45.8%	42.6%
2034	46.1%	43.6%	40.2%
2035	43.9%	41.3%	37.7%
2036	41.6%	38.8%	34.9%
2037	39.2%	36.2%	32.1%
2038	36.7%	33.4%	29.1%
2039	34.1%	30.6%	26.0%
2040	31.4%	27.7%	22.8%
2041	28.8%	24.8%	19.5%
2042	26.1%	21.9%	16.3%
2043	23.4%	19.0%	13.1%
2044	20.7%	16.2%	10.0%
2045	18.1%	13.5%	6.9%

***Via Electronic Mail***

March 15, 2023

Ms. Karen Alder  
Cincinnati Retirement System  
801 Plum Street, Suite 328  
Cincinnati, Ohio 45202

***Re: Increase to City Contribution Rate to Reach Full Funding by 2045***

Dear Karen:

As requested, we have calculated the City contribution rate on full-time payroll (currently 16.25%) that would be necessary for the System to be projected to reach full funding by December 31, 2045. We have assumed that this increased contribution rate would be effective January 1, 2024. These projections are based on the model that accompanied the December 31, 2021 actuarial valuation but has been updated to reflect the proposed demographic assumptions from our experience study presented at the March 2, 2023 Board meeting.

The attachment shows the projected funded ratios through 2045 under three discount rate/investment return scenarios. The funded ratios reflect the actuarial liabilities divided by the actuarial value of assets projected as of each of the December 31 measurement dates shown below. All the scenarios assume that City will continue to contribute \$2.7 million annually through 2034 for the Early Retirement Incentive Program. The three requested scenarios are:

- Scenario A: Assumed 7.50% discount rate and investment return for all years after 2022 / **31.00%** City Contribution Rate on full-time payroll
- Scenario B: Assumed 7.25% discount rate and investment return for all years after 2022 / **33.00%** City Contribution Rate on full-time payroll
- Scenario C: Assumed 7.00% discount rate and investment return for all years after 2022 / **35.00%** City Contribution Rate on full-time payroll

The projected funded ratios in the attachment assume that all the assumptions are realized. As advised by the System, we have reflected an assumed investment return of -10% for 2022 and the assumed discount rates and investment returns above for all future years thereafter. Future projections may differ significantly from those presented in this letter 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 these projections, we relied on the same census data, assumptions (unless stated otherwise) and methods used in performing the December 31, 2021 valuation. All the caveats in that report still apply.

If you have any questions, please let us know.

Sincerely,  
Cheiron



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



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

Attachment

## ATTACHMENT

December 31,	Funded Ratio as of December 31,		
	Scenario A (7.50% Discount Rate) – 31.00% City Contribution Rate on Full-Time Payroll	Scenario B (7.25% Discount Rate) – 33.00% City Contribution Rate on Full-Time Payroll	Scenario C (7.00% Discount Rate) – 35.00% City Contribution Rate on Full-Time Payroll
2022	68.6%	66.8%	65.1%
2023	67.3%	65.5%	63.7%
2024	66.1%	64.4%	62.7%
2025	65.0%	63.4%	61.8%
2026	62.6%	61.1%	59.6%
2027	62.8%	61.4%	59.9%
2028	63.2%	61.8%	60.4%
2029	63.7%	62.3%	60.9%
2030	64.3%	62.9%	61.6%
2031	65.0%	63.7%	62.4%
2032	65.8%	64.6%	63.4%
2033	66.8%	65.7%	64.6%
2034	68.0%	67.0%	65.9%
2035	69.5%	68.5%	67.5%
2036	71.0%	70.2%	69.3%
2037	72.9%	72.1%	71.3%
2038	75.0%	74.4%	73.6%
2039	77.5%	76.9%	76.3%
2040	80.3%	79.9%	79.3%
2041	83.5%	83.2%	82.8%
2042	87.2%	87.0%	86.6%
2043	91.2%	91.2%	90.9%
2044	95.8%	95.8%	95.7%
2045	100.7%	100.9%	100.9%



***Via Electronic Mail***

March 16, 2023

Ms. Karen Alder  
Cincinnati Retirement System  
801 Plum Street, Suite 328  
Cincinnati, Ohio 45202

***Re: Incremental Increases to City Contribution Rate to Reach Full Funding by 2045***

Dear Karen:

As requested, we have calculated the incremental increases to the City contribution rate on full-time payroll (currently 16.25%) necessary for the System to be projected to reach full funding by December 31, 2045. Please refer to our March 15, 2023 letter to see the level contribution rate necessary. We have assumed that the first increase would be effective January 1, 2024. These projections are based on the model that accompanied the December 31, 2021 actuarial valuation but has been updated to reflect the proposed demographic assumptions from our experience study presented at the March 2, 2023 Board meeting.

The attachment shows the projected funded ratios through 2045 under three discount rate/investment return scenarios. The funded ratios reflect the actuarial liabilities divided by the actuarial value of assets projected as of each of the December 31 measurement dates shown below. All the scenarios assume that City will continue to contribute \$2.7 million annually through 2034 for the Early Retirement Incentive Program. The three requested scenarios are:

- Scenario A: 7.50% discount rate/investment return for all years after 2022 / Incremental 1.50% increases per year to City Contribution Rate until 44.75% of full-time payroll
- Scenario B: 7.25% discount rate/investment return for all years after 2022 / Incremental 1.75% increases per year to City Contribution Rate until 46.00% of full-time payroll
- Scenario C: 7.00% discount rate/investment return for all years after 2022 / Incremental 2.00% increases per year to City Contribution Rate until 48.25% of full-time payroll

The projected funded ratios in the attachment assume that all the assumptions are realized. As advised by the System, we have reflected an assumed investment return of -10% for 2022 and the assumed discount rates and investment returns above for all future years thereafter. Future projections may differ significantly from those presented in this letter 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 these projections, we relied on the same census data, assumptions (unless stated otherwise) and methods used in performing the December 31, 2021 valuation. All the caveats in that report still apply.

If you have any questions, please let us know.

Sincerely,  
Cheiron



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



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

## ATTACHMENT

Year	Scenario A		Scenario B		Scenario C	
	City Contribution Rate (% of Full-Time Payroll)	Funded Ratio as of December 31,	City Contribution Rate (% of Full-Time Payroll)	Funded Ratio as of December 31,	City Contribution Rate (% of Full-Time Payroll)	Funded Ratio as of December 31,
2022	16.25%	68.6%	16.25%	66.8%	16.25%	65.1%
2023	16.25%	67.3%	16.25%	65.5%	16.25%	63.7%
2024	17.75%	65.0%	18.00%	63.1%	18.25%	61.3%
2025	19.25%	62.6%	19.75%	60.8%	20.25%	58.9%
2026	20.75%	59.1%	21.50%	57.2%	22.25%	55.4%
2027	22.25%	58.2%	23.25%	56.3%	24.25%	54.5%
2028	23.75%	57.5%	25.00%	55.6%	26.25%	53.7%
2029	25.25%	57.0%	26.75%	55.0%	28.25%	53.2%
2030	26.75%	56.6%	28.50%	54.7%	30.25%	52.8%
2031	28.25%	56.4%	30.25%	54.6%	32.25%	52.7%
2032	29.75%	56.5%	32.00%	54.7%	34.25%	53.0%
2033	31.25%	56.9%	33.75%	55.2%	36.25%	53.5%
2034	32.75%	57.5%	35.50%	56.0%	38.25%	54.5%
2035	34.25%	58.6%	37.25%	57.2%	40.25%	55.9%
2036	35.75%	59.9%	39.00%	58.8%	42.25%	57.7%
2037	37.25%	61.8%	40.75%	60.9%	44.25%	60.1%
2038	38.75%	64.2%	42.50%	63.6%	46.25%	63.1%
2039	40.25%	67.1%	44.25%	67.0%	48.25%	66.9%
2040	41.75%	70.8%	46.00%	71.2%	48.25%	71.2%
2041	43.25%	75.2%	46.00%	75.9%	48.25%	76.0%
2042	44.75%	80.5%	46.00%	81.1%	48.25%	81.4%
2043	44.75%	86.4%	46.00%	87.1%	48.25%	87.5%
2044	44.75%	92.9%	46.00%	93.6%	48.25%	94.2%
2045	44.75%	100.0%	46.00%	100.7%	48.25%	101.5%

#### Motion 1

I move that the CRS Board of Trustees accept the proposed demographic changes presented by the actuary Cheiron in the Experience Review dated March 2, 2023. These changes are necessary to reflect actual experience in the assumed demographic assumptions used to actuarially evaluate CRS.

#### Motion 2

I move that the CRS Board of Trustees recommend to the City an assumed rate of return of 7.25% on CRS investments used to actuarially evaluate CRS. Because the CSA states that the assumed rate of return is 7.5%, the CRS Board will continue to provide information on funding level and employer contribution based on the 7.5% rate of return, in addition to the 7.25%, rate of return.

#### Motion 3

I move that the CRS Board of Trustees send the attached letter to the Mayor and City Council, copy to the City Manager, and Judge Michael R. Barrett 1) recommending an increase in the employer contribution annually of 1.75% in accordance with the Scenario B provided by the Cheiron letter dated 3/16/2-23 regarding **Incremental Increases to the City Contribution Rate to reach Full Funding by 2045** and 2) recommending that the Scenario B multi-year incremental funding methodology be updated annually and reflected in the City budget each year for the City employer contribution to CRS pension.



March x, 2023

Hon. Aftab Pureval  
Mayor  
City of Cincinnati  
801 Plum St., Suite 150  
Cincinnati, OH 45202

Members of City of Cincinnati City Council  
c/o Clerk of Council  
City of Cincinnati  
801 Plum St., Suite 308  
Cincinnati, OH 45202

Re: City Employer Contribution Rate (Update)

Dear Mayor Pureval and Members of the City Council,

This letter is a follow up to the letter of January 17, 2023, entitled City Employer Contribution Rate. Since then, the Cincinnati Retirement System (CRS) Board of Trustees has received the Experience Review from the actuary, Cheiron.

### **Experience Study Introduction**

Experience Reviews are generally performed every five years for pension systems and the purpose is to compare actual system experience to the actuarial assumptions used to value the system. For CRS, the actuary has proposed some changes to the actuarial demographic assumptions to more accurately reflect the CRS experience. Demographic assumptions include retirement rates, termination rates, disability rates, mortality rates, salary rates, and family composition.

### **Experience Study Summary of Results – Estimated Actuarial Liability and Estimated Insolvency**

The demographic proposed changes result in an increase of the actuarial liability from \$2.560 billion to \$2.595 billion, a 1.4% increase. The CRS Board has approved the proposed demographic changes to the actuarial assumptions.

The Experience Review also noted that the CRS assumed rate of return of 7.5% is above the median rate of return of 7.0% for public pension systems. The actuary provided analyses of the impact of the demographic assumption changes; the estimated -10.0% investment return for

2022; and the forward assumed rates of return of 7.5%, 7.25%, and 7%. Insolvency is estimated in 2051, 2048, and 2046, respectively.

### **CRS Board Recommendations**

The Board recommends using a 7.25% assumed rate of return as a more conservative approach. As a point of reference, CRS has achieved a 7.6% return over the last 10 years according to the latest investment results report to the Board (1/31/2023).

As noted in the January 17, 2023 letter, CRS is governed by the Collaborative Settlement Agreement (CSA) which calls for 100% funding of the pension trust by December 31, 2045. CRS is a defined benefit plan as noted in the Cincinnati Municipal Code. Defined benefit plans offer guaranteed retirement benefits from the employer.

Based on the Experience Review the CRS Board has updated its recommendation for the City's employer contribution to increase by 1.75% each year until 2040 in order to achieve full funding by the end of 2045 (See attached 3/16/23 Cheiron Letter, Incremental Increases to City Contribution Rate to Reach Full Funding by 2045, Scenario B). The Board also continues to recommend an annually updated multi-year incremental funding methodology and that the City budget the employer contribution annually according to the Scenario B schedule.

We provide this information to be considered in the current budget development cycle and to stabilize CRS in the future.

Sincerely,

William E. Moller  
Chair, Cincinnati Retirement System Board

c: Ms. Sheryl Long, City Manager  
Hon. Michael R. Barrett, Judge, U.S. District Ct., Southern District of Ohio

Attachment (Cheiron Letter)