County Employees' and Officers' Annuity and Benefit Fund of Cook County

A Component Unit of Cook County, Illinois

ANNUAL COMPREHENSIVE FINANCIAL REPORT

For the Fiscal Years Ended December 31, 2021 and 2020

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Prepared by the staff of the

County Employees' and Officers' Annuity and Benefit Fund of Cook County

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INTRODUCTORY Section

This section provides information regarding the County Employees' and Officers' Annuity and Benefit Fund of Cook County's Certificate of Achievement, Board of Trustees, consultants, and organizational structure, as well as a letter of transmittal.

Government Finance Officers Association

Certificate of Achievement

for Excellence in

Financial Reporting

Presented to

Cook County Employee Annuity and Benefit Fund Illinois

For its Annual Comprehensive Financial Report

For the Fiscal Year Ended

December 31, 2020

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Tracy Reed
Elected Cook County Employee

James M. O'Rourke
Elected Cook County Annuitant

PROFESSIONAL CONSULTANTS

Legal Counsel
Burke Burns & Pinelli, Ltd.

Auditor
RSM US LLP

Investment Consultant
Callan Associates, Inc.

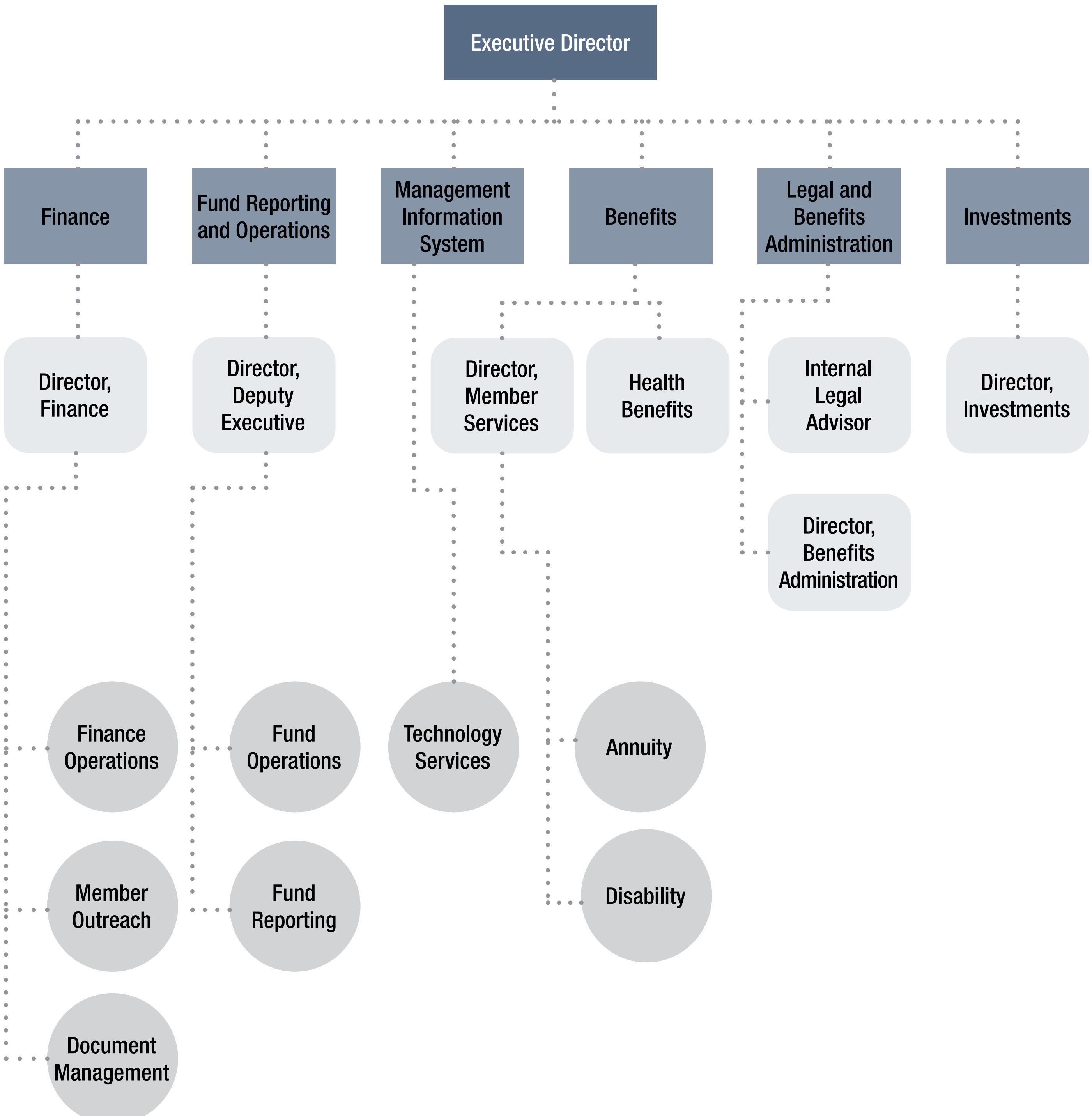
Consulting Actuary
Cavanaugh Macdonald Consulting, LLC

Master Custodian
BNY Mellon

Custodian
Cook County Treasurer

Investment Managers are listed on pages 74-75.
Brokers used by Investment Managers are listed on pages 76-77.

As of December 31, 2021



June 3, 2022

Retirement Board
County Employees' and Officers' Annuity and Benefit Fund of Cook County
and *ex officio* for the Forest Preserve District Employees' Annuity and Benefit Fund of Cook County
70 W Madison St, Suite 1925
Chicago, IL 60602

To the Retirement Board and Our Members:

We are pleased to submit to you the Annual Comprehensive Financial Report ("ACFR") of the County Employees' and Officers' Annuity and Benefit Fund of Cook County ("the Fund") for the calendar year ended December 31, 2021. The financial statements and their content are the responsibility of the Fund's management.

To the best of our knowledge and belief, the information contained in this report is complete and accurate in all material respects. This report is provided to allow the reader to gain an understanding of the Fund's financial position and operational activities as of December 31, 2021. Readers should review this report in conjunction with the Management's Discussion and Analysis (MD&A) found in the Financial Section of this report.

Fund Profile

Established in 1926 by an act of the Illinois General Assembly, the Fund is a defined benefit public pension fund that is governed by the Illinois Pension Code 40 ILCS 5/1-101 et seq. The Fund administers annuity, disability, death, and health benefits to employees and their beneficiaries of Cook County, Illinois. It is considered a component unit of Cook County and is included in the County's financial statements as a pension trust fund. As of December 31, 2021, the Fund consisted of 18,320 active employees, 16,945 retiree annuitants, 2,911 survivor annuitants, and 17,313 inactive members.

The Fund is governed by a nine-member Retirement Board ("Board") that also administers the Forest Preserve District Fund. The nine Trustees are elected or appointed as follows: three are elected by the employees of Cook County; one is elected by employees of the Forest Preserve District, two are elected by the annuitants of Cook County; one is elected by the annuitants of the Forest Preserve District, and two are ex officio seats appointed by the Comptroller and Treasurer of Cook County. Elected Trustees serve staggered three-year terms, resulting in no more than three positions being subject to election each year. The Fund has common trustees to administer the annuity and benefits of Cook County and Forest Preserve District employees in accordance with Illinois Compiled Statutes (ILCS) Chapter 40, Articles 1, 9, 10, and 20.

Summary of Financial Experience

The following table illustrates the changes in the Fund's net position between December 31, 2020 and December 31, 2019 (numbers in millions):

Change in Net Position	2021	2019	$ Change	% Change
Total additions	$ 2,675.2	$ 2,145.5	$ 529.7	24.7%
Total deductions	$ 1,043.2	$ 986.8	$ 56.4	5.7%
Change in net position from prior year	$ 1,632.0	$ 1,158.7	$ 473.3	40.8%

A more detailed analysis of the Fund's financial information can be found in the Financial Section of this report.

Funding

The Fund engages an independent actuary, Cavanaugh Macdonald Consulting, LLC, to perform an actuarial valuation on an annual basis pursuant to the provisions of the Illinois Pension Code.

As of December 31, 2021, the Fund's combined actuarial accrued liability for pension and retiree benefits was $19.1 billion, and the actuarial value of assets was $12.8 billion, resulting in an unfunded actuarial accrued liability of $6.3 billion. The funded ratio (ratio of assets to liabilities) for pension benefits and retiree health benefits combined was 67.16%, an increase from prior year's funded ratio of 63.87%.

The Fund's actuarial accrued liability for pension benefits only was $18.1 billion and the actuarial value of assets was $12.8 billion, resulting in an unfunded liability of $5.3 billion and a funded ratio of approximately 71%. Based on the Fund's combined actuarial valuation, the Fund's actuarial accrued liability for retiree health benefits was $1.0 billion. As there are no dedicated assets for retiree health benefits, the actuarial value of assets was $0 for retiree health benefits, resulting in an unfunded liability for retiree health benefits of $1.0 billion.

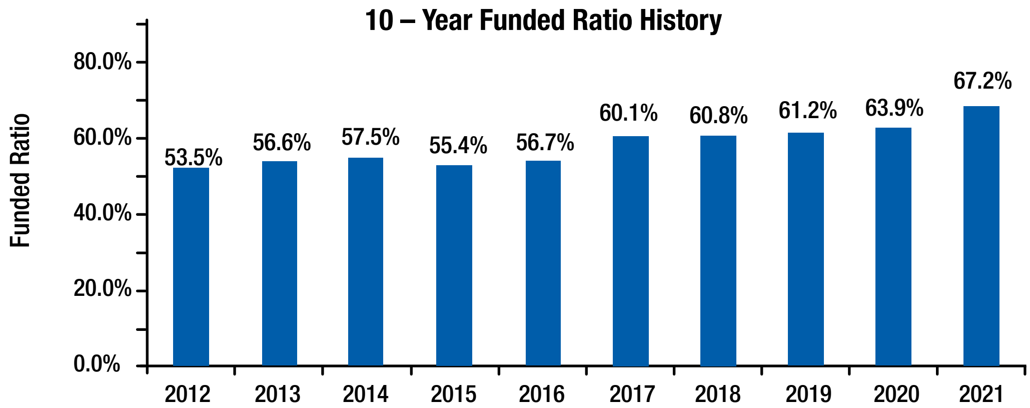
Employees contribute 8.5% of pensionable earnings (9.0% for County police employees) to the Fund. Contributions from the employer, as required by the Illinois Pension Code, are determined by a multiplier of active employee contributions. Specifically, the County levies a tax annually equal to the total amount of contributions made by employees in the calendar year 2 years prior to the year of the levy, multiplied by 1.54.

This multiplier, in the opinion of the Fund's actuary, is an inadequate funding mechanism to address the long-term financial requirements of the Fund. Since 1984, the statutory tax multiple used to determine the employer contribution has remained static at 1.54. According to the Fund's 2021 actuarial valuation, an actuarially-determined tax multiplier of 4.76 would be needed to generate the actuarially required 2022 employer contribution. Thus, the current fixed multiplier is an inadequate mechanism to provide long-term sustainability. The Fund's most recent actuarial valuation projects that the Fund's assets will be depleted by 2054. On a projected basis, the Fund faces a critical funding shortfall without legislative action to establish an actuarially-based funding policy. Also of note, the trend of annuitant members exceeding active employee members, which occurred for the first time in the Fund's history in 2020, continues with active members declining from 19,102 at December 31, 2020, to 18,320 at December 31, 2021. Annuitant members increased from 19,442 at December 31, 2020, to 19,856 at December 31, 2021. With the continued changing demographics of the Fund's membership, funding legislation has become even more critical.

The Fund has been submitting legislation to the General Assembly on an annual basis since 2010 which proposes an actuarially-based funding policy in lieu of a fixed multiplier. The Fund continues to work with its actuary, legislation liaison, fiduciary counsel and the employer to address the funding shortfall and identify permanent long-term solutions that can be enacted as statutory requirements within the Illinois Pension Code.

The Employer, under the leadership of President Preckwinkle and the Cook County Board of Commissioners, has attempted to address the downward funding trend being experienced by the Fund by identifying and transmitting an additional contribution source to the Fund. This supplemental contribution is made to the Fund pursuant to a one-year Intergovernmental Agreement (IGA) which has been renewed annually beginning in fiscal year 2016 and continuing to date through fiscal year 2022. The supplemental contribution source is derived from the Home Rule Sales Tax, which amounted to an additional contribution from the Employer to the Fund of $309.2 million (155% above the statutory contribution) in 2020, and $340.0 million (169% above the statutory contribution) in 2021. For 2022, the Employer is expected to make supplemental payments to the Fund of $324.2 million, of which $26.0 million was funded on December 31, 2021. On a near-term basis, the supplemental contributions serve to bridge the funding shortfall between annual contributions received and the annual benefit payments made by the Fund. As of the date of this letter, the Employer has made additional contributions to the Fund in 2022 (pursuant to the 2022 IGA) totaling $130,000,000. The Employer is expected to make additional payments during 2022 in the amounts of: $26,000,000 on June 30, 2022, $26,000,000 on July 31, 2022; $26,000,000 on August 31, 2022; $26,000,000 on September 30, 2022; $26,000,000 on October 31, 2022; and $38,199,712 on or before November 30, 2022 for a total of $298,199,712 in 2022. These contributions significantly alleviate the negative cash flows experienced by the Fund in order to pay monthly benefit payments, especially during volatile market periods.

The following chart depicts historical funding ratios for the Fund.



Investments

The Board's authority to invest the Fund's assets is governed by 40 ILCS 5/1-101 et seq. and 40 ILCS 5/9-101 et seq. The Fund's Investment Policy, which provides additional strategies and safeguards for the Fund's investment objectives, can be found at CookCountyPension.com.

At year-end, the total invested assets of the Fund were valued at $14.2 billion compared with $12.5 billion at the end of 2020, an increase of approximately $1.7 billion. With the gradual opening of the economy due to Covid vaccine prevalence, investors hoped for a return to normalcy in 2021 and the Fund experienced another strong year of investment returns with a realized 17.2% net return on investment for the year ended December 31, 2021. Widespread distribution of vaccines and the easing of lockdowns were followed by an economic rebound, but the emergence of new variants would deal a setback for a full opening and recovery as well as looming concerns about long-term inflation. Throughout the year, the U.S. and global market continued a relatively steady rise, with U.S. large cap stocks ending 2021 at record highs. As a result, the Fund continued to generate positive returns on a 3, 5 and 10-year basis with all three time periods well above the actuarial assumed rate of return of 7.25%.

The Fund outperformed its benchmark for the year ended December 31, 2021. Active management in private equity, public and private real estate and domestic equity were the largest contributors for the year. Despite posting absolute returns, international Equity finished below its benchmark. As was experienced in 2020, the Fund once again reached record asset levels at the end of 2021.

The Board continues to work to maintain a diversified asset allocation within acceptable risk parameters. In addition, the Board continues its long and steady track record of working with emerging minority and women-owned firms. In 2021, the Fund awarded commitments of $50 million to two emerging real estate managers; $25 million was awarded to Artemis Real Estate Partners, an emerging women-owned firm, and $25 million was awarded to Basis Investment Group, LLC, and an emerging women-owned and minority-owned firm.

Additional information regarding performance and investment professionals who provide services to the Fund can be found in the Investment Section of this report..

2021 Initiatives

In 2021, the Fund continued to adjust to the dynamic environmental conditions while delivering quality, undisrupted service that members deserve and expect. In July, Fund staff returned full-time onsite to the Fund office. Shortly thereafter, the Fund opened its doors to welcome members back to the office for in-person appointments, with appropriate safety precautions and minimal wait times, to provide members with an option for in-person service. The Fund continues to offer options to members to service their needs during these changing times.

Benefits and Communication

Fund staff continues to process member needs through various service support platforms, including in-person counseling appointments, email communications and phone call requests. During 2021, over 33,000 incoming phone calls and 5,400 emails were received and prompt responses were provided. Member applications for benefits continue at a steady pace.

The following summarizes the benefits processed in 2021 for both the Cook County and Forest Preserve Funds:

- Processed over 247,000 annuity and disability payments to members
- Processed over 2,700 refunds to terminated members or their survivors
- Calculated approximately 1,250 new annuitant and survivor benefits

In addition to processing of member benefits, the Fund initiated a member outreach to update contact information, including obtaining notarized signatures, for all annuitants. These efforts were conducted in a series of mailings that began in May of 2021. Through these efforts Fund staff has been able to verify or obtain new contact information for its annuitants, including email addresses, as available. The Fund has updated its records and will utilize the information to mitigate fraud risks to the Fund and its members, and improve future means of communication.

Trustee Election

In 2021 three member trustee positions were subject to election, which was held on October 27, 2021.

As decided by a majority of Cook County annuitants, Mr. Patrick J. McFadden was re-elected Cook County Annuitant Trustee and his three year term is December 1, 2021, through November 30, 2024.

As decided by a majority of Cook County employees, Ms. Tracy Reed was elected Cook County Employee Trustee and her three year term is December 1, 2021, through November 30, 2024.

Mr. Stephen Hughes was the sole candidate for the Forest Preserve District Employee Trustee, and was declared the winner by acclamation, in accordance with the Board's rules. His three year term is December 1, 2021, through November 30, 2024.

Ms. Diahann Goode decided not to seek election for another Trustee Term and completed her responsibilities as Cook County Employee Trustee on November 30, 2021. Ms. Goode's dedication to the membership and commitment to the Fund is greatly appreciated and acknowledged.

Investment

As mentioned the Fund conducted an emerging real estate manager search in 2021, and two mandates of $25 million each were awarded to Artemis Real Estate Partners and Basis Investment Group.

Other investment activity in 2021 continued pacing initiatives associated with the existing target allocation. Two new commitments of $40 million and $30 million were made to Mesirow Financial Private Equity and Mesirow Financial Real Estate Fund IV, respectively.

The Board engaged Callan LLC in 2021 to prepare an asset liability study for the Fund. Results of the study and proposed changes to the target asset allocation will be evaluated in 2022.

Administration

Fund staff continues to seek ways to evaluate cost-efficient solutions to enhance member service. In 2020, a request for proposal (RFP) was issued for global custody and ancillary services, which included services for a benefit payment agent. In 2021, the Board awarded these services to Bank of New York Mellon (BNY Mellon). In addition to significant cost savings on global custody services for five years beginning in 2022, BNY Mellon's response included an initiative to outsource the payment of benefits to a service line within the custodial bank. Currently these functions are performed by Fund staff. Outsourcing these functions will enhance member service in many ways and provide opportunities to evaluate and improve Fund staff current procedures and processes.

Also of note is that the administrative expenses of the Fund of $5,107,805 have experienced insignificant increases, and in some cases decreases, over a 10–year period. The costs to administer benefits have remained lean with increased annuitant membership and are approximately $134 for every active member and annuitant. This cost per member is among the lowest when compared to other local funds in the State of Illinois.

Legislation

The following Public Acts were enacted in calendar year 2021:

Public Act 102-0210 Provisions

- amends 5/9-158 to allow the board to use an acceptable physician and allow the board discretion to approve periods longer than 1 year of disability.
- amends 5/14-110(h) to allow state employees to transfer prior Cook County service to SERS if they were in certain County positions (corrections officer, court services officer).

Accounting System and Internal Control

This report and the financial statements included within were prepared to conform to the principles of governmental accounting and reporting pronounced by the Governmental Accounting Standards Board and the American Institute of Certified Public Accountants.

The financial statements were prepared using the accrual basis of accounting. Under the accrual basis, revenues are recognized in the accounting period in which they are earned, without regard to the date of collection, and expenses are recognized when the corresponding liabilities are incurred, regardless of when payment is made.

The Fund maintains a system of internal controls to adequately safeguard its assets and assure the reliability of its financial records. The controls are designed to provide reasonable, but not absolute, assurance that these objectives are met. The concept of reasonable assurance recognizes that first, the cost of the control should not exceed the benefits likely to be derived, and second that the valuation of the cost and benefits requires estimates and judgments by management.

Management and the independent auditor continually review the controls for adequacy.

The financial statements included in this report were audited by RSM US LLP, who has issued an unmodified opinion for calendar year ended December 31, 2021. A copy of their report is contained in the Financial Section of this report.

Awards

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to the Fund for its ACFR for the fiscal year ended December 31, 2020. This was the twelfth year that the Fund has earned this prestigious award. In order to be awarded a Certificate of Achievement, the Fund must publish an easily readable and efficiently organized annual comprehensive financial report. This report must satisfy both generally accepted accounting principles and applicable legal requirements.

A Certificate of Achievement is valid for a period of one year only. We believe that this current ACFR continues to meet the Certificate of Achievement Program's requirements, and we are submitting it to the GFOA to determine its eligibility for another certificate.

Acknowledgements

Thank you to the Fund's accounting and finance staff that worked diligently under the direction of the Board to prepare the 2021 financial statements and the compilation and production of this report. The favorable financial results included herein reflect many years of prudent dedication by the Board to a strategic investment plan and careful evaluation of many financial considerations. These results also reflect the efforts of Fund staff to execute all Board directives, policies and procedures, with efficient utilization of Fund resources and professional consultants.

A special thank you to the Board and Fund staff who faced many challenges presented by the Covid-19 pandemic, and professionally and effectively re-engineered job functions, presented creative service solutions and adapted to meet member needs and provide quality public service.

In addition, thank you to the members of the Fund for their hard work and dedication to providing vital support to the operations of Cook County. We appreciate the members' interest and involvement in the Fund and are always striving for cost effective ways to better serve the Fund's members. We welcome your comments or suggestions.

Respectfully submitted,

Regina Tuczak

Regina Tuczak, Executive Director

FINANCIAL Section

This section contains the report of the independent auditors, financial statements, analysis, and supplemental financial information.

RSM

Independent Auditor's Report

RSM US LLP

To the Board of Trustees of the Forest Preserve District Employees' Annuity and Benefit Fund of Cook County

Opinions

We have audited the accompanying Combining Statements of Pension Plan Fiduciary Net Position and Postemployment Healthcare Plan Net Position of the Forest Preserve District Employees' Annuity and Benefit Fund of Cook County (the Fund), a fiduciary component unit of the Forest Preserve District of Cook County, Illinois, as of December 31, 2021 and 2020, the related Combining Statements of Changes in Pension Plan Fiduciary Net Position and Postemployment Healthcare Plan Net Position for the years then ended and the related notes to the financial statements, which collectively comprise the Fund's basic financial statements as listed in the table of contents.

In our opinion, the accompanying financial statements referred to above present fairly, in all material respects, the respective financial position of the Fund, as of December 31, 2021 and 2020, and the respective changes in financial position for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Basis for Opinions

We conducted our audit in accordance with auditing standards generally accepted in the United States of America (GAAS). Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are required to be independent of the Fund, and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Responsibilities of Management for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with accounting principles generally accepted in the United States of America, and for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the Fund's ability to continue as a going concern for 12 months beyond the financial statement date, including any currently known information that may raise substantial doubt shortly thereafter.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinions. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

In performing an audit in accordance with GAAS, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Fund's internal control. Accordingly, no such opinion is expressed.

- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about the Fund's ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control-related matters that we identified during the audit.

Required Supplementary Information
Accounting principles generally accepted in the United States of America require that the Management's Discussion and Analysis, the Pensions Fund's Schedule of Changes in Employer's Net Pension Liability and Related Ratios, Schedule of Employer Contributions, Related Notes and Schedule of Investment Returns, the Postemployment Healthcare Fund's Schedule of Changes in the Employer's Net Postemployment Healthcare Liability and Related Ratios and the Schedule of Employer Contributions and Related Notes be presented to supplement the basic financial statements. Such information is the responsibility of management and, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Supplementary Information
Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise the Fund's basic financial statements. The Schedules of Administrative Expenses and Professional and Consulting Fees, Schedules of Investment Expenses, Schedules of Additions by Source, Schedules of Deductions by Source, and the Schedules of Employer Contributions Receivable are presented for purposes of additional analysis and are not a required part of the basic financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. The information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the Schedules of Administrative Expenses and Professional and Consulting Fees, Schedules of Investment Expenses, Schedules of Additions by Source, Schedules of Deductions by Source, and the Schedules of Employer Contributions Receivable are fairly stated, in all material respects, in relation to the basic financial statements as a whole.

Other Information
Management is responsible for the other information included in the annual comprehensive financial report. The other information comprises the other sections of the annual comprehensive financial report such as the introductory, investment, actuarial and statistical sections but does not include the basic financial statements and our auditor's report thereon. Our opinions on the basic financial statements do not cover the other information, and we do not express an opinion or any form of assurance thereon.

In connection with our audit of the basic financial statements, our responsibility is to read the other information and consider whether a material inconsistency exists between the other information and the basic financial statements, or the other information otherwise appears to be materially misstated. If, based on the work performed, we conclude that an uncorrected material misstatement of the other information exists, we are required to describe it in our report.

RSM US LLP

June 1, 2022, except for our report on the "Other Information", for which the date is August 30, 2022

Management's Discussion and Analysis (Unaudited)

This section presents Management's Discussion and Analysis of the financial position and performance of the County Employees' and Officers' Annuity and Benefit Fund of Cook County (the Fund or the Plan) for the years ended December 31, 2021 and 2020. This discussion is presented as an overview of the financial activities of the Fund and should be read in conjunction with the Fund's financial statements.

Overview of the Basic Financial Statements

The following discussion and analysis is intended to serve as an introduction to the Fund's basic financial statements. The financial statements are prepared on an economic sources focus and accrual basis of accounting in accordance with Governmental Accounting Standards Board (GASB) pronouncements. The basic components of the financial package are described below:

Combining Statements of Pension Plan Fiduciary Net Position and Postemployment Healthcare Plan Net Position provides a snapshot of account balances and net position held in trust for future benefit payments and any liabilities as of the Fund's year end. Over time increases and decreases in net position may serve as a useful indicator of whether the financial position of the Fund is improving or deteriorating.

Combining Statements of Changes in Pension Plan Fiduciary Net Position and Postemployment Healthcare Plan Net Position shows the revenues (additions) and expenses (deductions) during the year, where additions less deductions equal net increase (decrease) in net position. The net increase (decrease) in net position reports the change in net position during the year.

Notes to the Financial Statements provide additional information that is essential to achieving a better understanding of the data provided in the basic financial statements.

Required Supplementary Information provides schedules and related notes concerning actuarial information, funding progress, employer contributions and investment returns.

Supplementary Information includes schedules of net administrative expenses, professional and consulting fees, investment expenses, additions by source, and deductions by type and employer contributions receivable.

Financial Highlights

Net position increased by $1,631,917,124 or 12.9% from $12,649,610,438 at December 31, 2020 to $14,281,527,562 at December 31, 2021. Comparatively, net position increased by $1,158,561,218 or 10.1% from $11,490,959,220 at December 31, 2019 to $12,649,610,438 at December 31, 2020. The increase in net position for 2021 and 2020 was primarily due to the increase in the fair value of investments.

Rate of return of the Fund's investment portfolio was 17.15% (benchmark 14.67%) for 2021, 12.74% (benchmark 13.27%) for 2020, and 19.07% (benchmark 19.00%) for 2019.

Funded ratio for the Fund, based on the actuarial value of assets, was 67.16% in 2021, 63.87% in 2020, and 61.19% in 2019.

Net Position

The condensed Combining Statements of Pension Plan Fiduciary Net Position and Postemployment Healthcare Plan Net Position reflects the resources available to pay benefits to members. A summary of the Combining Statements of Pension Plan Fiduciary Net Position and Postemployment Plan Net Position is as follows:

Plan Net Position As of December 31,

	2021	2020	2019	Current Year Increase (Decrease) in Dollars	Current Year Increase (Decrease) in Percent
Total assets	$ 15,382,692,833	$ 13,436,785,089	$ 12,242,245,144	$ 1,945,907,744	14.5%
Total liabilities	1,101,165,271	787,174,651	751,285,924	313,990,620	39.9%
Net position	$ 14,281,527,562	$ 12,649,610,438	$ 11,490,959,220	$ 1,631,917,124	12.9%

Total receivables increased to $400,434,172 in 2021from $367,208,528 in 2020, and were $383,516,311 in 2019. The increase in 2021 was the result of increased earned investment income not yet paid, increased investment securities sold but not settled, and a greater amount of healthcare rebate payments due from vendors at year-end. The amounts owed were received in the subsequent year. The decrease in 2020 was due to less employer contributions due from the tax levy and a lower volume of unsettled transactions from securities sold at year-end.

Total investments increased to $14,188,869,915 in 2021 from $12,475,167,990 in 2020, and were $11,262,255,136 in 2019. The increase in 2021 was due to market value increases in equities, fixed income (U.S. government and government agency obligations, and corporate and foreign government obligations) securities, exchange traded funds, private equities, hedge funds, real estate funds, and short term investments. The increase in 2020 was due to market value increases in equities, corporate and foreign government obligations, private equities, hedge funds, and real estate funds investments.

Total liabilities increased to $1,101,165,271 in 2021 from $787,174,651 in 2020, and were $751,285,924 in 2019. The increase in 2021 was the result of increased unsettled investment securities purchased, an increase in investment manager fees and administrative expense payable, and increased healthcare expenses due at year-end. The increase in 2020 was due to increased unsettled transactions from securities purchased and an increase in outstanding healthcare expenses due at year-end.

Changes in Net Position

The condensed Combining Statements of Changes in Pension Plan Fiduciary Net Position and Postemployment Healthcare Plan Net Position reflects the changes in the resources available to pay benefits to members. A summary of the Combining Statements of Changes in Pension Plan Fiduciary Net Position and Postemployment Healthcare Plan Net Position is as follows:

Changes in Plan Net Position For the Years Ended December 31,

				Current Year Increase/(Decrease) in	
	2021	2020	2019	Dollars	Percent
Additions:					
Employer contributions	$ 541,300,175	$ 509,209,160	$ 526,240,864	$ 32,091,015	6.3%
Employee contributions	133,368,302	134,157,866	134,837,512	(789,564)	– 0.6%
Net investment income (includes security lending activities)	1,960,919,641	1,465,457,845	1,865,645,039	495,461,796	33.8%
Other	39,562,675	36,669,560	34,906,308	2,893,115	7.9%
Total additions	2,675,150,793	2,145,494,431	2,561,629,723	529,656,362	24.7%
Deductions:					
Benefits	1,001,104,106	950,137,294	890,115,295	50,966,812	5.4%
Refunds and death benefit	36,979,751	30,990,651	37,745,951	5,989,100	19.3%
Employee transfers to (from) the					
the Forest Preserve Fund	42,007	714,659	(252,406)	(672,652)	-94.1%
Administrative expenses	5,107,805	5,000,609	5,085,445	107,196	2.1%
Total deductions	1,043,233,669	986,843,213	932,694,285	56,390,456	5.7%
Net increase (decrease)	1,631,917,124	1,158,651,218	1,628,935,438	473,265,906	40.8%
Net position					
Beginning of year	12,649,610,438	11,490,959,220	9,862,023,782	1,158,651,218	10.1%
End of year	$ 14,281,527,562	$ 12,649,610,438	$ 11,490,959,220	$ 1,631,917,124	12.9%

Additions to Net Position

Total additions were $2,675,150,793 in 2021, $2,145,494,431 in 2020, and $2,561,882,129 in 2019.

Employer contributions increased to $541,300,175 in 2021 from $509,209,160 in 2020. Comparatively, employer contribution decreased to $509,209,160 in 2020 from $526,240,864 in 2019. Employer contributions are statutorily set at 1.54 times employee contributions collected two years prior. The County made supplemental contributions of $339,961,760 in 2021, $309,214,508 in 2020, and $320,296,720 in 2019.

Employee contributions, including permissive service credit purchases, decreased to $133,368,302 in 2021 from $134,157,866 in 2020 and $134,837,512 in 2019. Employees are required to contribute 8.5% (9% for sheriffs) of their pensionable salary to the Fund.

Net investment income totaled $1,960,919,641 for 2021 compared to net investment income of $1,465,457,845 in 2020 and $1,865,645,039 in 2019. Investment earnings fluctuate primarily from the overall performance of the financial markets from year to year.

Deductions to Net Position

Total deductions were $1,043,233,669 in 2021, $986,843,213 in 2020, and $932,946,691 in 2019.

Benefits increased to $1,001,104,106 in 2021 from $950,137,294 in 2020 and $890,115,295 in 2019 due primarily to the 3% annual cost of living increases for annuitants and an increase in the number of retirees.

Refunds increased to $36,979,751 in 2021 from $30,990,651 in 2020 and decreased from $37,745,951 in 2019. These changes are due to fluctuations in refund applications.

Employee transfers to (from) the Cook County Fund resulted from Forest Preserve District employees transferring employment to or (from) Cook County. The accumulated contributions and the accrued pension benefit obligation are transferred between the Forest Preserve Fund and the Cook County Fund.

The cost to administer the Fund increased to $5,107,805 in 2021from $5,000,609 in 2020. Comparatively, the cost to administer the Fund decreased by to $5,000,609 in 2020 from $5,085,445 in 2019.

Actuarial Information

Pension Benefits

Under GASB Statement No. 67, *Financial Reporting for Pension Plans*, the Fund's funding for pension benefits is as follows:

Funding for Pension Benefits For the Years Ended December 31,

	2021	2020	2019
Total pension liability	$ 25,118,790,453	$ 27,634,518,984	$ 25,071,941,811
Plan fiduciary net position	14,281,527,562	12,649,610,438	11,490,959,220
Employer's net pension liability	$ 10,837,262,891	$ 14,984,908,546	$ 13,580,982,591
Plan fiduciary net position as a percentage of the total pension liability	56.86%	45.77%	45.83%

Postemployment Healthcare Benefits

Under GASB Statement No. 74, *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans*, the Fund's funding for postemployment healthcare benefits is as follows:

Funding for Healthcare Benefits For the Years Ended December 31,

	2021	2020	2019
Total other postemployment benefits liability	$ 1,978,062,391	$ 2,105,154,520	$ 1,900,989,370
Plan fiduciary net position	—	—	—
Employer's net other postemployment benefits liability	$ 1,978,062,391	$ 2,105,154,520	$ 1,900,989,370

Contributions for postemployment healthcare benefits are made on a "pay-as-you-go" basis, resulting in a 0.00% funded ratio.

Actuarial Information (continued)

Combined

The Fund actuary has performed a combined valuation of the pension and postemployment healthcare benefits provided by the Fund to measure the overall funded status and contribution requirements of the Fund. Such a valuation is required under Chapter 40, Article 5/9-199 of the Illinois Pension Code which provides that the Fund shall submit a report each year containing a detailed statement of the affairs of the Fund, its income and expenditures, and assets and liabilities. The combined valuation reflects the actuarial assumptions adopted by the Board based on the results of an actuarial experience study. These assumptions conform to the actuarial standards recommended by the Fund's actuary and were used by the Fund's actuary to present the combined funding status in accordance with Section 9-199. The Fund's funding under the combined actuarial valuation is as follows:

Funding for Combined Pension and Postemployment Healthcare Benefits
For the Years Ended December 31,

	2021	2020	2019
Unfunded actuarial accrued liability	$ 6,268,859,053	$ 6,655,454,351	$ 6,966,299,527
Funded ratio	67.16%	63.87%	61.19%

Contact Information

This financial report is designed to provide the employer, plan participants and others with a general overview of the Fund's finances and show accountability for money it receives. Questions concerning any data provided in the report or requests for additional information should be addressed to:

County Employees' and Officers' Annuity
and Benefit Fund of Cook County
Attention: Executive Director
70 West Madison Street
Suite 1925
Chicago, Illinois 60602

Combining Statements of Pension Plan Fiduciary Net Position and Postemployment Healthcare Plan Net Position

December 31, 2021

Assets	Total	Pension	Postemployment Healthcare
RECEIVABLES			
Employer contributions less allowance of $7,231,365 in 2021	$ 195,286,088	$ 195,286,088	$ —
Employee contributions	5,623,324	5,623,324	—
Accrued investment income	38,777,422	38,777,422	—
Receivable for securities sold	129,946,647	129,946,647	—
EGWP/Medicare Part D subsidy & other	28,234,791	9,820,317	18,414,474
Prescription rebates	1,103,276	—	1,103,276
Impress balance receivable	1,441,000	—	1,441,000
Other	21,624	21,624	—
Total receivables	400,434,172	379,475,422	20,958,750
INVESTMENTS			
U.S. and international equities	7,635,101,620	7,635,101,620	—
U.S. Government and government agency obligations	1,473,893,826	1,473,893,826	—
Corporate and foreign government obligations	1,451,709,977	1,451,709,977	—
Collective international equity fund	98,052,511	98,052,511	—
Commingled fixed income fund	36,954,580	36,954,580	—
Private global fixed fund limited partnership	234,288,180	234,288,180	—
Exchange traded funds	9,662,015	9,662,015	—
Private equities	1,107,947,617	1,107,947,617	—
Hedge funds	814,964,951	814,964,951	—
Real estate funds	968,510,214	968,510,214	—
Short-term investment	357,784,424	357,784,424	—
Total investments	14,188,869,915	14,188,869,915	—
Collateral held for securities on loan	793,388,746	793,388,746	—
Total assets	15,382,692,833	15,361,734,083	20,958,750
LIABILITIES			
Accounts payable	8,120,850	8,120,850	—
Healthcare & other benefits payable	20,958,750	—	20,958,750
Due to Forest Preserve District Employees' Annuity and Benefit Fund of Cook County	998,679	998,679	—
Payable for securities purchased	277,698,246	277,698,246	—
Securities lending collateral	793,388,746	793,388,746	—
Total liabilities	1,101,165,271	1,080,206,521	20,958,750
Net position			
Net position restricted for pensions	14,281,527,562	14,281,527,562	—
Net position held in trust for postemployment healthcare benefits	—	—	—
Total	$ 14,281,527,562	$ 14,281,527,562	$ —

See accompanying notes to financial statements.

Combining Statements of Pension Plan Fiduciary Net Position and Postemployment Healthcare Plan Net Position (continued)

December 31, 2020

Assets	Total	Pension	Postemployment Healthcare
RECEIVABLES			
Employer contributions less allowance of $6,390,937 in 2020	$ 195,048,545	$ 195,048,545	$ —
Employee contributions	5,634,981	5,634,981	—
Accrued investment income	35,002,953	35,002,953	—
Receivable for securities sold	116,443,382	116,443,382	—
Due from Forest Preserve District Employees’ Annuity and Benefit Fund of Cook County	—	—	—
EGWP/Medicare Part D subsidy & other	12,210,594	2,025,337	10,185,257
Prescription rebates	873,121	—	873,121
Imprest balance receivable	1,441,000	—	1,441,000
Other	553,952	553,952	—
Total receivables	367,208,528	354,709,150	12,499,378
INVESTMENTS			
U.S. and international equities	6,930,194,686	6,930,194,686	—
U.S. Government and government agency obligations	1,021,751,132	1,021,751,132	—
Corporate and foreign government obligations	1,424,006,422	1,424,006,422	—
Collective international equity fund	82,904,306	82,904,306	—
Commingled fixed income fund	40,925,720	40,925,720	—
Private global fixed fund limited partnership	244,996,202	244,996,202	—
Exchange traded funds	8,037,180	8,037,180	—
Private equities	938,804,581	938,804,581	—
Hedge funds	740,040,004	740,040,004	—
Real estate funds	776,471,639	776,471,639	—
Short-term investment	267,036,118	267,036,118	—
Total investments	12,475,167,990	12,475,167,990	—
Collateral held for securities on loan	594,408,571	594,408,571	—
Total assets	13,436,785,089	13,424,285,711	12,499,378
LIABILITIES			
Accounts payable	6,082,240	6,082,240	—
Healthcare & other benefits payable	12,499,378	—	12,499,378
Due to Forest Preserve District Employees’ Annuity and Benefit Fund of Cook County	686,022	686,022	—
Payable for securities purchased	173,498,440	173,498,440	—
Securities lending collateral	594,408,571	594,408,571	—
Total liabilities	787,174,651	774,675,273	12,499,378
Net position			
Net position restricted for pensions	12,649,610,438	12,649,610,438	—
Net position held in trust for postemployment healthcare benefits	—	—	—
Total	$ 12,649,610,438	$ 12,649,610,438	$ —

See accompanying notes to financial statements.

Combining Statements of Changes in Pension Plan Fiduciary Net Position and Postemployment Healthcare Plan Net Position

Year Ended December 31, 2021

	Total	Pension	Postemployment Healthcare
ADDITIONS			
Employer contributions			
Statutory	$ 201,338,415	$ 201,338,415	$ —
Supplemental	339,961,760	339,961,760	—
Allocation to postemployment healthcare	—	(34,230,005)	34,230,005
Total employer contributions	541,300,175	507,070,170	34,230,005
Employee contributions			
Salary deductions	127,259,463	127,259,463	—
Refund repayments	3,055,193	3,055,193	—
Former and miscellaneous service payments	677,061	677,061	—
Optional payments and deductions	48,637	48,637	—
Deductions in lieu of disability	2,327,948	2,327,948	—
Total employee contributions	133,368,302	133,368,302	—
Investment income			
Net appreciation in fair value of investments	1,779,077,843	1,779,077,843	—
Dividends	137,638,306	137,638,306	—
Interest	82,268,488	82,268,488	—
	1,998,984,637	1,998,984,637	—
Less investment expenses	(40,720,172)	(40,720,172)	—
Net investment income	1,958,264,465	1,958,264,465	—
Securities lending			
Income	3,225,119	3,225,119	—
Expenses	(569,943)	(569,943)	—
Net securities lending income	2,655,176	2,655,176	—
Other			
Employer federal subsidized programs	4,321,425	4,321,425	—
EGWP/Medicare Part D subsidy	30,522,721	—	30,522,721
Prescription plan rebates	4,530,153	—	4,530,153
Miscellaneous	188,376	188,376	—
Total other additions	39,562,675	4,509,801	35,052,874
Total additions	2,675,150,793	2,605,867,914	69,282,879
DEDUCTIONS			
Benefits			
Annuity			
Employee	849,658,684	849,658,684	—
Spouse and children	69,428,345	69,428,345	—
Disability			
Ordinary	11,989,211	11,989,211	—
Duty	744,987	744,987	—
Healthcare less annuitant contributions of $57,240,134 in 2021	69,282,879	—	69,282,879
Total benefits	1,001,104,106	931,821,227	69,282,879
Refunds and death benefits	36,979,751	36,979,751	—
Employee transfer to Forest Preserve District Employees' Annuity and Benefit Fund of Cook County	42,007	42,007	—
Net administrative expenses	5,000,609	5,000,609	—
Total deductions	1,043,126,473	973,843,594	69,282,879
Net increase (decrease)	1,632,024,320	1,632,024,320	—
Net position			
Beginning of year	12,649,610,438	12,649,610,438	—
End of year	$ 14,281,634,758	$ 14,281,634,758	$ —

See accompanying notes to financial statements.

Combining Statements of Changes in Pension Plan Fiduciary Net Position and Postemployment Healthcare Plan Net Position (continued)

Year Ended December 2020	Total	Pension	Postemployment Healthcare
ADDITIONS			
Employer contributions			
Statutory	$ 199,994,652	$ 199,994,652	$ —
Supplemental	309,214,508	309,214,508	—
Allocation to postemployment healthcare	—	(43,430,445)	43,430,445
Total employer contributions	509,209,160	465,778,715	43,430,445
Employee contributions			
Salary deductions	129,389,135	129,389,135	—
Refund repayments	1,877,909	1,877,909	—
Former and miscellaneous service payments	528,376	528,376	—
Optional payments and deductions	109,582	109,582	—
Deductions in lieu of disability	2,252,864	2,252,864	—
Total employee contributions	134,157,866	134,157,866	—
Investment income			
Net appreciation in fair value of investments	1,305,533,430	1,305,533,430	—
Dividends	114,984,928	114,984,928	—
Interest	78,568,641	78,568,641	—
	1,499,086,999	1,499,086,999	—
Less investment expenses	(36,023,573)	(36,023,573)	—
Net investment income	1,463,063,426	1,463,063,426	—
Securities lending			
Income	2,912,136	2,912,136	—
Expenses	(517,717)	(517,717)	—
Net securities lending income	2,394,419	2,394,419	—
Other			
Employer federal subsidized programs	4,434,155	4,434,155	—
EGWP/Medicare Part D subsidy	28,493,977	—	28,493,977
Prescription plan rebates	3,706,118	—	3,706,118
Miscellaneous	35,310	35,310	—
Total other additions	36,669,560	4,469,465	32,200,095
Total additions	2,145,494,431	2,069,863,891	75,630,540
DEDUCTIONS			
Benefits			
Annuity			
Employee	799,105,038	799,105,038	—
Spouse and children	64,617,964	64,617,964	—
Disability			
Ordinary	9,808,737	9,808,737	—
Duty	975,015	975,015	—
Healthcare less annuitant contributions of $52,821,697 in 2020	75,630,540	—	75,630,540
Total benefits	950,137,294	874,506,754	75,630,540
Refunds and death benefits	30,990,651	30,990,651	—
Employee transfer to Forest Preserve District			
Employees' Annuity and Benefit Fund of Cook County	714,659	714,659	—
Net administrative expenses	5,000,609	5,000,609	—
Total deductions	986,843,213	911,212,673	75,630,540
Net increase (decrease)	1,158,651,218	1,158,651,218	—
Net position			
Beginning of year	11,490,959,220	11,490,959,220	—
End of year	$ 12,649,610,438	$ 12,649,610,438	$ —

See accompanying notes to financial statements.

NOTE 1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

County Employees' and Officers' Annuity and Benefit Fund of Cook County (the Fund or Plan) is administered in accordance with Chapter 40, Article 5/9 of the Illinois Compiled Statutes (the Statutes).

Financial Reporting Entity — Accounting principles generally accepted in the United States of America define a financial reporting entity as consisting of the primary government and its component units for which the primary government is financially accountable. Financial accountability includes appointing a voting majority of a component unit's governing board, the ability of a primary government to impose its will on the component unit, or a potential for a component unit to provide specific financial benefits to or impose specific financial burdens on the primary government. The Fund has determined that no other outside entity meets the above criteria and, therefore, no other entity has been included as a component unit in the Fund's financial statements.

Based on the above criteria, the Fund is considered to be a fiduciary component unit of Cook County, Illinois (the County) and is included in the County's financial statements.

Method of Accounting — The financial statements are prepared using the accrual basis of accounting. Employer contributions are recognized as income pursuant to legal requirements as specified by the Illinois Compiled Statutes. Employee contributions are recognized in the period in which the contributions are due. Benefits and refunds are recognized when due and payable in accordance with the terms of the Fund.

Investments — Investments are reported at fair value, which generally represents reported market value as of the last business day of the year. Where less than an entire investment holding is sold, average value is used to determine realized gain or loss. Purchases and sales of securities are recorded on a trade-date basis. Interest income is recorded on the accrual basis. Dividends are recorded on the ex-dividend date. Net appreciation (depreciation) in fair value of investments includes gains and losses on investments bought and sold, as well as held during the year.

Allocated Expenses — Administrative expenses are initially paid by the Fund. These expenses are allocated between the Fund and the Forest Preserve District Employees' Annuity and Benefit Fund of Cook County (the Forest Fund) on a pro rata basis, as applicable.

Capital Assets — The Fund has set a capitalization threshold of $100,000 for all capital asset types. As of December 31, 2021 and 2020, the Fund does not have any capital assets.

Estimates — The preparation of the financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect certain reported amounts and disclosures in the financial statements. Actual results could differ from those estimates.

Subsequent Events — Subsequent events have been evaluated through the auditor's report date, which is the date the financial statements were available to be issued.

NOTE 2. PLAN DESCRIPTION

The Fund was established on January 1, 1926, and is governed by legislation contained in the Illinois Compiled Statutes (the Statutes), particularly Chapter 40, Articles 5/1; 5/9 and 5/20. Effective with the signing of Public Act 96-0889 into law on April 14, 2010, participants that first became contributors on or after January 1, 2011 are Tier 2 participants. All other participants that were contributing prior to January 1, 2011 are Tier 1 participants. The pension plan provisions can be amended only by the Illinois Legislature. The pension plan is a single employer defined benefit pension plan with a defined contribution minimum. The pension plan was established for the purpose of providing retirement, death and disability benefits for full-time employees of the County and the eligible dependents of such employees.

NOTE 2. PLAN DESCRIPTION (continued)

The Statutes authorize a Board of Trustees (the Board) of nine members to carry out the provisions of the Article. According to the Article, two members of the Board are ex officio, four are elected by the employee members of the Fund and three are elected by the annuitants of the Fund. The two ex officio members are the Comptroller of Cook County, or someone chosen by the Comptroller, and the Treasurer of Cook County, or someone chosen by the Treasurer. All members of the Board are fiduciaries with respect to the Fund and are statutorily mandated to discharge their duties, as such, solely in the interest of the Fund's participants and beneficiaries.

The Board has the powers and duties required in the Article to collect all contributions due to the Fund, to invest the Fund's reserves, to have an annual audit, to appoint employees, to authorize or suspend payment of any benefit and to have exclusive original jurisdiction in all matters relating to or affecting the Fund. The Board approves its own budget which is prepared by the administrative staff of the Fund. The Board is required annually to submit to the County Board of Cook County a detailed report of the financial affairs and status of the Fund. Provisions in other articles of Chapter 40 require the Board to submit its annual audit and actuarial valuation reports to the State of Illinois Department of Insurance, as well as another detailed annual report, the form and content of which is specified by the Department of Insurance.

Covered employees are required to contribute 8.5% (9% for sheriffs) of their salary to the Fund, subject to the salary limitations for Tier 2 participants in Article 5/1-160. If an employee leaves covered employment without qualifying for an annuity, accumulated contributions are refunded with interest (3% or 4% depending on when the employee became a participant). The County's total contribution is the amount of contributions made by the employees to the Fund in the calendar year two years prior to the year for which annual applicable tax is levied, multiplied by 1.54. The source of funds for the County's contributions has been designated by State Statute as the County's annual property tax levy.

The Fund provides retirement as well as death and disability benefits. Tier 1 employees age 50 or older and Tier 2 employees age 62 or older are entitled to receive a minimum formula annuity of 2.4% for each year of credited service if they have at least 10 years of service. The maximum benefit is 80% of the final average monthly salary. For Tier 1 employees under age 60 and Tier 2 employees under age 67, the monthly retirement benefit is reduced by ½% for each month the participant is below that age. The reduction is waived for Tier 1 participants having 30 or more years of credited service.

Participants should refer to the applicable Articles for more complete information.

At December 31, 2021 and 2020, participants consisted of the following:

	2021	2020
Active members	18,320	19,102
Retired members	16,945	16,572
Beneficiaries	2,911	2,870
Inactive members	17,313	16,404
Total	55,489	54,948

NOTE 3. EMPLOYER'S PENSION LIABILITY

Net Pension Liability

The components of the employer's net pension liability of the Fund for the years ended December 31, 2021 and 2020 are as follows:

	2021	2020
Total pension liability	$ 25,118,790,453	$ 27,634,518,984
Plan fiduciary net position	14,281,527,562	12,649,610,438
Employer's net pension liability	$ 10,837,262,891	$ 14,984,908,546
Plan fiduciary net position as a percentage of the total pension liability	56.86%	45.77%

Refer to the schedule of changes in the employer's net pension liability and related ratios in the required supplementary information for additional information related to the funded status of the Fund.

The net pension liability was determined by actuarial valuations performed as of December 31, 2021 and 2020 using the following actuarial methods and assumptions:

Actuarial valuation date	December 31, 2021	December 31, 2020
Actuarial cost method	Entry Age Normal	Entry Age Normal
Actuarial assumptions:		
Inflation	2.50% per year, compounded annually	2.75% per year, compounded annually
Salary increases	3.00% to 5.00%, based on service	3.50% to 8.00%, based on age
Investment rate of return	7.00% per year, compounded annually	7.25% per year, compounded annually
Retirement age	Rates of retirement for each age from 50 to 80 based on recent experience of the Plan where all employees are assumed to retire by age 80	Rates of retirement for each age from 50 to 80 based on recent experience of the Plan where all employees are assumed to retire by age 80
Mortality	Pub–2010 amount-weighted tables projected from 2010 using generational improvement with Scale MP-2021	RP–2014 Blue Collar Mortality Table, base year 2006. Buck Modified MP–2017 projection scale
Postretirement annuity increase	Tier 1 participants – 3.0% compounded annually Tier 2 participants – the lesser of 3.0% or one half of the increase in the Consumer Price Index	Tier 1 participants – 3.0% compounded annually Tier 2 participants – the lesser of 3.0% or one half of the increase in the Consumer Price Index

The actuarial assumptions used in the December 31, 2021 valuations were based on the results of an actuarial experience study conducted by Cavanaugh Macdonald Consulting dated March 2022 covering a four-year period ended December 31, 2020. In addition to the assumptions listed above, the assumptions changes include decrease of wage growth assumptions from 0.75% to 0.50%, and general wage inflation assumption lowered from 3.50% to 3.00%. The marriage assumption was changed from assuming spouses of active female members are four years older than female members to assume that spouses of active female members are two years older than female members. The marital status assumption for female members was lowered from 70% assumed to be married to 40% assumed to be married. The assumed retirement age for Tier 1 deferred vested members was increased from 55 to 62. The assumed annual increase in administrative expense was lowered form 5.00% to 2.50%.

The December 31, 2020 valuations were based on the results of an actuarial experience study conducted by Buck (Formerly Conduent, Inc.) covering the four-year period ended in December 31, 2016. The Fund engaged Cavanaugh Macdonald Consulting to prepare the December 31, 2021 and 2020 valuations.

NOTE 3. EMPLOYER'S PENSION LIABILITY (continued)

Discount Rate

The discount rate used to measure the total pension liability at December 31, 2021 and 2020 was 4.38% and 3.68%, respectively. The projection of cash flows used to determine the discount rate assumed that contributions will continue to follow the current funding policy. Based on this assumption, the Fund's fiduciary net position was projected to be insufficient to make all projected future benefit payments of current plan members. A municipal bond rate of 2.05% at December 31, 2021(2.12% for 2020) and long-term investment rate of 7.00% (7.25% for 2020) were used in the development of the blended discount rate after that point. The municipal bond rates are based on the S&P Municipal Bond 20 Year High Grade Rate Index. As a result, for December 31, 2021 and 2020, the long-term rate of return of 7.00% and 7.25%, respectively, were applied to projected benefit payments through 2052 and 2044, respectively. Based on the long-term rate of return of 7.00% for 2021 and 7.25% for 2020 and municipal bond rate of 2.05% at December 31, 2021 and 2.12% at December 31, 2020, the blended discount rate would be 4.38% at December 31, 2021 and 3.68% at December 31, 2020.

Sensitivity of the Net Pension Liability to Changes in the Discount Rate

The following is an analysis of the net pension liability's sensitivity to changes in the discount rate at December 31, 2021 and 2020. The following table presents the net pension liability of the employer using the blended discount rate as well as the employer's net pension liability calculated using a discount rate 1% lower and 1% higher than the current discount rate:

	1% Decrease 3.38%	Current Discount Rate 4.38%	1% Increase 5.38%
Net Pension Liability — December 31, 2021	$ 14,697,112,448	$ 10,837,262,891	$ 7,701,865,180

	1% Decrease 2.68%	Current Discount Rate 3.68%	1% Increase 4.68%
Net Pension Liability — December 31, 2020	$ 19,498,281,825	$ 14,984,908,546	$ 11,352,586,219

NOTE 4. SUMMARY OF EMPLOYER FUNDING POLICIES

Statutory Funding

Employer contributions are funded primarily through a tax levied by Cook County, Illinois. The employer contributions to be remitted to the Fund are equal to the total contributions made by the employees to the Fund in the calendar year two years prior, multiplied by 1.54.

Supplemental Funding

Per the 2021 IGA (Intergovernmental Agreement), the County is required to make supplemental payments totaling $341,961,760 by November 30, 2021, to promote the long-term fiscal sustainability of the Fund. During the year ended December 31, 2021, the County made supplemental contributions to the Fund totaling $339,961,760, which includes $26,000,000 paid on December 31, 2021, pertaining to the 2022 IGA. Per the 2020 IGA, the County is required to make supplemental payments totaling $306,214,508 by November 30, 2020. During the year ended December 31, 2020, the County made supplemental contributions to the Fund totaling $309,214,508, which includes $28,000,000 paid on December 31, 2020 pertaining to the 2021 IGA.

NOTE 5. INVESTMENTS

Investment Policy

The Board of Trustees is responsible for establishing reasonable and consistent investment objectives, policies, and guidelines governing the investment of Fund assets in accordance with the Illinois Compiled Statutes. The Fund is authorized to invest in bonds, notes, certificates of indebtedness, mortgage notes, real estate, stocks, shares, debentures, or other obligations or securities as set forth in the "prudent person" provisions of the state statutes. All of the Fund's financial instruments are consistent with the permissible investments outlined in the state statutes and any index-linked financial instruments are limited to those indices that replicate the permissible investments outlined in the State Statutes. The investment policy was updated to conform with new legislation (PA 1001-473), also known as Sustainable Investing Principles Act.

The Fund's investment policy in accordance with the Statutes establishes the following target allocation across asset classes for the years ended December 31, 2021 and 2020:

	2021		2020	
Asset Class	Target Allocation %	Long–term Expected Real Rate of Return	Target Allocation %	Long–term Expected Real Rate of Return
Domestic equities	33.00%	5.33%	33.00%	5.58%
International equities	21.00%	5.63%	21.00%	5.88%
Fixed income	26.00%	1.18%	26.00%	1.43%
Real estate funds	9.00%	4.27%	9.00%	4.52%
Private equity	4.00%	6.65%	4.00%	6.91%
Hedge Funds	6.00%	2.70%	6.00%	2.91%
Short–term investment	1.00%	0.00%	1.00%	0.03%
Total investments	100.00%		100.00%	

Long-Term Expected Real Rate of Return

The long-term expected real rates of return are the nominal expected returns for various asset classes net of the long-term inflation assumption of 2.25%. The nominal expected return is expressed as the annualized growth rate over 30 years (i.e., geometric or compounded return). A building block methodology is employed to develop long-term return expectations. Building block includes a long-term estimate of the short-term real rate, inflation, term premium, credit premium, and equity risk premium among others. Current economic conditions (inflation, yields, valuation) serve as a starting point for development; however, over a 30-year horizon, risk premiums are largely influenced by long-term history. The 30-year geometric long-term expected real rate of return for each major asset class included with the Fund's target asset allocation as of December 31, 2021 are listed in the table above.

Annual Money-Weighted Rate of Return

The annual money-weighted rate of return on pension plan investments, net of pension plan investment expense, was 17.13% and 12.50% for the years ended December 31, 2021 and 2020, respectively. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

Custodial Credit Risk — Deposits

Custodial credit risk for deposits is the risk that, in the event of the failure of a depository financial institution, a government will not be able to cover deposits or will not be able to recover collateral securities that are in the possession of an outside party. The fund does not have uncollateralized cash balances as of 12/31/2021.

NOTE 5. INVESTMENTS (continued)

Custodial Credit Risk — Investments

Custodial credit risk for investments is the risk that, in the event of failure of the counterparty to a transaction, a government will not be able to recover the value of investment or collateral securities that are in the possession of an outside party. None of the Fund's investments are exposed to custodial credit risk as they are held by the custodian in the name of the Fund as of December 31, 2021.

Concentration of Credit Risk

Concentration of credit risk is the risk of loss attributed to the magnitude of a government's investment in a single issuer. The Fund did not have any issuer investment that exceeded 5% of the total investments of the fund as of December 31, 2021.

Credit Risk

Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligations. The Fund's investment policy is an average credit quality for each manager's total fixed income portfolio (Corporate and U.S. Government holdings) of not less than A- by two out of three credit agencies (Moody's Investor Service, Standard & Poor's and/or Fitch).

The following table presents a summarization of the Fund's credit quality ratings of investments at December 31, 2021 and 2020 valued by Moody's Investors Service, Standard & Poor's and/or Fitch:

Type of Investment	Rating	2021	2020
U.S. Government and government agency obligations	Aaa	$ 1,314,968,485	$ 940,302,740
	Aa	7,233,724	5,796,599
	A	1,804,256	1,219,136
	Baa	472,447	3,645,493
	Not Rated	149,414,914	70,787,164
		$ 1,473,893,826	$ 1,021,751,132
Corporate and foreign government obligations	Aaa	$ 124,316,082	$ 116,667,847
	Aa	40,172,373	44,788,835
	A	295,611,897	345,792,273
	Baa	551,439,307	468,489,357
	Ba	87,298,814	114,801,400
	B	38,049,146	46,954,187
	Caa	1,873,000	1,698,529
	Ca	—	366,750
	Not Rated	312,949,358	284,447,244
		$ 1,451,709,977	$ 1,424,006,422
Commingled fixed income fund	Not Rated	$ 36,954,580	$ 40,925,720
Short–term investment	Not Rated	$ 357,784,424	$ 267,036,118

NOTE 5. INVESTMENTS (continued)

Interest Rate Risk

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. Investments with longer maturities are subject to increased risk of adverse interest rate changes. In an effort to mitigate this risk, the Fund's investment policy states that the duration for each manager's total fixed income portfolio shall not exceed 30% of the duration of its respective fixed income performance benchmark (Bloomberg Barclays US Aggregate Fixed Income Index, *Bloomberg Barclays US 1-3 Year Government/Credit Index*, which was 6.78 years at December 31, 2021 and 6.22 years at December 31, 2020).

The following table presents a summarization of the Fund's debt investments at December 31, 2021 and 2020, using the segmented time distribution method:

Type of Investment	Maturity	2021	2020
U.S. Government and government agency obligations	Less than 1 year	$ 15,968,060	$ 12,752,364
	1—5 years	444,475,797	254,759,387
	5—10 years	236,712,933	209,146,971
	Over 10 years	776,737,036	545,092,410
		$ 1,473,893,826	$ 1,021,751,132
Corporate and foreign government obligations	Less than 1 year	$ 24,262,286	$ 16,680,318
	1—5 years	303,148,360	370,773,966
	5—10 years	446,568,544	435,323,612
	Over 10 years	677,730,787	601,228,526
		$ 1,451,709,977	$ 1,424,006,422
Commingled fixed income fund	1—5 years	$ 36,954,580	$ 40,925,720
Short–term investment	Less than 1 year	$ 357,784,424	$ 267,036,118

NOTE 5. INVESTMENTS (continued)

Foreign Currency Risk

Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment or a deposit. The Fund's exposure to foreign currency risk at December 31, 2021 and 2020 is as follows:

Type of Investment	Fair Value (USD) 2021	Fair Value (USD) 2020
U.S. and international equities		
Australian dollar	$ 75,746,515	$ 71,073,063
Brazil real	36,227,422	40,620,209
British pound sterling	270,808,291	224,724,672
Canadian dollar	147,867,286	134,320,290
Chilean peso	3,086,381	2,884,589
Colombian peso	79,231	79,443
Danish krone	55,321,315	45,672,504
Egyptian pound	—	185,284
European euro	647,363,300	573,587,863
Hong Kong dollar	204,015,807	222,846,809
Hungarian forint	1,243,636	870,457
Indian rupee	28,497,256	21,077,536
Indonesian rupiah	15,288,877	13,010,969
Israeli shekel	16,039,686	10,385,739
Japanese yen	356,631,089	381,539,043
Malaysian ringgit	5,806,620	6,329,165
Mexican peso	14,347,603	14,010,089
New Taiwan dollar	102,529,377	82,944,533
New Zealand dollar	420,295	1,620,420
Norwegian krone	13,280,228	8,873,462
Philippines peso	7,961,719	4,196,132
Polish zloty	2,509,521	1,867,353
Russian ruble	382,805	335,264
Singapore dollar	27,035,493	28,663,462
South African rand	15,169,951	14,808,018
South Korean won	75,562,516	73,289,937
Swedish krona	73,702,234	62,559,810
Swiss franc	147,040,503	140,257,776
Thailand baht	14,975,166	10,761,483
Turkish lira	578,041	394,915
United Arab Emirates dirham	4,280,904	2,782,255
U.S. dollar	5,271,302,552	4,733,622,142
Total U.S. and international equities	$ 7,635,101,620	$ 6,930,194,686

NOTE 5. INVESTMENTS (continued)

Foreign Currency Risk (continued)

Type of Investment	Fair Value (USD) 2021	Fair Value (USD) 2020
Corporate and foreign government obligations		
Australian dollar	$ —	$ 52,451
Brazil real	(974,318)	118,469
British pound sterling	5,778,004	2,773,406
Chilean peso	(491,054)	—
Canadian dollar	553,968	402,084
Chinese yuan renminbi	—	53,116
Colombian peso	(281,737)	157,657
European euro	24,465,958	15,220,670
Hungarian forint	(310,131)	45,446
Mexican peso	746,237	742,361
New Zealand dollar	(291,010)	29,937
Norwegian krone	726,982	755,399
Polish zloty	(386,621)	535,677
Russian ruble	—	471,766
South African rand	748,859	1,291,103
Turkish lira	—	1,048,644
U.S. dollar	1,421,424,840	1,400,308,236
Total corporate and foreign government obligations	$1,451,709,977	$ 1,424,006,422

Investment Activity

The calculation of realized gains and losses is independent of the calculation of net appreciation in the fair value of plan investments. Investments purchased in a previous year and sold in the current year result in their realized gains and losses being reported in the current year and their net appreciation in Fund assets being reported in both the current year and the previous years.

NOTE 6. DERIVATIVES

Derivative transactions involve, to varying degrees, credit risk, interest rate risk and market risk. Credit risk is the possibility that a loss may occur because a party to a transaction fails to perform according to the previously agreed upon terms. Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. Market risk is the possibility that a change in interest or currency rates will cause the value of a financial instrument to decrease or become more costly to settle. The following table summarizes the derivatives held within the Fund's investment portfolio as of December 31, 2021 and 2020.

	Notional Amounts		Fair Value	
	2021	2020	2021	2020
Hedging derivative instruments				
Foreign currency contracts purchased	$ —	$ —	$ (105,256,931)	$ (96,196,997)
Foreign currency contracts sold	—	—	105,854,694	96,083,458
Futures				
Equity	—	6,860,640	—	45,545
Fixed Income	(78,645,182)	(161,114,898)	492,454	(504,223)
Options				
Purchased	—	—	64,395	—
Written	—	—	(16,541)	—
Swaps				
Inflation swaps	—	—	(548,009)	—
Interest rate swaps	—	—	(2,405,070)	739,957
Zero coupon swaps	—	—	(473,896)	87,817
Credit default swaps	—	—	15,897	(8,897)

Forward Currency Forward Contracts

Forward currency contracts are used to hedge against fluctuations in foreign currency-denominated assets used primarily in portfolio trade settlements. These contracts are a cash contract in which a seller agrees to deliver a specific cash commodity to a buyer sometime in the future. Forward agreements are subject to the creditworthiness of the counterparties, which are principally large financial institutions. Forward currency contracts are reported at fair value within the combining statement of pension plan fiduciary net position and postemployment healthcare plan net position included in investments. The gain or loss on forward currency contracts is recognized and recorded on the combining statement of changes in pension plan fiduciary net position and postemployment healthcare plan net position as part of investment income. The foreign currency contracts are short-term in nature.

NOTE 6. DERIVATIVES (continued)

Forward Currency Forward Contracts (continued)

The Fund's exposure to foreign currency risk at December 31, 2021 and 2020 is as follows:

	2021	2020
Foreign currency exchange sales		
Currency		
Australian dollar	$ 5,420,436	$ 6,399,671
Brazil real	1,715,368	1,750,534
British pound sterling	2,573,137	2,885,510
Canadian dollar	7,516,759	4,244,880
Chilean peso	378,080	—
Chinese yuan renminbi	2,701,623	5,176,485
Colombian peso	160,222	337,617
Czech koruna	1,257,443	1,314,366
European euro	1,253,828	2,463,484
Hong Kong dollar	60,454	18,910
Hungarian forint	1,781,162	244,716
Indian rupee	2,491,045	2,552,091
Indonesian rupiah	1,288,335	1,740,371
Israeli shekel	430,450	2,404,256
Japanese yen	3,380,602	3,671,796
Mexican peso	1,108,815	1,231,826
New Zealand dollar	195,014	769,860
Norwegian krone	963,673	2,053,075
Philippines peso	278,996	340,803
Polish zloty	2,397,912	1,028,284
Russian ruble	1,037,841	2,175,746
Singapore dollar	476,959	742,808
South Korean won	—	793,229
South African rand	979,030	47,697
Swedish krona	1,708,492	1,535,423
Swiss franc	546,052	2,645,447
Thailand baht	988,296	1,140,167
Turkish lira	—	1,062,606
U.S. dollar	62,764,670	45,311,800
Total	$ 105,854,694	$ 96,083,458

.

NOTE 6. DERIVATIVES (continued)

Forward Currency Forward Contracts (continued)

	2021	2020
Foreign currency exchange purchases		
Currency		
Australian dollar	$ (665,810)	$ (1,514,900)
Brazil real	(158,258)	(1,065,083)
British pound sterling	(7,004,975)	(3,720,531)
Canadian dollar	—	(1,449,233)
Chilean peso	—	(944,121)
Chinese yuan renminbi	(2,112,148)	(2,125,157)
Colombian peso	(346,867)	(861,240)
Czech koruna	(1,268,552)	(447,017)
European euro	(45,129,349)	(29,175,497)
Hong Kong dollar	—	(5,133,634)
Hungarian forint	(1,598,421)	(722,834)
Indian rupee	(1,190,739)	(478,918)
Israeli shekel	(684,605)	(217,863)
Japanese yen	(35,524)	(1,657,059)
Mexican peso	(486,448)	(276,438)
New Taiwan dollar	(3,030,738)	(408,259)
New Zealand dollar	—	(625,295)
Norwegian krone	(566,726)	(1,861,563)
Russian ruble	(515,180)	(537,760)
Philippines peso	(1,713,342)	(165,493)
Polish zloty	(363,714)	(309,279)
Singapore dollar	(3,402,757)	(42,597)
South Korean won	(1,400,959)	(600,976)
South African rand	(2,759,351)	(2,013,370)
Swedish krona	—	(292,856)
Swiss franc	(2,299,682)	(2,778,387)
Thailand baht	(2,418,549)	—
U.S. dollar	(26,104,237)	(36,771,637)
	$ (105,256,931)	$ (96,196,997)

NOTE 6. DERIVATIVES (continued)

Futures, Swaps, and Options

Futures are agreements to purchase or sell a specific amount of an asset at a specified maturity for an agreed-upon price. Swaps are arrangements to exchange currency or assets. Options are contracts that give its holder the right but not the obligation to buy or sell a financial instrument or commodity at a certain price for a period of time.

Futures contracts, swaps, and options are reported at fair value in the fixed income investments on the combining statement of pension plan fiduciary net position and postemployment healthcare plan net position. The gain or loss on futures contracts, swaps, and options are reported as part of investment income on the combining statement of changes in pension plan fiduciary net position and postemployment healthcare plan net position. These instruments are not rated by the credit rating agencies.

The following table presents a summarization of the Fund's Futures and Swaps investments' interest rate risk exposure at December 31, 2021 and 2020, using the segmented time distribution method:

Derivative Type	Maturity	2021	2020
Futures	Less than 1 Year	$ 492,454	$ (458,678)
Options	Less than 1 Year	$ 47,854	$ —
Swaps	Less than 1 Year	$ —	$ 4,327
	1 – 5 years	(724,096)	166,141
	5 – 10 years	(1,277,827)	682,362
	Over 10 years	(1,409,155)	(33,953)
		$ (3,411,078)	$ 818,877

NOTE 7. WHEN–ISSUED TRANSACTIONS

The Fund may purchase securities on a when-issued basis, that is, obligate itself to purchase securities with delivery and payment to occur at a later date. At the time the Fund enters into a commitment to purchase the security, the transaction is recorded at the purchase price which equals fair value. The value at delivery may be more or less than the purchase price. No interest accrues to the Fund until delivery and payment takes place. As of December 31, 2021 and 2020, the Fund contracted to acquire securities on a when-issued basis with a total principal amount of approximately $140,813,796 and $60,305,143, respectively.

NOTE 8. FAIR VALUE MEASUREMENTS

GASB Statement No. 72, Fair Value Measurement and Application, established a fair value hierarchy that prioritizes the inputs to valuation techniques used to measure fair value. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurements) and the lowest priority to unobservable inputs (Level 3 measurements). The three levels of the fair value hierarchy are described below:

NOTE 8. FAIR VALUE MEASUREMENTS (continued)

Basis of Fair Value Measurement

Level 1 Unadjusted quoted prices in active markets that are accessible at the measurement date for identical, unrestricted assets or liabilities

Level 2 Quoted prices in markets that are not considered to be active or financial instruments for which all significant inputs are observable, either directly or indirectly

Level 3 Prices or valuations that require inputs that are both significant to the fair value measurement and unobservable

The Fund categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles. The Fund has the following recurring fair value measurements as of December 31, 2021 and 2020:

		Fair Value Measurements at 12/31/2021 Using		
	Total	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Investments by fair value level				
U.S. and international equities	$ 7,635,101,620	$ 7,635,101,620	$ —	$ —
U.S. Government and government agency obligations	1,473,893,826	841,154,708	632,739,118	—
Corporate and foreign government obligations	1,451,709,977	—	1,451,709,977	—
Exchange traded funds	9,662,015	9,662,015	—	—
Total investments by fair value level	10,570,367,438	$ 8,485,918,343	$ 2,084,449,095	$ —
Investments measured at net asset value	3,618,502,477			
Total investments at fair value	$ 14,188,869,915			

		Fair Value Measurements at 12/31/2020 Using		
	Total	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Investments by fair value level				
U.S. and international equities	$ 6,930,194,686	$ 6,930,194,686	$ —	$ —
U.S. Government and government agency obligations	1,021,751,132	502,789,238	518,961,894	—
Corporate and foreign government obligations	1,424,006,422	—	1,424,006,422	—
Exchange traded funds	8,037,180	8,037,180	—	—
Total investments by fair value level	9,383,989,420	$ 7,441,021,104	$ 1,942,968,316	$ —
Investments measured at net asset value	3,091,178,570			
Total investments at fair value	$ 12,475,167,990			

NOTE 8. FAIR VALUE MEASUREMENTS (continued)

Level 1 Measurements

U.S. Government obligations, U.S. and international equities and exchange traded funds are traded in active markets on national and international securities exchanges and are valued at closing prices on the measurement date.

Level 2 Measurements

U.S. Government and government agency obligations and corporate and foreign government obligations are generally valued by benchmarking model-derived prices to quoted market prices and trade data for identical or comparable securities. To the extent that quoted prices are not available, fair value is determined based on a valuation model that include inputs such as interest rate yield curves and credit spreads. Securities traded in markets that are not considered active are valued based on quoted market prices, broker to dealer quotations, or alternative pricing sources with reasonable levels of price transparency. Securities that trade infrequently and therefore have little or no price transparency are valued using the investment manager's best estimates.

The valuation methods for investments measured at net asset value (NAV) are presented on the following table:

	Fair Value		Unfunded Commitments	Redemption Frequency (If Eligible)	Redemption Notice Period
	12/31/2021	12/31/2020			
Investments measured at net asset value:					
Collective international equity fund (1)					
Lazard/Wilmington Emerging Markets Sudan Free Portfolio	$ 98,052,511	$ 82,904,306	$ —	Daily	N/A
Commingled fixed income fund (2)					
MacKay Shields Defensive Bond Arbitrage Fund Ltd.	36,954,580	40,925,720	—	Daily	5 days
Private global fixed fund limited partnership (3)					
Franklin Templeton Global Multisector Plus Fund, L.P.	234,288,180	244,996,202	—	Monthly	15 days
Private equities (4)	1,107,947,617	938,804,581	150,705,127	Closed Ended	N/A
Hedge funds (5)					
Burnham Harbor Fund Ltd.	592,454,271	533,277,504	—	Monthly	95 days
RC Kenwood Fund Ltd.	222,510,680	206,762,500	—	Quarterly	90 days
Real estate funds (6)					
JPMCB Strategic Property Fund	313,259,400	267,959,235	—	Quarterly	45 days
PRISA Separate Account	330,709,230	248,165,695	—	Quarterly	90 days
Artemis Real Estate Partners	21,373,339	12,321,643	28,227,262	Closed Ended	N/A
Others	303,168,245	248,025,066	69,557,085	Quarterly	90 days
Short–term investment (7)					
BNY Mellon EB Temporary Investment Fund	357,784,424	267,036,118	—	Daily	N/A
Total investments measured at net asset value	$ 3,618,502,477	$ 3,091,178,570			

(1) Collective international equity fund – The fund's investment objective is to achieve long-term capital appreciation by investing primarily in equity and equity-related securities of issuers that are located, or do significant business, in emerging market countries. The fair value of the investment in the fund has been determined using the NAV per share of the investment.

(2) Commingled fixed income fund – The fund's investment objective is to track the performance of the Barclays U.S. Aggregate Index. The fair value of the investment in the fund has been determined using the NAV per share of the investment.

(3) Private global fixed income fund limited partnership – The partnership's investment objective is to maximize total investment return by investing in a portfolio of fixed and floating rate debt securities and debt obligations of governments, government-related or corporate issuers worldwide, as well as derivative financial instruments. The fair value of the investment in the partnership fund has been determined using the NAV per share (or its equivalent) of the investment.

(4) Private equities – This investment consists of 83 limited partnership investments in 2021 and 77 in 2020, with an investment objective to achieve long-term capital appreciation and capital preservation through investments in limited partnerships, privately issued securities, private equity funds, and other pooled investments. Closed-end limited partnership interests are generally illiquid and cannot be redeemed. It is expected that liquidation of the limited partnership interests will generally coincide with the terms of the various underlying partnership agreements. These underlying private equity partnerships generally have a fund life per the Limited Partnership Agreements of approximately 10 to 12 years plus 2 to 3 one-year extensions. However, the underlying general partners may extend their funds indefinitely to facilitate an orderly liquidation of the underlying assets. The fair value of the investments in this type has been determined using the NAV per share (or its equivalent) of the investments.

(5) Hedge funds – The investment objective of the hedge funds is to invest in non-traditional portfolio managers, diversified portfolios of hedge funds having a low correlation with major investment markets, and diversified groups of alternative investment funds that invest or trade in a wide variety of financial instruments and strategies. The fair value of the investment in the hedge funds has been determined using the NAV per share (or its equivalent) of the investment.

(6) Real estate funds – These investments include a commingled pension trust fund, an insurance company separate account, and other real estate funds that are designed as funding vehicles for tax-qualified pension plans. Their investments are comprised primarily of real estate investments either directly owned or through partnership interests and mortgage and other loans on income producing real estate. The fair values of the investments in this type have been determined using the NAV per share (or its equivalent) of the investments. Due to the nature of the investments and available cash on hand, significant redemptions in this type of investment may at times be subject to additional restrictions.

(7) Short-term investment – This investment's objective is to invest in short-term investments of high quality and low risk to protect capital while achieving investment returns. The fair value of the investment in the fund has been determined using the NAV per share of the investment.

NOTE 9. SECURITIES LENDING

State Statutes and the investment policy permit the Fund to lend its securities to broker-dealers and other entities with a simultaneous agreement to return collateral for the same securities in the future. The Fund's custodian, acting as the lending agent, lends securities for collateral in the form of cash, U.S. Government obligations and irrevocable letters of credit equal to 102% of the fair value of domestic securities plus accrued interest and 105% of the fair value of foreign securities plus accrued interest.

The Fund does not have the right to sell or pledge securities received as collateral unless the borrower defaults. The average term of securities loaned was 116 days for 2021 and 110 days for 2020; however, any loan may be terminated on demand by either the Fund or the borrower. Cash collateral was invested in a separately managed portfolio, which had an average weighted maturity at December 31, 2021 and 2020 of 68 and 76 days, respectively.

As of December 31, 2021 and 2020, the fair value (carrying amount) of loaned securities was $1,009,457,404 and $859,748,216, respectively. As of December 31, 2021 and 2020, the fair value (carrying amount) of cash collateral received by the Fund was $793,388,746 and $594,408,571, respectively. The cash collateral is included as an asset and a corresponding liability on the combining statements of pension plan fiduciary net position and postemployment healthcare plan net position. As of December 31, 2021 and 2020, the fair value (carrying amount) of non-cash collateral received by the Fund was $241,667,352 and $287,720,165, respectively.

Although the Fund's securities lending activities are collateralized as described above, they involve both market and credit risk. In this context, market risk refers to the possibility that the borrower of securities will be unable to collateralize the loan upon a sudden material change in the fair value of the loaned securities. Credit risk refers to the possibility that counterparties involved in the securities lending program may fail to perform in accordance with the terms of their contracts.

Indemnification deals with the situation in which a client's securities are not returned due to the insolvency of a borrower. The contract with the lending agent requires indemnification to the Fund if borrowers fail to return the securities or fail to pay the Fund for income distributions by the issuers of securities while the securities are on loan.

A summary of securities loaned at fair value as of December 31, 2021 and 2020 is as follows:

	2021	2020
Securities loaned — backed by cash collateral		
U.S. and international equities	$ 435,948,180	$ 358,795,706
U.S. Government and government agency obligations	175,275,397	90,154,039
Exchange traded funds	—	4,320,584
Corporate and foreign government obligations	163,292,881	126,418,677
Total securities loaned — backed by cash collateral	774,516,458	579,689,006
Securities loaned — backed by non-cash collateral		
U.S. and international equities	165,364,054	201,131,621
U.S. Government and government agency obligations	66,618,139	78,153,339
Exchange traded funds	—	517,851
Corporate and foreign government obligations	2,958,753	256,399
Total securities loaned — backed by non-cash collateral	234,940,946	280,059,210
Total	$ 1,009,457,404	$ 859,748,216

NOTE 10. EMPLOYER'S POSTEMPLOYMENT HEALTHCARE LIABILITY

Plan Description

The Fund administers a Postemployment Group Healthcare Benefit Plan (PGHBP), a single-employer defined benefit postemployment healthcare plan. The PGHBP is administered in accordance with Chapter 40, Article 5/10 of the Illinois Compiled Statutes, which assigns the authority to establish and amend benefit provisions to the Fund's Board of Trustees. PGHBP provides a healthcare benefit to annuitants of Cook County, Illinois (the employer) who elect to participate in the PGHBP.

At December 31, 2021 and 2020, participants consisted of the following:

	2021	2020
Active members	18,320	19,102
Retired plan members or beneficiaries currently receiving benefit payments	11,792	11,905
Inactive plan members entitled to but not yet receiving benefit payments	1,657	1,708
Total	31,769	32,715

Benefits provided – The PGHBP provides healthcare and vision benefits for annuitants and their dependents.

Contributions – The PGHBP is funded on a "pay-as-you-go" basis. For the valuation of the obligation as of December 31, 2021 the employee and spouse annuitants are expected to pay 56% of the annual costs. For the valuation of the obligation as of December 31, 2020, the employee and spouse annuitants are expected to pay between 55% – 67% and 48% – 62% of the annual costs, respectively, depending upon Medicare enrollment and coverage selection. The remaining costs are funded by an allocation from the Fund.

Method of Accounting – The PGHBP's financial statements have been combined with the Fund's financial statements and are presented using the accrual basis of accounting. Healthcare expenses are recognized when incurred and estimable.

Employer's Net Postemployment Healthcare Liability

The components of the employer's net postemployment healthcare liability at December 31, 2021 and 2020 were as follows:

	2021	2020
Total postemployment healthcare liability	$ 1,978,062,391	$ 2,105,154,520
Plan fiduciary net position	—	—
Employer's net postemployment healthcare liability	$ 1,978,062,391	$ 2,105,154,520
Plan fiduciary net position as a percentage of the total postemployment healthcare liability	0.00%	0.00%

NOTE 10. EMPLOYER'S POSTEMPLOYMENT HEALTHCARE LIABILITY (continued)

Employer's Net Postemployment Healthcare Liability (continued)

Contributions for postemployment healthcare benefits are made on a "pay-as-you-go" basis. There are no dedicated assets for healthcare benefits resulting in a 0.00% funded ratio.

Refer to the schedule of changes in the employer's net postemployment healthcare liability and related ratios in the required supplementary information for additional information related to the funded status of the PGHBP.

The net postemployment healthcare liability was determined by actuarial valuations performed as of December 31, 2021 and 2020 using the following actuarial methods and assumptions:

Actuarial valuation date	December 31, 2021	December 31, 2019
Actuarial cost method	Entry Age Normal	Entry Age Normal
Actuarial assumptions:		
Inflation	2.50% per year	2.75% per year
Salary increases	3.00% to 5.00%, based on service	3.50% to 8.00%, based on age
Health care cost trend rates	7.000% in the first year, decreasing by .25% per year until an ultimate rate of 4.500% is reached for pre–Medicare 5.500% in the first year, decreasing by .25% in the second year, decreasing by .125 in the third and fourth year and decreasing by .25 in the fifth year until an ultimate rate of 4.500% is reached for post–Medicare.	7.25% in the first year, decreasing by .25% per year until an ultimate rate of 4.75% is reached for pre-Medicare 5.75% in the first year, decreasing by .25% per year until an ultimate rate of 4.75% is reached for post–Medicare
Mortality	Pub–2010 amount-weighted tables projected from 2010 using generational improvement with Scale MP-2021	RP-2014 Blue Collar Mortality Table, base year 2006, Buck (formerly Conduent) Modified MP–2017 projection scale

The actuarial assumptions used in the December 31, 2021 valuations were based on the results of the actuarial experience study conducted by Cavanaugh Macdonald Consulting over the period 2017 through 2020. The December 31, 2020 valuations were based on the results of an actuarial experience study conducted by Buck (Formerly Conduent, Inc.) over the period 2013 through 2016.

Discount Rate

The blended discount rate used to measure the total postemployment healthcare liability at December 31, 2021 and 2020 was 2.05% and 2.12%, respectively. The projection of cash flows used to determine the discount rate assumed that the employer's contributions will continue to follow the current funding policy. Based on this assumption, the Fund's fiduciary net position was projected to be insufficient to make all projected future benefit payments of current plan members. Municipal bond rates of 2.05% and 2.12% at December 31, 2021 and 2020, respectively, and the long-term investment rate of return of 0% were used in the development of the blended discount rates. The municipal bond rates for 2021 and 2020 are based on the S&P Municipal Bond 20 Year High Grade Rate Index and Municipal Bond 20-Year Index Rate, respectively.

NOTE 10. EMPLOYER'S POSTEMPLOYMENT HEALTHCARE LIABILITY (continued)

Sensitivity of the Net Postemployment Healthcare Liability to Changes in the Discount Rate

The following is an analysis of the net postemployment healthcare liability's sensitivity to changes in the discount rate at December 31, 2021 and 2020. The following table presents the net postemployment healthcare liability of the employer using the blended discount rate as well as the employer's net postemployment healthcare liability calculated using a discount rate 1% lower and 1% higher than the current discount rate:

	1% Decrease 1.05%	Current Discount Rate 2.05%	1% Increase 3.05%
Net postemployment healthcare liability as of December 31, 2021	$ 2,363,453,441	$1,978,062,391	$1,673,001,519

	1% Decrease 1.12%	Current Discount Rate 2.12%	1% Increase 3.12%
Net postemployment healthcare liability as of December 31, 2020	$ 2,508,946,266	$ 2,105,154,520	$ 1,786,550,734

Sensitivity of the Net Postemployment Healthcare Liability to Changes in the Health Care Cost Trend Rate

The following is an analysis of the net postemployment healthcare liability's sensitivity to changes in the health care cost trend rate at December 31, 2021 and 2020. The following table presents the net postemployment healthcare liability of the employer using the health care cost trend rate as well as the employer's net postemployment healthcare liability calculated using a health care cost trend rate 1% lower and 1% higher than the current health care cost trend rate:

	1% Decrease	Health Care Cost Trend Rate	1% Increase
Net postemployment healthcare liability as of December 31, 2021	$ 1,637,326,692	$ 1,978,062,391	$ 2,426,877,442

	1% Decrease	Health Care Cost Trend Rate	1% Increase
Net postemployment healthcare liability as of December 31, 2020	$ 1,748,461,101	$ 2,105,154,520	$ 2,574,177,221

NOTE 11. RELATED PARTY TRANSACTIONS

The Fund has common Trustees and shares office space with the Forest Preserve District Employees' Annuity and Benefit Fund of Cook County (Forest Fund) who reimburses the Fund for shared administrative services provided by the Fund. During the years ended December 31, 2021 and 2020, the Fund allocated administrative expenditures of $101,428 and $102,610, respectively, to the Forest Fund.

As of December 31, 2021 and 2020, the Fund owed $998,679 and $686,022, respectively, to the Forest Fund. These amounts include plan transfers from Fund members transferring from one Fund to the other.

NOTE 12. PRONOUNCEMENTS ISSUED EFFECTIVE FISCAL YEAR ENDING DECEMBER 31, 2021

In June 2018, GASB issued Statement No. 89, *Accounting for Interest Cost Incurred Before the End of a Construction Period*. Statement No. 89 was issued to enhance the relevance and comparability of information about capital assets and the cost of borrowing for a reporting period and simplify accounting for interest cost incurred before the end of a construction period. Statement No. 89 is effective for the Fund's fiscal year ended December 31, 2021. We evaluated Statement No. 89 and have concluded that the operations of the Fund do not fall within the scope of Statement No. 89. Therefore, there is no impact on the Fund's financial statements.

In October 2021, GASB issued Statement No. 98, *The Annual Comprehensive Financial Report*. Statement No. 98 establishes the term annual comprehensive financial report and its acronym ACFR. The acronym replaces instances of annual comprehensive financial report and its acronym in generally accepted accounting principles for state and local governments. Statement No. 98 is effective for the Fund's fiscal year ended December 31, 2021 and has been implemented.

In April 2022, GASB issued Statement No. 99, *Omnibus 2022*. Statement No. 99 was issued to enhance comparability in accounting and financial reporting and to improve the consistency of authoritative literature by addressing (1) practice issues that have been identified during implementation and application of certain GASB Statements and (2) accounting and financial reporting for financial guarantees. The requirements of this Statement are effective as follows:

- The requirements related to extension of the use of LIBOR, accounting for SNAP (Supplemental Nutrition Assistance Program) distributions, disclosures of nonmonetary transactions, pledges of future revenues by pledging governments, clarification of certain provisions in Statement 34, as amended, and terminology updates related to Statement 53 and Statement 63 are effective upon issuance. We evaluated these requirements and concluded that the statement does not materially impact the financial operations of the Fund. Therefore, the Fund will pass on implementation of the Statement.

NOTE 13. PRONOUNCEMENTS ISSUED NOT YET EFFECTIVE

In June 2017, GASB issued Statement No. 87, *Leases*. Statement No. 87 was issued to improve accounting and financial reporting for leases by governments. This Statement increases the usefulness of governmental financial statements by requiring recognition of certain lease assets and liabilities for leases that were previously classified as operating leases. Statement No. 87 establishes a single model for lease accounting based on the foundational principle that leases are financings of the right to use an underlying asset. Statement No. 87 is effective for the Fund's fiscal year ending December 31, 2022.

In May 2019, GASB issued Statement No. 91, *Conduit Debt Obligations*. Statement No. 91 was issued to provide a single method of reporting conduit debt obligations by issuers and eliminate diversity in practice associated with commitments extended by issuers, arrangements associated with conduit debt obligations, and related note disclosures. Statement No. 91 is effective for the Fund's fiscal year ending December 31, 2022.

In January 2020, GASB issued Statement No. 92, *Omnibus 2020*. Statement No. 92 was issued to enhance comparability in accounting and financial reporting and to improve the consistency of authoritative literature by addressing practice issues that have been identified during implementation and application of certain GASB Statements. Statement No. 92 is effective for the Fund's fiscal year ending December 31, 2022.

In March 2020, GASB issued Statement No. 93, *Replacement of Interbank Offered Rates*. Statement No. 93 was issued to address the result of global reference rate reform, when London Interbank Offered Rate (LIBOR) is expected to cease to exist in its current form at the end of 2021, and other accounting and financial reporting implications that result from the replacement of an interbank offered rate (LIBOR). Statement No. 93 is effective for the Fund's fiscal year ending December 31, 2022.

In March 2020, GASB issued Statement No. 94, *Public-Private and Public-Public Partnerships and Availability Payment Arrangements*. This Statement No. 94 was issued to improve financial reporting by addressing issues related to public-private and public-public partnership arrangements (PPPs). Statement No. 94 is effective for the Fund's fiscal year ending December 31, 2023.

In May 2020, GASB issued Statement No. 95, *Postponement of the Effective Dates of Certain Authoritative Guidance*. Statement No. 95's primary objective is to provide temporary relief to governments and other stakeholders in light of the COVID-19 pandemic and extends the effective dates of certain accounting and financial reporting periods beginning after June 15, 2018. The Fund's effective dates have been updated for each applicable pronouncement according to Statement No. 95.

In May 2020, GASB issued Statement No. 96, *Subscription-Based Information Technology Arrangements (SBITAs)*. Statement No. 96 requires a government to disclose descriptive information about its SBITAs other than short-term SBITAs, such as the amount of the subscription asset, accumulated amortization, other payments not included in the measurement of a subscription liability, principal and interest requirements for the subscription liability, and other essential information. Statement No. 96 is effective for the Fund's fiscal year ending December 31, 2022.

NOTE 13. PRONOUNCEMENTS ISSUED NOT YET EFFECTIVE (continued)

In June 2020, GASB issued Statement No. 97, *Certain Component Unit Criteria, and Accounting and Financial Reporting for Internal Revenue Code Section 457 Deferred Compensation Plans—an amendment of GASB Statements No. 14 and No. 84, and a supersession of GASB Statement No. 32*. Statement No. 97's primary objectives are to (1) increase consistency and comparability related to the reporting of fiduciary component units in circumstances in which a potential component unit does not have a governing board and the primary government performs the duties that a governing board typically would perform; (2) mitigate costs associated with the reporting of certain defined contribution pension plans, defined contribution other postemployment benefit (OPEB) plans, and employee benefit plans other than pension plans or OPEB plans (other employee benefit plans) as fiduciary component units in fiduciary fund financial statements; and (3) enhance the relevance, consistency, and comparability of the accounting and financial reporting for Internal Revenue Code (IRC) Section 457 deferred compensation plans (Section 457 plans) that meet the definition of a pension plan and for benefits provided through those plans. The requirements of Statement No. 97 that are related to the accounting and financial reporting for Section 457 plans are effective for fiscal years beginning after June 15, 2021.

In April 2022, GASB issued Statement No. 99, *Omnibus 2022*. Statement No. 99 was issued to enhance comparability in accounting and financial reporting and to improve the consistency of authoritative literature by addressing (1) practice issues that have been identified during implementation and application of certain GASB Statements and (2) accounting and financial reporting for financial guarantees. The requirements of this Statement are effective as follows:

- The requirements related to leases, PPPs, and SBITAs are effective for fiscal years beginning after June 15, 2022, and all reporting periods thereafter.
- The requirements related to financial guarantees and the classification and reporting of derivative instruments within the scope of Statement 53 are effective for fiscal years beginning after June 15, 2023, and all reporting periods thereafter.

The Fund is currently evaluating the impact of adopting the aforementioned GASB Statements.

NOTE 14. SUBSEQUENT EVENTS

The Cook County Fund has been named as a defendant in a class action litigation, entitled *Lori G. Levin, et. al., v. The Retirement Board of the County Employees' and Officers' Annuity and Benefit Fund of Cook County*, in which the plaintiff seeks, on behalf of herself and similarly situated annuitants, the ability to purchase health insurance administered by the Cook County Fund, despite her ineligibility under the Board's policy. On June 7, 2019, the Appellate Court reversed the order of the Circuit Court of Cook County affirming the Board's decision denying Ms. Levin's participation in the health insurance program administered by the Cook County Fund. The Cook County Fund successfully filed a petition for leave to appeal the decision to the Illinois Supreme Court. On May 21, 2020, the Illinois Supreme Court entered a *Per Curiam* Opinion stating that one Justice had recused himself and that it was not able to obtain the constitutionally required concurrence of at least four justices necessary to enter a decision. Accordingly, the appeal was dismissed and the Clerk of the Supreme Court issued a mandate to Appellate and Circuit Courts. Based upon the Appellate Court's decision entered on June 7, 2019, the matter was then remanded to the Retirement Board with specific instructions. The Retirement Board allowed the Plaintiff to participate in the health insurance program as was consistent with the directions from the Appellate Court. Because the Circuit Court was not revested with jurisdiction, Plaintiff's motions to certify the class, issue notice and award damages and attorneys' fees were dismissed for want of jurisdiction and that order was entered as a final order. On April 23, 2021, the Plaintiff filed an appeal from the order entered by the Circuit Court. The matter was fully briefed before the Appellate Court by the parties and on May 20, 2022, the Appellate Court affirmed the Circuit Court's order that it lacked jurisdiction and had properly dismissed Plaintiff's motions to certify the class, issue notice and award damages and attorneys' fees. Plaintiff has 35 days to file a petition for leave to appeal the Appellate Court's May 20, 2022 order to the Illinois Supreme Court.

Schedule of Changes in the Employer's Net Pension Liability and Related Ratios

	2021	2020	2019	2018
Total pension liability				
Service cost	$ 522,496,743	$ 469,652,001	$ 367,986,188	$ 440,682,868
Interest	1,018,513,289	1,038,868,271	1,078,970,836	1,027,348,255
Difference between expected and actual experience	(54,518,860)	192,731,447	1,775,621	(278,982,116)
Changes of assumptions	(3,033,418,725)	1,766,822,859	2,760,713,592	(1,601,212,188)
Expected benefit payments, including refunds of employee contributions	(968,800,978)	(905,497,405)	(860,741,164)	(805,394,705)
Net change in total pension liability	(2,515,728,531)	2,562,577,173	3,348,705,073	(1,217,557,886)
Total pension liability				
Beginning of year	27,634,518,984	25,071,941,811	21,723,236,738	22,940,794,624
End of year	$ 25,118,790,453	$ 27,634,518,984	$ 25,071,941,811	$ 21,723,236,738
Plan fiduciary net position				
Contributions — employer	$ 507,070,170	$ 465,778,715	$ 488,003,692	$ 549,437,252
Contributions — employee	133,368,302	134,157,866	134,837,512	134,159,171
Net investment income	1,960,919,641	1,465,457,845	1,865,645,039	(424,787,945)
Expected benefit payments, including refunds of employee contributions	(968,800,978)	(905,497,405)	(860,741,164)	(805,394,705)
Administrative expenses	(5,107,805)	(5,000,609)	(5,085,445)	(5,134,047)
Other	4,467,794	3,754,806	6,275,804	5,860,613
Net change in plan fiduciary net position	1,631,917,124	1,158,651,218	1,628,935,438	(545,859,661)
Plan fiduciary net position				
Beginning of year	12,649,610,438	11,490,959,220	9,862,023,782	10,407,883,443
End of year	$ 14,281,527,562	$ 12,649,610,438	$ 11,490,959,220	$ 9,862,023,782
Employer's net pension liability	$ 10,837,262,891	$ 14,984,908,546	$ 13,580,982,591	$ 11,861,212,956
Plan fiduciary net position as a percentage of the total pension liability	56.86%	45.77%	45.83%	45.40%
Covered payroll	$ 1,520,619,855	$ 1,532,744,306	$ 1,553,498,503	$ 1,533,721,507
Employer's net pension liability as a percentage of covered payroll	712.69%	977.65%	874.22%	773.36%

Notes:

Changes in Benefit:

None noted in 2021.

Changes of Assumptions:

The blended discount rate used changed from 3.68% in 2020 to 4.38% in 2021.

The mortality table used changed from RP-2014 Blue Collar in 2020 to Pub-2010 amount-weighed in 2021.

Mortality projections in 2021 are projected from 2010 using generational improvement with Scale MP-2021, and were projected from 2006 base year using Buck Modified MP-2017 scale in 2020.

The investment rate of return changed from 7.25% in 2020 to 7.00% in 2021.

See Report of Independent Auditors.

Schedule of Changes in the Employer's Net Pension Liability and Related Ratios (continued)

	2017	2016	2015	2014
Total pension liability				
Service cost	$ 478,904,097	$ 559,176,234	$ 496,161,454	$ 491,887,347
Interest	1,082,982,064	1,002,950,495	994,674,970	958,433,835
Difference between expected and actual experience	(152,859,373)	318,014,746	(126,330,351)	—
Changes of assumptions	(950,493,320)	(1,893,474,930)	1,329,087,966	—
Expected benefit payments, including refunds of employee contributions	(757,930,854)	(709,560,225)	(676,470,215)	(622,003,259)
Net change in total pension liability	(299,397,386)	(722,893,680)	2,017,123,824	828,317,923
Total pension liability				
Beginning of year	23,240,192,010	23,963,085,690	21,945,961,866	21,117,643,943
End of year	$ 22,940,794,624	$ 23,240,192,010	$ 23,963,085,690	$ 21,945,961,866
Plan fiduciary net position				
Contributions — employer	$ 511,750,985	$ 414,703,155	$ 136,075,504	$ 146,075,414
Contributions — employee	138,826,184	139,355,592	137,707,719	129,325,318
Net investment income	1,399,625,874	629,442,470	(21,896,696)	488,890,897
Expected benefit payments, including refunds of employee contributions	(757,930,854)	(709,560,225)	(676,470,215)	(622,003,259)
Administrative expenses	(5,406,034)	(5,373,555)	(5,151,110)	(5,010,206)
Other	5,359,418	4,046,158	4,380,293	3,753,960
Net change in plan fiduciary net position	1,292,225,573	472,613,595	(425,354,505)	141,032,124
Plan fiduciary net position				
Beginning of year	9,115,657,870	8,643,044,275	9,068,398,780	8,927,366,656
End of year	$ 10,407,883,443	$ 9,115,657,870	$ 8,643,044,275	$ 9,068,398,780
Employer's net pension liability	$ 12,532,911,181	$ 14,124,534,140	$ 15,320,041,415	$ 12,877,563,086
Plan fiduciary net position as a percentage of the total pension liability	45.37%	39.22%	36.07%	41.32%
Covered payroll	$ 1,567,480,401	$ 1,580,251,254	$ 1,572,417,298	$ 1,514,550,023
Employer's net pension liability as a percentage of covered payroll	799.56%	893.82%	974.30%	850.26%

Notes:

Changes of Assumptions: (continued)

Projected salary increases changed from 3.50%-8.00% based on age in 2020 to 3.00%-5.00% in 2021 based on service.

Inflation rate changed from 2.75% in 2020 to 2.50% in 2021.

Rates of retirement remained the same as in 2020, employees are assumed to retire by age 80.

Post retirement annuity increase remained the same,

Tier 1 participants 3.0% compounded annually;

Tier 2 participants lesser of 3.0% or one half of the increase in the CPI.

This schedule is intended to show information for ten years. The additional years' information will be displayed as it becomes available.

See Report of Independent Auditors.

Schedule of Employer Contributions and Related Notes Last Ten Fiscal Years

	2021	2020	2019	2018	2017
Actuarially determined contribution	$ 650,512,479	$ 536,955,558	$ 523,625,965	$ 562,815,816	$ 514,888,487
Contributions in relation to the actuarially determined contribution	(507,070,170)	(465,778,715)	(488,003,692)	(549,437,252)	(511,750,985)
Contribution deficiency	$ 143,442,309	$ 71,176,843	$ 35,622,273	$ 13,378,564	$ 3,137,502
Covered payroll	$1,520,619,855	$1,532,744,306	$1,553,498,503	$1,533,721,507	$1,567,480,401
Contributions as a percentage of covered payroll	33.35%	30.39%	31.41%	35.82%	32.65%

Notes to Schedule of Employer Contributions

Actuarially determined contribution rates are calculated as of December 31, one year prior to the fiscal year in which contributions are reported.

Valuation Date	December 31, 2020

Methods and assumptions used to determine contribution rates:

Actuarial cost method	Entry Age Normal
Amortization method	Level Dollar – Open
Remaining amortization period	30 years
Asset valuation method	Five Year Smoothed Average Market
Inflation	2.75% per year, compounded annually
Salary increases	3.50% to 8.00%, based on age
Investment rate of return	7.25% per year, compounded annually
Retirement age	Based on actual past experience, assume all employees retire by age 80 (Tier 1 participants) and 75 (Tier 2 participants)
Mortality	RP-2014 Blue Collar Mortality Table, base year 2006, Buck Modified MP-2017 projection scale
Postretirement annuity increases:	Tier 1 participants — 3.0% compounded annually
	Tier 2 participants — the lesser of 3.0% or one half of the increase in the Consumer Price Index

See Report of Independent Auditors.

Schedule of Employer Contributions and Related Notes Last Ten Fiscal Years (continued)

	2016	2015	2014	2013	2012
Actuarially determined contribution	$ 519,642,931	$ 595,370,046	$ 540,218,287	$ 493,724,370	$ 454,327,461
Contributions in relation to the actuarially determined contribution	(414,703,155)	(136,075,504)	(146,075,414)	(147,720,014)	(152,734,539)
Contribution deficiency	$ 104,939,776	$ 459,294,542	$ 394,142,873	$ 346,004,356	$ 301,592,922
Covered payroll	$1,580,251,254	$1,572,417,298	$1,514,550,023	$1,484,269,715	$1,478,253,368
Contributions as a percentage of covered payroll	26.24%	8.65%	9.64%	9.95%	10.33%

Schedule of Investment Returns

	2021	2020	2019	2018	2017	2016	2015	2014
Annual money-weighted rate of return, net of investment expense	17.13%	12.50%	19.07%	–3.79%	15.35%	7.67%	–0.10%	5.90%

Notes:

This schedule is intended to show information for ten years.

The additional years' information will be displayed as it becomes available.

See Report of Independent Auditors.

Schedule of Changes in the Employer's Net Postemployment Healthcare Liability and Related Ratios

	2021	2020	2019
Total postemployment healthcare liability			
Service cost	$ 79,427,382	$ 66,338,671	$ 46,682,354
Interest	45,952,201	53,508,403	64,502,784
Changes in benefit terms	166,241,145	(65,649,811)	(81,634,771)
Difference between expected and actual experience	(275,500,153)	(15,827,767)	(9,467,033)
Changes of assumptions	(108,982,699)	209,226,099	385,089,639
Benefit payments	(34,230,005)	(43,430,445)	(38,237,172)
Net change in total postemployment healthcare liability	(127,092,129)	204,165,150	366,935,801
Total postemployment healthcare liability			
Beginning of year	2,105,154,520	1,900,989,370	1,534,053,569
End of year	$ 1,978,062,391	$ 2,105,154,520	$ 1,900,989,370
Plan fiduciary net position			
Contributions — employer	$ 34,230,005	$ 43,430,445	$ 38,237,172
Benefit payments — net	(34,230,005)	(43,430,445)	(38,237,172)
Net change in plan fiduciary net position	—	—	—
Plan fiduciary net position			
Beginning of year	—	—	—
End of year	$ —	$ —	$ —
Employer's net postemployment healthcare liability	$ 1,978,062,391	$ 2,105,154,520	$ 1,900,989,370
Plan fiduciary net position as a percentage of the total postemployment healthcare liability	0.00%	0.00%	0.00%
Covered payroll	$ 1,572,958,479	$ 1,583,198,305	$ 1,603,347,918
Employer's net postemployment healthcare liability as a percentage of covered payroll	125.75%	132.97%	118.56%

Notes:

Changes in Benefit Terms:

Subsidy percentages for member health benefits changed from 2020 to 2021, respectively, as follows:

Choice Plan:

Annuitants without Medicare changed from 45% to 44%; Annuitants with Medicare changed from 38% to 44%.
Survivors without Medicare changed from 52% to 44%; Survivors with Medicare changed from 38% to 44%.

Choice Plus Plan:

Annuitants without Medicare changed from 42% to 44%; Annuitants with Medicare changed from 33% to 44%.
Survivors without Medicare changed from 48% to 44%; Survivors with Medicare changed from 38% to 44%.

Changes of Assumptions:

The discount rate used changed from 2.12% in 2020 to 2.05% in 2021.

The mortality table used changed from RP-2014 Blue Collar in 2020 to Pub-2010 amount-weighed in 2021.

Mortality projections in 2021 are projected from 2010 using generational improvement with Scale MP-2021and were projected from 2006 base year using Buck Modified MP-2017 scale in 2020.

Healthcare cost trend rates remained the same for pre-Medicare, 7.000% in the first year, decreasing by .25% per year until an ultimate rate of 4.500% is reached for pre-Medicare.

Healthcare cost trend rates changed for post-Medicare, from 5.50% in the first year, decreasing by .25% until an ultimate rate of 4.75% is reached to 5.500% in the first year, decreasing by .25% in the second year, decreasing by .125 % in the third and fourth year, and decreasing by .25% in the fifth year until an ultimate rate of 4.500% is reached.

Projected salary increases changed from 3.50%-8.00% based on age in 2020 to 3.00%-5.00% in 2021 based on service.

Inflation rate changed from 2.75% in 2020 to 2.50% in 2021.

See Report of Independent Auditors.

Schedule of Changes in the Employer's Net Postemployment Healthcare Liability and Related Ratios (continued)

	2018	2017
Total postemployment healthcare liability		
Service cost	$ 40,557,095	$ 82,344,830
Interest	68,565,681	84,911,522
Changes in benefit terms	(292,725,744)	(79,293,990)
Difference between expected and actual experience	(92,253,919)	(55,814,160)
Changes of assumptions	(300,028,016)	(66,330,809)
Benefit payments	(38,310,969)	(47,454,621)
Net change in total postemployment healthcare liability	(614,195,872)	(81,637,228)
Total postemployment healthcare liability		
Beginning of year	2,148,249,441	2,229,886,669
End of year	$ 1,534,053,569	$ 2,148,249,441
Plan fiduciary net position		
Contributions — employer	$ 38,310,969	$ 47,454,641
Benefit payments — net	(38,310,969)	(47,454,641)
Net change in plan fiduciary net position	—	—
Plan fiduciary net position		
Beginning of year	—	—
End of year	$ —	$ —
Employer's net postemployment healthcare liability	$ 1,534,053,569	$ 2,148,249,441
Plan fiduciary net position as a percentage of the total postemployment healthcare liability	0.00%	0.00%
Covered payroll	$ 1,576,658,158	$ 1,602,986,483
Employer's net postemployment healthcare liability as a percentage of covered payroll	97.30%	134.02%

Notes:

This schedule is intended to show information for ten years.

The additional years' information will be displayed as it becomes available.

See Report of Independent Auditors.

Schedule of Employer Contributions and Related Notes Last Ten Fiscal Years

	2021	2020	2019	2018	2017
Actuarially determined contribution	$ 159,551,340	$ 172,996,709	$ 157,705,345	$ 133,228,086	$ 187,348,423
Contributions in relation to the actuarially determined contribution	(34,230,005)	(43,430,445)	(38,237,172)	(38,310,969)	(47,454,621)
Contribution deficiency	$ 125,321,335	$ 129,566,264	$ 119,468,173	$ 94,917,117	$ 139,893,802
Covered payroll	$ 1,572,958,479	$ 1,583,198,305	$ 1,603,347,918	$ 1,576,658,158	$ 1,602,986,483
Contributions as a percentage of covered payroll	2.18%	2.74%	2.38%	2.43%	2.96%

Notes to Schedule

Valuation Date: December 31, 2021

Methods and assumptions used to determine contribution rates:

Actuarial cost method	Entry Age Normal
Amortization method	Level Dollar – Open
Remaining amortization period:	30 years
Inflation	2.50% per year
Salary increases	3.00% to 5.00%, based on service
Health care cost trend rate	7.000% in the first year, decreasing by .25% per year until an ultimate rate of 4.500% is reached for pre-Medicare 5.500% in the first year, decreasing by .25% in the second year, decreasing by .125% in the third and fourth year and decreasing by .25% in the fifth year until an ultimate rate of 4.500% is reached for post-Medicare
Retirement age	Based on actual past experience, assume all employees retire by age 80 (Tier 1 participants) and 75 (Tier 2 participants)
Mortality	Pub-2010 amount-weighed tables projected from 2010 using generational improvement with Scale MP-2021

See Report of Independent Auditors.

Schedule of Employer Contributions and Related Notes Last Ten Fiscal Years (continued)

	2016	2015	2014	2013	2012
Actuarially determined contribution	$ 206,678,514	$ 190,871,452	$ 189,907,202	$ 178,698,965	$ 156,700,388
Contributions in relation to the actuarially determined contribution	(49,565,249)	(50,756,817)	(43,957,458)	(40,097,630)	(37,986,237)
Contribution deficiency	$ 157,113,265	$ 140,114,635	$ 145,949,744	$ 138,601,335	$ 118,714,151
Covered payroll	$ 1,609,559,234	$ 1,597,597,077	$ 1,514,550,023	$ 1,484,269,715	$ 1,478,253,368
Contributions as a percentage of covered payroll	3.08%	3.18%	2.90%	2.70%	2.57%

See Report of Independent Auditors.

Schedules of Net Administrative Expenses and Professional and Consulting Fees

Years Ended December 31, 2021 and 2020

	2021	2020
Administrative expenses		
Bank charges	$ 35,995	$ 33,890
Election expense	77,187	73,721
Employee benefits	574,865	520,752
Insurance — fidelity, fiduciary and liability	172,337	141,315
Maintenance of equipment, systems, software and support	305,623	323,703
Membership, conference and training	16,323	15,610
Office expense	37,412	46,373
Postage	115,370	105,421
Printing and stationery	57,375	56,400
Professional and consulting fees	656,421	567,149
Recovery site expense	4,092	37,142
Regulatory filing fees	8,000	8,000
Rent	517,657	528,745
Salaries	2,630,576	2,644,998
Total	5,209,233	5,103,219
Less administrative expenses allocated to Forest Preserve District Employees' Annuity and Benefit Fund of Cook County	(101,428)	(102,610)
Net administrative expenses	$ 5,107,805	$ 5,000,609

	2021	2020
Professional and consulting fees		
Actuarial service	$ 110,368	$ 67,202
Audit	69,225	67,400
Consulting	227,692	227,426
Legal	217,562	177,464
Lobbyist	31,574	27,657
Total	$ 656,421	$ 567,149

Schedules of Investment Expenses

Years Ended December 31, 2021 and 2020	2021	2020
Investment manager expense		
Adelante Capital Management	$ 658,383	$ 500,639
Allspring Global Investments	1,909,451	1,544,922
Angelo Gordon	249,758	263,969
Ariel Investments	778,479	694,121
Artemis Real Estate Partners	507,353	440,954
Blackstone Alternative Asset Management	6,329,051	5,892,178
Boston Common Asset Management	662,139	—
CastleArk Management	1,048,953	695,878
CBRE Global Investors	295,354	333,780
Channing Capital Management	1,555,757	1,038,148
Clarion Partners	1,199,489	992,912
Franklin Templeton Investments	3,008,035	2,556,229
Frontier Capital Management	1,632,803	1,142,388
Garcia Hamilton	118,263	214,648
Great Lakes Advisors, Inc.	580,109	466,193
J.P. Morgan Asset Management	2,425,778	2,786,838
LaSalle Investment Management	434,739	627,514
Lazard Asset Management, LLC	804,747	782,617
LM Capital Group, LLC	(262,300)*	709,485
MacKay Shields	1,092,581	912,491
Mellon Capital	166,550	141,109
Mesirow Financial	4,617,972	3,462,051
Mondrian Investment Partners, Ltd.	1,397,146	1,113,435
Muller and Monroe Asset Management	251,028	286,058
New Century Investment Management	302,123	287,544
PGIM Investments	926,744	858,933
Progress Investment Management	—	159,991
Prudential Real Estate Investors	2,076,806	1,990,541
RhumbLine Advisers	280,678	237,313
Russell Investments	209,318	182,279
SPC Capital Management	15,840	15,993
Strategic Global Advisors	792,362	666,907
State Street Global Advisors	483,987	383,980
The Rock Creek Group	1,609,653	1,442,330
William Blair & Company	1,143,560	864,429
Xponance	461,308	440,193
	39,763,997	35,128,990
Investment consulting fees		
Callan LLC	516,479	391,878
Investment custodian fees		
BNY Mellon	439,696	502,705
Total investment expenses	$ 40,720,172	$ 36,023,573

* Includes $867,116 fee reimbursement and interest. Total fee for 2021 was $604,816.

Schedule of Additions by Source

Year Ended December 31,	Employer Contributions	Employee Contributions	Net Investment and Net Securities Lending Income [1]	Other [2]	Total Additions
2016	$ 464,268,404	$ 139,355,592	$ 629,442,470	$ 14,019,340	$ 1,247,085,806
2017	559,205,626	138,826,184	1,399,625,874	23,321,813	2,120,979,497
2018	587,748,221	134,159,171	(424,787,945)	27,479,205	324,598,652
2019	526,240,864	134,837,512	1,865,645,039	35,158,714	2,561,882,129
2020	509,209,160	134,157,866	1,465,457,845	36,669,560	2,145,494,431
2021	541,300,175	133,368,302	1,960,919,641	39,562,675	2,675,150,793

Schedule of Deductions by Type

Year Ended December 31,	Benefits	Refunds	Employee Transfers to Forest Preserve Fund	Net Administrative Expenses	Total Deductions
2016	$ 742,396,434	$ 26,702,222	$ — [3]	$ 5,373,555	$ 774,472,211
2017	790,352,526	32,995,364	— [3]	5,406,034	828,753,924
2018	831,661,745	33,662,521	— [3]	5,134,047	870,458,313
2019	890,115,295	37,745,951	— [3]	5,085,445	932,946,691
2020	950,137,294	30,990,651	714,659	5,000,609	986,843,213
2021	1,001,104,106	36,979,751	42,007	5,107,805	1,043,233,669

1 Includes realized and unrealized net gain or loss on investments and net securities lending income.

2 Includes employer federal subsidized programs, EQWP/Medicare Part D, prescription/repayment plan rebates and miscellaneous income.

3 Employees transfers were added under “Other” in Schedule of Additions By Source above

Schedule of Employer Contributions Receivable December 31, 2021

Contribution Year	Contributions Receivable	Uncollected Balance	Reserved	Net Contributions Receivable
2020	$ 200,939,168	$ 637,630	$ 260,622	$ 377,008
2021	201,879,823	201,879,823	6,970,743	194,909,080
		$ 202,517,453	$ 7,231,365	$ 195,286,088

Notes:

Employer contributions are funded primarily through property taxes levied by Cook County, Illinois.

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INVESTMENT
Section

This section includes an Investment Report, Investment Consultant's Commentary, the Master Custodian's Certification, Summary of Investment Policy, asset allocation and historical investment returns, and summary tables of investment data.

June 3, 2022

To the Retirement Board and Fund Members:

The County Employees' and Officers' Annuity and Benefit Fund of Cook County ("the Fund") employs a prudent investment strategy to meet its long-term actuarial objective of growing fund assets to support member benefits. Together with fund staff and the investment consultant, Callan LLC, the Retirement Board oversees the investment strategy through ongoing study of the portfolio structure, return assumptions, and projected funding needs to support member benefits.

In 2021, the Fund returned a very strong +17.2% net return of investment fees continuing momentum from 2020, with investment income reaching almost $2.0 billion. Invested assets increased from $12.5 billion at the end of 2020 to just over $14.2 billion as of December 31, 2021. The Fund's 2021 portfolio returns exceeded its policy benchmark and have generated positive returns on a 3, 5 and 10-year basis.

Strong contributions to the portfolio's performance were provided by active management of domestic equity, public and private real estate and private equity. Of particular note, the Fund's private equity portfolio returned 83.8% net in 2021, with distributions from the private equity portfolio helping to support the Fund in meeting benefit payments.

In 2021, supplemental employer contributions of $339.9 million, resulting from a one-year Intergovernmental Agreement, supported the Fund in minimizing the liquidation of investment assets to meet benefit obligations, which had a stabilizing effect on the long-term position of the fund. However, negative cash flows continue, with benefit payments, refunds and administrative expenses exceeding all contributions from the employer and members by approximately $333 million.

The Consultant's Commentary; Master Custodian's certification letter; Summary of the Fund's Investment Policy; and selected investment schedules follow for your review.

Sincerely,

Regina Tuczak

Regina Tuczak
Executive Director

Data provided to the Fund by its investment consultant form the basis of the information that is presented throughout the Investment Section. All portfolio rates of return are presented using time and asset-weighted returns. Returns are calculated net of investment manager fees, unless otherwise noted.

Callan

Callan LLC
120 North LaSalle Street
Suite 2400
Chicago, IL 60602

Main 312.346.3536
Fax 312.346.1356

www.callan.com

June 3, 2022

Board of Trustees
County Employees' and Officers' Annuity and Benefit Fund of Cook County
70 W. Madison Street, Suite 1925
Chicago, IL 60602

Dear Trustees:

Callan LLC is pleased to present the County Employees' and Officers' Annuity and Benefit Fund of Cook County ("Fund") summary for fiscal year ended December 31, 2021. As of yearend, the Fund reported a fair value of $14.2 billion in investment assets, an increase of approximately $1.7 billion since December 31, 2020. This increase in value included approximately $353.9 million in net withdrawals.

The fourth quarter of 2021 closed out another remarkable year following the wild ride through the pandemic and the recovery, a cycle that began in earnest in February 2020. U.S. GDP notched an incredibly strong 6.9% quarterly gain (4Q over 4Q), which translates to annual growth of 5.7% over 2020. We have not seen such growth since the Ronald Reagan administration, following the consecutive recessions of 1980 and 1982 induced in part to wring double-digit inflation out of the economy. The U.S. economy added just shy of 6.5 million jobs over the year, which is the most on record, but we are still short of where we were pre-pandemic. The outlook is further clouded by uncertainty regarding the pace and degree of tighter fiscal and monetary policy, the path of inflation, lofty valuations across markets, and, of course, COVID. Annual CPI jumped to 7.0% in December - its eighth consecutive reading above 5% and the largest 12-month increase since the period ending June 1982.

The U.S. equity market continued to rise as the S&P 500 posted 70 record highs in 2021, and its nearly 29% jump marked the third consecutive year of double-digit gains (and the fifth in the past six years). Stock prices were bolstered by strong earnings as well as record-breaking share repurchases ($1 trillion). While revenues for companies in the S&P 500 grew roughly 17% in 2021, margins improved by 55% and the number of shares outstanding declined modestly. However, not all stocks enjoyed the same ride. Within the S&P 500 Index, the market capitalization weight of the top 10 stocks in the index reached a record 30.5%, and the P/E ratio of those stocks was 33.2 versus 21.2 for the broad index. Larger capitalization securities outperformed their smaller capitalization brethren for the year. Regarding style characteristics, the results were mixed as growth stocks outperformed value stocks in the large cap space, but for smaller capitalization issues, growth underperformed value securities.

Non-U.S. developed markets trailed the U.S. markets, but remained positive overall as measured by the MSCI ACWI ex-USA IMI Index which returned 8.5%. Developed markets were positive and outperformed emerging markets which were weighed down by China's lackluster performance thus resulting in a negative annual return for the MSCI Emerging Index (-2.5%). Rising inflation remained a focal point, intensified by tangled supply chains and demand vastly outpacing supply. The U.S. dollar rose against other major currencies as tapering accelerated alongside the expectation for 2022 rate hikes, which notably detracted from global ex-U.S. results.

Fixed Income experienced a challenging year in 2021 as the broad fixed income Bloomberg Aggregate Index posted an unusual negative result for the calendar year (-1.5%), for only the fourth time since the inception of the Index in 1976. In the fourth quarter, Fed Chairman Jerome Powell acknowledged that it might be time to retire the word "transitory" in describing inflationary pressures. The Fed later announced it would double the pace of its tapering plans and stop new purchases by March 2022. Lastly, the Fed expressed the view that it would begin raising interest rates earlier in 2022.

Following a year of havoc and disruption caused by the pandemic, commercial real estate returns (NCREIF ODCE Value-weighted Net) shot to a calendar year record of approximately 21% in 2021, well surpassing even the most optimistic expectations. The Industrial sector continued to be the strongest performer. Record performance was fueled by rebounding economic growth, marked improvement in real estate fundamentals of almost all property types, and the weight of capital propelling real estate valuations.

Hedge fund returns were mixed given changes in market dynamics throughout the year. Positions in growth vs. momentum and value vs. cyclical stocks fluctuated as rate hike forecasts and reopening expectations were constantly changing. The meme stock craze at the beginning of the year, driven by motivated retail investors, caused losses in some hedge fund mangers' short positions. Overall, hedge funds delivered as expected: trailing public equities in strong markets and outperforming fixed income.

Cook County's hedge fund program outperformed its absolute return benchmark, yet did not keep pace with public equity markets throughout the year. Event driven and equity hedge strategies were the top performers while credit strategies, albeit positive, trailed.

Private equity has adapted well to the COVID environment, with tremendous growth last year. On average, year-over-year transaction activity rose by 30% and dollar volumes by 70%, not terribly surprising given the effects of the bear market in early 2020, but on a standalone basis industry growth is still unprecedented. Trailing 12-month returns show dramatic private equity outperformance over public equity. These strong returns continue to attract new investors and major commitments to the asset class.

Total Fund Fiscal Year End Performance (net of fees)

The Fund experienced another strong year with a total return of 17.15% net of investment manager fees for the year ended December 31, 2021, outperforming the 14.67% return of the Fund's Total Fund Benchmark (Policy Benchmark). On a gross of fees basis, the Fund ranked in the top quartile of a comparable peer universe of funds with assets greater than $1 billion.

The largest contributors were Private Equity, Real Estate and Domestic Public Equity. Private Equity investments led the way with an 83.76% return for the year. Total Real Estate including private real estate (25.59%) and publicly traded REITS (47.47%) combined for a return of 27.97% return. Domestic Equity also posted a strong absolute return of 25.40%.

For the trailing three years, the Fund generated a 16.29% annualized return (net of manager fees) which outpaced its benchmark return of 15.62%. On a gross of fee basis, the Fund ranked in the 17th percentile (1% being the highest, 100% being the lowest) of a comparable gross of fee peer group. In the last five years, the Fund posted an 11.78% annualized return versus the 11.41% return of the benchmark. Furthermore, relative to its peer universe, the Fund ranked in the 23rd percentile, thus outperforming 77% of its peers.

Asset Class Fiscal Year End Performance (net of fees)

The Domestic Equity composite portfolio posted a return of 25.40% for the year ended December 31, 2021, trailing the Domestic Equity Benchmark, the Russell 3000 Index, return of 25.66%. The portfolio benefited from the active management in the small capitalization space; however, active management in large and SMID capitalization asset classes detracted overall. For the three-year period, the Domestic Equity portfolio generated an annualized 24.91% return, yet trailed the 25.79% return of the benchmark. For the last five years, domestic equities added 16.82% per annum, yet trailed the strong benchmark return of 17.97%.

The International Equity composite posted a return of 6.00% for the one year period ending December 31, 2021, but trailed the ACWI ex US IMI Index return of 8.53%. International Small Capitalization provided a 9.52% return while Emerging Market strategies lost 12.17%.

The Fixed Income portfolio posted a return of -0.47% for the one year period ending December 31, 2021. Albeit negative, the fixed income investments exceeded the -1.43% return of the custom fixed income benchmark. The core/coreplus, global, and short duration underlying strategies added value versus their respective benchmarks.

Within the Real Estate portfolio, public REITS ended the year with a 47.47% return and outperformed the 43.24% return of the NAREIT Index. Private real estate strategies also fared well with a 25.59% which outperformed the 21.02% return posted by the NFI-ODCE Index.

The Private Equity portfolio contributed an 83.76% return for the year ended December 31, 2021. Over 96% of the portfolio is invested in a single fund of funds program that has generated an annualized since inception IRR of 30.8% since Cook County's first investment in 2013. Approximately, 89% of committed capital has been invested.

The Hedge Fund composite portfolio posted a 6.42% return which exceeded its Libor+4% target. The complementary underlying funds both exceeded that benchmark. The more equity beta-oriented strategy outperformed significantly while the more credit-centric fund also surpassed the benchmark by a more modest amount.

Investment Manager Changes

The following accounts were added in 2022: Boston Common International Equity, Mesirow Real Estate Value IV, The Clarion Lion Industrial Trust.

Methodology

All performance returns for the Fund presented in this report have been calculated by Callan LLC using a time-weighted rate of return calculation for accounts with daily pricing and a modified BAI calculation for accounts without daily pricing.

Sincerely,

John P. Jackson

John P. Jackson, CFA
Senior Vice President, Callan LLC

BNY MELLON

Declan Denehan
Managing Director
Government Banking

240 Greenwich Street
New York, NY 10286

T 917.716.8516
Declan.denehan@bnymellon.com

June 3, 2022

To the Board of Trustees and the Executive Director of the County Employees' and Officers' Annuity & Benefit Fund of Cook County:

BNY Mellon as custodian of the County Employees' and Officers' Annuity & Benefit Fund of Cook County (the "client") has established an "Account" that holds the clients property in safekeeping facilities of the Custodian (or other custodian banks or clearing operations), provided the recordkeeping of certain property of the client and completed the annual accounting certification for the year January 1, 2021 through December 31, 2021.

In addition, in accordance with the terms of the Custody Agreement dated, November 1, 2007, BNY Mellon also provides the following services as Custodian:

- Market settlement of purchases and sales and engage in other transactions, including free receipts and deliveries, exchanges and other voluntary corporate actions, with respect to securities or property received by the Custodian.
- Take actions necessary to settle transactions in futures and/or options contracts, short selling programs, foreign exchange or foreign exchange contracts, swaps and other derivative investments with third parties.
- Lend the assets of the Account in accordance with a separate Securities Lending Agreement.
- Invest available cash in any collective fund, including a collective investment fund maintained by the Custodian or and affiliate of the Custodian for collective investment of employee benefit trusts or deposit in an Interest bearing account of banking department of Custodian.
- Appoint subcustodlans, including affiliates of the custodian, as to part or all of the Account.
- Hold property in nominee name, in bearer form or in book entry form, in a clearinghouse corporation or in a depository.
- Take all action necessary to pay for, and settle authorized transactions.
- Collect income payable to and distributions due to the Account.
- Collect all proceeds from securities, certificates of deposit or other investments which may mature or be called.
- Forward to the authorized party as designated by the client, proxies or ballots that are to be a voted by the authorized party.
- Attend to corporate actions that have no discretionary decision requirement.
- Report the value of the Account as agreed upon by the client and custodian.
- Credit the account with income and maturity proceeds on securities contractual payment date.

Sincerely,

Declan Denehan
Managing Director

Investment Authority

The County Employees' and Officers' Annuity and Benefit Fund of Cook County ("Fund") is a statutorily created public defined benefit plan. The Fund was established on January 1, 1926 and is governed by the Illinois Pension Code [40 ILCS 5] (Code). The Fund was designed to provide retirement, death and disability benefits for Cook County employees and their surviving spouses, children and certain other dependents.

Overview

Under the guidance and direction of the Board and governed by the "prudent man rule," it is the mission of the Fund and the Investment Staff to optimize the total return of the Fund's investment portfolio through a policy of diversified investments using parameters of prudent risk management as measured on the total portfolio, acting at all times in the exclusive interest of the participants and beneficiaries of the Fund. Investments made by the Fund shall satisfy the conditions of the Illinois Pension Code and applicable Illinois law and, in particular, the "prudent man" fiduciary standard set forth in section1-109 of the code [40 ILCS 5/1-109].

Subject to these fiduciary standards, the Board of Trustees ("Board") and Investment Staff shall endeavor at all times to execute their responsibilities in a manner consistent with the stated mission of the Fund, while ensuring transparency and compliance with all applicable laws and regulations:

- Establish a clear understanding of all involved parties of the investment goals and objectives of the Fund
- Define and assign the responsibilities of all involved parties
- Establish the relevant investment horizon for which the Fund assets will be managed
- Establish risk parameters governing assets of the Fund
- Establish target asset allocation and re-balancing procedures
- Establish a methodology and criteria for selecting, retaining and terminating Investment Service Providers
- Offer specific guidance to and define limitations for all Investment Managers regarding the investment of Fund assets

In summary, the purpose of the Investment Policy Statement ("IPS") is to formalize the Board's investment objectives, policies and procedures and to define the duties and responsibilities of the various entities involved in the investment process. The IPS is intended to serve as a guide, reference tool and a communications link between the Board, Investment Staff and Investment Service Providers.

Roles and Responsibilities

The Board is a fiduciary and has original and exclusive jurisdiction over all matters relating to the Fund, including benefits administration and the investment of the assets. As a fiduciary, the Board will discharge its duties in the sole interest of the participants and beneficiaries of the Fund.

Investment Committee

The Board has established an Investment Committee (“IC”), which is a committee of the whole. The IC reviews and makes recommendations of investment-related policies to the Board for approval. The IC works with Investment Staff and Investment Consultant(s) to implement all Board approved investment policies, evaluate investment performance and comply with the IPS.

Investment Staff

The Executive Director (“ED”) along with other staff are responsible for the implementation of investment strategy approved by the Board, making recommendations to the Board and Investment Committee as appropriate and for the coordination of all investment activities on behalf of the Fund.

Investment Consultant

The Board may hire Investment Consultant(s) to assist the Board, its Committees and Staff in developing and implementing a prudent process for establishing, monitoring and evaluating the Fund’s investment policy.

Investment Managers

Manage assets in accordance with the guidelines and objectives and consistent with each investment manager’s stated investment philosophy and style.

Objectives

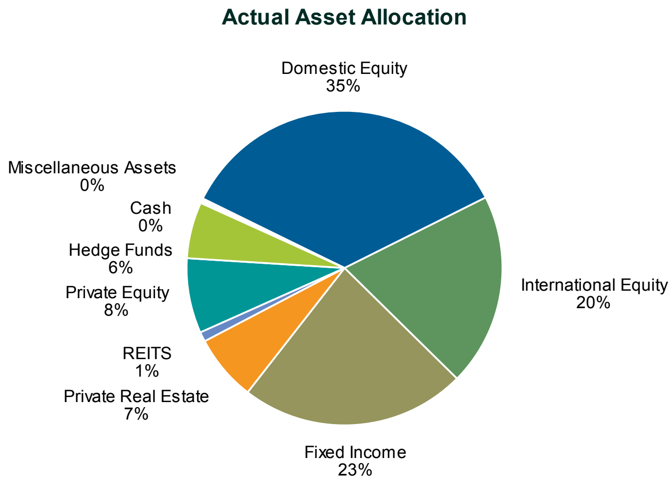
The Fund’s assets will be invested for the sole interests of the participants and beneficiaries of the Fund and in accordance with the following objectives:

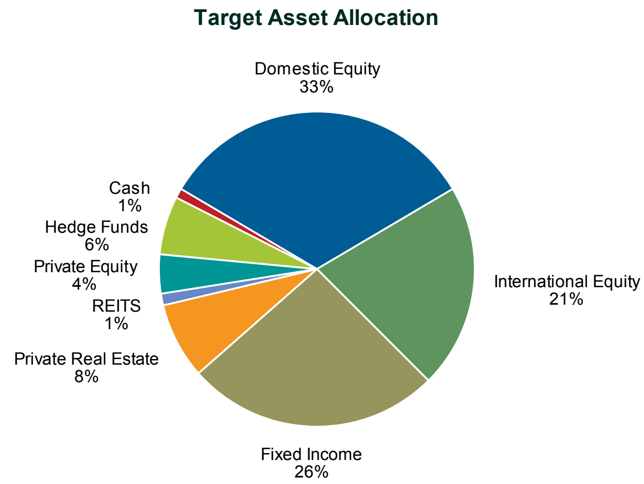
- Ensure that the current and future obligations of the Fund are met when due
- Ensure the assets of the Fund are invested with the care, skill, and diligence that a prudent person acting in a like capacity would undertake
- Ensure the assets of the Fund are invested in a manner that manages and controls the costs incurred in administering and managing the assets
- Diversify the investment of the assets to minimize the risk of large losses
- Attain the actuarial assumed annual rate of return over a long-term time horizon
- Exceed an asset policy weighted composite benchmark (Policy Target) over a market cycle (typically, 5 to 10 years)

In establishing the asset allocation policy, the Board takes into consideration the actuarial rate of return, the nature of the Fund’s liabilities, the cash flow needs, the return and risk expectations for the capital markets, as well as any applicable legislation and statutes governing the Fund. The asset allocation policy reflects the Board’s return objectives at a prudent level of risk.

2021 Asset Allocation

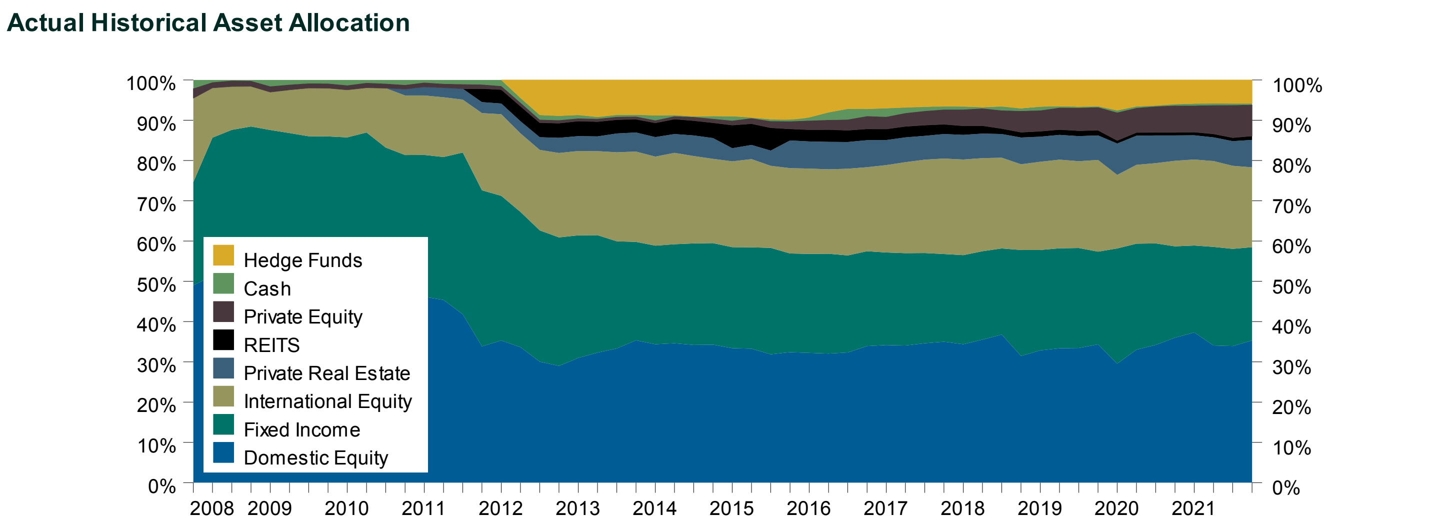
As of December 31, 2021, compared to the target allocation, the Fund was allocated within its target ranges. An overweight to U.S Equity and Private Equity was offset by its underweight to Fixed Income and International Equity. The Fund's asset allocation at the end of 2021 is shown below.





Historical Allocation by Asset Class

The chart below illustrates the historical asset allocation of the Fund



Annual and Trailing Investment Returns (net of fees) – December 31, 2021. Below is a detailed analysis of the Fund's net of fee performance on a trailing and calendar year basis. Calculations are prepared utilizing a time weighted rate of return.

Historical Calendar Year Investment Returns (Net of Fees)

Below is a detailed analysis of the Fund's net of fee investments performance on a calendar year basis. Calculations were prepared utilizing a time-weighted rate of return methodology.

Asset Class	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Net of Fee Returns										
Domestic Equity	25.40%	19.16%	30.42%	-6.78%	19.78%	14.57%	-1.61%	9.84%	35.13%	14.94%
Domestic Equity Benchmark (2)	25.66%	20.89%	31.02%	-5.24%	21.13%	12.74%	0.48%	12.56%	33.55%	16.42%
International Equity	6.00%	10.86%	22.33%	-13.59%	28.67%	2.92%	-1.36%	-4.44%	18.25%	19.36%
International Equity Benchmark (3)	8.53%	11.12%	21.63%	-14.76%	27.19%	4.50%	-5.66%	-3.87%	15.29%	16.98%
Fixed Income	-0.47%	6.73%	8.25%	-0.49%	4.13%	4.11%	-0.58%	5.57%	-2.03%	5.96%
Fixed Income Benchmark (4)	-1.43%	7.09%	8.72%	0.01%	3.54%	2.65%	0.55%	5.97%	-2.02%	4.48%
REITS	47.47%	-5.16%	27.29%	-6.21%	7.90%	6.33%	1.15%	27.17%	1.29%	17.89%
NAREIT Equity Index	43.24%	-8.00%	26.00%	-4.62%	5.23%	8.52%	3.20%	30.14%	2.47%	18.06%
Private Real Estate	25.59%	3.26%	5.95%	8.68%	5.24%	9.97%	13.74%	11.73%	10.08%	11.00%
NCREIF NFI-ODCE Value Weight Net	21.02%	0.34%	4.39%	7.36%	6.66%	7.79%	13.95%	11.46%	12.90%	9.79%
Private Equity	83.76%	31.60%	22.81%	29.77%	13.07%	11.49%	-2.95%	-9.46%	4.52%	4.45%
Hedge Funds	6.42%	3.42%	6.35%	1.75%	7.06%	2.68%	1.77%	5.99%	8.80%	—
LIBOR + 4%	4.16%	4.64%	6.35%	6.35%	5.26%	4.75%	4.30%	4.23%	4.28%	4.47%
HFRI Fund of Funds Index	9.65%	8.68%	4.90%	-1.52%	7.74%	-0.79%	0.52%	4.34%	8.83%	2.98%
Total Cook County Fund	17.15%	12.74%	19.07%	-3.79%	15.35%	7.67%	-0.25%	5.51%	14.97%	12.51%
Total Fund Benchmark (1)	14.67%	13.27%	19.00%	-2.93%	14.40%	6.88%	0.27%	6.85%	12.96%	11.72%

Investment results are calculated and presented using standard performance evaluation methods in a manner consistent with the investment industry in general and public pension funds in particular. Rates of return were determined using a modified time-weighted return calculation.

1. The Total Fund Benchmark:
   2020-2021: 33.0% Russell 3000 Index, 21.0% MSCI ACWI ex U.S. IMI, 23.4% Blmbg Aggregate, 2.6% Blmbg Govt/Credit 1-3 Year; 9% Custom Real Estate Index, 6% (3 Month Libor+ 4.0%), 4.0% Private Equity Custom Index, 1% U.S. 90 Day T-Bill.
   2017-2019: 33.0% Russell 3000 Index, 21.0% MSCI ACWI ex U.S. IMI, 26% Blmbg Aggregate, 9% Custom Real Estate Index, 6% (3 Month Libor+ 4.0%), 4.0% Private Equity Custom Index, 1% U.S. 90 Day T-Bill.
   2013-2016: 25% Russell 3000 Index; 20% MSCI ACWI ex U.S. Index, 32% Blmbg Aggregate Index, 8% Custom Real Estate Index, 9% (3 Month Libor+ 4.0%), 6% Private Equity Custom Index.
   2012: 6% Russell 3000 Index; 20% MSCI ACWI ex U.S. Index, 40% Custom Fixed Income Index, 8% Custom Real Estate Index, 6% Private Equity Custom Index.
2. Domestic Equity Benchmark: 2012-2021: Russell 3000.
3. International Benchmark:
   2018-2021: MSCI ACWI ex-US IMI.
   2013-2017: MSCI ACWI ex-U.S.
   2012: 85% MSCI ACWI ex-U.S., 15% Global ex U.S. under $2 billion.
4. Fixed Income Benchmark:
   2020-2021: 90% Bloomberg Aggregate Index and 10% Bloomberg Gov/Credit 1-3 Year Index.
   2013-2019: Bloomberg Aggregate Index.
   2012: 62.5% Bloomberg Aggregate Index, 12.5% Bloomberg U.S. TIPS Index, 25% Bloomberg Govt/Credit Intermediate index.

Current Year and Annualized Returns

Asset Class	For the Year Ended December 31, 2021	Annualized Returns 3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Net of Fee Returns				
Domestic Equity	25.40%	24.91%	16.82%	15.39%
Domestic Equity Benchmark (2)	25.66%	25.79%	17.97%	16.30%
International Equity	6.00%	12.86%	9.83%	8.15%
International Equity Benchmark (3)	8.53%	13.62%	9.72%	7.35%
Fixed Income	-0.47%	4.77%	3.57%	3.06%
Fixed Income Benchmark (4)	-1.43%	4.69%	3.51%	2.90%
REITS	47.47%	21.20%	12.49%	11.40%
NAREIT Equity Index	43.24%	18.41%	10.75%	11.38%
Private Real Estate	25.59%	11.17%	9.46%	10.38%
NCREIF NFI-ODCE Value Weight Net	21.02%	8.23%	7.74%	9.43%
Private Equity	83.76%	43.74%	34.23%	16.64%
Hedge Funds	6.42%	5.39%	4.98%	—
LIBOR + 4%	4.16%	5.05%	5.35%	4.88%
HFRI Fund of Funds Index	9.65%	7.71%	5.81%	4.46%
Total Fund	17.15%	16.29%	11.78%	9.85%
Total Fund Benchmark (1)	14.67%	15.62%	11.41%	8.10%

Investment results are calculated and presented using standard performance evaluation methods in a manner consistent with the investment industry in general and public pension funds in particular. Rates of return were determined using a modified time-weighted return calculation.

1. The Total Fund Benchmark:

   2020-2021: 33.0% Russell 3000 Index, 21.0% MSCI ACWI ex U.S. IMI, 23.4% Blmbg Aggregate, 2.6% Blmbg Govt/Credit 1-3 Year; 9% Custom Real Estate Index, 6% (3 Month Libor+ 4.0%), 4.0% Private Equity Custom Index, 1% U.S. 90 Day T-Bill.

   2017-2019: 33.0% Russell 3000 Index, 21.0% MSCI ACWI ex U.S. IMI, 26% Blmbg Aggregate, 9% Custom Real Estate Index, 6% (3 Month Libor+ 4.0%), 4.0% Private Equity Custom Index, 1% U.S. 90 Day T-Bill.

   2013-2016: 25% Russell 3000 Index; 20% MSCI ACWI ex U.S. Index, 32% Blmbg Aggregate Index, 8% Custom Real Estate Index, 9% (3 Month Libor+ 4.0%), 6% Private Equity Custom Index.

   2012: 26% Russell 3000 Index; 20% MSCI ACWI ex U.S. Index, 40% Custom Fixed Income Index, 8% Custom Real Estate Index, 6% Private Equity Custom Index.

2. Domestic Equity Benchmark: 2012-2021: Russell 3000.

3. International Benchmark:

   2018-2021: MSCI ACWI ex-US IMI.
   2013-2017: MSCI ACWI ex-U.S. ; custom blend previously.
   2012: 85% MSCI ACWI ex-U.S., 15% Global ex U.S. under $2 billion.

4. Fixed Income Benchmark:

   2020-2021: 90% Bloomberg Aggregate Index and 10% Bloomberg Gov/Credit 1-3 Year Index.
   2013-2019: Bloomberg Aggregate Index; custom blend previously.
   2012: 62.5% Bloomberg Aggregate Index, 12.5% Bloomberg U.S. TIPS Index, 25% Bloomberg Govt/Credit Intermediate index.

Schedule of Investment Summary and Asset Allocation

	For Year Ended December 31, 2021			For Year Ended December 31, 2020		
Asset Class	Fair Value	Percent of Total	Target	Fair Value	Percent of Total	Target
Domestic Equity	$ 5,280,964,567	37%	33%	$ 4,741,659,322	38%	33%
International Equity	2,461,851,579	17%	21%	2,279,476,850	18%	21%
Fixed Income	3,196,846,563	23%	26%	2,731,679,476	22%	26%
Real Estate	968,510,214	7%	9%	776,471,639	6%	9%
Hedge Funds of Funds	814,964,951	6%	4%	740,040,004	6%	4%
Private Equity	1,107,947,617	8%	6%	938,804,581	8%	6%
Short-Term Investments	357,784,424	2%	1%	267,036,118	2%	1%
Total Investments	$ 14,188,869,915	100%	100%	$ 12,475,167,990	100%	100%

Schedule of Top Ten Largest Holdings (Excludes Commingled Funds)

For year ended December 31, 2020

Top 10 Domestic Equity Holdings	Sector	Shares	Fair Value	% of Total
Apple Inc.	Technology	1,517,622	$269,484,139	5.1%
Microsoft Corp.	Technology	732,416	246,326,149	4.7%
Alphabet Inc.	Communication	57,886	167,598,442	3.2%
Amazon.com Inc.	Consumer Discretionary	42,557	141,899,507	2.7%
Tesla Inc.	Automotive	78,580	83,041,772	1.6%
Meta Platforms Inc.	Communication	238,861	80,340,897	1.5%
Nvidia Corp	Semiconductors	240,137	70,626,693	1.3%
Berkshire Hathaway Inc.	Insurance	188,988	56,507,412	1.1%
United Health Group Inc.	Healthcare	93,469	46,934,524	0.9%
Home Depot Inc.	Consumer Discretionary	103,048	42,765,950	0.8%
Total Top 10 Domestic Equity Holdings		3,293,564	$1,205,525,486	22.8%
Total Domestic Equity			$5,280,964,567	100.0%

Top 10 International Equity Holdings	Sector	Shares	Fair Value	% of Total
Roche Holding AG (Switzerland)	Healthcare	110,668	$32,694,939	1.3%
Tencent Holdings LTD (China)	Internet	538,197	24,336,715	1.0%
Nestle SA (Switzerland)	Consumer Goods	160,432	20,823,162	0.8%
Taiwan Semiconductor Manufacture (Taiwan)	Electronics	919,389	20,436,774	0.8%
Relx PLC (United Kingdom)	Publishing	562,453	18,298,543	0.7%
AIA Group LTD (Hong Kong)	Insurance	1,798,622	18,133,177	0.7%
Sanofi (France)	Healthcare	179,129	18,044,233	0.7%
Samsung Electronic Co. LTD (South Korea)	Electronics	221,550	14,592,950	0.6%
Sampo Group (Finland)	Insurance	323,689	16,218,448	0.7%
ASML Holding NV (Netherlands)	Semiconductors	19,785	15,900,398	0.6%
Total Top 10 International Equity Holdings		4,833,914	$199,479,339	8.1%
Total International Equity			$2,461,851,579	100.0%

Top 10 Fixed Income Holdings	Sector	Par	Fair Value	% of Total
U.S. Treasury Bond 1.875% 11/15/2051	US Governments	30,770,000	$30,669,074	1.0%
U.S. Treasury Note 0.375% 10/31/2023	US Governments	22,430,000	22,300,355	0.7%
U.S. Treasury Note 1.125% 10/31/2026	US Governments	21,730,000	21,599,185	0.7%
U.S. Treasury Note 0.125% 01/31/2023	US Governments	18,345,000	18,281,893	0.6%
U.S. Treasury Note 0.500% 01/15/2028	US Governments	13,900,524	15,557,745	0.5%
U.S. Treasury Note 1.750% 06/30/2024	US Governments	15,105,000	15,437,159	0.5%
U.S. Treasury Note 0.125% 05/15/2023	US Governments	14,850,000	14,765,355	0.5%
U.S. Treasury Note 0.125% 02/28/2023	US Governments	14,160,000	14,101,944	0.4%
U.S. Treasury Note 1.625% 05/15/2031	US Governments	14,300,000	14,496,625	0.5%
U.S. Treasury Note 2.000% 08/15/2051	US Governments	13,385,000	13,707,043	0.4%
Total Top 10 Fixed Income Holdings		178,975,524	$180,916,378	5.7%
Total Fixed Income			$3,196,846,563	100.0%

A complete list of the portfolio holdings is available for review upon request.

Schedule of Investment Manager Fees and Assets Under Management

For year ended December 31, 2021

Asset Category	Investment Manager Fees	Assets Under Management
Equity		
Adelante Capital Management	$ 658,383	$ 139,461,598
Allspring Global Investments (formerly Well Capital Management)	1,909,451	230,778,386
Ariel Investments	778,479	128,166,944
Boston Common Asset Management	662,139	207,772,705
Castle Ark Management	1,048,953	164,496,016
Channing Capital Management	1,555,757	292,416,906
Franklin Templeton Investments	2,345,260	438,167,789
Frontier Capital Management	1,632,803	243,171,675
Mesirow Financial	368,960	69,452,747
Great Lakes Advisors, Inc.	580,109	486,897,900
J.P. Morgan Asset Management	168,044	245,154
Lazard Asset Management, LLC	804,747	458,932,995
Mondrian Investment Partners, Ltd.	1,397,146	192,862,663
Progress Investment Management *	—	175,756
Strategic Global Advisors	792,362	132,257,775
Rhumb Line Advisers	280,678	2,975,603,916
Russell Implementation Services, Inc.	209,318	558,088,181
State Street Global Advisors	483,987	974,267,914
William Blair & Company	1,143,560	163,480,664
Total Global Equity	$ 16,820,136	$ 7,856,697,684
Fixed Income		
Franklin Templeton Investments	$ 662,775	$ 234,288,180
Garcia Hamilton	118,263	109,802,464
LM Capital Group, LLC **	(262,300)	472,618,459
MacKay Shields	1,092,581	488,678,761
Mellon Capital	166,550	1,115,483,937
New Century Investment Management	302,123	147,894,916
PGIM Investments	926,744	504,517,212
Xponance	461,308	306,003,911
Total Fixed Income	$ 3,468,044	$ 3,379,287,840

* Progress Investment Management dissolved in 2020

** Includes $867,116 fee reimbursement and interest. Total fee for 2021 was $604,816

Schedule of Investment Manager Fees and Assets Under Management (continued)

For year ended December 31, 2021

Asset Category	Investment Manager Fees	Assets Under Management
Real Estate		
Angelo Gordon & Co.	$ 249,758	$ 14,323,468
Artemis Real Estate Partners	507,353	21,373,339
Blackstone Alternative Asset Management	755,064	54,006,624
CBRE Global Investors	295,354	27,557,589
Clarion Partners	1,199,489	126,530,711
J.P. Morgan Asset Management	2,257,733	313,259,400
LaSalle Investment Management	434,739	13,306,907
Mesirow Financial	936,608	67,442,946
Prudential Real Estate Investors	2,076,806	330,709,230
Total Real Estate	$ 8,712,904	$ 968,510,214
Hedge Fund of Funds		
Blackstone Alternative Asset Management	$ 5,573,987	$ 592,203,447
The Rock Creek Group	1,609,653	222,761,504
Total Hedge Funds	$7,183,640	$814,964,951
Private Equity ***		
Legacy direct	$ —	$ 458,452
Mesirow Financial	3,312,405	1,092,778,466
Muller and Monroe Asset Management	251,028	25,303,675
SPC Capital Management	15,840	1,957,343
Total Private Equity	$ 3,579,273	$ 1,120,497,936
Short-Term Investments		
BNY Mellon ****	$ —	$ 48,911,290
Total	$ 39,763,997	$ 14,188,869,915

*** Fees shown are for fund-of-funds managers and do not reflect fees of underlying managers of investments, which are reflected in the net income from the related investment

**** Investments are held in commingled funds and/or publicly traded funds, and related investment returns are net of fees.

Schedule of Brokerage Commissions

For Year Ended December 31, 2021

Broker Name	Number of Shares	Commissions	Cost per Share
Domestic Equity Commissions			
Loop Capital Markets, LLC*	6,770,885	$ 192,890	$ 0.028
Cabrera Capital Markets*	3,084,615	67,193	0.022
Siebert Williams Shank *	4,863,387	50,367	0.010
Baird, Robert W & Co.	1,498,610	43,567	0.029
Piper Jaffray & Co.	1,196,864	41,199	0.034
Goldman Sachs & Co.	1,248,601	37,087	0.030
Liquident, Inc.	1,537,675	33,974	0.022
J.P. Morgan Securities	1,020,539	31,164	0.031
Penserra Securities*	1,655,164	29,069	0.018
Blaylock & Co Inc.*	802,489	24,075	0.030
Raymond James & Associates, Inc.	644,731	18,718	0.029
Stiffel Nicolaus	639,174	18,295	0.029
Instinet Clearing Service, Inc.	818,293	17,885	0.022
North South Capital LLC *	572,212	15,646	0.027
Jefferies, LLC	602,790	15,366	0.025
CL King & Associates *	548,500	14,053	0.026
Virtu Americas LLC	463,960	13,453	0.029
Credit Suisse	399,058	12,176	0.031
ISI Group, Inc.	412,034	11,922	0.029
National Financial Services Corp.	366,730	11,001	0.030
Castleoak Securities LP *	454,200	10,091	0.022
Pershing, LLC	332,552	10,047	0.030
Brokers with < $10,000 of Commission	4,847,753	126,291	0.026
Total Domestic Equity Commissions	34,780,816	$ 845,529	$ 0.024

* *Women/minority-owned brokerage firm. The Retirement Board's brokerage policy encourages investment manager, as they search for best possible trade execution, to utilize women/minority-owned enterprises, specifically firms headquartered in the State of Illinois.

Schedule of Brokerage Commissions (continued)

For Year Ended December 31, 2021			
Broker Name	**Number of Shares**	**Commissions**	**Cost per Share**
International Equity Commissions			
Merrill Lynch Securities	8,483,146	$ 57,152	$ 0.007
Loop Capital Markets, LLC*	5,589,611	47,179	0.008
Citigroup Global Markets, Inc.	7,333,093	44,642	0.006
Jefferies, LLC	13,863,865	36,254	0.003
Instinet Europe Limited	2,608,768	30,878	0.012
UBS Warburg	7,925,263	30,707	0.004
Goldman Sachs & Co.	4,933,278	26,375	0.005
Credit Suisse	4,026,200	24,992	0.006
J.P. Morgan Securities	2,321,194	24,145	0.010
Credit Lyonnas Securities	13,217,469	20,918	0.002
Exane	4,375,264	17,412	0.004
Penserra Securities *	620,544	13,565	0.022
Macquarie Securities	6,135,199	11,721	0.002
BNY Convergex Execution	583,037	10,946	0.019
Barclays Capital	1,615,198	10,313	0.006
Morgan Stanley & Co.	3,682,096	9,105	0.002
Mischler Financial Group, Inc.*	2,084,961	8,741	0.004
Bernstien Sanford & Co.	3,219,673	8,357	0.003
Kepler Equities	558,216	7,691	0.014
Investment Technology Group LTD	1,755,724	6,772	0.004
Sanford C Bernstein & Co Inc	693,881	6,468	0.009
Hongkong & Shanghai Banking Corp LTD	799,300	6,460	0.008
BNP Paribas Securities Services	560,200	6,221	0.011
Bofa Securities Inc	522,556	6,209	0.012
Nesbitt Burns	221,445	6,204	0.028
Daiwa Securities Inc.	158,400	5,977	0.038
Pershing Securities LTD	1,536,037	5,406	0.004
Brokers with < $5,000 of Commission	28,001,879	181,803	0.006
Total International Equity Commissions	127,425,497	$ 672,613	$ 0.005

* Women/minority-owned brokerage firm. The Retirement Board's brokerage policy encourages investment managers, as they search for best possible trade execution, to utilize women/minority-owned enterprises, specifically firms headquartered in the State of Illinois.

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ACTUARIAL Section

This section includes the actuarial reports and summarizes actuarial liability and unfunded actuarial liability. Schedules of data summarizing information about members and beneficiaries, actuarial assumptions, and principal provisions, and a glossary of terms are also included.

June 2, 2022

Board of Trustees
County Employees' and Officers' Annuity and Benefit Fund of Cook County
Chicago, Illinois

RE: December 31, 2021 Actuarial Valuation

Ladies and Gentlemen:

In accordance with your request, we have completed an actuarial valuation of the County Employees' and Officers' Annuity and Benefit Fund of Cook County ("CEABF" or "the Fund") as of December 31, 2021. The major findings of the valuation are contained in this report.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the CEABF's staff. This information includes, but is not limited to, statutory provisions, employee data, and financial information. We found this information to be reasonably consistent and comparable with information provided in prior years. The valuation results depend on the integrity of this information. The benefits considered are those delineated in the Fund. The CEABF was established on July 1, 1926 and is governed by legislation contained in the Illinois Compiled statutes, particularly Chapter 40, as amended and restated effective December 31, 2021. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

Cavanaugh Macdonald performs the actuarial valuation annually. All exhibits, except Exhibit 2.1 and 2.2 were prepared by the actuary.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: experience differing from that anticipated by the economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the CEABF's funded status); and changes in fund provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements.

We note that as we are preparing this report, the world is in the midst of a pandemic. We have considered available information, but do not believe that there is yet sufficient data to warrant the modification of any of our assumptions prior to the next experience study.

The CEABF is funded by Employer and Member Contributions. The County levies a tax annually equal to the total amount of contributions made by the members in the calendar year 2 years prior to the year of the levy, multiplied by 1.54. This funding mechanism is insufficient to meet the needs of the CEABF. We project that the CEABF will become insolvent in 2052. We recommend that a funding policy be legislated that is sufficient to pay the Normal Costs of active Fund members, Fund expenses, and amortize the Unfunded Actuarial Accrued Liability as a level percent of payroll (or salary) over a period no longer than 30 years.

The economic and demographic assumptions used in the valuation were adopted by the Board and first reflected in the December 31, 2021 valuation. The Board's recent practice is to review the experience of the CEABF every four years to determine if any changes to the valuation assumptions are warranted. The assumptions used in the valuation meet the parameters set by the Actuarial Standards of Practice and are based on recommendations made and approved by the Board as part of an Experience Study covering plan years from January 1, 2017 through December 31, 2020. We recommend performing an Experience Study covering plan years from January 1, 2021 through December 31, 2024 to compare economic and demographic experience against the actuarial assumptions used in the valuation. The implementation of updated assumptions would occur during the December 31, 2025 valuation. A summary of the actuarial assumptions and methods used in this actuarial valuation are shown beginning on page 108.

Actuarial computations presented in this report are for purposes of determining the actuarial contribution rates for funding the Fund based on the Board's funding policy report and all supporting schedules to meet the parameters and requirements for disclosure of Governmental Accounting Standards Board (GASB) Statement No. 67 and No. 68. The calculations in the enclosed report have been made on a basis consistent with our understanding of the Fund's funding requirements and goals. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

In order to prepare the results in this report we have utilized appropriate actuarial models that were developed for this purpose. These models use assumptions about future contingent events along with recognized actuarial approaches to develop the needed results.

We have prepared required accounting information for GASB Statement Nos. 67 and 68 for the measurement year ending December 31, 2021, based on valuation dates of December 31, 2020 and December 31, 2021.

The actuary prepared, or assisted in preparing, the following supporting information for the actuarial valuation:

- Comparative Summary of Principal Actuarial Valuation Results
- Actuarial Liabilities and Normal Cost
- Actuarial Contributions
- Calculation of Actuarial (Gain)/Loss
- Analysis of Experience
- Actuarial Balance Sheet
- History of UAAL and Funded Ratio
- Solvency Test
- Reconciliation of Change in Unfunded Actuarial Liability
- Determination of Actuarial Value of Assets
- GASB 67 Schedule of Changes in Net Pension Liability
- GASB 67 Net Pension Liability (Asset)
- GASB 67 Sensitivity of Net Pension Liability
- GASB 67 and 68 Actuarial Assumptions and Methods
- Membership Data
- Summary of Benefit Provisions
- Description of Actuarial Methods and Valuation Procedures
  - Actuarial Cost Method
  - Asset Valuation Method
  - Valuation Procedures
- Summary of Actuarial Assumptions

The actuaries who worked on this assignment are pension actuaries. CMC's advice is not intended to be a substitute for qualified legal or accounting counsel.

This is to certify that Larry Langer and Wendy Ludbrook are members of the American Academy of Actuaries, have experience in performing valuations for public retirement plans, and meet the qualification standards of the American Academy of Actuaries to render the actuarial opinion contained herein. The valuation was prepared in accordance with principles of practice prescribed by the Actuarial Standards Board and the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the retirement fund and on actuarial assumptions that are internally consistent and reasonable based on the actual experience of the Fund and future expectations. However, the Board of Trustees has the final decision regarding the selection of the assumptions and adopted them as indicated beginning on page 109.

Respectfully submitted,

Wendy Ludbrook

Larry Langer, ASA, EA, FCA, MAAA
Principal and Consulting Actuary

Wendy T. Ludbrook, FSA, EA, FCA, MAAA
Consulting Actuary

Ryan Gundersen

Ryan Gundersen
Senior Consultant

Overview

The County Employees' and Officers' Annuity and Benefit Fund of Cook County ("CEABF" or "the Fund) provides pension and ancillary benefit payments to the active, retired and separated employees of Cook County. A Retirement Board comprised of retiree, employee, and appointed representatives is responsible for administering the Fund and providing oversight of the investment policy. This report presents the results of the actuarial valuation of the Fund benefits as of the valuation date of December 31, 2021.

Purpose

An actuarial valuation is performed on the Fund annually as of the end of the fiscal year. The primary purposes of performing the valuation are:

- to estimate the liabilities for the future benefits expected to be provided by the Fund;
- to determine the actuarial contribution rate, based on the Fund's funding policy;
- to measure and disclose various asset and liability measures;
- to monitor any deviation between actual Fund experience and experience predicted by the actuarial assumptions so that recommendations for assumption changes can be made when appropriate;
- to analyze and report on any significant trends in contributions, assets and liabilities over the past several years.

Membership

Actives: As of December 31, 2021, there were 18,320 employees in active service (including 194 on disability) covered under the provisions of the Fund. The significant age, service, salary and accumulated contribution information for these employees is summarized below, along with comparative figures from the last actuarial valuation one year earlier.

	December 31, 2021	December 31, 2020
Number of active employees	18,320	19,102
Average age	47.8	47.9
Average years of service	13.6	13.6
Total annual payroll for year ended	$ 1,520,619,855	$ 1,532,744,306
Average annual salary	83,003	80,240
Total accumulated contributions	$ 1,763,374,996	$ 1,785,730,980
Average accumulated contributions	96,254	93,484

The number of active members decreased by 4.1% from the previous valuation date. The average age of the active members decreased by 0.1 years, and the average service remained the same. The total annual salary decreased by 0.8%. The average salary increased by 3.4% from the previous valuation.

Disabilities: There were 194 disabled members (included in the active data). There were 176 disabilities in the prior year.

Retirees and Beneficiaries: In addition to the active members, there were 16,945 retired members and 2,911 beneficiaries who are receiving monthly benefit payments on the valuation date. The significant age and annual benefit information for these members are summarized below with comparative figures from the last actuarial valuation performed one year earlier.

Membership (continued)

	December 31, 2021	December 31, 2020
Number of members receiving payments		
Retirees	16,945	16,572
Beneficiaries	2,911	2,870
Total	19,856	19,442
Average age	72.5	72.4
Annual benefit amounts		
Retirees	$ 875,478,663	$ 822,906,583
Beneficiaries	71,423,832	66,240,474
Total	$ 946,902,496	$ 889,147,057
Average annual benefit payments	$ 47,688	$ 45,733

The number of retired members and beneficiaries increased by 2.1% from the previous valuation date. The average age of the retired members increased by 0.1 years. The total annual benefit payments for these members increased by 6.5% from the previous valuation date.

Inactives: In addition to the active and retired members, there were 17,313 inactive members who did not elect to receive their accumulated contributions when they left covered employment. The age information for these inactive members is summarized below with comparative figures from the last actuarial valuation one year earlier.

	December 31, 2021	December 31, 2020
Number of inactive members	17,313	16,404
Average age	50.0	49.9

The number of inactive members increased by 5.5% from the previous valuation. The average age of the inactive members increased by 0.1 years.

In our opinion, the membership data collected and prepared for use in this actuarial valuation meets the data quality standards required under Actuarial Standards of Practice No. 23.

Fund Assets

The Fund's assets are held in trust and invested for the exclusive benefit of Fund members. The trust is funded by member and employer contributions and pays benefits directly to eligible members in accordance with Fund provisions. The assets are audited annually and are reported at fair value. On a fair value basis, the Fund has a Net Position Available for Benefits of $14.3 billion as of December 31, 2021. This includes an increase of $1.7 billion from the Net Position Available for Benefits of $12.6 billion as of December 31, 2020. During the prior year, the fair value of assets experienced an investment rate of return of 17.2% (net of investment expenses), as reported by the investment consultant.

In order to reduce the volatility investment gains and losses can have on the Fund's actuarially required contribution and funded status, the Board has adopted a five-year smoothing method to determine the actuarial value of assets used for funding purposes. This method recognizes gains and losses, i.e. the difference between actual investment return during the year and the expected return based on the valuation interest rate, on a level basis over a five year period. In our opinion, this method complies with Actuarial Standards of Practice No. 44.

As of December 31, 2021, the assets available for benefits on an actuarial value basis were $12.8 billion. This includes an increase of $1.0 billion over the actuarial value of assets of $11.8 billion as of December 31, 2020. During 2021, the actuarial value of assets experienced an actuarial rate of return of 12.0% which is based on a five-year averaging of investment returns.

A summary of the assets held for investment, a summary of changes in assets, and the development of the actuarial value of assets is shown beginning on page 96.

Actuarial Experience

Differences between the expected experience based on the actuarial assumptions and the actual experience create changes in the actuarial accrued liability, actuarial value of assets, and the unfunded actuarial accrued liability from one year to the next. These changes create an actuarial gain if the experience is favorable and an actuarial loss if the experience is unfavorable. The Fund experienced a total net actuarial gain of $509.7 million during the prior year. This net gain is about 2.9% of the Fund's prior year actuarial accrued liability. The net gain is a combination of two principal factors, demographic experience and investment performance under actuarial smoothing. Below is a more detailed discussion.

The demographic experience tracks actual changes in the Fund's population compared to the assumptions for decrements such as mortality, turnover, and retirement, as well as pay increases. The Fund experienced a demographic loss of $34.9 million during the year ending December 31, 2021. This loss increased the unfunded actuarial accrued liability by $34.9 million and decreased the funded ratio by 0.1%.

There were 16,491 active members who were also reported active in the December 31, 2020 actuarial valuation. The total pensionable salary for this group increased by 4.0%, which was slightly higher than the 3.9% increase that was expected.

Continued tracking of the demographic experience is warranted in order to confirm the appropriateness of the actuarial assumptions. Details of the demographic, economic, and other assumptions used to value the Fund liabilities and normal cost can be found beginning on page 108. In our opinion, the economic assumptions comply with Actuarial Standards of Practice No. 27 and the demographic assumptions comply with Actuarial Standards of Practice No. 35.

On the asset side, the rate of return on the fair value of assets for the year ending December 31, 2021 was reported to be 17.2%, which was higher than the assumed rate of 7.25%.

The Fund experienced a gain on an actuarial value of assets basis. The rate of return on the actuarial value of Fund assets for the year ending December 31, 2021 was approximately 12.0% compared to the assumption of 7.25%, resulting in an asset gain of $544.6 million. This gain decreased the unfunded actuarial accrued liability by $544.6 million and increased the funded ratio by 3.0%.

The rate of return on the fair value of assets for the year ending December 31, 2021 was higher than the assumed rate of 7.25%. The actuarial value of the assets recognizes only 20% of the 2021 unexpected change in fair value, delaying the recognition of the remaining 80% over the next four years. Moreover, the actuarial value of assets also recognizes deferred portions of prior years' gains and losses on fair value. The investment gain recognized this year is primarily due to the investment gains in 2021, 2020 and 2019. It should be noted that the Fund's assumed asset return of 7.25% during 2021 is a long-term rate and short-term performance is not necessarily indicative of expected long-term future returns.

A summary of the actuarial gains and losses experienced during the prior year is shown on page 93.

Actuarial Contributions

The current contribution mechanism is not sufficient to fund the CEABF in an actuarially sound manner. The County levies a tax annually equal to the total amount of contributions made by the members in the calendar year 2 years prior to the year of the levy, multiplied by 1.54. This funding policy is insufficient to meet the needs of the CEABF. We project that the CEABF will become insolvent in 2052. We recommend that a funding policy be legislated that is sufficient to pay the Normal Costs of active Fund members, Fund expenses, and amortize the unfunded actuarial accrued liability as a level percent of payroll (or salary) over a period no longer than 30 years. We summarize those costs based on 30 years in the next paragraph.

The normal cost represents the cost of the benefits that accrue during the year for active members under the Entry Age Actuarial Cost Method. It is determined as a level percentage of pay which, if paid from entry age to the assumed retirement age, assuming all the actuarial assumptions are exactly met by experience, would accumulate to a fund sufficient to pay all benefits provided by the Fund. The expected member contributions are subtracted from this amount to determine the employer normal cost. The employer normal cost for 2022 has been determined to be $64.6 million, or 4.15% of pay. This represents a decrease in the employer normal cost rate of 0.39% of pay from last year's employer normal cost rate of 4.54%.

The cost method also determines the actuarial accrued liability which represents the value of all accumulated past normal cost payments. This amount is compared to the actuarial value of assets to determine if the Fund is ahead or behind in funding as of the valuation date. The difference between the total actuarial accrued liability and the actuarial value of assets equals the amount of unfunded actuarial accrued liability or surplus (if negative) on the valuation date. This amount is amortized and added to the employer normal cost plus Fund expenses to determine the annual actuarially required employer contribution for the year.

The unfunded actuarial accrued liability as of December 31, 2021 is $5.3 billion. This represents a decrease of $0.3 billion in the unfunded actuarial accrued liability from last year's amount of $5.6 billion. The annual payment required to amortize the unfunded actuarial accrued liability of $5.3 billion, over a period of 30 years, as of December 31, 2021 is $414.2 million, or 26.6% of pay.

The annual actuarially required employer contribution for fiscal year ending December 31, 2023 is $478.8 million, or 30.7% of pay. This represents a decrease of $43.7 million in the employer contribution amount of $522.5 million for fiscal year ending December 31, 2022, or a decrease of 2.2% of pay from last year's employer contribution rate of 32.9%.

The actuarial liabilities and development of the annual actuarial employer contribution is beginning on page 91.

In our opinion, the measurement of the benefit obligations and determination of the actuarial cost of the Fund is performed in compliance with Actuarial Standards of Practice No. 4.

Funded Status

The funded status is a measure of the progress that has been made in funding the Fund as of the valuation date. It is determined as a ratio of the actuarial value of assets divided by the total actuarial accrued liability on the valuation date. A ratio of over 100% represents a Fund that is ahead in funding, and a ratio of less than 100% represents a Fund that is behind in funding on the valuation date.

As of December 31, 2021 the funded ratio of the Fund is 70.69%. This represents an increase of 3.11% from last year's funded ratio of 67.58% as of December 31, 2020.

Where presented, references to "funded ratio" and "unfunded accrued liability" are typically measured on an actuarial value of assets basis. It should be noted that the same measurements using market value of assets would result in different funded ratios and unfunded accrued liabilities. Moreover, the funded ratio presented is appropriate for evaluating the need and level of future contributions but makes no assessment regarding the funded status of the Fund if the plan were to settle (i.e. purchase annuities) for a portion or all of its liabilities.

A history of the unfunded actuarial accrued liability and the funded ratio is shown on page 94.

Accounting Information

The Governmental Accounting Standards Board (GASB) issues statements which establish financial reporting standards for defined benefit pension Funds and accounting for the pension expenditures and expenses for governmental employers. The required financial reporting information for the Fund and the Employer under GASB No. 67 and 68 can be found beginning on page 100.

Changes in Fund Provisions

None, there were no changes in benefits or other Fund provisions considered in this actuarial valuation since the last valuation performed as of December 31, 2020.

Changes in Actuarial Assumptions, Methods, or Procedures

The assumptions used in this valuation were developed as part of an Experience Study covering plan years from January 1, 2017 through December 31, 2020 and first used in the December 31, 2021 actuarial valuation. A description of these assumptions can be found beginning on page 108. The changes include:

- The investment return assumption was lowered from 7.25% to 7.00%
- The inflation assumption was lowered from 2.75% to 2.50%
- The real wage growth assumption was decreased from 0.75% to 0.50%
- The general wage inflation assumption was lowered from 3.50% to 3.00%
- The withdrawal rates, retirement rates, mortality and annual rate of salary increase assumptions were changed
- The marriage assumption was changed from assuming spouses of female employees were four years older than female employees to assume that spouses of female employees are two years older than female employees
- The martial status assumption for female members was lowered from 70% assumed to be married to 40% assumed to be married.
- The assumed retirement age for Tier 1 deferred vested members was increased from 55 to 62.
- The assumed annual increase in administrative expense was lowered from 5.00% to 2.50%.

The impact of these assumption changes was to increase the Actuarial Accrued Liability by $218 million.

All results presented in this report for years prior to December 31, 2018 were performed by the prior actuary(s).

Comparative Summary of Key Actuarial Valuation Results
Principal Actuarial Valuation Results

Actuarial Valuation as of	**December 31, 2021**	**December 31, 2020**
Summary of Member Data		
Number of Members Included in the Valuation:		
Active Members	18,320	19,102
Retirees and Beneficiaries	19,856	19,442
Inactive Members	17,313	16,404
Total	55,489	54,948
Annual Payroll		
Average	$ 83,003	$ 80,240
Annual Benefit Payments		
Retirees and Beneficiaries (Average) [1]	$ 47,688	$ 45,733
Investment Returns		
Fair Value Rate of Return (net of investment expenses)[2]	17.15%	12.74%
Actuarial Value Rate of Return	11.95%	10.06%
Summary of Assets and Liabilities		
Total Actuarial Accrued Liability	$ 18,138,658,517	$ 17,410,026,961
Actuarial Value of Assets	12,822,498,767	11,765,568,459
Unfunded Actuarial Accrued Liability	$ 5,316,159,750	$ 5,644,458,502
Funded Ratio	70.69%	67.58%

Fiscal Year Ending	**December 31, 2023**	**December 31, 2022**
Employer Actuarial Required Contribution[3]		
Employer Normal Cost including Administrative Expenses	$ 64,610,643	$ 72,162,148
Amortization of Unfunded Actuarial Accrued Liability (Surplus)	414,159,768	450,305,055
Employer Actuarial Required Contribution	$ 478,770,411	$ 522,467,203

1 The average annual benefit payments for retirees only is $51,666 as of December 31, 2021 and $49,656 as of December 31, 2020.

2 Rate of return Provided by the CCPF.

3 As of the date of the actuarial valuation without adjustment.

Actuarial Liabilities and Normal Cost

Actuarial Liabilities	Tier 1	Tier 2	Total	December 31, 2020 Total
1. Present Value of Projected Benefits				
a. Retirement Benefits	$ 6,704,289,574	$ 438,198,625	$ 7,142,488,199	$ 7,341,984,142
b. Withdrawal Benefits	167,567,235	222,779,429	390,346,664	340,754,012
c. Death Benefits	55,276,424	9,588,807	64,865,231	87,465,955
Total	**$ 6,927,133,233**	**$ 670,566,861**	**$ 7,597,700,094**	**$ 7,770,204,109**
2. Retired Members and Beneficiaries Receiving Benefits	11,217,652,052	1,018,247	11,218,670,299	10,188,823,794
3. Inactive Members with Deferred Benefits	659,359,585	20,831,835	680,191,420	878,745,218
4. Total Present Value of Projected Benefits (1. + 2. + 3.)	**$ 18,804,144,870**	**$ 692,416,943**	**$ 19,496,561,813**	**$ 18,837,773,121**
5. Present Value of Future Normal Costs	995,798,334	362,104,962	1,357,903,296	1,427,746,160
6. Total Actuarial Accrued Liability	**$ 17,808,346,536**	**$ 330,311,981**	**$ 18,138,658,517**	**$ 17,410,026,961**
a. Active Members	5,931,334,899	308,461,899	6,239,796,798	6,342,457,949
b. Retired Members and Beneficiaries Receiving Benefits	11,217,652,052	1,018,247	11,218,670,299	10,188,823,794
c. Inactive Members with Deferred Benefits	659,359,585	20,831,835	680,191,420	878,745,218

Normal Cost as of December 31, 2021	Tier 1		Tier 2		Total		December 31, 2020 Total	
Projected Capped Payroll for Fiscal Year 2022	**$ 1,016,899,242**		**$ 540,937,398**		**$ 1,557,836,640**		**$ 1,590,057,838**	
1. Total Normal Cost	**Amount**	**% of Pay**	**Amount**	**% of Pay**	**Amount**	**% of Pay**	**Amount**	**% of Pay**
a. Retirement Benefits	$ 121,331,369	11.93%	$ 32,089,435	5.93%	$ 153,420,804	9.85%	$ 169,784,396	10.68%
b. Withdrawal Benefits	16,523,316	1.62%	13,729,613	2.54%	30,252,929	1.94%	23,721,171	1.49%
c. Duty Disability Benefits	78,150	0.01%	—	0.00%	78,150	0.01%	39,577	0.00%
d. Ordinary Disability Benefits	5,686,566	0.56%	418,875	0.08%	6,105,441	0.39%	5,447,843	0.34%
e. Death Benefits	1,516,606	0.15%	679,688	0.13%	2,196,294	0.14%	3,327,273	0.21%
f. Administrative Expenses	3,417,544	0.34%	1,817,956	0.34%	5,235,500	0.34%	5,250,639	0.33%
Total	**$ 148,553,551**	**14.61%**	**$ 48,735,567**	**9.05%**	**$ 197,289,118**	**12.67%**	**$ 207,570,899**	**13.05%**
2. Expected Member Contributions	**$ 86,635,435**	**8.52%**	**$ 46,043,041**	**8.51%**	**$ 132,678,476**	**8.52%**	**$ 135,408,751**	**8.52%**
3. Employer Normal Cost (1. - 2.)	**$ 61,918,116**	**6.09%**	**$ 2,692,526**	**0.51%**	**$64,610,643**	**4.16%**	**$ 72,162,149**	**4.54%**

Actuarial Contributions*

Valuation Date	December 31, 2021	December 31, 2020
1. Projected Payroll for Year Beginning	$ 1,557,836,640	$ 1,590,057,838
2 Total Actuarial Accrued Liability		
a. Active Members		
i. Retirement Benefits	$ 6,039,389,257	$ 6,124,386,864
ii. Withdrawal Benefits	151,468,063	154,052,762
iii. Death Benefits	48,939,478	64,018,323
iv. Total	$ 6,239,796,798	$ 6,342,457,949
b. Retired Members and Beneficiaries Receiving Benefits	$ 11,218,670,299	$ 10,188,823,794
c. Inactive Members with Deferred Benefits	680,191,420	878,745,218
d. Total (2a. + 2b. + 2c.)	$ 18,138,658,517	$ 17,410,026,961
3. Actuarial Value of Assets	12,822,498,767	11,765,568,459
4. Unfunded Actuarial Accrued Liability (UAAL) (2d. - 3.)	$ 5,316,159,750	$ 5,644,458,502
5. Funded Ratio (3. / 2d.)	70.69%	67.58%
6. UAAL as a Percent of Annual Payroll (4. / 1.)	341.25%	354.98%

Development of Employer Contribution*	Fiscal Year Ending December 31, 2023	Fiscal Year Ending December 31, 2022
7. Amortization Payment for UAAL (30 year amortization)		
a. Amount	$ 414,159,768	$ 450,305,055
b. As a % of pay (7a. / 1.)	26.59%	28.32%
8. Employer Normal Cost		
a. Amount	$ 64,610,643	$ 72,162,148
b. As a % of pay (8a. / 1.)	4.15%	4.54%
9. Employer Actuarial Required Contribution		
a. Amount (8a + 7a)	$ 478,770,411	$ 522,467,203
b. As a % of pay (9a. / 1.)	30.73%	32.86%

* Amount needed to fund the CEABF in an actuarially responsible manner. These amounts have not been adjusted to account for the difference in Valuation Date and Fiscal Year End.

Calculation of Actuarial (Gain)/Loss

Development of Actuarial (Gain) / Loss	Amount
1. Expected Actuarial Accrued Liability	
a. Actuarial Accrued Liability at December 31, 2020	$ 17,410,026,961
b. Normal Cost at December 31, 2020	202,320,260
c. Interest on a. + b. to End of Year	1,276,895,174
d. Benefit Payments and Refunds, with Interest to End of Year	1,003,305,560
e. Expected Actuarial Accrued Liability Before Changes (a. + b. + c. - d.)	$ 17,885,936,835
f. Change in Actuarial Accrued Liability at December 31, 2021 due to:	
i. Change in Actuarial Assumptions	217,795,378
ii. Change in Actuarial Methods	—
g. Expected Actuarial Accrued Liability at December 31, 2021 (e. + f.i. + f.ii.)	$ 18,103,732,213
2. Actuarial Accrued Liability at December 31, 2021	18,138,658,517
3. Liability (Gain) / Loss (2. – 1.g.)	**$ 34,926,304**
4. Expected Actuarial Value of Assets	
a. Actuarial Value of Assets at December 31, 2020	$ 11,765,568,459
b. Interest on a. to End of Year	853,003,713
c. Contributions Paid During 2021	644,906,266
d. Interest on c. to End of Year	22,968,826
e. Benefit Payments, Refunds and Administrative Expenses, with Interest to End of Year	1,008,595,283
f. Change in Actuarial Value of Assets at December 31, 2020 due to:	
i. Change in Asset Method	—
g. Expected Actuarial Value of Assets at December 31, 2020 (a. + b. + c. + d. – e. – f.i.)	$ 12,277,851,981
5. Actuarial Value of Assets as of December 31, 2020	12,822,498,767
6. Actuarial Asset (Gain) / Loss (4.g. - 5.)	**$ (544,646,786)**
7. Actuarial (Gain) / Loss (3. + 6.)	**$ (509,720,481)**

Analysis of Experience

Type of (Gain) or Loss	Year Ending December 31, 2020	As a % of Last Year's AAL
1. (Gain) or Loss During the Year from Experience:		
a. Salary	$ (11,456,711)	-0.07%
b. Investment	(544,646,786)	-3.13%
c. Retiree Mortality	1,861,018	0.01%
d. Other (turnover, retirement ages, service purchase, etc.)	44,521,997	0.26%
e. Total Experience (Gain) or Loss (a. + b. + c. + d.)	$ (509,720,481)	-2.93%
2. Assumption and Method Changes	217,795,378	1.25%
3. Total (Gain) or Loss During Year (1.e. + 2.)	$ (291,925,103)	-1.68%

Actuarial Balance Sheet

Financial Resources	December 31, 2021
1. Actuarial Value of Assets	$ 12,822,498,767
2. Present Value of Future Contributions	
a. Expected Member Contributions	913,200,591
b. Employer Normal Cost	444,702,705
c. Total	$ 1,357,903,296
3. Unfunded Actuarial Accrued Liability/(Reserve)	$ 5,316,159,750
4. Total Assets [1. + 2.c. + 3.]	$ 19,496,561,813

Benefit Obligations	December 31, 2021
1. Present Value of Future Benefits	
a. Active Members	$ 7,597,700,094
b. Retirees and Beneficiaries	11,218,670,299
c. Inactive Members	680,191,420
d. Total	$ 19,496,561,813

History of UAAL and Funded Ratio

Valuation Date	Actuarial Accrued Liability (AAL)	Actuarial Value of Assets (AVA)	Funded Ratio (AVA as a % of AAL)	Unfunded Actuarial Accrued Liability (UAAL)
December 31, 2012	$ 13,418,486,943	$ 7,833,882,926	58.38%	$ 5,584,604,017
December 31, 2013	13,636,576,177	8,381,444,287	61.46%	5,255,131,890
December 31, 2014	14,140,547,353	8,810,509,070	62.31%	5,330,038,283
December 31, 2015	14,936,591,336	8,991,018,918	60.19%	5,945,572,418
December 31, 2016	15,456,773,985	9,488,223,349	61.39%	5,968,550,636
December 31, 2017	15,671,756,443	10,148,203,833	64.75%	5,523,552,610
December 31, 2018	16,314,389,047	10,512,756,514	64.44%	5,801,632,533
December 31, 2019	16,941,207,568	10,983,364,279	64.83%	5,957,843,289
December 31, 2020	17,410,026,961	11,765,568,459	67.58%	5,644,458,502
December 31, 2021	18,138,658,517	12,822,498,767	70.69%	5,316,159,750

Reconciliation of Change In Unfunded Actuarial Liability

Development of Unfunded Actuarial Liability	Amount
1. Unfunded Actuarial Accrued Liability as of December 31, 2020	$ 5,644,458,502
2. Total Normal Cost Paid During 2021	214,633,855
3. Interest on 1. and 2.	416,867,589
4. Employer Contribution Requirement of Normal Cost Plus Interest on Unfunded Liability for Period January 1, 2021 to December 31, 2021	$ 631,501,444
5. Total Contribution for the Year (Includes Misc. Contribution)*	644,906,266
6. Interest on 5.	22,968,826
7. Increase/(Decrease) in Unfunded Liability Due to Employer Contribution Plus Interest Being Greater Than Normal Cost Plus Interest on Unfunded Liability (4. - (5.+6.))	$ (36,373,648)
8. Increase/(Decrease) in Unfunded Liability Due to:	
a. Investment Return Lower/(Higher) Than Assumed	(544,646,786)
b. Salary Increases Higher/(Lower) Than Assumed	(11,456,711)
c. Assumption changes	217,795,378
d. Other Sources	46,383,015
9. Net Increase/(Decrease) in Unfunded Liability for the Year (7. + 8a. + 8b. + 8c. + 8d.)	(328,298,752)
10. Unfunded Actuarial Accrued Liability as of December 31, 2021 (1. + 9.)	$ 5,316,159,750

* Includes an additional $340.0 million in supplemental contribution from the employer.

Summary of Fair Value of Assets

	Fair Value as of December 31, 2021		Fair Value as of December 31, 2020	
Asset Category	Amount	%	Amount	%
1. Short-Term Investments	$ 357,784,424	2.39%	$ 267,036,118	2.04%
2. Investments at Fair Value				
a. U.S. and International Equities	$ 7,635,101,620	50.96%	$ 6,930,194,686	53.03%
b. U.S. Government and Government Agency Obligations	1,473,893,826	9.84%	1,021,751,132	7.82%
c. Corporate Bonds	1,451,709,977	9.69%	1,424,006,422	10.90%
d. Collective International Equity Fund	98,052,511	0.65%	82,904,306	0.63%
e. Commingled Fixed Income Fund	36,954,580	0.25%	40,925,720	0.31%
f. Exchange Traded Funds	9,662,015	0.06%	8,037,180	0.06%
g. Private Equities	1,342,235,797	8.96%	1,183,800,783	9.06%
h. Hedge Funds	814,964,951	5.44%	740,040,004	5.66%
i. Real Estate	968,510,214	6.46%	776,471,639	5.94%
j. Total	$ 13,831,085,491	92.32%	$ 12,208,131,872	93.41%
3. Collateral Held for Securities Lending	$ 793,388,746	5.30%	$ 594,408,571	4.55%
4. Total Assets (1. + 2.j + 3.)	$ 14,982,258,661	100.00%	$ 13,069,576,561	100.00%
5. Receivables				
a. Interest and Dividends	$ 38,777,422		$ 35,002,953	
b. Investments Sold	129,946,647		116,443,382	
c. Other Receivables	210,751,353		203,262,815	
d. Total	$ 379,475,422		$ 354,709,150	
6. Payables				
a. Investments Purchased	$ 277,698,246		$ 173,498,440	
b. Securities Lending Collateral	793,388,746		594,408,571	
c. Other Payables	9,119,529		6,768,262	
d. Total	$ 1,080,206,521		$ 774,675,273	
7. Net Position for Pension Benefits [4. + 5.d – 6.d.]	**$ 14,281,527,562**		**$ 12,649,610,438**	

Changes in Fair Value of Assets

Transactions	December 31, 2021	December 31, 2020
Additions		
1. Contributions		
a. Contributions from Employers	$ 507,070,170	$ 465,778,715
b. Contributions from Plan Members	133,368,302	134,157,866
c. Total	$ 640,438,472	$ 599,936,581
2. Net Investment Income		
a. Interest and Dividends	$ 219,906,794	$ 193,553,569
b. Net Appreciation (Depreciation)	1,779,077,843	1,305,533,430
c. Net Securities Lending Income	2,655,176	2,394,419
d. Total	$ 2,001,639,813	$ 1,501,481,418
e. Less Investment Expense	40,720,172	36,023,573
f. Net Investment Income (Loss)	$ 1,960,919,641	$ 1,465,457,845
g. Miscellaneous	4,509,801	4,469,465
h. Employee Transfers	(42,007)	(714,659)
3. Total Additions (1c. + 2f. + 2g. + 2.h)	$ 2,605,825,907	$ 2,069,149,232
Deductions		
4. Benefits and Expenses		
a. Retirement Benefits	$ 931,821,227	$ 874,506,754
b. Refund of Contributions	36,979,751	30,990,651
c. Administrative Expenses	5,107,805	5,000,609
5. Total Deductions	$ 973,908,783	$ 910,498,014
6. Net Increase (Decrease) (3. - 5.)	$ 1,631,917,124	$ 1,158,651,218
Net Position Held in Trust for Pension Benefits		
a. Beginning of Year	$ 12,649,610,438	$ 11,490,959,220
b. End of Year	$ 14,281,527,562	$ 12,649,610,438

Determination of Actuarial Value of Assets

Development of Actuarial Value of Assets	Amount
1. Actuarial Value of Assets as of December 31, 2020	$ 11,765,568,459
2. Unrecognized Return as of December 31, 2020	884,041,979
3. Fair Value of Assets as of December 31, 2020 (1. + 2.)	$ 12,649,610,438
4. Contributions	
a. Member (includes purchased service)	$ 133,368,302
b. Employer	507,070,170
c. Miscellaneous contributions	4,467,794
d. Total	$ 644,906,266
5. Distributions	
a. Benefit payments	$ 931,821,227
b. Refund of contributions	36,979,751
c. Administrative expenses	5,107,805
d. Total	$ 973,908,783
6. Expected Return at 7.25% on	
a. Item 1.	$ 853,003,713
b. Item 2.	64,093,043
c. Item 4.d.	22,968,826
d. Item 5.d.	34,686,500
e. Total (a. + b. + c. - d.)	$ 905,379,082
7. Actual Return on Fair Value for Fiscal Year, net of Investment Expenses	$ 1,960,919,641
8. Return to be Spread for Fiscal year (7. – 6e.)*	$ 1,055,540,559
9. Total Fair Value of Assets as of December 31, 2021	$ 14,281,527,562
10. Return to be Spread	

Fiscal Year	Return to be Spread	Unrecognized Percent	Unrecognized Return
2021	$ 1,055,540,559	80.00%	$ 844,432,447
2020	643,290,453	60.00%	385,974,272
2019	1,159,078,907	40.00%	463,631,563
2018	(1,175,047,434)	20.00%	(235,009,487)
2017	719,906,235	0.00%	—
			$ 1,459,028,795

11. Actuarial Value of Assets (9. –10.)	$ 12,822,498,767
12.Recognized rate of return for the Year on Actuarial Value of Assets	11.95%
13.Rate of Return for the Year on Market Value of Assets (reported by Cook County – net of inv. expenses)	17.15%

* Annual Return to be Spread calculation is based on assumed 7.25% investment return which includes an assumption that all expenses and revenues are paid mid-year on average.

Schedule of Funding Progress

The liabilities and assets resulting from the last ten actuarial valuations are as follows:

Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liability (AAL)	Unfunded AAL (UAAL) (Actuarial Value)	Funded Ratio (Actuarial Value)	Covered Payroll	Percentage of Covered Payroll (Fair Value)
	(a)	(b)	(b-a)	(a/b)	(c)	(b-a)/(c)
2012	$ 7,833,882,926	$ 13,418,486,943	$ 5,584,604,017	58.38%	$ 1,478,253,368	377.8%
2013	8,381,444,287	13,636,576,177	5,255,131,890	61.46%	1,484,269,715	354.1%
2014	8,810,509,070	14,140,547,353	5,330,038,283	62.31%	1,514,550,023	351.9%
2015	8,991,018,918	14,936,591,336	5,945,572,418	60.19%	1,572,417,298	378.1%
2016	9,488,223,349	15,456,773,985	5,968,550,636	61.39%	1,580,251,254	377.7%
2017	10,148,203,834	15,671,756,443	5,523,552,609	64.75%	1,567,480,401	352.4%
2018	10,512,756,514	16,314,389,047	5,801,632,533	64.44%	1,533,721,507	378.3%
2019	10,983,364,279	16,941,207,568	5,957,843,289	64.83%	1,553,498,503	383.5%
2020	11,765,568,459	17,410,026,961	5,644,458,502	67.58%	1,532,744,306	368.3%
2021	12,822,498,767	18,138,658,517	5,316,159,750	70.69%	1,520,619,855	349.6%

Schedule of Employer Contributions

The required contributions and actual percentages contributed over the last ten years are as follows:

Fiscal year Ended December 31,	Actuarially Determined Contribution (ADC)	Employer Contribution	Percentage Contributed
2012	$ 454,327,461	$ 152,734,539	33.62%
2013	493,724,370	147,720,014	29.92%
2014	540,218,287	146,075,414	27.04%
2015	595,370,046	136,075,504	22.86%
2016	519,642,931	414,703,155	79.81%
2017	514,888,487	511,750,985	99.39%
2018	562,815,816	549,437,252	97.62%
2019	523,625,965	488,003,692	93.20%
2020	536,955,558	465,778,715	86.74%
2021	650,512,479	507,070,170	77.95%

GASB 67 Schedule of Changes in Net Pension Liability

	2021	2020	2019	2018	2017	2016	2015
Total Pension Liability							
Service Cost	$ 522,496,743	$ 469,652,001	$ 367,986,188	$ 440,682,868	$ 478,904,097	$ 559,176,234	$ 496,161,454
Interest	1,018,513,289	1,038,868,271	1,078,970,836	1,027,348,255	1,082,982,064	1,002,950,495	994,674,970
Benefit changes	0	0	0	0	0	0	0
Difference between expected and actual experience	(54,518,860)	192,731,447	1,775,621	(278,982,116)	(152,859,373)	318,014,746	(126,330,351)
Changes of assumptions	(3,033,418,725)	1,766,822,859	2,760,713,592	(1,601,212,188)	(950,493,320)	(1,893,474,930)	1,329,087,966
Benefit payments, including refund of contributions	(968,800,978)	(905,497,405)	(860,741,164)	(805,394,705)	(757,930,854)	(709,560,225)	(676,470,215)
Net change in Total Pension Liability	(2,515,728,531)	2,562,577,173	3,348,705,073	(1,217,557,886)	(299,397,386)	(722,893,680)	2,017,123,824
Total Pension Liability — beginning	27,634,518,984	25,071,941,811	21,723,236,738	22,940,794,624	23,240,192,010	23,963,085,690	21,945,961,866
Total Pension Liability — ending (a)	25,118,790,453	27,634,518,984	25,071,941,811	21,723,236,738	22,940,794,624	23,240,192,010	23,963,085,690
Plan Fiduciary Net Position							
Contributions — employer	507,070,170	465,778,715	488,003,692	549,437,252	511,750,985	414,703,166	136,075,504
Contributions — member	133,368,302	134,157,866	134,837,512	134,159,171	138,826,184	139,355,592	137,707,719
Net investment income	1,960,919,641	1,465,457,845	1,865,645,039	(424,787,945)	1,399,625,874	629,442,470	(21,896,696)
Benefit payments, including refund of contributions	(968,800,978)	(905,497,405)	(860,741,164)	(805,394,705)	(757,930,854)	(709,560,225)	(676,470,215)
Administrative expense	(5,107,805)	(5,000,609)	(5,085,445)	(5,134,047)	(5,406,034)	(5,373,555)	(5,151,110)
Other	4,467,794	3,754,806	6,275,804	5,860,613	5,359,418	4,046,147	4,380,293
Net change in Plan Fiduciary Net Position	1,631,917,124	1,158,651,218	1,628,935,438	(545,859,661)	1,292,225,573	472,613,595	(425,354,505)
Plan Fiduciary Net Position – beginning	12,649,610,438	11,490,959,220	9,862,023,782	10,407,883,443	9,115,657,870	8,643,044,275	9,068,398,780
Plan Fiduciary Net Position – ending (b)	14,281,527,562	12,649,610,438	11,490,959,220	9,862,023,782	10,407,883,443	9,115,657,870	8,643,044,275
Net Pension Liability – ending (a) – (b)	$10,837,262,891	$14,984,908,546	$13,580,982,591	$11,861,212,956	$12,532,911,181	$14,124,534,140	$15,320,041,415

GASB 67 Net Pension Liability (Asset)

	2021	2020	2019	2018	2017	2016	2015
Total Pension Liability	$25,118,790,453	$27,634,518,984	$25,071,941,811	$21,723,236,738	$22,940,794,624	$23,240,192,010	$23,963,085,690
Plan Fiduciary Net Position	14,281,527,562	12,649,610,438	11,490,959,220	9,862,023,782	10,407,883,443	9,115,657,870	8,643,044,275
Net Pension Liability	$10,837,262,891	$14,984,908,546	$13,580,982,591	$11,861,212,956	$12,532,911,181	$14,124,534,140	$15,320,041,415
Ratio of Plan Fiduciary Net Position to Total Pension Liability	56.86%	45.77%	45.83%	45.40%	45.37%	39.22%	36.07%
Covered-employee payroll	$ 1,520,619,855	$ 1,532,744,306	$ 1,553,498,503	$ 1,533,721,507	$ 1,567,480,401	$ 1,580,251,254	$ 1,572,417,298
Net Pension Liability as a percentage of covered-employee payroll	712.69%	977.65%	874.22%	773.36%	799.56%	893.82%	974.30%

GASB 67 Sensitivity of Net Pension Liability

	1% Decrease (3.38%)	Current Discount Rate (4.38%)	1% Increase (5.38%)
Total Pension Liability	$ 28,978,640,010	$ 25,118,790,453	$ 21,983,392,742
Fiduciary Net Position	14,281,527,562	14,281,527,562	14,281,527,562
Net Pension Liability	$ 14,697,112,448	$ 10,837,262,891	$ 7,701,865,180

The discount rate used to measure the total pension liability was 4.38%. The discount rate used to measure the total pension liability at December 31, 2020 was 3.68%. The projection of cash flows used to determine the discount rate assumed that CEABF contributions will continue to follow the current funding policy, which levies a tax annually equal to the total amount of contributions made by the members in the calendar year 2 years prior to the year of the levy, multiplied by 1.54. Based on this assumption, the Fund's fiduciary net position was projected to be insufficient to make all projected future benefit payments of current Fund members. A municipal bond rate of 2.05% was used in the development of the blended GASB discount rate after that point. The 2.05% rate is based on the S&P Municipal Bond 20 Year High Grade Rate Index as of December 31, 2021. The rate used for this purpose is the monthly average of the Bond Buyers General Obligation 20-year Municipal Bond Index Rate (formerly published monthly by the Board of Governors of the Federal Reserve System). Based on the long-term rate of return of 7.00% and the municipal bond rate of 2.05%, the blended GASB discount rate would be 4.38%. Please see the supporting exhibits for additional detail.

GASB 67 AND 68 Actuarial Assumptions and Methods

Measurement Date:	December 31, 2021	December 31, 2020
Valuation Date (VD):	December 31, 2020	December 31, 2019
Membership Data:		
Retirees	16,572	16,305
Beneficiaries	2,870	2,838
Inactive Vested Members	16,404	15,422
Active Employees	19,102	19,551
Total	54,948	54,116
Single Equivalent Interest Rate (SEIR):		
Long-Term Expected Rate of Return	7.00%	7.25%
Municipal Bond Index Rate at Measurement Date	2.05%	2.12%
Fiscal Year in which Fiduciary Net Position is Projected to be Depleted	2052	2045
Single Equivalent Interest Rate at Measurement Date	4.38%	3.68%
Actuarial Assumptions:		
– Projected Salary Increases	3.00%-5.00%	3.50%-8.00%
– Inflation Assumption	2.50%	2.75%

The projection of cash flows used to determine the discount rate assumed that CEABF contributions will continue to follow the current funding policy based on the tax levy. Based on this assumption, the Fund's fiduciary net position is projected to be insufficient to make all projected future benefit payments of current fund members. A municipal bond rate of 2.05% was used in the development of the blended GASB discount rate after that point. The 2.05% rate is based on the 20-year tax-exempt municipal bond (rating AA/Aa or higher) rate (Municipal Bond Index Rate). The rate used for this purpose is the monthly average of the Bond Buyers General Obligation 20-year Municipal Bond Index Rate (formerly published monthly by the Board of Governors of the Federal Reserve System). Based on the long-term rate of return of 7.25% and the municipal bond rate of 2.05%, the blended GASB discount rate would be 4.38%. See the preceding exhibits for more detail.

GASB 67 AND 68 Actuarial Assumptions and Methods (continued)

Investment Rate of Return Detail

The long-term expected rate of return on the Fund's investments was determined based on the results of an experience review. The results of the experience review were adopted by the Board at the Board's March 2022 Meeting. The rate of return assumption was based on the target asset allocation of the fund. In the experience review, best estimate ranges of expected future real rates of return (net of inflation) for the portfolio were developed, based on the expected returns of each major asset class and their weights in the portfolio. An econometric model that forecasts a variety of economic environments and then calculates asset class returns based on functional relationships between the economic variables and the asset classes was then used. Expected Investment expenses were subtracted and expected inflation was added to arrive at the long term expected nominal return. A value for the expected long term expected return was selected for the portfolio such that there was a better than 50% likelihood of the emerging returns exceeding the expected return.

Best estimates of arithmetic real rates of return (net of inflation) for each major asset class included in the Fund's target asset allocation as of December 31, 2021 are listed in the table below:

Asset Category	Target Allocation	Long-Term Expected Real Rate of Return
Domestic Equities	33.00%	5.53%
International Equities	21.00%	5.63%
Fixed Income	26.00%	1.18%
Real Estate Funds	9.00%	4.27%
Private Equity	4.00%	6.65%
Hedge Funds	6.00%	2.70%
Short-Term Investment	1.00%	0.00%
Total	100.00%	

Summary of Benefit Provisions

Participant. A person employed by Cook County whose salary or wages is paid in whole or in part by the Cook County. An employee in service on or after January 1, 1984 shall be deemed as a participant regardless of when he or she became an employee.

Service. For all purposes except the minimum retirement annuity and ordinary disability benefit, service during four months in any calendar year constitutes one year of service. For the minimum retirement annuity, all service is computed in whole calendar months. Service for any 15 days in a calendar month shall constitute a month of service.

For purposes of the minimum retirement annuity, service shall include:

a. Any time during which the employee performed the duties of his or her position and contributed to the Fund.
b. Vacations and leaves of absence with whole or part pay.
c. Periods during which the employee receives a disability benefit from the Fund, and
d. Certain periods of accumulated sick leave.

Retirement Annuity — Eligibility (Tier 1). An employee who withdraws from service with 10 or more years of service is entitled to a retirement annuity upon attainment of age 50.

Retirement Annuity — Amount (Tier 1).

Money Purchase Annuity (Tier 1). The amount of annuity based on the sum accumulated from the employee's salary deductions for age and service annuity plus 1/10 of the sum accumulated from the contributions by the County for age and service annuity for each completed year of service after the first 10. Except that when the employee retires after age 60, the full amount of contributions by the Employer are used.

Minimum Formula Annuity (Tier 1). The amount of annuity provided is equal to 2.4% of final average salary for each year of service. Final average salary is the highest average monthly salary for any 48 consecutive months within the last 10 years of service. Salary for pension purposes is actual salary earned exclusive of overtime or extra salary. The maximum amount of annuity is 80% of final average salary.

If an employee retires before age 60, the annuity is reduced by .5% for each full month or fraction thereof that the employee is under age 60 when the annuity begins, unless the employee has 30 or more years of service, in which case there is no reduction for retirement before age 60.

If the Minimum Formula Annuity is greater than the Money Purchase Annuity, the employee is entitled to receive the Minimum Formula Annuity.

Automatic Increase in Retirement Annuity (Tier 1). Employees who retire from service having attained age 60 or more, or, if retirement occurs on or after January 1, 1991, with at least 30 years of service, 3% of the annuity beginning January of the year following the year in which the first anniversary of retirement occurs. If retirement is before age 60 with less than 30 years of service, increases begin in January of the year immediately following the year in which age 60 is attained. Beginning January 1, 1998, increases are calculated as 3% of the monthly annuity payable at the time of the increase.

Summary of Benefit Provisions (continued)

Optional Plan of Contributions and Benefits (Tier 1). During the period through June 30, 2005, an employee may establish optional credit for additional benefits by making additional contributions of 3% of salary. The additional benefit is equal to 1% of final average salary for each year of service for which optional contributions have been paid. The additional benefit shall be included in the calculation of the automatic annual increase and the calculation of the survivor's annuity.

Alternate Annuity for County Officers (Tier 1). An alternate annuity is available for county officers elected on or before January 1, 2008. The amount of this alternate annuity is equal to 3% of final salary for the first 8 years of service, 4% for the next 4 years of service, and 5% thereafter, subject to a maximum of 80% of final salary. The elected county officer is required to contribute an additional 3% of salary to be eligible for the alternate annuity. The alternate survivor's annuity for survivors of elected county officers is 66-2/3% of the amount of the elected county officer's earned retirement annuity on the date of death, subject to a minimum payment of 10% of salary.

Annuities for Members of the Cook County Police Department (Tier 1). In lieu of the regular minimum retirement annuity, a deputy sheriff who is a member of the County Police Department may be entitled to the following annuity:

Upon withdrawal from service after having attained age 50 in service with 20 or more years of service credit as a police officer, the officer shall be entitled to an annuity computed as follows: 50% of final average salary, plus 2% of final average salary for each year of service in excess of 20 years, subject to a maximum of 80% of final average salary.

Surviving Spouse's Annuity — Death in Service (Tier 1).

Money Purchase Annuity (Tier 1). The amount of annuity based on the accumulated salary deductions and County contributions for both the employee and the spouse.

Minimum Formula Annuity. A minimum annuity is provided for the eligible surviving spouse of an employee who dies in service with any number of years of service. The amount of such minimum spouse's annuity is equal to 65% of the annuity the employee would have been entitled to as of the date of death, provided the spouse on such date is age 55 or older, or that the employee had 30 or more years of service. If the spouse is under age 55 and the employee had less than 30 years of service, the amount of the spouse's annuity shall be discounted by .5% for each month that the spouse is less than age 55 on the date of the employee's death. The amount of the surviving spouse's annuity shall not be less than 10% of the employee's final average salary as of the date of death.

If the Minimum Formula Annuity is greater than the Money Purchase Annuity, the surviving spouse shall be entitled to receive the Minimum Formula Annuity.

Summary of Benefit Provisions (continued)

Surviving Spouse's Annuity — Death after Retirement (Tier 1). The amount of the annuity is the greater of the money purchase annuity or the minimum formula annuity. The surviving spouse of an annuitant who dies on or after July 1, 2002 shall be entitled to an annuity of 65% of the employee's annuity at the time of death if the employee had at least 10 years of service, reduced by .5% per month that the spouse is under age 55 at the time of the employee's death. There is no reduction for age if the employee had at least 30 years of service.

Automatic Annual Increase in Surviving Spouse's Annuity (Tier 1). On the January 1 occurring on or immediately after the first anniversary of the deceased employee's death, the surviving spouse's annuity shall be increased by 3% of the amount of annuity payable at the time of the increase. On each January 1, thereafter, the annuity shall be increased by an additional 3% of the amount of annuity payable at the time of the increase.

Child's Annuity. Annuities are provided for unmarried children of a deceased employee who are under age 18. An adopted child is entitled to the child's annuity if such child was legally adopted at least one year before the child's annuity becomes payable. The child's annuity is payable under the following conditions:

(a) the death of the employee was a duty related death; or (b) if the death is not a duty related death, the employee died while in service and had completed at least four years of service from the date of his or her original entrance in service and at least two years from the latest re-entrance: or (c) if the employee died while in receipt of an annuity, he or she must have withdrawn from service after attainment of age 50.

The amount of the annuity is the greater of 10% of the employee's final salary at the date of death or $140 per month for each child.

Duty Disability Benefits. Duty disability benefits are payable to an employee who becomes disabled as a result of an accidental injury incurred while in the performance of an act of duty. Benefits begin on the first regular and normal work date for which the employee does not receive a salary. The amount of the duty disability benefit is equal to 75% of the employee's salary at the date of injury, reduced by the amount the employee receives from Workers' Compensation. However, if the disability, in any measure has resulted from any physical defect or disease that existed at the time such injury was sustained, the duty disability benefit shall be 50% of salary. The 8.5% (9% for County Police) of salary normally contributed by the employee for pension purposes is contributed on their behalf during the period of approved disability.

If the disability commences prior to age 60, duty disability benefits are payable during disability until the employee attains age 65. If the disability begins after age 60, the benefit is payable during disability for a period of 5 years.

Recipients of duty disability benefits also have a right to receive child's disability benefits of $10 per month on account of each unmarried child less than age 18. Total children's disability benefits shall not exceed 15% of the employee's salary.

Summary of Benefit Provisions (continued)

Ordinary Disability Benefits. Ordinary disability benefits are provided for employees who become disabled as the result of any cause other than injury incurred in the performance of an act of duty. The amount of the benefit is 50% of the employee's annual salary at the time of disability. The 8.5% (9% for County Police) of salary normally contributed by the employee for pension purposes is contributed on their behalf during the period of approved disability.

Ordinary disability benefits are payable after the first 30 days of disability provided the employee is not then in receipt of salary. Ordinary disability benefits are payable until the first of the following shall occur:

a. the disability ceases; or
b. the date that total payments equal the lesser of (1) 1/4 of the total service rendered prior to disability, and (2) five years.

An employee unable to return to work at the expiration of ordinary disability benefit is entitled to an annuity beginning on the date of the employee's withdrawal from service regardless of age on such date.

Death Benefit. Upon the death of an active or retired employee, a death benefit of $1,000 is payable to the employee's designated beneficiary or to the employee's estate if no beneficiary has been designated.

Refund to Employee upon Withdrawal From Service. Upon withdrawal from service, an employee under the age of 55 (or age 62 if Tier 2), or anyone with less than 10 years of service is eligible for a refund. The employee is entitled to a refund of the amount accumulated to his or her credit for age and service annuity and the survivor's annuity together with the total amount contributed for the automatic annual increase, without interest. Upon receipt of such refund, the employee forfeits all rights to benefits from the Fund.

Election of Refund in Lieu of Annuity. If an employee's annuity or spouse's annuity is less than $150.00 per month, such employee or spouse annuitant may elect a refund of the employee's accumulated contributions in lieu of a monthly annuity.

Refund For Surviving Spouse's Annuity. If an employee is unmarried at the time of retirement, all contributions for surviving spouse's annuity will be refunded with interest at the rate of 3% per year, compounded annually.

Refund of Remaining Amounts. In the event that the total amount accumulated to the account of an employee from employee contributions for annuity purposes has not been paid to the employee and surviving spouse as a retirement or surviving spouse's annuity before the death of the survivor(s) of the employee, a refund of any excess amount shall be paid to the children of the employee, in equal parts, or if there are no children, to the beneficiaries of the employee or the administrator of the estate.

Employee Contributions. Employees contribute through salary deductions 8.5% (9% for County Police) of salary to the Fund, 6.5% (7% for County Police) being for the retirement annuity. 1.5% being for the surviving spouse's annuity, and .5% being for the automatic increase in retirement annuity.

Employer Contributions. The County levies a tax annually equal to the total amount of contributions made by employees in the calendar year 2 years prior to the year of the levy, multiplied by 1.54.

Summary of Benefit Provisions (continued)

Employer Pick-up of Employee Contributions. Since April 15, 1982, regular employee contributions have been designated for federal income tax purposes as being made by the employer. The employee's W-2 salary is therefore reduced by the amount of contribution. For pension purposes, the salary remains unchanged. For purposes of benefits, refunds, and financing, these contributions are treated as employee contributions.

Persons Who First Become Participants On or After January 1, 2011 (Tier 2)

The following changes to the aforementioned provisions apply to persons who first become participants on or after January 1, 2011:

1. The highest salary for annuity purposes is equal to the average monthly salary obtained by dividing the participant's total salary during the 96 consecutive months of service within the last 120 months of service in which the total compensation was the highest by the number of months in that period.
2. For 2011, the annual salary is limited to the Social Security wage base of $106,800. Limitations for future years shall automatically be increased by the lesser of 3% or one-half of percentage change in the Consumer Price Index-U for the 12 months ending in September.
3. A participant is eligible to retire with unreduced benefits at age 67 with at least 10 years of service credit. However, a participant may elect to retire at age 62 with at least 10 years of service credit and receive a retirement annuity reduced by one-half of 1% for each month that his or her age is under 67.
4. The initial survivor's annuity is equal to 66-2/3% of the participant's earned retirement annuity at the date of death, subject to automatic annual increases of the lesser of 3% or one-half of the increase in the Consumer Price Index-U for the 12 months ending in September, based on the originally granted survivor's annuity.
5. Automatic annual increases in the retirement annuity then being paid are equal to the lesser of 3% or one-half the annual change in the Consumer Price Index-U, whichever is less, based on the originally granted retirement annuity.
6. Refund upon withdrawal from service. Upon withdrawal from service, an employee who withdraws from service before age 62 regardless of length of service or withdraws with less than 10 years of service regardless of age is entitled to a refund of total contributions made by the employee without interest.

Description of Actuarial Methods and Valuation Procedures

Actuarial Cost Method

Liabilities and contributions shown in this report are computed using the **Entry Age Actuarial Cost Method** of funding.

Sometimes called a "funding method," this is a particular technique used by actuaries for establishing the amount and incidence of the annual actuarial cost of pension Fund benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily the annual contribution to the Fund is comprised of (1) the normal cost and (2) an amortization payment on the unfunded actuarial accrued liability. Under the Entry Age Actuarial Cost Method, the **Normal Cost** is computed as the level percentage of pay which, if paid from the earliest time each Member would have been eligible to join the Fund if it then existed (thus, entry age) until his retirement or termination, would accumulate with interest at the rate assumed in the valuation to a fund sufficient to pay all benefits under the Fund.

The Normal Cost for the Fund is determined by summing individual results for each active Member and determining an average normal cost rate by dividing the summed individual normal costs by the total payroll of Members before assumed retirement age.

The **Actuarial Accrued Liability** under this method at any point in time is the theoretical amount of the fund that would have accumulated had annual contributions equal to the Normal Cost been made in prior years (it does not represent the liability for benefits accrued to the valuation date.)

The **Unfunded Actuarial Accrued Liability** is the excess of the Actuarial Accrued Liability over the Actuarial Value of Fund Assets actually on hand on the valuation date. The Unfunded Actuarial Accrued Liability is amortized as a level percent of payroll over an open 30-year period.

Under this method experience gains or losses, i.e. decreases or increases in accrued liabilities attributable to deviations in experience from the actuarial assumptions, adjust the Unfunded Actuarial Accrued Liability.

Asset Valuation Method

The actuarial value of assets is based on a five-year smoothing method and is determined by spreading the effect of each year's investment return in excess of or below the expected return. The Fair Value of assets at the valuation date is reduced by the sum of the following:

(i) 80% of the return to be spread during the first year preceding the valuation date,

(ii) 60% of the return to be spread during the second year preceding the valuation date,

(iii) 40% of the return to be spread during the third year preceding the valuation date, and

(iv) 20% of the return to be spread during the fourth year preceding the valuation date.

The return to be spread is the difference between (1) the actual investment return on Fair Value and (2) the expected return on Fair Value.

Valuation Procedures

No actuarial liability is included for members who terminated non-vested prior to the valuation date, except those due a refund of contributions.

Annual increases in salary were limited to the dollar amount defined under Internal Revenue Code Section 401(a)(17) for affected members.

Summary of Actuarial Assumptions

The actuarial assumptions used for the December 31, 2021 actuarial valuation are summarized below.

The mortality rate, termination rate, retirement rate, and salary assumptions are based on an experience analysis of the Fund over the period 2017 through 2020. These assumptions were adopted by the Board as of December 31, 2021, based on the recommendation from the actuary.

Interest Rate: 7.00% per year, compounded annually.

Price Inflation Rate: 2.50% per year, compounded annually.

Real Wage Growth: 0.50% per year, compounded annually

General Wage Growth: 3.00% per year, compounded annually

Mortality Rates: All mortality rates use Pub-2010 General Amount Weighted Median Mortality Tables.

Mortality Projections: All mortality rates are projected from 2010 using generational improvement with Scale MP-2021.

Summary of Actuarial Assumptions (continued)

Deaths After Retirement: Mortality rates are based on the Pub-2010 General Amount Weighted Median Mortality Table for Retirees. Rates for male members are set forward one year and multiplied by 107% at all ages. Rates for female members are set forward 2 years and multiplied by 109% at all ages. Because the retiree tables have no rates prior to age 50, the Pub-2010 General Amount Weighted Median Mortality Table for Employees is used for ages less than 50.

Deaths After Retirement (Survivors of Deceased members): Mortality rates are based on the Pub-2010 General Amount Weighted Median Mortality Table for Contingent Survivors. Because the contingent survivor tables have no rates prior to age 45, the Pub-2010 General Amount Weighted Median Mortality Table for Employees is used for ages less than 45.

Deaths Prior to Retirement: Mortality rates are based on the Pub-2010 General Amount Weighted Median Mortality Table for Employees for all employees.

Termination Rates: Termination rates based on the recent experience of the Fund were used. The following is a sample of the termination rates used:

Service at Termination	Rate
0	15.0%
5	8.0%
10	6.0%
15	3.5%
20	3.5%
25+	2.5%

Retirement Rates for Tier 1 Members. For persons who became participants prior to January 1, 2011, rates of retirement for each age from 50 to 80 based on the recent experience of the Fund. The following are samples of the rates of retirement used:

Age	With Less than 30 Years of Service at Retirement	With 30 or More Years of Service at Retirement
<50	0.0%	28.0%
50-58	3.5%	28.0%
59	12.0%	28.0%
60-64	12.0%	21.0%
65-79	20.0%	21.0%
80+	100.0%	100.0%

Summary of Actuarial Assumptions (continued)

Retirement Rates for Deputy Sheriffs. For Cook County Deputy Sheriffs, rates of retirement for each age from 50 to 80 based on the recent experience of the Fund. The following are samples of the rates of retirement that were used:

	Males		Females	
Age	Less than 20 years of service at retirement	With 20 or more years of service at retirement	Less than 20 years of service at retirement	With 20 or more years of service at retirement
50	2.0%	8.0%	1.0%	8.0%
51-53	2.5%	8.0%	2.0%	8.0%
54	5.0%	8.0%	4.0%	8.0%
55-58	5.0%	12.0%	4.0%	12.0%
59	12.0%	25.0%	10.0%	25.0%
60	12.0%	25.0%	15.0%	25.0%
61-63	12.0%	25.0%	12.0%	25.0%
64	17.0%	25.0%	12.0%	25.0%
65	20.0%	100.0%	22.0%	100.0%
66	17.0%	100.0%	22.0%	100.0%
67-74	20.0%	100.0%	22.0%	100.0%
75-79	30.0%	100.0%	25.0%	100.0%
80+	100.0%	100.0%	100.0%	100.0%

Retirement Rates for Tier II Members. For persons who became or will become participants on or after January 1, 2011, rates of retirement for each age from 62 to 75 were used. The following are samples of the rates of retirement that were used:

	Rates of Retirement	
Age	Males	Females
62	.400	.350
64	.225	.150
67	.400	.350
70	.450	.200
75	1.000	1.000

Summary of Actuarial Assumptions (continued)

Salary Increases.

Service	Wage Growth	Merit and Longevity	Total
0	3.00%	2.00%	5.00%
1	3.00%	2.00%	5.00%
2	3.00%	2.00%	5.00%
3	3.00%	2.00%	5.00%
4	3.00%	1.50%	4.50%
5	3.00%	1.50%	4.50%
6	3.00%	1.00%	4.00%
7	3.00%	0.50%	3.50%
8	3.00%	0.50%	3.50%
9	3.00%	0.50%	3.50%
10	3.00%	0.50%	3.50%
>10	3.00%	0.00%	3.00%

Projected Salary Increase Rate for New Entrants. 3.00% per year (for projection in Section III)

Loading for Reciprocal Benefits. Costs and liabilities of active employees were loaded by 1% for reciprocal annuities where the County is the last employer. It was assumed that 50% of inactive members with one or more year of service would receive a reciprocal annuity where the County is not the last employer. These reciprocal annuities were valued as of the member's retirement date as 10 times an inactive member's accumulated contributions.

Summary of Actuarial Assumptions (continued)

Marital Status. 70% of male members are assumed to be married. 40% of female members are assumed to be married.

Spouse's Age. The spouse of a male employee is assumed to be four years younger than the employee. The spouse of a female employee is assumed to be two years older than the age of the employee.

Inactives. For Tier 1 inactives with 10 or more years of service, benefits were estimated based on service and pay and valued as deferred to age 62 annuities. For Tier 2 inactives with ten or more years of service, benefits were estimated based on service and pay and valued as deferred to age 67 annuities.

Annual increase in administrative expenses: 2.50% per year, compounded annually.

Timing of Assumptions: All withdrawals, deaths, retirements and salary increases are assumed to occur July 1 of each year. The timing of retirement changes from mid-year to beginning of year at and after 100% retirement age.

Reported Compensation: Compensation as of the valuation date as furnished by the Fund's office.

Valuation Compensation: Reported compensation adjusted to reflect the pay increases and the probability of decrement during the year.

Normal Cost: Normal cost rate reflects the impact of new entrants during the year.

Changes Since Prior Valuation:

The assumptions used for the December 31, 2021 actuarial valuation are based on the experience study prepared as of December 31, 2020 and adopted by the Board of Trustees on March 3, 2022. Material assumptions and methods that were changed since the prior valuation:

- The investment return assumption was lowered from 7.25% to 7.00%
- The inflation assumption was lowered from 2.75% to 2.50%
- The real wage growth assumption was decreased from 0.75% to 0.50%
- The general wage inflation assumption was lowered from 3.50% to 3.00%
- The withdrawal rates, retirement rates, mortality and annual rate of salary increase assumptions were changed
- The marriage assumption was changed from assuming spouses of female employees were four years older than female employees to assume that spouses of female employees are two years older than female employees
- The martial status assumption for female members was lowered from 70% assumed to be married to 40% assumed to be married.
- The assumed retirement age for Tier 1 deferred vested members was increased from 55 to 62.
- The assumed annual increase in administrative expense was lowered from 5.00% to 2.50%.

Glossary of Terms

Actuarial Accrued Liability	Total accumulated cost to fund pension benefits arising from service in all prior years.
Actuarial Cost Method	Technique used to assign or allocate, in a systematic and consistent manner, the expected cost of a pension Fund for a group of Fund members to the years of service that give rise to that cost.
Actuarial Present Value of Future Benefits	Amount which, together with future interest, is expected to be sufficient to pay all future benefits.
Actuarial Valuation	Study of probable amounts of future pension benefits and the necessary amount of contributions to fund those benefits.
Actuary	Person who performs mathematical calculations pertaining to pension and insurance benefits based on specific procedures and assumptions.
Annual Determined Contribution	Disclosure measure of annual pension cost.
GASB 67	Governmental Accounting Standards Board Statement Number 67
Maturity Ratio	The ratio of the actuarial accrued liability for members who are no longer active to the total actuarial accrued liability. A ratio of over 50% indicates a mature Fund. The higher the maturity ratio, the more volatile the contribution rate will be from year to year given actuarial gains and losses.
Normal Cost	That portion of the actuarial present value of benefits assigned to a particular year in respect to an individual participant or the Fund as a whole.
Vested Benefits	Benefits which are unconditionally guaranteed regardless of employment status.

June 2, 2022

Board of Trustees
County Employees' and Officers' Annuity and Benefit Fund of Cook County
Chicago, Illinois

Ladies and Gentlemen:

Presented in this report is information to assist the County Employees' and Officers' Annuity and Benefit Fund of Cook County ("CEABF" or "the Fund" or "the Plan") in meeting the requirements of the Governmental Accounting Standards Board (GASB) Statements No. 74 and 75 for the December 31, 2021 Measurement Date. The calculations in this report have been made on a basis that is consistent with our understanding of this accounting standard (GASB 74 and 75). Please note that the discount rate used to determine the Total OPEB Liability (TOL) changed from 2.12% at the Prior Measurement Date to 2.05% at the current Measurement Date.

The information is based on an actuarial valuation performed by Cavanaugh Macdonald (CMC) as of December 31, 2021, with plan asset information provided by CEABF for its fiscal year ended December 31, 2021. CMC performs the actuarial valuation annually.

The valuation was based upon data, furnished by CEABF staff, concerning active, inactive and retired members along with pertinent financial information. This information was reviewed for completeness and internal consistency but was not audited by us. The valuation results depend on the integrity of the data. If any of the information is inaccurate or incomplete our results may be different, and our calculations may need to be revised. Please see the actuarial valuation for additional details on the funding requirements for CEABF including actuarial assumptions and methods and the funding policy.

The economic and demographic assumptions used in the valuation were adopted by the Board and first reflected in the December 31, 2021 valuation. The Board's recent practice is to review the experience of the CEABF every four years to determine if any changes to the valuation assumptions are warranted. The assumptions used in the valuation meet the parameters set by the Actuarial Standards of Practice and are based on recommendations made and approved by the Board as part of an Experience Study covering plan years from January 1, 2017 through December 31, 2020. A summary of the actuarial assumptions and methods used in this actuarial valuation are shown beginning on page 124.

To the best of our knowledge, the information contained in this report is complete and accurate. The calculations were performed by qualified actuaries according to generally accepted actuarial principles and practices, as well as in conformity with Actuarial Standards of Practice issued by the Actuarial Standards Board. The calculations are based on the current provisions of CEABF, and on actuarial assumptions that are internally consistent and individually reasonable based on the actual experience of CEABF. In addition, the calculations were completed in compliance with applicable law and, in our opinion, meet the requirements of GASB 74 and 75.

These results are only for financial reporting and may not be appropriate for funding purposes or other types of analysis. Calculations for purposes other than satisfying the requirements of

GASB 74 and 75 may produce significantly different results. Future actuarial results may differ significantly from the current results presented in this report due to such factors as changes in plan experience or changes in economic or demographic assumptions.

In order to prepare the results in this report we have utilized appropriate actuarial models that were developed for this purpose. These models use assumptions about future contingent events along with recognized actuarial approaches to develop the needed results.

We note that as we are preparing this report, the world is in the midst of a pandemic. We have considered available information, but do not believe that there is yet sufficient data to warrant the modification of any of our assumptions prior to the next experience study.

The actuary prepared, or assisted in preparing, the following supporting information for the actuarial valuation:

- Changes in the GASB 74/75 Total OPEB Liability (TOL)
- GASB 74 Components of the Net OPEB Liability
- GASB 74 Schedule of Employer Contributions
- GASB 74 Schedule of Changes in Net OPEB Liability
- GASB 74 Schedule of the Net OPEB Liability
- GASB 74 Sensitivity of the Net OPEB Liability
- Membership Data
- Solvency Test
- Summary of Substantive Plan Provisions
- Summary of Assumptions and Methods
- Description of Actuarial Methods

We, Larry F. Langer, ASA, Alisa Bennett, FSA, and Wendy T. Ludbrook, FSA are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein. We are available to answer any questions on the material contained in this report or to provide explanations or further details as may be appropriate.

Respectfully submitted

Larry Langer, ASA, EA, FCA, MAAA
Principal and Consulting Actuary

Alisa Bennett, FSA, EA, FCA, MAAA
President

Wendy T. Ludbrook, FSA, EA, FCA, MAAA
Consulting Actuary

Ryan Gundersen
Senior Consultant

Overview

The County Employees' and Officers' Annuity and Benefit Fund of Cook County ("CEABF" or "the Fund" or "the Plan") offers health benefits to retired employees of Cook County and their eligible dependents. This report presents the results of the actuarial valuation of the Fund benefits as of the valuation date of December 31, 2021.

Purpose

This report had been prepared at the request of the Fund for use in financial reporting of CEABF under GASB 74 and GASB 75. It may not be appropriate for other purposes, such as analyzing proposed design alternatives, funding, pricing or option evaluation. Use of this report for any other purpose may not be appropriate and may result in mistaken conclusions due to failure to understand applicable assumptions, methodologies or inapplicability of the report for that purpose. No one may make any representations or warranties based on any statements or conclusions contained in this report without the written consent of Cavanaugh Macdonald.

Membership

	Year Ended December 31,	
Summary of Membership Data	**2021**	**2020**
Annuitants Currently Receiving Benefits	9,097	9,198
Covered Spouses of Annuitants Currently Receiving Benefits	2,695	2,707
Separated Employees Entitled To Benefits But Not Yet Receiving Them	1,657	1,708
Active Employees	18,320	19,102
Total Number of Members	31,769	32,715

Changes in Plan Provisions

The following changes in benefits and other plan provisions in the Retiree Health Insurance actuarial valuation have been made since the last valuation performed as of December 31, 2020 and are effective with the December 31, 2021 valuation:

- The 2022 subsidy percentages for member health benefits were changed as follows:
  - Choice Plan
    - Annuitants without Medicare changed from 45% to 44%.
    - Annuitants with Medicare changed from 38% to 44%.
    - Survivors without Medicare changed from 52% to 44%.
    - Survivors with Medicare changed from 38% to 44%.
  - Choice Plus Plan
    - Annuitants without Medicare changed from 42% to 44%.
    - Annuitants with Medicare changed from 33% to 44%.
    - Survivors without Medicare changed from 48% to 44%.
    - Survivors with Medicare changed from 38% to 44%.

Changes in Actuarial Assumptions, Methods, or Procedures

The following changes in the actuarial assumptions or valuation procedures in the Retiree Health Insurance actuarial valuation have been made since the last valuation performed as of December 31, 2020 and are effective with the December 31, 2021 valuation:

- Mortality rates were updated to the Pub-2010 General Amount Weighted Median Mortality Tables:
  - Deaths after retirement are based on the Pub-2010 General Amount Weighted Median Mortality Table for Retirees with rates set forward one year and multiplied by 107% at all ages for male retirees and set forward 2 years and multiplied by 109% at all ages for female retirees;
  - Deaths after retirement for survivors of deceased members are based the Pub-2010 General Amount Weighted Median Mortality Table for Contingent Survivors;
  - Deaths prior to retirement are based on the Pub-2010 General Amount Weighted Median Mortality Table for Employees;
  - All mortality rates are projected from 2010 using the generational mortality improvement scale MP-2021;
- Price inflation was reduced 2.75% to 2.50%;
- Wage inflation was reduced from 3.50% to 3.00%;
- Rates of retirement were reduced overall for Tier I regular members and deputy sheriffs. Tier II retirement rates remained unchanged;
- Withdrawal rates increased overall and changed from an age-based to service-based table;
- The spouse's age assumption for active members at retirement decreased from 4 years older to 2 years older for female members' spouses. Male members' spouse's age difference remained unchanged;
- Retiree health care plan participation rates for active members upon retirement was decreased from 65% to 60%. Deferred vested member retiree plan participation was reduced from 40% to 35%;
- Health care plan election for active members at retirement on a pre and post-Medicare basis was updated to reflect recent experience. Current plan election rates on a pre- Medicare basis are 90% Choice and 10% Choice Plus. On a post-Medicare basis the plan election rates are 60% Choice and 40% Choice Plus;
- The per capita plan costs were updated to reflect the most recent year of claims experience, drug rebates and Employer Group Waiver Plan (EGWP) subsidies. Additionally, working premium rates were updated for 2022;
- Health care cost trend rates that apply to expected claims, premiums and retiree contributions were updated for pre and post-Medicare; and
- The discount rate used to measure the Total OPEB Liability was changed from 2.12% as of the December 31, 2020 valuation to 2.05% as of the December 31, 2021 valuation, based on the Municipal Bond 20-year Index Rate as of December 31, 2021. The 2.05% rate is based on the S&P Municipal Bond 20 Year High Grade Rate Index as of December 31, 2021. The rate used for this purpose is the monthly average of the Bond Buyers General Obligation 20-year Municipal Bond Index Rate (formerly published monthly by the Board of Governors of the Federal Reserve System).

The impact on the December 31, 2021 Total OPEB Liability due to the changes in provisions and assumptions is shown below.

Changes in the GASB 74/75 Total OPEB Liability (TOL)

	TOL	% Change
December 31, 2020	**$ 2,105,154,520**	
Expected Growth Due to Passage of Time	91,149,578	4.3%
Demographic Experience	(61,569,747)	-2.9%
Updated Per Capita Health Plan Experience	(213,930,406)	-10.2%
Change in Plan Provisions	166,241,145	7.9%
Change in Trend Assumption	(74,144,431)	-3.5%
Change in Discount Rate	24,538,564	1.2%
Change in Other Assumptions*	(59,376,832)	-2.8%
Total Change in TOL	**$ (127,092,129)**	**-6.1%**
December 31, 2021	**$ 1,978,062,391**	**-6.1%**

* Includes changes in TOL based on the changes in assumptions from the previous valuation due to new assumptions adopted based on the recommendations in the 2021 experience study.

GASB 74 Components of the Net OPEB Liability

Valuation Date (VD):	December 31, 2021
Prior Measurement Date:	December 31, 2020
Measurement Date (MD):	December 31, 2021
Membership Data:	
Retirees and Beneficiaries	9,097
Inactive Members Eligible for Allowances	1,657
Active Employees	18,320
Total	29,074
Single Equivalent Interest Rate (SEIR):	
Long-Term Expected Rate of Return	7.00%
Municipal Bond Index Rate at Prior Measurement Date	2.12%
Municipal Bond Index Rate at Measurement Date	2.05%
Year in which Fiduciary Net Position is Projected to be Depleted	2021
Single Equivalent Interest Rate at Prior Measurement Date	2.12%
Single Equivalent Interest Rate at Measurement Date	2.05%
Net OPEB Liability:	
Total OPEB Liability (TOL)	$ 1,978,062,391
Fiduciary Net Position (FNP)	—
Net OPEB Liability (NOL = TOL – FNP)	$ 1,978,062,391
FNP as a percentage of TOL	0.00%

Fiscal Year Ending December 31, 2021

Total OPEB Liability	$ 1,978,062,391
Fiduciary Net Position	—
Net OPEB Liability	$ 1,978,062,391
Ratio of Fiduciary Net Position to Total OPEB Liability	0.00%

GASB 74 Schedule of Employer Contributions

	2021	2020	2019	2018	2017
Actuarially determined employer contribution	$ 159,551,340	$ 172,996,709	$ 157,705,345	$ 133,228,086	$ 187,348,423
Actual employer contributions	34,230,005	43,430,445	38,237,172	38,310,969	47,454,621
Annual contribution deficiency (excess)	$ 125,321,335	$ 129,566,264	$ 119,468,173	$ 94,917,117	$ 139,893,802
Covered employee payroll	$ 1,572,958,479	$ 1,583,198,305	$ 1,603,347,918	$ 1,576,658,158	$ 1,602,986,483
Actual contributions as a percentage of covered payroll	2.18%	2.74%	2.38%	2.43%	2.96%

GASB 74 Schedule of Changes in Net OPEB Liability

	2021	2020	2019	2018	2017
Total OPEB Liability					
Service Cost	$ 79,427,382	$ 66,338,671	$ 46,682,354	$ 40,557,095	$ 82,344,830
Interest	45,952,201	53,508,403	64,502,784	68,565,681	84,911,522
Benefit changes	166,241,145	(65,649,811)	(81,634,771)	(292,725,744)	(79,293,990)
Difference between expected and actual experience	(275,500,153)	(15,827,767)	(9,467,033)	(92,253,919)	(55,814,160)
Changes of assumptions	(108,982,699)	209,226,099	385,089,639	(300,028,016)	(66,330,809)
Benefit payments	(34,230,005)	(43,430,445)	(38,237,172)	(38,310,969)	(47,454,621)
Net change in Total OPEB Liability	$ (127,092,129)	$ 204,165,150	$ 366,935,801	$ (614,195,872)	$ (81,637,228)
Total OPEB Liability – beginning	$ 2,105,154,520	$ 1,900,989,370	$ 1,534,053,569	$ 2,148,249,441	$ 2,229,886,669
Total OPEB Liability – ending (a)	$ 1,978,062,391	$ 2,105,154,520	$ 1,900,989,370	$ 1,534,053,569	$ 2,148,249,441
Plan Fiduciary Net Position					
Employer contributions	$ 34,230,005	$ 43,430,445	$ 38,237,172	$ 38,310,969	$ 47,454,621
Net investment income	—	—	—	—	—
Net Benefit payments	(34,230,005)	(43,430,445)	(38,237,172)	(38,310,969)	(47,454,621)
Administrative expense	—	—	—	—	—
Other	—	—	—	—	—
Net change in Plan Fiduciary Net Position	$ —	$ —	$ —	$ —	$ —
Plan Fiduciary Net Position – beginning	$ —	$ —	$ —	$ —	$ —
Plan Fiduciary Net Position – ending (b)	$ —	$ —	$ —	$ —	$ —
Net OPEB Liability – ending (a) – (b)	$1,978,062,391	$2,105,154,520	$1,900,989,370	$1,534,053,569	$2,148,249,441

GASB 74 Schedule of the Net OPEB Liability

	2021	2020	2019	2018	2017
Total OPEB Liability	$ 1,978,062,391	$ 2,105,154,520	$ 1,900,989,370	$ 1,534,053,569	$ 2,148,249,441
Plan Fiduciary Net Position	—	—	—	—	—
Net OPEB Liability	$ 1,978,062,391	$ 2,105,154,520	$ 1,900,989,370	$ 1,534,053,569	$ 2,148,249,441
Ratio of Plan Fiduciary Net Position to Total OPEB Liability	0.00%	0.00%	0.00%	0.00%	0.00%
Covered employee payroll	$ 1,572,958,479	$ 1,583,198,305	$ 1,603,347,918	$ 1,576,658,158	$ 1,602,986,483
Net OPEB Liability as a percentage of covered employee payroll	125.75%	132.97%	118.56%	97.30%	134.02%

GASB 74 Sensitivity of the Net OPEB Liability

Sensitivity of the Net OPEB Liability to changes in the discount rate. The following presents the Net OPEB Liability as of December 31, 2021, calculated using the discount rate of 2.05%, as well as what the Plan's Net OPEB Liability would be if it were calculated using a discount rate that is 1 percentage-point lower (1.05%) or 1 percentage-point higher (3.05%) than the current rate:

	1% Decrease (1.05%)	Current Discount Rate (2.05%)	1% Increase (3.05%)
Total OPEB Liability	$ 2,363,453,441	$ 1,978,062,391	$ 1,673,001,519
Fiduciary Net Position	—	—	—
Net OPEB Liability	$ 2,363,453,441	$ 1,978,062,391	$ 1,673,001,519

Sensitivity of the Net OPEB Liability to changes in the healthcare cost trend rates. The following presents the Net OPEB Liability as of December 31, 2021, calculated using the healthcare cost trend rates as summarized in this report, as well as what the Plan's Net OPEB Liability would be if it were calculated using trend rates that are 1-percentage-point lower or 1- percentage-point higher than the current healthcare cost trend rates:

	1% Decrease	Current Trend Rate	1% Increase
Total OPEB Liability	$ 1,637,326,692	$ 1,978,062,391	$ 2,426,877,442
Fiduciary Net Position	—	—	—
Net OPEB Liability	$ 1,637,326,692	$ 1,978,062,391	$ 2,426,877,442

Summary of Substantive Plan Provisions

Eligibility. Tier 1 retirement (hired before January 1, 2011)

- Age 50 and 10 years of service

Tier 2 retirement (hired on or after January 1, 2011)

- Age 62 and 10 years of service

All active employee members who separate with 10 or more years of service can receive postretirement health benefits under the Plan upon receipt of annuity benefits. In some cases employees that retire with less than 10 years of service with Cook County may be eligible for Health Benefits due to reciprocity or if they are Tier 1 and qualify for Money Purchase annuity benefits.

Surviving dependents of actively employed members and surviving dependents of annuitants are eligible for postretirement health benefits under the Plan upon receipt of annuity benefits.

Annuitants may cover their spouses and dependent children under the age of 26 and all disabled children (no age limitation if enrolled in the Plan prior to age 26). Eligible dependents that are between ages of 25 and 30 can be in the Plan if he/she is on active duty with the United States Armed Forces.

Effective January 1, 2019, all future plan participants who are ineligible for free Medicare Part A must purchase Medicare Part A and Part B in order to receive coverage under the health plan administered by CEABF. CEABF will provide a reduced monthly premium for annuitants and spouses who are ineligible for premium free Medicare Part A.

Medical Plans.

Non-Medicare retirees can choose from:

- United Healthcare Choice
- United Healthcare Choice Plus

Medicare eligible retirees can choose from:

- United Healthcare Choice
- United Healthcare Choice Plus

When Medicare is primary, the medical benefits coordinate by reducing the plan allowed charge amount by Medicare's payment, and then subsequently applying any applicable plan copays, coinsurances or deductibles to the remainder. A retail and mail pharmacy benefit through CVS/Caremark is included with the election of any medical plan. For Medicare primary participants, prescriptions are provided via an Employer Group Waiver Plan, with the same copays as the commercial prescription plan.

Summary of Substantive Plan Provisions (continued)

Contributions

CEABF pays the following percentage subsidies of the total premium, including the cost of family coverage:

	Participant		Fund	
	Choice	Choice Plus	Choice	Choice Plus
Retiree Annuitant w/o Medicare	56%	56%	44%	44%
Retiree Annuitant with Medicare	56%	56%	44%	44%
Survivor Annuitant w/o Medicare	56%	56%	44%	44%
Survivor Annuitant with Medicare	56%	56%	44%	44%

The following are the annual working rates effective January 1, 2022. These rates represent an estimated cost of self-insured coverage and include administrative expenses.

	Choice	Choice Plus
Single w/o Medicare	$ 17,400	$ 23,636
Two w/o Medicare	$ 34,800	$ 47,271
Single with Medicare	$ 4,693	$ 4,200
Two with Medicare	$ 9,386	$ 8,400

Summary of Assumptions and Methods

The actuarial assumptions used for the December 31, 2021 actuarial valuation are summarized below. The mortality rates, termination rates, retirement rates, salary, inflation, participation, and Medicare primary assumptions are based on an experience analysis of CEABF, over the period 2017 through 2020. These assumptions were adopted by the Board on March 3, 2022. Per capita cost and medical trend rate assumptions are revisited annually. The next experience analysis is scheduled to occur after the December 31, 2024 actuarial valuation, with expected implementation of updated assumptions beginning with the December 31, 2025 actuarial valuation. This analysis will cover the four-year period from 2021 through 2024.

Valuation Date.	December 31, 2021
Measurement Date.	December 31, 2021
Discount Rate.	2.05% at December 31, 2021 (Municipal Bond Index Rate) 2.12% at December 31, 2020 (Municipal Bond Index Rate)

Benefit payments are funded on a pay-as-you-go basis. The discount rate is the single equivalent rate which results in the same present value as discounting future benefit payments made from assets at the long term expected rate of return and discounting future benefit payments funded on a pay-as-you-go basis on the Municipal Bond 20-year Index Rate.

Mortality Rates. All mortality rates use Pub-2010 General Amount Weighted Median Mortality Tables.

Mortality Projection. All mortality rates are projected from 2010 using generational mortality improvement with Scale MP-2021.

Deaths After Retirement. Mortality rates are based on the Pub-2010 General Amount Weighted Median Mortality Table for Retirees. Rates for male members are set forward one year and multiplied by 107% at all ages. Rates for female members are set forward 2 years and multiplied by 109% at all ages. Because the retiree tables have no rates prior to age 50, the Pub-2010 General Amount Weighted Median Mortality Table for Employees is used for ages less than 50.

Deaths After Retirement (Survivors of Deceased members). Mortality rates are based on the Pub-2010 General Amount Weighted Median Mortality Table for Contingent Survivors. Because the contingent survivor tables have no rates prior to age 45, the Pub-2010 General Amount Weighted Median Mortality Table for Employees is used for ages less than 45.

Deaths Prior to Retirement. Mortality rates are based on the Pub-2010 General Amount Weighted Median Mortality Table for Employees for all employees.

Summary of Assumptions and Methods (continued)

Termination Rates. Termination rates based on the recent experience of the Fund were used. The following is a sample of the termination rates used:

Services at Termination	Rate
0	15.0%
5	8.0%
10	6.0%
15	3.5%
20	3.5%
25+	2.5%

Retirement Rates for Tier 1 Members. For persons who became participants prior to January 1, 2011, rates of retirement for each age from 50 to 80 based on the recent experience of the Fund. The following are samples of the rates of retirement used:

Age	With Less than 30 Years of Service at Retirement	With 30 or More Years of Service at Retirement
<50	0.0%	28.0%
50-58	3.5%	28.0%
59	12.0%	28.0%
60-64	12.0%	21.0%
65-79	20.0%	21.0%
80+	100.0%	100.0%

Summary of Assumptions and Methods (continued)

Retirement Rates for Deputy Sheriffs. For Cook County Deputy Sheriffs, rates of retirement for each age from 50 to 80 based on the recent experience of the Fund. The following are samples of the rates of retirement that were used:

	Males		Females	
Age	With less than 20 years of service at retirement	With 20 or more years of service at retirement	Less than 20 years of service at retirement	With 20 or more years of service at retirement
50	2.0%	8.0%	1.0%	8.0%
51-53	2.5%	8.0%	2.0%	8.0%
54	5.0%	8.0%	4.0%	8.0%
55-58	5.0%	12.0%	4.0%	12.0%
59	12.0%	25.0%	10.0%	25.0%
60	12.0%	25.0%	15.0%	25.0%
61-63	12.0%	25.0%	12.0%	25.0%
64	17.0%	25.0%	12.0%	25.0%
65	20.0%	100.0%	22.0%	100.0%
66	17.0%	100.0%	22.0%	100.0%
67-74	20.0%	100.0%	22.0%	100.0%
75-79	30.0%	100.0%	25.0%	100.0%
80+	100.0%	100.0%	100.0%	100.0%

Retirement Rates for Tier II Members. For persons who became or will become participants on or after January 1, 2011, rates of retirement for each age from 62 to 75 were used. The following are samples of the rates of retirement that were used:

	Rates of Retirement	
Age	Males	Females
62	.400	.350
64	.225	.150
67	.400	.350
70	.450	.200
75	1.000	1.000

Inflation Rate. 2.50% per year, compounded annually.

Summary of Assumptions and Methods (continued)

Salary Increases.

Service	Wage Growth	Merit and Longevity	Total
0	3.00%	2.00%	5.00%
1	3.00%	2.00%	5.00%
2	3.00%	2.00%	5.00%
3	3.00%	2.00%	5.00%
4	3.00%	1.50%	4.50%
5	3.00%	1.50%	4.50%
6	3.00%	1.00%	4.00%
7	3.00%	0.50%	3.50%
8	3.00%	0.50%	3.50%
9	3.00%	0.50%	3.50%
10	3.00%	0.50%	3.50%
>10	3.00%	0.00%	3.00%

Disability Rates. Included in termination and retirement rates.

Summary of Assumptions and Methods (continued)

Anticipated Plan Participation.

60% of eligible employees are assumed to elect retiree health benefits. Of those who elect retiree medical benefits, 94% are assumed to be eligible for free Medicare Part A. For those assumed to be ineligible for free Medicare Part A, a reduced premium will be provided by CEABF.

35% of vested terminated employees are assumed to elect retiree medical benefits upon retirement and are assumed to retire at age 61.

Based on recent experience, future annuitants are assumed to elect from among the available plans as follows:

% Who Elect	Choice	Choice Plus
Pre-Medicare	90%	10%
Post-Medicare	60%	40%

Current annuitants who elect coverage are assumed to remain in coverage. Current annuitants who have waived or deferred coverage are not assumed to participate in the future.

Dependent Coverage.

35% of future annuitants are assumed to cover a dependent. 35% of surviving dependents are assumed to elect coverage upon the death of an actively employed member and are assumed to commence benefits when the actively employed member would have reached age 61. Male members are assumed to be 4 years older than female spouses and female members are assumed to be 2 years younger than male spouses. Actual ages were used for dependents of current annuitants.

Medicare Coordination.

Medicare is assumed to remain the primary payer for current and future retirees and spouses who are at least age 65 and who are currently on Medicare. Medicare is assumed to become primary for 100% of retirees and spouses who retired before January 1, 2019 and who are not yet age 65, when they attain that age. However, five percent of this group is assumed to be ineligible for free Medicare Part A and a reduced premium will be provided by CEABF. For all other retirees and spouses, Medicare is assumed to be the primary payer at the time they reach age 65.

Summary of Assumptions and Methods (continued)

Per Capita Health Plan Costs.

Estimated net annual per capita incurred claim costs per covered adult for fiscal year 2022 at age 65, reflecting administrative expenses, drug rebates and EGWP subsidies.

	Choice	Choice Plus
Not Medicare Eligible	$ 18,916	$ 19,963
Medicare Eligible	$ 4,572	$ 4,087

Per capita medical costs were developed using claims, enrollment, drug rebates and EGWP subsidies for the period from January 1, 2021 through December 31, 2021 provided by the Fund. The resulting costs were adjusted for age morbidity.

The valuation relies on the accuracy of the rate calculations. We understand that the rates represent only medical and prescription drug benefit costs for annuitants under the Fund.

Age-based Morbidity.

Per capita costs are adjusted to reflect expected cost differences due to age and gender. The morbidity factors for pre-Medicare morbidity were developed from "Health Care Costs—From Birth to Death" sponsored by the Society of Actuaries and prepared by Dale H. Yamamoto (May 2013). Table 4 from Mr. Yamamoto's study formed the basis of Medicare morbidity factors that are gender distinct and assumed a cost allocation of 60% for pharmacy, 20% for inpatient, 10% for outpatient, and 10% for professional services. Adjustments were made to Table 4 factors for inpatient costs at age 70 and below to smooth out what appears to be a spike in utilization for Medicare retirees gaining health care for the first time through Medicare. While such retirees were included in the study, their specific experience is not applicable for a valuation of an employer retiree medical plan where participants had group active coverage before retirement. Morbidity factors at sample ages are shown below:

Age	Male	Female
50	0.4612	0.5736
55	0.6085	0.6667
60	0.7829	0.7791
65	1.0000	0.9438
70	1.1873	1.1094
75	1.2752	1.2009
80	1.3381	1.2697
85	1.3479	1.3171
90	1.3235	1.3303

Summary of Assumptions and Methods (continued)

Health Care Cost Trend Rates.

Health care cost trend rates apply to expected claims, premiums and retiree contributions:

Year	Pre- Medicare	Post- Medicare
2022	7.000%	5.500%
2023	6.750%	5.250%
2024	6.500%	5.125%
2025	6.250%	5.000%
2026	6.000%	4.750%
2027	5.750%	4.500%
2028	5.500%	4.500%
2029	5.250%	4.500%
2030	5.000%	4.500%
2031	4.750%	4.500%
2032+	4.500%	4.500%

Census Data. The active, deferred vested and retiree census were provided by the Fund.

Actuarial Cost Method. The entry age actuarial cost as a percentage of earnings was used.

Amortization Method. 30 years open, level dollar.

Assets. The valuation assumes CEABF or the County has not set aside any assets to prefund its retiree medical liabilities.

Retiree Drug Subsidy and Employer Group Waiver Plan. CEABF will no longer be receiving the Retiree Drug Subsidy due to their switch to an EGWP plan effective January 1, 2017. Per capita claims costs for fiscal year 2022 include approximately 28% savings due to drug rebates and EGWP subsidies.

IBNR. The calculations do not include any explicit amount for incurred but not reported claims (IBNR).

Miscellaneous. The valuation was prepared on an on-going plan basis. This assumption does not imply that an obligation to continue the plan actually exists.

COVID-19. The impact of the COVID-19 pandemic was considered in this valuation; however, no changes were incorporated at this time due to the level of uncertainty regarding the impact on both plan costs and contribution levels going forward. Given the uncertainty regarding COVID-19 (e.g., the impact of routine care being deferred, direct COVID-19 treatment and prevention costs, changes in contribution and budget projections), continued monitoring of the impact on the Plan's liability will be required.

Benefits Not Valued. On May 21, 2020, the Levin case was decided in the plaintiff's favor. As of the date of the report, a minimum number have enrolled in FPEABF and CEABF retiree health care plan as a result of the Levin case. Given the limited amount of elections, we have not included additional cost impact of the Levin case beyond those in the census data submitted for the valuation.

Description of Actuarial Methods

Actuarial Cost Method

Liabilities and contributions shown in this report are computed using the **Entry Age Actuarial Cost Method** of funding.

Sometimes called a “funding method,” this is a particular technique used by actuaries for establishing the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily the annual contribution to the plan is comprised of (1) the normal cost and (2) an amortization payment on the unfunded actuarial accrued liability.

Under the Entry Age Actuarial Cost Method, the **Normal Cost** is computed as the level percentage of pay which, if paid from the earliest time each Member would have been eligible to join the Plan if it then existed (thus, entry age) until his retirement or termination, would accumulate with interest at the rate assumed in the valuation to a fund sufficient to pay all benefits under the Plan.

The **Actuarial Accrued Liability** under this method at any point in time is the theoretical amount of funding that would have accumulated had annual contributions equal to the Normal Cost been made in prior years (it does not represent the liability for benefits accrued to the valuation date).

The **Unfunded Actuarial Accrued Liability** is the excess of the Actuarial Accrued Liability over the Actuarial Value of Plan Assets on hand on the valuation date. The Unfunded Actuarial Accrued Liability is amortized as a level dollar amount over an open 30-year period.

Under this method experience gains or losses, i.e., decreases or increases in accrued liabilities attributable to deviations in experience from the actuarial assumptions, adjust the Unfunded Actuarial Accrued Liability.

Glossary of Terms

Actuarially determined contribution	A target or recommended contribution to a defined benefit OPEB plan 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.
Actuarial present value of projected benefit payments	Projected benefit payments discounted to reflect the expected effects of the time value (present value) of money and the probabilities of payment.
Actuarial valuation	The determination, as of a point in time (the actuarial valuation date), of the service cost, total OPEB liability, and related actuarial present value of projected benefit payments for OPEB performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.
Actuarial valuation date	The date as of which an actuarial valuation is performed.
Ad hoc postemployment benefit changes	Postemployment benefit changes that require a decision to grant by the authority responsible for making such decisions.
Automatic hoc postemployment benefit changes	Postemployment benefit changes that occur without a requirement for a decision to grant by a responsible authority.
Covered-employee payroll	The payroll for employees that are provided with OPEB through the OPEB plan.
Discount rate	The single rate of return that, when applied to all projected benefit payments, results in an actuarial present value of projected benefit payments equal to the total of the following: a. The actuarial present value of benefit payments projected to be made in future periods in which (1) the amount of the OPEB plan's fiduciary net position is projected (under the requirements of this Statement) to be greater than the benefit payments that are projected to be made in that period and b. The actuarial present value of projected benefit payments not included in (a), calculated using a yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher (or equivalent quality on another rating scale).

Glossary of Terms (continued)

Entry age 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 or service of the individual between entry age and assumed exit age(s). The portion of this actuarial present value allocated to a valuation year is called the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is called the Actuarial accrued liability.
Healthcare cost trend rates	The rates of change in per capita health claims costs over time as a result of factors such as medical inflation, utilization of healthcare services, plan design, and technological developments.
Inactive employees	Individuals no longer employed by an employer in the OPEB plan, or the beneficiaries of those individuals. Inactive employees include individuals who have accumulated benefits under the terms of an OPEB plan but are not yet receiving benefit payments.
Measurement period	The period between the prior and the current measurement dates.
Net OPEB liability	The liability of employers and non-employer contributing entities to employees for benefits provided through a defined benefit OPEB plan that meets the criteria in paragraph 4 of GASB Statement Nos. 74 and 75. Other postemployment benefits (OPEB) (such as death benefits, life insurance, disability, and long-term care) that are paid in the period after employment and that are provided separately from a pension plan, as well as healthcare benefits paid in the period after employment, regardless of the manner in which they are provided. OPEB does not include termination benefits or termination payments for sick leave.
Projected benefit payments	All benefits estimated to be payable through the OPEB plan (including amounts to be paid by employers or non-employer contributing entities as the benefits come due) to current active and inactive employees as a result of their past service and their expected future service.
Real rate of return	The rate of return on an investment after adjustment to eliminate inflation.
Service costs	The portions of the actuarial present value of projected benefit payments that are attributed to valuation years.
Total OPEB liability	The portion of the actuarial present value of projected benefit payments that is attributed to past periods of employee service.

Schedule of Active Member Valuation Data — Pension Benefits

Valuation Date	Number	Annual Payroll	Annual Average Pay	% Increase In Average Pay
12/31/12	21,447	$ 1,478,253,368	$ 68,926	4.3%
12/31/13	21,287	1,484,269,715	69,727	1.2%
12/31/14	21,656	1,514,550,023	69,937	0.3%
12/31/15	21,596	1,572,417,298	72,811	4.1%
12/31/16	20,969	1,580,251,254	75,361	3.5%
12/31/17	20,349	1,567,480,401	77,030	2.2%
12/31/18	19,671	1,533,721,507	77,969	1.2%
12/31/19	19,551	1,553,498,503	79,459	1.9%
12/31/20	19,102	1,532,744,306	80,240	1.0%
12/31/21	18,320	1,520,619,855	83,003	3.4%

Schedule of Retirees and Beneficiaries Added To and Removed From Rolls — Pension Benefits

	Added-To-Rolls		Removed-From-Rolls		Rolls-End-of-Year			
Year Ended	Number	Annual Benefits	Number	Annual Benefits	Number	Annual Benefits	Average Annual Benefit	% Increase in Average Annual Benefit
2012	1,374	$ 58,601,319	632	$ 14,697,753	16,174	$ 524,228,085	$ 32,412	4.1%
2013	992	52,564,737	489	10,006,848	16,677	566,785,974	33,986	4.9%
2014	929	52,208,075	530	11,628,617	17,076	607,365,432	35,568	4.7%
2015	1,323	69,890,199	802	22,262,895	17,597	654,992,736	37,222	4.7%
2016	968	58,252,392	656	18,067,979	17,909	695,177,149	38,817	4.3%
2017	902	57,971,733	594	16,538,820	18,217	736,610,062	40,435	4.2%
2018	1,109	68,372,858	724	22,268,886	18,602	782,714,034	42,077	4.1%
2019	1,223	78,654,100	682	20,981,568	19,143	840,386,566	43,900	4.3%
2020	1,142	78,187,840	843	29,427,349	19,442	889,147,057	45,733	4.2%
2021	1,210	87,049,235	796	29,293,796	19,856	946,902,496	47,688	4.3%

Schedule of Retirees and Beneficiaries Added To and Removed From Rolls — Postemployment Healthcare

	Added-To-Rolls		Removed-From-Rolls		Rolls-End-of-Year			
Year Ended	Number	Annual Benefits	Number	Annual Benefits	Number	Annual Benefits	Average Annual Benefit	% Increase in Average Annual Benefit
2012	640	$ 3,715,909	386	$ 6,655,532	8,179	$ 43,964,717	$ 5,375	-9.2%
2013	703	3,970,847	346	3,986,309	8,536	43,949,255	5,149	-4.2%
2014	556	6,767,482	501	2,229,694	8,591	48,487,043	5,644	9.6%
2015	631	8,261,563	439	2,119,662	8,783	54,628,944	6,220	10.2%
2016	570	989,701	399	1,962,607	8,954	53,656,038	5,992	-3.7%
2017	540	(3,945,464)*	497	2,255,953	8,997	47,454,621	5,275	-12.0%
2018	567	(6,942,823)*	479	2,200,829	9,085	38,310,969	4,217	-20.1%
2019	591	1,748,045	466	1,821,842	9,210	38,237,172	4,152	-1.5%
2020	602	7,791,538	614	2,598,265	9,198	43,430,445	4,722	13.7%
2021	521	(6,615,309)	622	2,585,131	9,097	34,230,005	3,763	-20.3%

*Employer contribution decreased, resulting in reduction of employer paid benefits from the level in prior years

Solvency Test — Pension Benefits

	Accrued Liabilities For				Percent of Accrued Liabilities Covered By Assets		
Fiscal Year	(1) Active and Inactive Member Accumulated Contributions	(2) Member Currently Receiving Benefits	(3) Active and Inactive Member Employer Portion	Actuarial Value of Assets	(1)	(2)	(3)
2012	$ 1,821,792,594	$ 6,431,295,762	$ 5,168,398,587	$ 7,833,882,926	100%	93%	0%
2013	1,854,155,647	6,822,552,230	4,959,868,300	8,381,444,287	100%	96%	0%
2014	1,897,951,260	7,295,515,219	4,947,080,874	8,810,509,070	100%	95%	0%
2015	1,914,569,837	7,864,534,443	5,157,487,056	8,991,018,918	100%	90%	0%
2016	1,967,965,799	8,305,339,574	5,183,468,612	9,488,223,349	100%	91%	0%
2017	2,001,714,112	8,583,373,041	5,086,669,289	10,148,203,834	100%	95%	0%
2018	2,020,570,657	9,050,032,658	5,243,785,732	10,512,756,514	100%	94%	0%
2019	2,016,337,278	9,685,006,939	5,239,863,351	10,983,364,279	100%	93%	0%
2020	2,013,381,600	10,188,823,794	5,207,821,567	11,765,568,459	100%	96%	0%
2021	1,992,402,321	11,218,670,299	4,927,585,897	12,822,498,767	100%	97%	0%

Solvency Test — Postemployment Healthcare

	Accrued Liabilities For				Percent of Accrued Liabilities Covered By Assets		
Fiscal Year	(1) Active and Inactive Member Accumulated Contributions	(2) Member Currently Receiving Benefits	(3) Active and Inactive Member Employer Portion	Actuarial Value of Assets	(1)	(2)	(3)
2012	$ —	$ 776,395,244	$ 1,069,213,888	$ —	0%	0%	0%
2013	—	818,201,554	1,160,565,936	—	0%	0%	0%
2014	—	826,052,274	1,154,036,343	—	0%	0%	0%
2015	—	879,319,447	1,254,787,260	—	0%	0%	0%
2016	—	825,328,625	1,132,476,063	—	0%	0%	0%
2017	—	811,486,860	1,075,129,583	—	0%	0%	0%
2018	—	701,048,505	833,005,063	—	0%	0%	0%
2019	—	898,168,059	1,002,821,312	—	0%	0%	0%
2020	—	1,008,020,323	1,097,134,196	—	0%	0%	0%
2021	—	993,469,986	984,592,405	—	0%	0%	0%

STATISTICAL Section

This section contains additional schedules that are designed to supplement the information in the Annual Comprehensive Financial Report:

Statements of Changes in Plan Net Position — Pension and Postemployment Healthcare provide details on the specific sources and uses of funds.

Schedules of Retired Members by Benefit Type — Pension and Postemployment Healthcare provide details on the monthly pension amounts for retirement and survivor members, including those with postemployment healthcare.

Schedules of Average Benefit Payments — Pension Benefits and Postemployment Healthcare provide details on years of credited service, average monthly pension, average monthly final average salary, and the number of new retirees, including those with postemployment healthcare.

Schedule of Principal Participating Employers — Pension Benefits and Postemployment Healthcare provides details on employers who participate in the Plan.

Additional Schedules Required by Employer provide details on historical financial, investment and actuarial performance.

For year ended December 31, 2021, with comparative totals for 9 years

	2021	2020	2019	2018	2017
Additions:					
Employer contributions	$ 507,070,170	$ 465,778,715	$ 488,003,692	$ 549,437,252	$ 511,750,985
Employee contributions	133,368,302	134,157,866	134,837,512	134,159,171	138,826,184
Net investment and net securities lending income (loss)	1,960,919,641	1,465,457,845	1,865,645,039	(424,787,945)	1,399,625,874
Other	4,509,801	4,469,465	6,275,804	5,860,613	5,359,418
Total additions	2,605,867,914	2,069,863,891	2,494,762,047	264,669,091	2,055,562,461
Deductions:					
Benefits					
Retirement	849,658,684	799,105,038	751,788,339	704,246,643	661,594,080
Survivors	69,428,345	64,617,964	60,115,798	55,983,104	51,874,102
Disability	12,734,198	10,783,752	11,091,076	11,502,437	11,467,308
Refunds					
Death	6,463,295	4,151,318	4,884,365	3,961,280	4,511,674
Separation	16,308,816	12,737,441	17,610,985	16,909,520	16,792,901
Other	14,207,640	14,101,892	15,250,601	12,791,721	11,690,790
Net administrative and miscellaneous expenses	5,149,812	5,715,268	5,085,445	5,134,047	5,406,034
Total deductions	973,950,790	911,212,673	865,826,609	810,528,752	763,336,888
Net increase (decrease)	1,631,917,124	1,158,651,218	1,628,935,438	(545,859,661)	1,292,225,573
Net Position:					
Beginning of period	12,649,610,438	11,490,959,220	9,862,023,782	10,407,883,443	9,115,657,870
End of period	$ 14,281,527,562	$ 12,649,610,438	$ 11,490,959,220	$ 9,862,023,782	$ 10,407,883,443

For year ended December 31, 2021, with comparative totals for 9 years (continued)

	2016	2015	2014	2013	2012
Additions:					
Employer contributions	$ 414,703,155	$ 136,075,504	$ 146,075,414	$ 147,720,014	$ 152,734,539
Employee contributions	139,355,592	137,707,719	129,325,318	127,593,220	128,869,508
Net investment and net securities lending income (loss)	629,442,470	(21,896,696)	488,890,897	1,179,440,119	887,687,519
Other	4,046,158	4,380,293	3,753,960	4,041,145	4,212,209
Total additions	1,187,547,375	256,266,820	768,045,589	1,458,794,498	1,173,503,775
Deductions:					
Benefits					
Retirement	624,231,419	587,861,744	543,274,840	507,494,409	469,398,775
Survivors	47,919,324	45,002,859	41,865,298	38,761,919	35,762,286
Disability	10,707,260	10,332,441	10,515,760	10,909,478	12,265,257
Refunds					
Death	2,792,846	4,983,186	3,187,363	3,461,166	4,636,647
Separation	13,967,392	14,486,833	13,082,086	15,180,523	16,740,836
Other	9,941,984	13,803,152	10,077,912	11,231,341	11,704,243
Net administrative and miscellaneous expenses	5,373,555	5,151,110	5,010,206	4,324,634	4,303,353
Total deductions	714,933,780	681,621,325	627,013,465	591,363,470	554,811,397
Net increase (decrease)	472,613,595	(425,354,505)	141,032,124	867,431,028	618,692,378
Net Position:					
Beginning of period	8,643,044,275	9,068,398,780	8,927,366,656	8,059,935,628	7,441,243,250
End of period	$ 9,115,657,870	$ 8,643,044,275	$ 9,068,398,780	$ 8,927,366,656	$ 8,059,935,628

For year ended December 31, 2021, with comparative totals for 9 years

	2021	2020	2019	2018	2017
Additions:					
Employer contributions	$ 34,230,005	$ 43,430,445	$ 38,237,172	$ 38,310,969	$ 47,454,641
Annuitant healthcare benefits contributions*	—	—	—	—	—
Other	35,052,874	32,200,095	28,882,910	21,618,592	17,962,395
Total additions	69,282,879	75,630,540	67,120,082	59,929,561	65,417,036
Deductions:					
Healthcare Benefits	69,282,879	75,630,540	67,120,082	59,929,561	65,417,036
Net increase (decrease)	—	—	—	—	—
Net Position:					
Beginning of period	—	—	—	—	—
End of period	$ —	$ —	$ —	$ —	$ —

*Beginning 2017, the annuitants Healthcare contribution is netted against Healthcare benefits expense.

For year ended December 31, 2021, with comparative totals for 9 years

	2016	2015	2014	2013	2012
Additions:					
Employer contributions	$ 49,565,249	$ 50,756,817	$ 43,957,458	$ 40,097,630	$ 37,986,237
Annuitant healthcare benefits contributions	41,650,333	37,635,349	37,358,502	35,927,206	33,948,728
Other	9,973,182	7,077,550	5,988,102	4,506,584	5,978,480
Total additions	101,188,764	95,469,716	87,304,062	80,531,420	77,913,445
Deductions:					
Healthcare Benefits	101,188,764	95,469,716	87,304,062	80,531,420	77,913,445
Net increase (decrease)	—	—	—	—	—
Net Position:					
Beginning of period	—	—	—	—	—
End of period	$ —	$ —	$ —	$ —	$ —

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Schedule of Retired Members by Benefit Type — Pension Benefits

As of December 31, 2021

Amount of Monthly Pension Benefit			Number of Recipients	Type of Pension Benefit 1	Type of Pension Benefit 2	Benefit Payment Form 1	Benefit Payment Form 2	Benefit Payment Form 3
$ 1	—	500	1,464	1,027	437	921	496	47
501	—	1,000	1,642	1,061	581	1,072	516	54
1,001	—	1,500	1,379	977	402	908	471	0
1,501	—	2,000	1,249	942	307	831	418	0
2,001	—	2,500	1,234	994	240	763	471	0
2,501	—	3,000	1,300	1,080	220	806	494	0
3,001	—	3,500	1,414	1,215	199	879	535	0
3,501	—	4,000	1,333	1,153	180	839	494	0
4,001	—	4,500	1,349	1,240	109	791	558	0
4,501	—	5,000	1,136	1,047	89	634	502	0
5,001	—	5,500	1,144	1,090	54	572	572	0
5,501	—	6,000	1,103	1,071	32	494	609	0
6,001	—	6,500	804	791	13	343	461	0
6,501	—	7,000	725	717	8	308	417	0
7,001	—	7,500	729	722	7	273	456	0
7,501	—	8,000	496	491	5	205	291	0
8,001	—	8,500	320	317	3	138	182	0
8,501	—	9,000	247	245	2	93	154	0
9,001	—	9,500	189	186	3	65	124	0
9,501	—	10,000	122	122	0	46	76	0
10,001	—	10,500	68	64	4	27	41	0
10,501	—	11,000	39	36	3	13	26	0
11,001	—	11,500	39	36	3	11	28	0
11,501	—	12,000	22	21	1	7	15	0
12,001	—	12,500	19	18	1	3	16	0
12,501	—	13,000	17	15	2	5	12	0
13,001	—	13,500	24	21	3	8	16	0
13,501	—	14,000	24	24	0	6	18	0
14,001	—	14,500	22	22	0	8	14	0
14,501	—	15,000	14	14	0	2	12	0
Over $15,000			189	186	3	53	136	0
Totals			**19,856**	**16,945**	**2,911**	**11,124**	**8,631**	**101**

Type of Pension Benefit
1. Regular Retirement
2. Survivor Payment

Form of Benefit
1. Whole Life Annuity
2. Joint and Contingent Annuity
3. Temporary Annuity

As of December 31, 2021

Amount of Monthly Pension Benefit			Number of Recipients	Type of Pension Benefit 1	Type of Pension Benefit 2	Benefit Payment Form 1	Benefit Payment Form 2	Benefit Payment Form 3
$ 1	—	500	84	34	50	68	14	2
501	—	1,000	210	81	129	177	33	0
1,001	—	1,500	316	180	136	246	70	0
1,501	—	2,000	423	288	135	316	107	0
2,001	—	2,500	512	392	120	363	149	0
2,501	—	3,000	595	480	115	422	173	0
3,001	—	3,500	699	600	99	487	212	0
3,501	—	4,000	732	619	113	512	220	0
4,001	—	4,500	805	734	71	541	264	0
4,501	—	5,000	672	612	60	438	234	0
5,001	—	5,500	689	648	41	417	272	0
5,501	—	6,000	675	654	21	371	304	0
6,001	—	6,500	496	486	10	266	230	0
6,501	—	7,000	450	446	4	232	218	0
7,001	—	7,500	483	478	5	214	269	0
7,501	—	8,000	336	331	5	177	159	0
8,001	—	8,500	221	219	2	115	106	0
8,501	—	9,000	180	178	2	80	100	0
9,001	—	9,500	136	133	3	56	80	0
9,501	—	10,000	79	79	0	35	44	0
10,001	—	10,500	40	38	2	16	24	0
10,501	—	11,000	23	21	2	11	12	0
11,001	—	11,500	25	23	2	8	17	0
11,501	—	12,000	15	15	0	4	11	0
12,001	—	12,500	13	12	1	2	11	0
12,501	—	13,000	10	9	1	3	7	0
13,001	—	13,500	17	15	2	7	10	0
13,501	—	14,000	16	16	0	6	10	0
14,001	—	14,500	12	12	0	4	8	0
14,501	—	15,000	9	9	0	2	7	0
Over $15,000			124	122	2	32	92	0
Totals			**9,097**	**7,964**	**1,133**	**5,628**	**3,467**	**2**

Type of Pension Benefit
1. Regular Retirement
2. Survivor Payment

Form of Benefit
1. Whole Life Annuity
2. Joint and Contingent Annuity
3. Temporary Annuity

Schedule of Average Benefit Payments — Pension Benefits
Years of Credited Service

		0-4	5-9	10-14	15-19	20-24	25-29	30+
2012	Average Monthly Pension	$ 432	$ 982	$ 1,828	$ 2,579	$ 3,273	$ 4,273	$ 4,578
	Average Monthly Final Average Salary	$ 7,369	$ 6,598	$ 5,733	$ 5,475	$ 5,391	$ 5,882	$ 5,795
	Number of New Retirees	97	35	110	167	210	113	287
2013	Average Monthly Pension	$ 469	$ 1,150	$ 1,864	$ 2,567	$ 3,334	$ 4,864	$ 4,813
	Average Monthly Final Average Salary	$ 7,331	$ 7,653	$ 5,999	$ 5,419	$ 5,597	$ 6,609	$ 6,087
	Number of New Retirees	60	44	113	123	168	132	275
2014	Average Monthly Pension	$ 421	$ 1,336	$ 1,767	$ 2,643	$ 3,770	$ 4,620	$ 4,829
	Average Monthly Final Average Salary	$ 6,611	$ 8,364	$ 5,943	$ 5,968	$ 6,296	$ 6,447	$ 6,131
	Number of New Retirees	53	33	104	119	155	135	246
2015	Average Monthly Pension	$ 485	$ 1,153	$ 1,756	$ 2,683	$ 3,696	$ 4,796	$ 5,011
	Average Monthly Final Average Salary	$ 8,264	$ 7,364	$ 6,060	$ 6,286	$ 6,382	$ 6,770	$ 6,363
	Number of New Retirees	73	43	106	110	180	165	329
2016	Average Monthly Pension	$ 466	$ 1,255	$ 2,105	$ 2,838	$ 3,683	$ 4,772	$ 4,977
	Average Monthly Final Average Salary	$ 7,292	$ 8,242	$ 6,926	$ 6,393	$ 6,256	$ 6,887	$ 6,339
	Number of New Retirees	44	31	101	108	131	128	233
2017	Average Monthly Pension	$ 431	$ 1,315	$ 2,133	$ 2,875	$ 3,796	$ 4,577	$ 5,106
	Average Monthly Final Average Salary	$ 7,456	$ 7,640	$ 6,952	$ 6,696	$ 6,670	$ 6,508	$ 6,518
	Number of New Retirees	49	35	84	100	136	173	261
2018	Average Monthly Pension	$ 524	$ 1,151	$ 2,236	$ 2,813	$ 3,701	$ 4,561	$ 5,028
	Average Monthly Final Average Salary	$ 8,557	$ 7,697	$ 7,602	$ 6,616	$ 6,414	$ 6,583	$ 6,457
	Number of New Retirees	34	31	91	111	134	175	312
2019	Average Monthly Pension	$ 482	$ 1,424	$ 2,266	$ 2,961	$ 3,639	$ 4,846	$ 5,379
	Average Monthly Final Average Salary	$ 7,968	$ 9,015	$ 7,718	$ 7,201	$ 6,481	$ 6,916	$ 6,902
	Number of New Retirees	38	39	83	112	140	210	379
2020	Average Monthly Pension	$ 571	$ 1,451	$ 2,022	$ 2,888	$ 3,921	$ 5,024	$ 5,278
	Average Monthly Final Average Salary	$ 8,172	$ 8,708	$ 7,117	$ 6,702	$ 7,128	$ 7,219	$ 6,785
	Number of New Retirees	36	28	71	91	122	198	375
2021	Average Monthly Pension	$ 619	$ 1,486	$ 2,311	$ 2,917	$ 3,859	$ 5,319	$ 5,549
	Average Monthly Final Average Salary	$ 9,526	$ 8,946	$ 7,841	$ 6,999	$ 7,010	$ 7,596	$ 7,194
	Number of New Retirees	35	26	70	87	146	209	417

Schedule of Average Benefit Payments — Postemployment Healthcare Years of Credited Service

		0-4	5-9	10-14	15-19	20-24	25-29	30+
2012	Average Monthly Pension	$ 635	$ 1,127	$ 1,767	$ 2,746	$ 3,462	$ 4,572	$ 4,479
	Average Monthly Final Average Salary	$ 5,149	$ 7,880	$ 5,489	$ 5,552	$ 5,457	$ 6,193	$ 5,672
	Number of New Retirees	2	4	36	88	142	82	197
2013	Average Monthly Pension	$ 607	$ 868	$ 2,014	$ 2,674	$ 3,562	$ 4,739	$ 4,705
	Average Monthly Final Average Salary	$ 5,833	$ 4,857	$ 6,140	$ 5,441	$ 5,737	$ 6,441	$ 5,952
	Number of New Retirees	1	5	48	76	110	87	190
2014	Average Monthly Pension	$ 0	$ 609	$ 1,786	$ 2,682	$ 3,631	$ 4,768	$ 4,781
	Average Monthly Final Average Salary	$ 0	$ 4,183	$ 5,834	$ 5,718	$ 6,035	$ 6,521	$ 6,062
	Number of New Retirees	0	4	31	63	104	97	162
2015	Average Monthly Pension	$ 2,419	$ 1,150	$ 1,915	$ 3,078	$ 3,881	$ 4,965	$ 4,860
	Average Monthly Final Average Salary	$ 26,180	$ 8,620	$ 6,239	$ 6,854	$ 6,375	$ 6,890	$ 6,175
	Number of New Retirees	1	5	37	60	101	95	232
2016	Average Monthly Pension	$ 257	$ 1,148	$ 2,236	$ 3,009	$ 3,860	$ 5,242	$ 4,893
	Average Monthly Final Average Salary	$ 4,469	$ 6,816	$ 7,156	$ 6,548	$ 6,363	$ 7,282	$ 6,219
	Number of New Retirees	1	5	36	54	72	80	154
2017	Average Monthly Pension	$ 0	$ 1,693	$ 2,013	$ 2,873	$ 4,136	$ 4,729	$ 5,047
	Average Monthly Final Average Salary	$ 0	$ 13,707	$ 6,838	$ 6,506	$ 7,098	$ 6,615	$ 6,441
	Number of New Retirees	0	3	18	41	77	106	157
2018	Average Monthly Pension	$ 0	$ 1,247	$ 2,543	$ 3,098	$ 3,813	$ 4,941	$ 4,967
	Average Monthly Final Average Salary	$ 0	$ 7,320	$ 8,545	$ 7,260	$ 6,338	$ 6,943	$ 6,343
	Number of New Retirees	0	2	33	52	70	105	189
2019	Average Monthly Pension	$ 0	$ 1,268	$ 2,302	$ 3,753	$ 3,762	$ 5,010	$ 5,482
	Average Monthly Final Average Salary	$ 0	$ 6,491	$ 7,534	$ 9,032	$ 6,538	$ 7,060	$ 7,004
	Number of New Retirees	0	2	26	44	67	114	223
2020	Average Monthly Pension	$ 464	$ 2,362	$ 2,282	$ 3,172	$ 4,085	$ 5,109	$ 5,289
	Average Monthly Final Average Salary	$ 8,070	$ 8,572	$ 8,067	$ 7,249	$ 7,204	$ 7,258	$ 6,809
	Number of New Retirees	1	3	20	37	50	112	215
2021	Average Monthly Pension	$ 0	$ 2,149	$ 2,250	$ 2,957	$ 3,995	$ 5,349	$ 5,646
	Average Monthly Final Average Salary	$ 0	$ 9,508	$ 7,860	$ 6,937	$ 6,876	$ 7,512	$ 7,291
	Number of New Retirees	0	1	17	25	54	110	209

Schedule of Principal Participating Employers — Pension Benefits and Postemployment Healthcare Combined

	As of December 31, 2021 and 2012			
	2021		2012	
Participating Employer	**Covered Employees**	**Percentage of Total Covered Employees**	**Covered Employees**	**Percentage of Total Covered Employees**
Cook County	18,294	99.86%	21,421	99.88%
County Employees' and Officers' Annuity and Benefit Fund of Cook County	26	0.14%	26	0.12%
Total	**18,320**	**100.00%**	**21,447**	**100.00%**

Schedule of Investment Rate of Return — Pension and Postemployment Healthcare Benefits Combined

Year Ended December 31,	Investment Rate of Return (Net of Fees)
2012	12.5%
2013	15.1%
2014	5.9%
2015	– 0.1%
2016	7.7%
2017	15.4%
2018	– 3.8%
2019	19.1%
2020	12.7%
2021	17.2%

Schedule of Actuarial Value of Assets vs. Fair Value of Assets — Pension and Postemployment Healthcare Benefits Combined

Year Ended December 31,	Actuarial Value of Assets	Fair Value of Assets	Actuarial Value as a Percentage of Fair Value
2012	$ 7,833,882,926	$ 8,059,935,628	97.2%
2013	8,381,444,287	8,927,366,656	93.9%
2014	8,810,509,070	9,068,398,780	97.2%
2015	8,991,018,918	8,643,044,275	104.0%
2016	9,488,223,349	9,115,657,870	104.1%
2017	10,148,203,834	10,407,883,443	97.5%
2018	10,512,756,514	9,862,023,782	106.6%
2019	10,983,364,279	11,490,959,220	95.6%
2020	11,765,568,459	12,649,610,438	93.0%
2021	12,822,498,767	14,281,527,562	89.8%

Schedule of Employer Contributions — Pension and Postemployment Healthcare Benefits Combined

Year Ended December 31,	Actuarially Required Contribution (ARC)	Tax Levy Requested	Actual Employer Contribution	Percentage of ARC Contributed
2012	$ 613,952,848	$ 196,139,483	$ 190,720,776	31.1%
2013	655,800,100	192,969,505	187,817,644	28.6%
2014	719,890,057	194,668,229	190,032,872	26.4%
2015	634,722,132	192,786,468	186,832,321	29.4%
2016	639,794,759	195,653,930	464,268,404 [1]	72.6%
2017	696,007,249	208,226,206	559,205,626 [1]	80.3%
2018	691,620,570	211,449,244	587,748,221 [1]	85.0%
2019	643,433,440	209,506,965	526,240,864 [1]	81.8%
2020	636,336,154	200,939,168	509,209,160 [1]	80.0%
2021	650,512,479	201,879,823	541,300,175 [1]	83.2%

[1]. Includes supplemental employer contribution.

Schedule of Financial Condition — Pension and Postemployment Healthcare Benefits Combined (continued)

	For year ended December 31, 2021, with comparative totals for 9 years				
	2021	2020	2019	2018	2017
Beginning Net Position (Fair Value)	$ 12,649,610,438	$ 11,490,959,220	$ 9,862,023,782	$ 10,407,883,443	$ 9,115,657,870
Additions:					
Employer contributions	541,300,175	509,209,160	526,240,864	587,748,221	559,205,626
Employer contributions	133,368,302	134,157,866	134,837,512	134,159,171	138,826,184
Annuitant Health Benefit Contributions	—*	—*	—*	—*	—*
Net investment income (loss)	1,960,919,641	1,465,457,845	1,865,645,039	(424,787,945)	1,399,625,874
Other	39,562,675	36,669,560	35,158,714	27,479,205	23,321,813
Total additions	2,675,150,793	2,145,494,431	2,561,882,129	324,598,652	2,120,979,497
Deductions:					
Benefits	1,001,104,106	950,137,294	890,115,295	831,661,745	790,352,526
Refunds	36,979,751	30,990,651	37,745,951	33,662,521	32,995,364
Administrative Expenses	5,149,812	5,715,268	5,085,445	5,134,047	5,406,034
Total deductions	1,043,233,669	986,843,213	932,946,691	870,458,313	828,753,924
Ending Net Position (Fair Value)	$ 14,281,527,562	$ 12,649,610,438	$ 11,490,959,220	$ 9,862,023,782	$ 10,407,883,443
Actuarial Value of Assets	12,822,498,767	11,765,568,459	10,983,364,279	10,512,756,514	10,148,203,834
Actuarial Accrued Liabilities (AAL)	19,091,357,820	18,421,022,810	17,949,663,806	17,303,773,833	16,889,499,662
Unfunded AAL (UAAL) (Fair Value)	4,809,830,258	5,771,412,372	6,458,704,586	7,441,750,051	6,481,616,219
Unfunded AAL (UAAL) (Actuarial Value)	6,268,859,053	6,655,454,351	6,966,299,527	6,791,017,319	6,741,295,828
Funded Ratio (Fair Value)	74.8%	68.7%	64.0%	57.0%	61.6%
Funded Ratio (Actuarial Value)	67.2%	63.9%	61.2%	60.8%	60.1%

* Beginning 2017, the annuitants Healthcare contribution is netted against Healthcare benefits expense.

Schedule of Financial Condition — Pension and Postemployment Healthcare Benefits Combined (continued)

For year ended December 31, 2021, with comparative totals for 9 years

	2016	2015	2014	2013	2012
Beginning Net Position (Fair Value)	$ 8,643,044,275	$ 9,068,398,780	$ 8,927,366,656	$ 8,059,935,628	$ 7,441,243,250
Additions:					
Employer contributions	464,268,404	186,832,321	190,032,872	187,817,644	190,720,776
Employer contributions	139,355,592	137,707,719	129,325,318	127,593,220	128,869,508
Annuitant Health Benefit Contributions	41,650,333	37,635,349	37,358,502	35,927,206	33,948,728
Net investment income (loss)	629,442,470	(21,896,696)	488,890,897	1,179,440,119	887,687,519
Other	14,019,340	11,457,843	9,742,062	8,547,729	10,190,689
Total additions	1,288,736,139	351,736,536	855,349,651	1,539,325,918	1,251,417,220
Deductions:					
Benefits	784,046,767	738,666,760	682,959,960	637,697,226	595,339,763
Refunds	26,702,222	33,273,171	26,347,361	29,873,030	33,081,726
Administrative Expenses	5,373,555	5,151,110	5,010,206	4,324,634	4,303,353
Total deductions	816,122,544	777,091,041	714,317,527	671,894,890	632,724,842
Ending Net Position (Fair Value)	$ 9,115,657,870	$ 8,643,044,275	$ 9,068,398,780	$ 8,927,366,656	$ 8,059,935,628
Actuarial Value of Assets	9,488,223,349	8,991,018,918	8,810,509,070	8,381,444,287	7,833,882,926
Actuarial Accrued Liabilities (AAL)	16,726,457,108	16,232,185,534	15,318,790,688	14,812,087,677	14,630,250,955
Unfunded AAL (UAAL) (Fair Value)	7,610,799,238	7,589,141,259	6,250,391,908	5,884,721,021	6,570,315,327
Unfunded AAL (UAAL) (Actuarial Value)	7,238,233,759	7,241,166,616	6,508,281,618	6,430,643,390	6,796,368,029
Funded Ratio (Fair Value)	54.5%	53.2%	59.2%	60.3%	55.1%
Funded Ratio (Actuarial Value)	56.7%	55.4%	57.5%	56.6%	53.5%

Schedule of Funding Progress—Pension and Postemployment Healthcare Benefits Combined

Year Ended December 31,	Actuarial Accrued Liabilities (AAL)*	Actuarial Value of Assets	Fair Value of Net Position	Unfunded AAL (UAAL) (Actuarial Value)	Unfunded AAL (UAAL) (Fair Value)
2012	$ 14,630,250,955	$ 7,833,882,926	$ 8,059,935,628	$ 6,796,368,029	$ 6,570,315,327
2013	14,812,087,677	8,381,444,287	8,927,366,656	6,430,643,390	5,884,721,021
2014	15,318,790,688	8,810,509,070	9,068,398,780	6,508,281,618	6,250,391,908
2015	16,232,185,534	8,991,018,918	8,643,044,275	7,241,166,616	7,589,141,259
2016	16,726,457,108	9,488,223,349	9,115,657,870	7,238,233,759	7,610,799,238
2017	16,889,499,662	10,148,203,834	10,407,883,443	6,741,295,828	6,481,616,219
2018	17,303,773,833	10,512,756,514	9,862,023,782	6,791,017,319	7,441,750,051
2019	17,949,663,806	10,983,364,279	11,490,959,220	6,966,299,527	6,458,704,586
2020	18,421,022,810	11,765,568,459	12,649,610,438	6,655,454,351	5,771,412,372
2021	19,091,357,820	12,822,498,767	14,281,527,562	6,268,859,053	4,809,830,258

Schedule of Funding Progress — Pension Benefits

Year Ended December 31,	Actuarial Accrued Liabilities(AAL)*	Actuarial Value of Assets	Fair Value of Net Position	Unfunded AAL (UAAL) (Actuarial Value)	Unfunded AAL (UAAL) (Fair Value)
2012	$ 13,418,486,943	$ 7,833,882,926	$ 8,059,935,628	$ 5,584,604,017	$ 5,358,551,315
2013	13,636,576,177	8,381,444,287	8,927,366,656	5,255,131,890	4,709,209,521
2014	14,140,547,353	8,810,509,070	9,068,398,780	5,330,038,283	5,072,148,573
2015	14,936,591,336	8,991,018,918	8,643,044,275	5,945,572,418	6,293,547,061
2016	15,456,773,985	9,488,223,349	9,115,657,870	5,968,550,636	6,341,116,115
2017	15,671,756,443	10,148,203,834	10,407,883,443	5,523,552,609	5,263,873,000
2018	16,314,389,047	10,512,756,514	9,862,023,782	5,801,632,533	6,452,365,265
2019	16,941,207,568	10,983,364,279	11,490,959,220	5,957,843,289	5,450,248,348
2020	17,410,026,961	11,765,568,459	12,649,610,438	5,644,458,502	4,760,416,523
2021	18,138,658,517	12,822,498,767	14,281,527,562	5,316,159,750	3,857,130,955

* These amounts are determined using the assumed discount rate for the actuarial funding calculations. These discount rates differ from the GASB accounting rates assumptions utilized in the AAL detailed in the OPEB tables on pages 152 and 153.

Schedule of Funding Progress—Pension and Postemployment Healthcare Benefits Combined (continued)

Unfunded AAL (UAAL) (Fair Value)	Funded Ratio (Actuarial Value)	Funded Ratio (Fair Value)	Covered Payroll	UAAL as a Percentage of Covered Payroll (Actuarial Value)	UAAL as a Percentage of Covered Payroll (Fair Value)
$ 6,570,315,327	53.5%	55.1%	$ 1,478,253,368	459.8%	444.5%
5,884,721,021	56.6%	60.3%	1,484,269,715	433.3%	396.5%
6,250,391,908	57.5%	59.2%	1,514,550,023	429.7%	412.7%
7,589,141,259	55.4%	53.2%	1,572,417,298	460.5%	482.6%
7,610,799,238	56.7%	54.5%	1,580,251,254	458.0%	481.6%
6,481,616,219	60.1%	61.6%	1,567,480,401	430.1%	413.5%
7,441,750,051	60.8%	57.0%	1,533,721,507	442.8%	485.2%
6,458,704,586	61.2%	64.0%	1,553,498,503	448.4%	415.8%
5,771,412,372	63.9%	68.7%	1,532,744,306	434.2%	376.5%
4,809,830,258	67.2%	74.8%	1,520,619,855	412.3%	316.3%

Schedule of Funding Progress — Pension Benefits (continued)

Unfunded AAL (UAAL) (Fair Value)	Funded Ratio (Actuarial Value)	Funded Ratio (Fair Value)	Covered Payroll	UAAL as a Percentage of Covered Payroll (Actuarial Value)	UAAL as a Percentage of Covered Payroll (Fair Value)
$ 5,358,551,315	58.4%	60.1%	$ 1,478,253,368	377.8%	362.5%
4,709,209,521	61.5%	65.5%	1,484,269,715	354.1%	317.3%
5,072,148,573	62.3%	64.1%	1,514,550,023	351.9%	334.9%
6,293,547,061	60.2%	57.9%	1,572,417,298	378.1%	400.2%
6,341,116,115	61.4%	59.0%	1,580,251,254	377.7%	401.3%
5,263,873,000	64.8%	66.4%	1,567,480,401	352.4%	335.8%
6,452,365,265	64.4%	60.4%	1,533,721,507	378.3%	420.7%
5,450,248,348	64.8%	67.8%	1,553,498,503	383.5%	350.8%
4,760,416,523	67.6%	72.7%	1,532,744,306	368.3%	310.6%
3,857,130,955	70.7%	78.7%	1,520,619,855	349.6%	253.7%

Schedule of Funding Progress — Postemployment Healthcare

Year Ended December 31,	Actuarial Accrued Liabilities (AAL)	Actuarial Value of Assets	Fair Value of Net Position	Unfunded AAL (UAAL) (Actuarial Value)
2012	$ 1,845,609,132	$ —	$ —	$ 1,845,609,132
2013	1,978,767,490	—	—	1,978,767,490
2014	1,980,088,617	—	—	1,980,088,617
2015	2,134,106,707	—	—	2,134,106,707
2016	1,957,804,688	—	—	1,957,804,688
2017	1,886,616,443	—	—	1,886,616,443
2018	1,534,053,569	—	—	1,534,053,569
2019	1,900,989,370	—	—	1,900,989,370
2020	2,105,154,520	—	—	2,105,154,520
2021	1,978,062,391	—	—	1,978,062,391

Schedule of Funding Progress — Postemployment Healthcare (continued)

Unfunded AAL (UAAL) (Fair Value)	Funded Ratio (Actuarial Value)	Funded Ratio (Fair Value)	Covered Payroll	UAAL as a Percentage of Covered Payroll (Actuarial Value)	UAAL as a Percentage of Covered Payroll (Fair Value)
$ 1,845,609,132	0.0%	0.0%	$ 1,478,253,368	124.9%	124.9%
1,978,767,490	0.0%	0.0%	1,484,269,715	133.3%	133.3%
1,980,088,617	0.0%	0.0%	1,514,550,023	130.7%	130.7%
2,134,106,707	0.0%	0.0%	1,597,597,077	133.6%	133.6%
1,957,804,688	0.0%	0.0%	1,609,559,234	121.6%	121.6%
1,886,616,443	0.0%	0.0%	1,602,986,483	117.7%	117.7%
1,534,053,569	0.0%	0.0%	1,576,658,158	97.3%	97.3%
1,900,989,370	0.0%	0.0%	1,603,347,918	118.6%	118.6%
2,105,154,520	0.0%	0.0%	1,583,198,305	133.0%	133.0%
1,978,062,391	0.0%	0.0%	1,572,958,479	125.8%	125.8%

Schedule of Components of Change in Unfunded Liability — Pension Benefits and Postemployment Healthcare Combined

Year Ended December 31,	Salary Increase Higher / (Lower) than Assumed	Investment Returns (Higher) / Lower than Assumed	Employer Contributions Higher / (Lower) than Normal Cost Plus Interest	Legislative Amendments
2012	$ 34,073,219	$ 376,601,751	$ 252,886,106	$ —
2013	(184,385,510)	(586,433,767)	513,419,056	—
2014	(148,871,075)	(161,124,113)	423,103,748	—
2015	164,977,011	61,964,372	431,124,367	—
2016	2,613,304	14,518,350	196,813,036	—
2017	(78,486,650)	(59,718,736)	93,692,715	—
2018	(144,455,926)	245,808,320	13,181,699	—
2019	(21,547,203)	46,426,889	48,781,707	—
2020	(48,554,330)	(303,644,048)	49,252,170	—
2021	(11,456,711)	(544,646,786)	(13,806,126)	—

Schedule of Components of Change in Unfunded AAL — Pension Benefits and Postemployment Healthcare Combined (continued)

Changes in Actuarial Assumptions	Plan Changes	Other Sources (1)	Total Change in Unfunded Liability
$ —	$ —	$ 305,896,670	$ 969,457,746
—	—	(108,324,418)	(365,724,639)
—	—	(35,470,332)	77,638,228
—	—	74,819,248	732,884,998
—	—	(216,877,547)	(2,932,857)
(323,327,660)	(50,292,826)	(78,804,774)	(496,937,931)
(24,987,447)	(164,731,446)	124,906,290	49,721,490
10,343,906	(49,424,951)	140,701,859	175,282,207
—	(38,192,819)	30,293,851	(310,845,176)
197,695,368	69,352,100	(83,733,143)	(386,595,298)

(1) Includes but is not limited to health insurance, optional retirement experience and death, retirement and withdrawal experience.

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