

COUNTY EMPLOYEES' RETIREMENT FUND

COMPREHENSIVE ANNUAL FINANCIAL REPORT FISCAL YEAR ENDED DECEMBER 31, 2019



Helping you build a brighter tomorrow.

Sarah Maxwell
Executive Director

Kelly Schwartze, CPA
Deputy Director

County Employees' Retirement Fund
2121 Schotthill Woods Drive
Jefferson City, MO 65101
(877) 632-2373
(573) 632-9203

TABLE OF CONTENTS

	PAGE
Introductory Section	
Letter of Transmittal	1 - 3
GFOA Award	4
Administrative Structure	5
Organizational Chart	6
Financial Section	
Independent Auditors' Report	7 - 8
Management's Discussion and Analysis	9 - 12
Financial Statements:	
Statement of Fiduciary Net Position	13
Statement of Changes in Fiduciary Net Position	14
Notes to Financial Statements	15 - 26
Required Supplementary Information:	
Schedule of Changes in the Net Pension Liability	27
Schedule of Net Pension Liability	28
Schedule of Employer Contributions	29
Schedule of Investment Returns	30
Notes to Required Supplementary Information	31
Supplementary Information:	
Schedule of Administrative Expenses	32
Schedule of Investment Expenses	33
Investments Section	
Investment Officer's Report	34 - 35
Asset Allocation	36
Investment Policy	37
Investment Results	38
Largest Holdings	39
Schedule of Advisors Fees	39
Schedule of Brokerage Commissions	40

Actuarial Section

Actuary's Certification Letter	41 - 42
Summary of Actuarial Assumptions	43 - 45
Schedule of Active Member Data	46
Retirees and Beneficiaries Added and Removed	46
Employer Schedule of Funding Progress	47
Financial Experience Analysis	47
Short-Term Solvency Test	48
Summary of Plan Provisions	48 - 50

Statistical Section

Summary	51
Change in Fiduciary Net Position	52
County Fee Receipts	53
Schedule of Contributions	54
Benefits Paid	55
Comparison of Actuarial Assets and Total Actuarial Liabilities	56
Average Monthly Benefit Payments	57
Member Data	58 - 59
Retiree and Beneficiary Payouts by County	60

INTRODUCTORY SECTION





COUNTY EMPLOYEES'
RETIREMENT FUND

June 8, 2020

To the Board of Directors
County Employees' Retirement Fund
Jefferson City, MO 65101

We are pleased to provide this Comprehensive Annual Financial Report (CAFR) of the County Employees' Retirement Fund (CERF), for the fiscal year ended December 31, 2019. Responsibility for both the accuracy of the data and the completeness and fairness of the presentation in this CAFR rests with the management of CERF. To the best of management's knowledge and belief, the enclosed data is accurate in all material respects and is reported in a manner designed to present fairly the financial position and results of operations of CERF.

Background Information

CERF was established by an act of the Missouri General Assembly effective August 28, 1994. CERF is a mandatory cost-sharing multiple employer retirement system for each county in the state of Missouri, except any city not within a county and counties of the first classification with a charter form of government, other than any county adopting a charter form of government after January 1, 2008. CERF covers county elective or appointive officers or employees whose position requires the actual performance of duties not less than 1,000 hours per year and does not cover circuit clerks, deputy circuit clerks, county prosecuting attorneys, and county sheriffs. CERF is a defined benefit plan providing retirement and death benefits to its members. Retirement benefits vest after 8 years of creditable service.

As of year-end 2019, CERF served almost 20,500 members, including approximately 5,700 retirees and beneficiaries.

Mission Statement

CERF's mission statement is to provide an accountable, financially sound system which promotes retirement security and rewards members with comprehensive benefits.

Accounting System and Reports

Management of CERF is responsible for establishing and maintaining internal controls designed to ensure that CERF's assets are protected from loss, theft, or misuse. Responsibility for the accuracy, completeness, and fair presentation of information, and all disclosures in this CAFR and in CERF's records, rests with CERF's management. Williams-Keepers, LLC, a certified public accounting firm, has audited the financial statements and related disclosures. The financial statement audit provides reasonable assurance that CERF's financial statements are presented in conformity with U.S. generally accepted accounting principles and are free from material misstatements. The internal controls are designed to provide reasonable, but not absolute, assurance that these objectives are met. The concept of reasonable assurance recognizes that the cost of a control should not exceed the benefits likely to be derived, and that the assessment of costs and benefits requires estimates and judgments by management.

This report has been prepared in accordance with generally accepted accounting principles (GAAP) as promulgated by the Governmental Accounting Standards Board (GASB). GAAP requires that management provide a narrative introduction, overview, and analysis to accompany the basic financial statements in the form of management's discussion and analysis (MD&A). This letter of transmittal is designed to complement the MD&A and should be read in conjunction with it. CERF's MD&A can be found immediately following the independent auditors' report.

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to CERF for its CAFR for the fiscal year ended December 31, 2018. This was the third year CERF had applied to receive this prestigious award for its annual report. The Certificate of Achievement is the highest form of recognition for excellence in state and local government financial reporting. To be awarded a Certificate of Achievement, a government must publish an easily readable and efficiently organized CAFR. This report must satisfy both generally accepted accounting principles and applicable legal and GFOA reporting requirements.

A Certificate of Achievement is valid for a period of one year. We believe this report continues to conform to the Certificate of Achievement Program requirements and we are submitting it to the GFOA to determine its eligibility for another certificate.

Fiscal Year 2019 Highlights

Fiscal highlights and major initiatives during 2019 were as follows:

- During 2019, CERF began offering those participants who terminated employment non-vested the option to receive their refund via ACH instead of check. During the nine months this option was offered, 25% of refunds were processed via ACH.
- Enhancements were made to the CERF Member Portal to allow beneficiary changes to be made online.
- CERF coordinated an initiative between member counties and the third party administrator of the CERF Savings Plan to begin reporting participant contributions electronically each payroll period. By the fourth quarter of 2019, all member counties had made the transition to electronic reporting.
- CERF continued to focus on member outreach through newsletters, retiree spotlights, and county visits. CERF staff visited 75 counties, attended or presented at 10 county association conferences, and held 6 pre-retirement seminars.

Funded Status

The funded status measures the progress of accumulating the funds necessary to meet future obligations. As of December 31, 2019, the actuarial funded ratio of CERF increased from 65.9% to 75%, primarily as a result of a strong investment market during 2019. A detailed discussion of funding is provided in the Actuarial Section of this report.

Investments

CERF's total pension return was 19.5% (net of fees), greater than the expected rate of return of 7.5%. In addition, over long periods of time, CERF continues to produce investment returns that exceed CERF's objective. The annualized investment return for CERF over the last ten years is 8.94%, and is 8.84% since inception.

A complete discussion of CERF's investment returns, activities, asset allocation strategy, and policies governing those activities can be found in the Investment Section.

Professional Services

Professional consultants are selected by the Board of Directors to perform professional services that are essential to the effective and efficient operation of CERF. An opinion of the certified public accountant and the actuary are included in this report. The consultants appointed by the Board are listed on page 4 of this report.

Acknowledgments

This report, prepared by CERF's executive director and staff, is intended to provide comprehensive and reliable information about CERF, to demonstrate compliance with legal provisions, and to allow for the evaluation of responsible stewardship of CERF's funds.

This report is being provided electronically to all participant counties of the system. These offices form the link between CERF and its membership, and their cooperation contributes significantly to the success of CERF. We hope all readers of this report find it informative and useful. An electronic version of this report is available on CERF's website at www.mocerf.org.

We express our gratitude to the members of the Board, the staff, the consultants, and the many people who have worked so diligently to assure the continued successful operation of CERF.

Respectfully submitted,



Sarah Maxwell
Executive Director



Kelly Schwartze, CPA
Deputy Director



Government Finance Officers Association

**Certificate of
Achievement for
Excellence in
Financial
Reporting**

Presented to

**County Employees' Retirement Fund
Missouri**

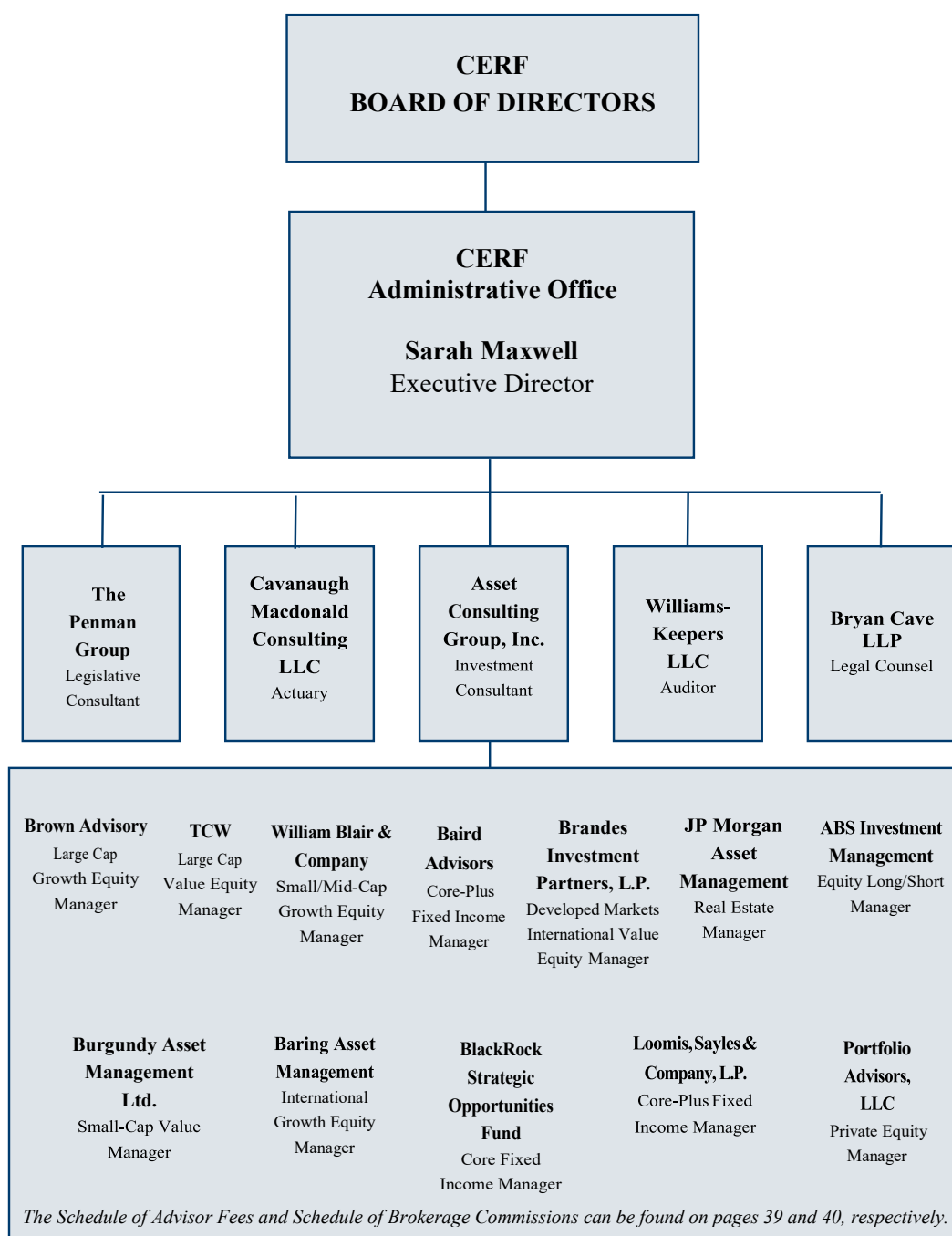
For its Comprehensive Annual
Financial Report
for the Fiscal Year Ended

December 31, 2018

Christopher P. Morrell

Executive Director/CEO

ADMINISTRATIVE STRUCTURE



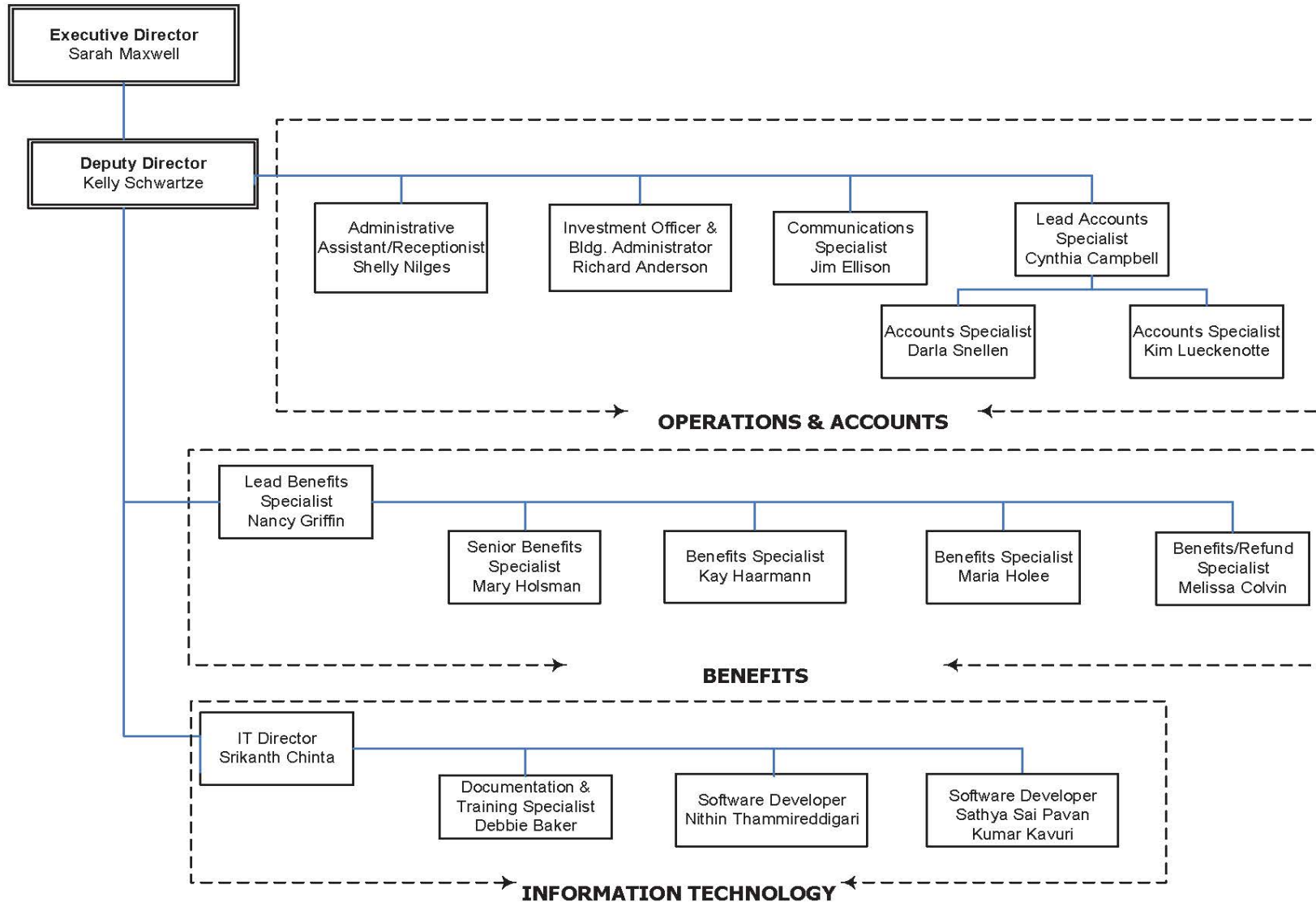
2019 Board of Directors

Tom Ruhl – Chair
 Mark Price – Vice Chair
 Conny Dover – Secretary
 Mark Collins – Member
 Collin Follis – Member

Rita Milam – Member
 Ted Nichols – Member
 Jim Platt – Member
 June Pitchford – Member
 Sherry Shamel – Member



CERF Administrative Office



INDEPENDENT AUDITORS' REPORT

To the Board of Directors
County Employees' Retirement Fund

We have audited the accompanying financial statements of the County Employees' Retirement Fund (CERF), which comprise the statement of fiduciary net position as of December 31, 2019, the related statement of changes in fiduciary net position for the year then ended, and the related notes to the financial statements.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with U.S. generally accepted accounting principles; this includes 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.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with U.S. generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements 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 entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the fiduciary net position of the County Employees' Retirement Fund as of December 31, 2019, and the changes in fiduciary net position for the year then ended in accordance with U.S. generally accepted accounting principles.

Other Matters

Required Supplementary Information

U.S. generally accepted accounting principles require that the management's discussion and analysis; the schedules of changes in the net pension liability, net pension liability, employer contributions, and investment returns; and the notes to the schedules as listed in the table of contents be presented to supplement the basic financial statements. Such information, 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 U.S. generally accepted auditing standards, which consisted of inquires 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.

Other Information

Our audit was conducted for the purpose of forming an opinion on the financial statements as a whole. The supplementary information as listed in the table of contents is presented for purposes of additional analysis and is not a required part of the 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 financial statements. The information has been subjected to the auditing procedures applied in the audit of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, and other additional procedures in accordance with U.S. generally accepted auditing standards. In our opinion, the information is fairly stated in all material respects in relation to the financial statements as a whole.

The introductory, investment, actuarial, and statistical sections have not been subjected to the auditing procedures applied in the audit of the basic financial statements and, accordingly, we do not express an opinion or provide any assurance on them.

William K. Kapers UC

June 8, 2020

COUNTY EMPLOYEES' RETIREMENT FUND MANAGEMENT'S DISCUSSION AND ANALYSIS

The following Management's Discussion and Analysis (MD&A) of the County Employees' Retirement Fund's (CERF) financial performance provides an introduction to the financial statements of CERF for the year ended December 31, 2019. Since the MD&A is designed to focus on current activities, resulting changes and current known facts, please read it in conjunction with the financial statements.

Required Financial Statements

CERF, a public employees' retirement plan, prepares its financial statements on the accrual basis in accordance with generally accepted accounting principles promulgated by the Governmental Accounting Standards Board (GASB). The Statement of Fiduciary Net Position includes all of CERF's assets and liabilities and provides information about the nature and amount of investments available to satisfy the pension benefits of the plan. All additions to and deductions from the net position held in trust for pension benefits are accounted for in the Statement of Changes in Fiduciary Net Position. This statement measures CERF's success over the past year in increasing the net position available for pension benefits.

Financial Analysis of CERF

Fiduciary Net Position

The fiduciary net position is essentially the GASB accounting term for the fair value of assets. On a fair value of assets basis, the Fund's investment performance for year ended December 31, 2019 was above the assumed long-term return. On that basis the calculated return for the January 1, 2019 – December 31, 2019 fiscal year was 19.62% compared to (3.24)% for the prior year. That performance resulted in an investment gain of \$59 million.

Total Pension Liability

The total pension liability (TPL) refers to the actuarial accrued liability as calculated under the Entry Age Normal actuarial cost method in accordance with the GASB accounting standards. TPL increased from \$742,631,649 as of December 31, 2018 to \$785,589,623 as of December 31, 2019. Of the increase, \$35.6 million is attributable to the normal operation of the plan over the year, benefit accruals plus interest minus benefit payments. The remainder of the increase was due to approximately \$7 million in actuarial losses from demographic experience differing from the assumptions, and an additional \$423,000 as a result of assumption changes.

Net Pension Liability

The net pension liability (NPL) is equal to the total pension liability minus the net fiduciary position. The net result of the investment losses relative to the expected long term rate of return was an increase in the funded percentage from 66% as of December 31, 2018 to 75% as of December 31, 2019. The NPL decreased from \$249.3 million to \$197 million.

Actuarially Determined Contribution

Differences between the actuarial liabilities and the assets can be made up through (1) future contributions in excess of the normal costs to amortize the shortfall and/or (2) the excess of actual investment returns over assumed returns. An actuarial valuation sets out a schedule of future contributions that will deal with this deficiency in a systematic manner if future experience follows the assumptions. Since CERF's actual contributions are a combination of member contributions and county collected taxes, fees, and penalties, the actuarially determined contribution (ADC) is more of a measuring stick to assess the sufficiency of the current sources of contributions to CERF.

For 2019, the County portion of ADC was \$30,817,130, net of both member and County-paid employee contributions. The actual County contributions for 2019 totaled \$31,109,986, for an excess of \$292,856.

Net Position

To begin the financial analysis, a summary of CERF's net position is as follows:

Condensed Statements of Fiduciary Net Position

	2019	2018	Dollar Change	Percent Change
Cash and cash equivalents	\$ 3,575,270	\$ 4,140,965	\$ (565,695)	-14%
Receivables	4,965,737	4,666,276	299,461	6%
Investments	580,933,289	484,328,030	96,605,259	20%
Invested securities lending collateral	46,303,900	64,745,149	(18,441,249)	-28%
Capital assets, net	5,208,889	5,418,029	(209,140)	-4%
Total assets	640,987,085	563,298,449	77,688,636	14%
Liabilities	52,427,805	69,995,581	(17,567,776)	-25%
Total fiduciary net position	<u>\$ 588,559,280</u>	<u>\$ 493,302,868</u>	<u>\$ 95,256,412</u>	<u>19%</u>

Net position increased by \$95,256,412 or 19%, in 2019. This increase was a result of investment gains experienced during 2019, which is also the reason for the increase in the December 31, 2019 investment balance. Securities lending collateral decreased compared to prior year due to less investments on loan as of December 31, 2019.

Condensed Statements of Changes in Fiduciary Net Position

	2019	2018	Dollar Change	Percent Change
Additions:				
Contributions:				
Counties receipts	\$ 31,109,986	\$ 28,517,335	\$ 2,592,651	9%
By members	13,959,900	13,303,261	656,639	5%
For members, paid by counties	2,255,331	2,300,484	(45,153)	-2%
Members, purchase of prior service	76,378	94,579	(18,201)	-19%
Total contributions	47,401,595	44,215,659	3,185,936	7%
Net investment income (loss)	95,983,226	(16,558,901)	112,542,127	680%
Net securities lending activities	107,305	176,434	(69,129)	-39%
Other income	5,093	8,808	(3,715)	-42%
Total additions	143,497,219	27,842,000	115,655,219	415%
Deductions:				
Benefits	\$ 36,768,803	\$ 33,439,139	\$ 3,329,664	10%
Refunds	4,203,660	3,810,029	393,631	10%
Defined contribution plan match	4,117,722	3,698,619	419,103	11%
Administrative expenses	3,150,622	3,121,552	29,070	1%
Total deductions	48,240,807	44,069,339	4,171,468	9%
Net increase (decrease)	<u>\$ 95,256,412</u>	<u>\$ (16,227,339)</u>	<u>\$ 111,483,751</u>	<u>687%</u>

Additions

Additions needed to fund benefits are accumulated through contributions, which include both county fee receipts and employee contributions, and returns on invested funds. Contributions for 2019 totaled \$47,401,595, which was 7% above those received in 2018. Fiscal year 2019 was the first full year of implementation of Senate Bill 62, which resulted in the majority of the increase in contributions. Senate Bill 62 went into effect in 2018, and increased various CERF fees. In addition, due to the legislation which took effect in 2003, as new employees continue to replace employees hired prior to February 25, 2002, employee contributions are expected to continue to rise.

Overall, 2019 was a much improved investment market compared to 2018, and CERF performed above the benchmark in almost all categories. As a result, CERF experienced an \$112,542,127 increase in net investment income. The total rate of return for the CERF portfolio in 2019 was 20.37%, as compared to (3.11)% in 2018. For 2019, the S&P 500 Index return was 31.49%, the BloomBar U. S. Aggregate Index was 8.72%, the Russell 2500 was 27.77%, the HFRI Equity Hedge was 13.73%, and the MSCI EAFE Index was 22.66%.

CERF participates in a Securities Lending Agreement with Key Bank, thus allowing CERF to lend its securities to broker-dealers, for the purpose of providing additional income to CERF. In 2019, CERF experienced a net unrealized securities lending gain of \$107,305, as compared to \$176,434 in 2018.

When comparing returns, it is important to note that CERF's investment objectives should be pursued as long-term goals designed to maximize return while reducing exposure to undue risk, as set out in the Board's investment policy. At a minimum, it is the objective of CERF to meet its actuarial interest assumption on an ongoing basis. Beginning in 2019, the actuarial assumption for investment return was changed from 7.50% to 7.25%. The desired objective on a long-term basis is to achieve an excess return over the actuarial assumption, net of investment management fees and transaction costs. Long term is defined as greater than 10 years. Some of the results for the total fund are:

<u>Period</u>	<u>Returns</u>	<u>Other Public Funds</u>
One Year	19.70%	21st Percentile
Three Years	9.94%	11th Percentile
Five Years	6.91%	27th Percentile
Ten Years	8.42%	18th Percentile
Since Inception	8.54%	

Deductions

The expenses paid by CERF include benefit payments, refunds, a defined contribution plan match, and administrative expenses.

Expenses for 2019 totaled \$48,240,807, an increase of \$4,171,468 over 2018. The increase in benefit payments to members and beneficiaries of \$3,329,664 resulted primarily from growth in the number of annuitants to 5,529 in 2019 from 5,321 in 2018 (an increase of 208 payees). In addition, the amount of contributions refunded to terminated non-vested employees increased by 10% compared to 2018; this amount will fluctuate year to year based on employee turnover at the county level. The amount needed to fund the defined contribution plan match also increased by almost \$420,000 due to increased participation in the plan. Administrative expenses remained consistent with prior year.

Economic Outlook

CERF's estimated investment loss for the four months ended April 30, 2020, is approximately (7.19)%. CERF's investments as of April 30, 2020 total approximately \$537,862,000, a decrease of \$43,071,000 since December 31, 2019, due to investment loss the first four months of the year. For the first four months of 2019, the S&P 500 Index return was (9.29)%, the BloomBar U. S. Aggregate Index was 4.98%, the Russell 2500 was (19.50)%, the NFI ODCE Index was .97%, and the MSCI EAFE Index was (17.66)%.

Requests for Information

This financial report is designed to provide the Board of Directors, our members, and other users of our financial report with a general overview of CERF's finances and to demonstrate CERF's accountability for the money it receives. If you have any questions about this report or need additional financial information, contact County Employees' Retirement Fund (CERF), 2121 Schotthill Woods Drive, Jefferson City, MO 65101.

COUNTY EMPLOYEES' RETIREMENT FUND

STATEMENT OF FIDUCIARY NET POSITION

December 31, 2019

ASSETS

Cash	\$ 3,575,270
Receivables:	
Member contributions	380,224
Member prior service contributions	135,010
County contributions	3,987,023
Receivable for pending investment sales	335,771
Accrued interest and dividends	<u>127,709</u>
Total receivables	4,965,737
Investments, at fair value:	
Common stocks	228,541,018
Fixed income mutual funds	163,707,158
Hedge funds	49,682,114
International equities funds	81,913,520
Real estate fund	23,052,141
Private equity	22,268,893
Cash equivalents	<u>11,768,445</u>
Total investments	580,933,289
Invested securities lending collateral	46,303,900
Capital assets, net of accumulated depreciation of \$2,167,538	<u>5,208,889</u>
Total assets	<u>640,987,085</u>

LIABILITIES

Accounts payable	668,723
Accrued defined contribution plan funding	4,117,722
Other accrued expenses	203,581
Unearned revenue	371,210
Payable for pending investment purchases	160,818
Obligations under security lending agreements	<u>46,905,751</u>
Total liabilities	<u>52,427,805</u>
Net position - restricted for pension benefits	<u>\$ 588,559,280</u>

The notes to financial statements are an integral part of these statements.

COUNTY EMPLOYEES' RETIREMENT FUND

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION

For the Year Ended December 31, 2019

ADDITIONS:

Contributions:

County receipts	\$ 31,109,986
By members	13,959,900
For members, paid by counties	2,255,331
Members, purchase of prior service	76,378
Total contributions	<u>47,401,595</u>

Investment income:

Investing activities:

Net appreciation in fair value of investments	86,753,627
Fixed income securities	4,700,020
Equity securities	7,194,543
Other miscellaneous income	157,357
Total investment income	<u>98,805,547</u>
Investment expenses	<u>(2,822,321)</u>
Net income from investing activities	<u>95,983,226</u>

Securities lending activities:

Income	1,453,892
Expenses	<u>(1,346,587)</u>
Net income from securities lending activities	<u>107,305</u>

Total net investment income	<u>96,090,531</u>
-----------------------------	-------------------

Other income	<u>5,093</u>
--------------	--------------

Total additions	<u>143,497,219</u>
-----------------	--------------------

DEDUCTIONS:

Benefits	36,768,803
Refunds of member contributions	4,203,660
Defined contribution plan matching contribution	4,117,722
Administrative expense	3,150,622
Total deductions	<u>48,240,807</u>

Net increase	95,256,412
--------------	------------

Net position - restricted for pension benefits

Beginning of year	<u>493,302,868</u>
End of year	<u>\$ 588,559,280</u>

The notes to financial statements are an integral part of these statements.

COUNTY EMPLOYEES' RETIREMENT FUND

NOTES TO FINANCIAL STATEMENTS

1. PLAN DESCRIPTION

The County Employees' Retirement Fund ("CERF") was established by an act of the Missouri General Assembly effective August 28, 1994. Laws governing the retirement fund are found in Sections 50.1000-50.1300 of the Missouri Revised Statutes (RSMo). The Board of Directors consists of eleven members, nine of whom are county employee or retiree participants. Two members, who have no beneficiary interest in CERF, are appointed by the Governor of Missouri. The Board of Directors has the authority to adopt rules and regulations for administering the system.

CERF is a mandatory cost-sharing multiple employer retirement system for each county in the state of Missouri, except any city not within a county (which excludes the City of St. Louis) and counties of the first classification with a charter form of government. CERF covers county elective or appointive officers or employees whose position requires the actual performance of duties not less than 1,000 hours per year; including employees of circuit courts located in a first class, non-charter county which is not participating in the Local Government Employees Retirement System (LAGERS); and does not cover circuit clerks, deputy circuit clerks, county prosecuting attorneys, and county sheriffs. Until January 1, 2000, employees hired before January 1, 2000, could opt out of the system.

CERF is a defined benefit plan providing retirement and death benefits to its members. All benefits vest after 8 years of creditable service. Employees who retire on or after age 62 are entitled to an allowance for life based on the form of payment selected. The normal form of payment is a single life annuity. Optional joint and survivor annuity and 10-year certain and life annuity payments are also offered to members in order to provide benefits to a named survivor annuitant after their death. Employees who have a minimum of 8 years of creditable service and who terminated employment after December 31, 1999 may retire with an early retirement benefit and receive a reduced allowance after attaining age 55. Annual cost-of-living adjustments, not to exceed 1%, are provided for eligible retirees and survivor annuitants, up to a lifetime maximum of 50% of the initial benefit which the member received upon retirement. Benefit provisions are fixed by state statute and may be amended only by action of the Missouri Legislature. Administrative expenses for the operation of CERF are paid out of the funds of the system.

Contributions: Prior to January 1, 2003, participating county employees, except for those who participated in LAGERS, were required to make contributions equal to 2% of gross compensation. Effective January 1, 2003, participating county employees hired on or after February 25, 2002 are required to make contributions of 4% if they are in a LAGERS county and contributions of 6% if they are in a non-LAGERS county. If an employee leaves covered employment before attaining 8 years of creditable service, accumulated employee contributions are refunded to the employee. The contribution rate is set by state statute and may be amended only by action of the Missouri Legislature.

Counties may elect to make all or a portion of the required 4% contribution on behalf of employees. Total county-paid member contributions for the year ended December 31, 2019 was \$2,255,331.

In addition, the following fees and penalties prescribed under Missouri law are required to be collected and remitted to CERF by counties covered by the plan:

- Late fees on filing of real estate and personal property tax declarations,
- Twenty dollars on each merchants and manufacturers license issued,
- Six dollars on each document recorded or filed with county recorders of deeds, with an additional one dollar on each document recorded,
- Five-ninths of the fee on delinquent property taxes, and
- Interest earned on investment of the above collections prior to remittance to CERF.

The fees and penalties collected and remitted to CERF by counties covered by the plan for the year ended December 31, 2019, were as follows:

Delinquent property tax fees	\$ 14,599,160	46.93%
Assessor late assessment filing fees	9,149,069	29.41%
Recorder document fees	4,811,847	15.47%
Merchants and manufacturers licenses	1,024,158	3.29%
Delinquent land list fees	1,405,814	4.52%
Interest on the above fees	<u>119,938</u>	<u>0.39%</u>
	<u>\$ 31,109,986</u>	<u>100%</u>

Members: CERF members include eligible employees of 111 counties in the State of Missouri. The number of members and benefit recipients served by the system at December 31, 2019 was:

Retirees and beneficiaries receiving benefits	5,529
Terminated employees entitled to but not yet receiving benefits	2,472
Current active plan members	<u>11,879</u>
Total	<u>19,880</u>

Tax status: The Internal Revenue Service has determined and informed CERF by letter dated September 28, 2011, that the plan as amended through November 1, 2010, is in a form acceptable under the Internal Revenue Code.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of accounting: CERF's financial statements are prepared using the accrual basis of accounting. Member and employer contributions are recognized in the period in which the contributions are due. Benefits are recognized when due and payable in accordance with the terms of the plan. Expenses are recorded when the corresponding liabilities are incurred, regardless of when payment is made.

Method used to value investments: Investments are reported at fair value. Short-term investments are reported at cost, which approximates fair value. Bonds and stocks traded on a national or international exchange are valued at the last reported sales price at current exchange rates as reported by independent pricing services. The values of real estate included in the real estate investment fund are based upon annual independent appraisals, updated quarterly, as provided by the fund manager. Investments that do not have an established market are reported at estimated fair value or net asset value as provided by investment or fund managers.

Property and equipment: Property and equipment, including computer software programs, are stated at cost less accumulated depreciation. Depreciation is calculated using the straight-line method over the estimated lives of the assets ranging from three to fifty years.

Estimates: The preparation of financial statements in conformity with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect certain reported amounts and disclosures. Accordingly, actual results could differ from those estimates.

3. DEPOSITS AND INVESTMENTS

Custodial credit risk for deposits: Custodial credit risk is the risk that in the event of a bank failure, CERF's deposits may not be returned to it. At December 31, 2019, CERF's bank balances were secured by a combination of federal depository insurance and pledged collateral held in CERF's name by an agent of the depository bank.

Investments: Funds are invested by outside managers under policies established by the Board of Directors. The Board requires that its investment managers invest CERF's assets with the care, skill, and diligence a prudent person familiar with such matters acting in a like capacity would use in a similar enterprise with like objectives.

The following table summarizes CERF investments by type at December 31, 2019:

Common stocks	\$ 228,541,018
Fixed income mutual funds	163,707,158
Hedge funds	49,682,114
International equities funds	81,913,520
Real estate fund	23,052,141
Private equity	22,268,893
Cash equivalents	11,768,445
Total	<u><u>\$ 580,933,289</u></u>

CERF's investment policy permits investments in equity and fixed income (debt) securities and real estate, with guidelines for the percentage of the total for each category and for the type of investments within each category.

With respect to debt securities, the policy permits fixed and variable rate securities issued or guaranteed by the U.S. government, its agencies or instrumentalities; and U.S. government sponsored and other corporation securities. To manage interest rate and credit risks, two investment managers are used for debt securities, each operating under specific guidelines with respect to approved securities, duration, diversification, and minimum quality ratings by Moody's or Standard and Poor's.

Investment income in the statement of changes in fiduciary net position displays the realized and unrealized investment gains and losses from all investment types on the line item "Net appreciation in fair value of investments". Totals for interest, dividends, and other types of investment income are presented by broad categories of investments.

Interest rate risk: Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. CERF did not have any fixed income investments other than fixed income mutual funds as of December 31, 2019. As of December 31, 2019, the Baird Core Plus Bond Fund had a balance of \$57,370,620 and an average effective maturity of 5.68 years. The BlackRock Strategic Income Opportunities Fund had a balance of \$48,526,578 and an effective maturity of 3 years. The Loomis Sayles Fund had a balance of \$57,811,038 and an effective maturity of 6.23 years.

Credit risk: Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligation to the plan. CERF's fixed income mutual funds were unrated as of December 31, 2019.

Concentration of credit risk: Concentration of credit risk is the risk of loss attributed to the magnitude of a plan's investment in a single issuer. CERF's investment guidelines require diversified portfolios with no single issue, excluding U.S. government securities, being greater than 5% of each manager's total portfolio value at cost or 7% at fair value. As of December 31, 2019, no single issue exceeded the thresholds.

Money-Weighted Rate of Return: The annual money-weighted rate of return on pension plan investments, net of pension plan investment expenses, was 19.62% for the year ended December 31, 2019. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for changing amounts actual invested.

Foreign currency risk: Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment. The following is a summary of CERF's international equities funds showing the exposure to foreign currency risk as of December 31, 2019:

Australian Dollar	\$ 346,556
Brazilian Real	1,755,805
China Yuan Renminbi	1,728,193
Euro	24,031,036
Hong Kong Dollar	806,742
Japanese Yen	15,984,732
Korean Won	861,438
Mexican Peso	2,484,538
Norwegian Krone	689,811
Russian Ruble	2,259,854
South African Rand	551,188
South Korean Won	2,455,193
Swiss Franc	5,515,690
Taiwan New Dollar	810,615
United Kingdom Pound	17,858,014
United States Dollar	<u>3,774,115</u>
Total	<u>\$ 81,913,520</u>

Securities Lending Program:

Description of the program: CERF participates in a securities lending program administered by KeyBank National Association (the custodian). Under this program, the Board of Directors has authorized CERF to lend its securities to broker-dealers with a simultaneous agreement to return the collateral for the same securities in the future. At the initiation of a loan, borrowers are required to provide cash collateral at 102% of the fair value of loaned securities. This cash collateral is then invested in certain qualified investments as detailed in the securities lending agreement. The maturities of the investments made with cash collateral do not generally match the maturity of security loans. There are no restrictions on the amount of securities that can be lent at one time. CERF does not have the ability to pledge or sell collateral securities unless the borrower defaults. CERF and the borrowers each maintained the right to terminate all security lending transactions on demand.

Transactions with borrowers during the period: Securities lent as of December 31, 2019 consisted of U.S. government and agency securities, U.S. equities, U.S. corporate bonds, and mortgage backed securities. The average term of securities loans was 1 day at December 31, 2019. The fair value, including accrued interest, of securities on loan was \$45,640,405 as of December 31, 2019. Because the fair value of collateral held exceeded the fair value of securities lent at December 31, 2019, CERF had no credit risk exposure to borrowers as of that date. There were no losses during the year resulting from a default of the borrowers or the custodial bank.

Investment of cash collateral during the period: The weighted average duration of collateral investments was 1.5 days at December 31, 2019. The fair value of collateral investments was \$46,303,900 as of December 31, 2019. CERF's securities lending policy states that in the event a security held in the collateral investments portfolio is downgraded below A3 by Moody's or A- by Standard and Poor's that a potential course of action be discussed. Such potential actions include selling the security as soon as possible or holding the security in the hopes of an improved market. As of December 31, 2019, less than 1% of the total fair value of the collateral investments portfolio was in securities that had fallen below these minimum ratings thresholds; in addition, 46% of securities were unrated. The fair value of collateral investments was \$601,851 less than the liability for the collateral held for securities on loan as of December 31, 2019. The agreement between CERF and the securities lending agent does not provide for indemnification to CERF for any loss incurred as a result of CERF's participation in the program. In January 2020, CERF terminated its participation in the security lending program.

Securities lending income: Securities lending income from CERF's share of income on investments made from cash collateral less borrower rebates and fees of the securities lending agent was \$107,305 for 2019.

The following table summarizes duration by investment type as of December 31, 2019 for securities lending invested collateral subject to interest rate risk:

Investment	Fair Value	Effective Duration Rate
Repurchase agreements	\$ 28,110,000	1-93 days
Commercial paper	3,699,100	1-8 days
Money market funds	14,204,007	1 day
Corporate notes	290,698	1-261 days
Asset backed securities	95	1 day
Total	<u>\$ 46,303,900</u>	

The following table summarizes credit ratings by investment type as of December 31, 2019 for securities lending invested collateral subject to credit risk:

Standard & Poor's Credit Rating Level	Repurchase Agreements	Commercial Paper	Money Market Funds	Corporate Notes	Asset Backed Securities
Not rated	\$ 9,410,000	\$ -	\$ 11,504,007	\$ 290,698	\$ -
AAA	-	-	2,700,000	-	-
A1+	9,400,000	-	-	-	-
A1	9,300,000	3,699,100	-	-	-
D	-	-	-	-	95
Total	<u>\$ 28,110,000</u>	<u>\$ 3,699,100</u>	<u>\$ 14,204,007</u>	<u>\$ 290,698</u>	<u>\$ 95</u>

CERF categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles. The hierarchy is based on the valuation inputs used to measure the fair value of the asset and give 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).

- Level 1 – unadjusted quoted prices for identical instruments in active markets.
- Level 2 – quoted prices for similar instruments in active markets; quoted prices for identical or similar instruments in markets that are not active; and model-derived valuations for which all significant inputs are observable.
- Level 3 – valuations derived from valuation techniques in which significant inputs are unobservable.

Investments that are measured at fair value using the net asset value per share (or its equivalent) as a practical expedient are not classified in the fair value hierarchy.

The categorization of investments within the hierarchy is based upon the pricing transparency of the instrument and should not be perceived as the particular investment's risk.

In instances where inputs used to measure fair value fall into different levels in the fair value hierarchy, fair value measurements in their entirety are categorized based on the lowest level input that is significant to the valuation. CERF's assessment of the significance of particular inputs to these fair value measurements requires judgment and considers factors specific to each asset or liability.

Equities within all asset classes that are classified in Level 1 are valued using prices quoted in active markets for those securities. Equity securities classified in Level 2 are securities whose values are derived daily from associated traded securities. Equity securities classified in Level 3 are valued with last trade data having limited trading volume.

Fixed income securities within all asset classes that are classified in Level 2 are valued using either a bid evaluation or a matrix pricing technique. Bid evaluations may include market quotations, yields, maturities, call features and ratings. Matrix pricing is used to value securities based on the securities relationship to benchmark quoted prices. Level 2 fixed income securities have non-proprietary information that was readily available to market participants, from multiple independent sources, which are known to be actively involved in the market.

The fair values of investments in certain funds are based on the investments' net asset value (NAV) per share (or its equivalent) and are presented in the above table. Investments that are measured at fair value using the net asset value (or its equivalent) as a practical expedient are not classified in the fair value hierarchy.

Investments by Fair Value	Total	Level 1	Level 2	Level 3
Equity securities				
Domestic common stock				
Communication services	\$ 16,340,183	\$ 16,340,183	\$ -	\$ -
Consumer discretionary	24,787,696	24,787,696	-	-
Consumer staples	12,158,879	12,158,879	-	-
Energy	5,446,285	5,446,285	-	-
Financials	33,598,778	33,598,778	-	-
Healthcare	34,471,515	34,471,515	-	-
Industrials	26,769,788	26,769,788	-	-
Information technology	43,256,976	43,256,976	-	-
Materials	8,687,812	8,687,812	-	-
Real estate	9,210,892	9,210,892	-	-
Utilities	2,790,910	2,790,910	-	-
Total domestic common stock	<u>217,519,714</u>	<u>217,519,714</u>	<u>-</u>	<u>-</u>
International common stock				
Consumer discretionary	1,787,332	1,787,332	-	-
Healthcare	2,730,127	2,730,127	-	-
Industrials	1,089,049	1,089,049	-	-
Information technology	2,103,099	2,103,099	-	-
Materials	302,358	302,358	-	-
Other	2,827,111	2,827,111	-	-
Real estate	357,181	357,181	-	-
Total international common stock	<u>11,196,257</u>	<u>11,196,257</u>	<u>-</u>	<u>-</u>
Fixed income mutual funds	<u>105,896,120</u>	<u>105,896,120</u>	<u>-</u>	<u>-</u>
Total investments at fair value	<u>334,612,091</u>	<u>\$ 334,612,091</u>	<u>\$ -</u>	<u>\$ -</u>
Invested securities lending collateral				
Collateralized mortgage obligations	290,793	\$ -	\$ 290,793	\$ -
Commercial paper	3,699,101	-	3,699,101	-
Mutual funds	14,204,410	14,204,410	-	-
Repurchase agreements	28,110,000	-	28,110,000	-
Total invested securities lending collateral	<u>46,304,304</u>	<u>\$ 14,204,410</u>	<u>\$ 32,099,894</u>	<u>\$ -</u>
Investments exempt from fair value hierarchy				
Short term investments	<u>11,768,445</u>			
Investments measured at net asset value (NAV)				
Commingled international equity funds	81,913,520			
Commingled fixed income fund	57,811,038			
Commingled real estate investment fund	23,052,141			
Hedge funds	49,682,114			
Private equity limited partnership funds	22,268,893			
Total investments measured at NAV	<u>234,727,706</u>			
Total	<u>\$ 627,412,546</u>			
Reconciliation to Statement of Fiduciary Net Position				
Total	\$ 627,412,546			
Securities lending collateral	(46,304,304)			
Receivable for pending investment sales	(335,771)			
Payable for pending investment purchases	160,818			
Investments per Statement of Fiduciary Net Position	<u>\$ 580,933,289</u>			

Investments Measured at Net Asset Value	Total	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Commingled international equity funds	\$ 81,913,520	\$ -	Daily, monthly	1-7 days
Commingled fixed income fund	57,811,038	-	Daily	1 day
Commingled real estate investment fund	23,052,141	-	Quarterly	45 days
Hedge funds				
Long/short equity fund	49,682,114	-	Quarterly	45 days
Private equity limited partnership funds	22,268,893	8,344,630	Not eligible	N/A
Total investments measured at NAV	<u>\$ 234,727,706</u>	<u>\$ 8,344,630</u>		

Commingled international equity funds, fixed income fund, and real estate investment fund: Consisting of two international equity funds (long-term capital appreciation), one fixed income fund (high total investment return through current income and capital appreciation), and one real estate investment fund (high level of current income with moderate appreciation), these funds are considered commingled in nature. These funds are valued at NAV of units held at the end of period based upon the fair value of the underlying investments.

Long/short equity hedge fund: Consisting of one fund, this strategy invests in both long and short in global equity marketable securities, and can be both long and short in its positioning. This fund seeks to provide diversification by holding a number of funds within a single fund structure. This investment is valued at NAV and is redeemable quarterly.

Private equity limited partnership funds: Consisting of two funds, these investments are valued at NAV. The funds are not eligible for redemption. Distributions are received as underlying investments within the funds are liquidated, which on average can occur over the span of 10 years.

4. CAPITAL ASSETS

Capital assets consist of the following as of December 31, 2019:

	December 31, 2018	Additions	Disposals	December 31, 2019
Capital assets not being depreciated:				
Land	\$ 932,050	\$ -	\$ -	\$ 932,050
Total capital assets, not being depreciated	932,050	-	-	932,050
Capital assets being depreciated:				
Building	3,033,136	-	-	3,033,136
Equipment, furnishings and software	3,345,686	83,209	(17,654)	3,411,241
Total capital assets, being depreciated	6,378,822	83,209	(17,654)	6,444,377
Less accumulated depreciation for:				
Building	934,110	67,034	-	1,001,144
Equipment, furnishings and software	958,733	225,315	(17,654)	1,166,394
Total accumulated depreciation	1,892,843	292,349	(17,654)	2,167,538
Total capital assets being depreciated, net	4,485,979	(209,140)	-	4,276,839
Total capital assets, net	<u>\$ 5,418,029</u>	<u>\$ (209,140)</u>	<u>\$ -</u>	<u>\$ 5,208,889</u>

5. NET PENSION LIABILITY OF EMPLOYERS

The components of the net pension liability of employers as of December 31, 2019 are as follows:

Year Ended	Total Pension Liability (TPL) (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (NPL) (a - b)	Plan Fiduciary Net Position as a % of TPL (b/a)	Covered Payroll (c)	NPL as a % of Covered Payroll ((a-b)/c)
12/31/2019	\$ 785,589,623	\$ 588,559,280	\$ 197,030,343	74.92%	\$ 433,125,201	45.49%

Actuarial assumptions

Actuarial valuations of the Plan involve estimates of the reported amount and assumptions about probability of occurrence of events far into the future. Examples include assumptions about future employment, mortality and future compensation increases. Amounts determined regarding the net pension liability are subject to continual revision as actual results are compared with past expectations and new estimates are made about the future.

The purpose of the schedule of net pension liability is to present multi-year trend information about whether the Plan's fiduciary net position is increasing or decreasing over time relative to the total pension liability. This schedule is presented in the required supplementary information following the notes to the financial statements. Until a full 10-year trend is completed, the multi-year information will be added as it becomes available.

The total pension liability as of December 31, 2019, was based on the most recent actuarial valuation as of December 31, 2018, rolled forward to December 31, 2019, using the following actuarial assumptions. An actuarial experience study is performed every 5 years. The most recent actuarial experience study covered the period 2014 through 2018.

Actuarial cost method	Entry age normal
Investment rate of return	7.25%
Inflation	2.5%
Compensation increases	2.73% to 10.10%
Mortality rates	Pub-2010 General Annuitant Median Table, no adjustment for males and 110% scaling for females, and a one-year age set forward for both males and females. Future mortality improvements assumed using 75% of the MP-2018 Scale.

Sensitivity of the net pension liability

The sensitivity of the net pension liability of employers to changes in the discount rate is presented below.

As of December 31, 2019, the net pension liability calculated using the discount rate of 7.25% is presented as well as what the employers' net pension liability would be using a discount rate that is 1% lower (6.25%) or 1% higher (8.25%) than the current rate.

	1% Decrease (6.25%)	Current Rate (7.25%)	1% Increase (8.25%)
Net pension liability	\$300,693,833	\$197,030,343	\$111,117,935

Long-term expected rate of return

The long-term expected rate of return on the Plan's investments was determined using a building-block method in which best-estimate ranges of expected future real rates of returns (expected returns, net of investment

expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the Plan's target allocations for 2019 are summarized below along with the long term geometric return. Geometric return (also referred to as the time weighted return) is considered standard practice within the investment management industry. Geometric returns represent the compounded rate of growth of a portfolio. The method eliminates the effects created by cash flows.

Asset Class	Target Asset Allocation	Long-Term Arithmetic Basis	
		Expected Real Return	Weighted Expected Real Return
U.S. Large Cap Equity	26.00%	7.20%	1.87%
Core Plus	21.00%	2.89%	0.61%
Non-U.S. Equity	14.00%	8.35%	1.17%
Long/Short Equity	9.00%	5.64%	0.51%
U.S. Small Cap Equity	12.00%	8.41%	1.01%
Absolute Return	9.00%	4.25%	0.38%
Core Real Estate	5.00%	6.79%	0.34%
Private Equity	4.00%	10.40%	0.42%
Total	100.00%		6.30%
		Inflation	2.50%
		Long-term expected geometric return	8.80%

The discount rate used to measure the total pension liability as of December 31, 2019 was 7.25%. The projection of cash flows used to determine the discount rate assumed that contributions from plan members will be made at the current statutory rates and that contributions from employers will be made based on the Plan's revenue sources (various fees and penalties paid to the counties). Such revenue was assumed to increase at the rate of 1% per year. This increase assumption has been used by the Plan in prior funding status projections. Historically, revenue increase has averaged more than 1% per year. Based on the assumptions, the Plan's fiduciary net position was projected to be available to make projected future benefit payments of current plan members. The projections covered an 80-year period into the future. The long-term expected rate of return on the Plan's investments was applied to projected benefit payments.

6. PRIOR SERVICE CONTRIBUTIONS

An eligible county employee who was employed prior to CERF's inception on August 28, 1994, is considered to have prior service. If the employee was working on June 10, 1999, and worked through January 1, 2000, the prior service is awarded. This means the employee does not have to purchase the service to have it deemed creditable. If the employee did not work continually from June 10, 1999, through January 1, 2000, the prior service must be purchased to become creditable. The prior service is calculated at the time of retirement and can be paid in one lump sum or over a period of up to 48 months. The monthly pension benefit is reduced by the buyback amount until the prior service has been paid in full.

An eligible county employee who was employed on January 1, 1990, but not employed on August 28, 1994, and who had at least eight years of service is classified as a special consultant. A special consultant can elect to purchase eight years or more of their service in order to receive a CERF benefit. Since a special consultant would have terminated employment prior to CERF's inception, they are required to make a larger buyback and must pay at least 50% of this amount up front. The remaining amount is deducted from the monthly pension benefit for up to 48 months.

An eligible county employee who opted out of the system prior to January 1, 2000, had the option to become a member within three months of the three year anniversary of the decision to opt out. Upon deciding to opt in to the system, such employee either purchased in total or began payroll deductions to purchase all or part of their prior creditable service plus interest over a maximum period of four years. Such amounts were recognized as contributions when received by CERF.

The receivables for member prior service contributions shown on the accompanying statements of fiduciary net position represent the total amount, as of December 31, 2019, that are due in future periods from retirees who have elected to purchase prior service.

7. RETIREMENT PLANS FOR FUND EMPLOYEES

All full-time employees of CERF are eligible for participation in a defined contribution plan. CERF contributes 6% of a participating employee's monthly gross salary to the plan. The contribution requirements of the plan are governed by the plan document, which may be amended by the Board of Directors. Employees do not contribute to the retirement plan. Employees become vested in contributions made by CERF after 5 years of creditable service. Total contributions for the year ended December 31, 2019 were \$87,601.

All full-time employees are eligible for participation in an Internal Revenue Code (IRC) 457 deferred compensation plan upon their eligibility in the defined contribution plan.

8. DEFINED CONTRIBUTION AND DEFERRED COMPENSATION PLANS

Plan description: Effective January 1, 2000, CERF also administers a defined contribution plan and an IRC Section 457 deferred compensation plan. Members of the pension plan are eligible to participate. The plans were established to provide an opportunity for members of the pension plan to have additional retirement benefits. The plans' provisions and contribution requirements are established and may be amended only by action of the Missouri Legislature.

Contributions: Pension plan members who are not members of LAGERS are required to contribute 0.7% of gross compensation to the defined contribution plan. Contributions of \$1,078,363 were made during the year ended December 31, 2019. Participation in the 457 plan is voluntary. The level of contributions to the 457 plan is elected by the employee, subject to the limitations of IRC Sections 401(a) and 457. CERF's Board of Directors determines if matching contributions from the pension plan trust funds for a calendar year will be made to the defined contribution plan accounts of those who participated in the 457 plan and met the applicable service criteria during the plan year. The amount of any matching contribution is limited to an amount not needed to keep the pension plan actuarially sound. The matching contribution is also limited to 50% of a member's voluntary contributions to the 457 plan, up to 3% of the member's compensation. Members vest in the matching portion of contributions allocated to their respective accounts after five years of creditable service. Matching contributions for the year ended December 31, 2019 were \$4,117,722.

Administration: Maintenance of individual member accounts and custody of assets have been contracted to a third party administrator and investment custodian, respectively. Member contributions are sent directly to the third party administrator by the counties. Members can self-direct investments of their contributions and their respective share of matching contributions in a number of investment options. Separate trust funds are maintained for the defined contribution and 457 plan assets.

Because CERF does not hold the plans' assets and does not have significant administrative responsibilities, the plans' assets and changes in net assets are not reported in CERF's financial statements.

9. RISK MANAGEMENT

CERF is exposed to various risks of loss related to natural disasters, errors and omission, loss of assets, torts, etc. CERF has chosen to cover such losses through the purchase of commercial insurance. There have been no significant insurance claims filed or paid during the past three years.

COUNTY EMPLOYEES' RETIREMENT FUND

REQUIRED SUPPLEMENTARY INFORMATION SCHEDULE OF CHANGES IN THE NET PENSION LIABILITY For the Years Ended December 31, 2019, 2018, 2017, 2016, 2015 and 2014

	2019	2018	2017	2016	2015	2014
Total pension liability						
Service cost	\$ 20,789,409	\$ 19,941,921	\$ 19,108,969	\$ 18,004,559	\$ 17,052,205	\$ 13,595,040
Interest cost	55,747,889	53,188,413	50,835,611	47,131,401	44,726,570	41,986,362
Difference between actual and expected experience	6,965,886	(774,315)	(3,400,101)	(14,041,749)	9,248,266	(1,804,223)
Benefit payments, including refunds of member contributions	(40,972,463)	(37,249,168)	(34,808,444)	(31,460,383)	(29,901,257)	(27,411,906)
Effect of assumption changes or inputs	427,253	-	-	30,295,003	33,428,440	-
Net change in total pension liability	42,957,974	35,106,851	31,736,035	49,928,831	74,554,224	26,365,273
Total pension liability - beginning of year	742,631,649	707,524,798	675,788,763	625,859,932	551,305,708	524,940,435
Total pension liability - end of year	<u>\$ 785,589,623</u>	<u>\$ 742,631,649</u>	<u>\$ 707,524,798</u>	<u>\$ 675,788,763</u>	<u>\$ 625,859,932</u>	<u>\$ 551,305,708</u>
Plan fiduciary net position						
Employer contributions	\$ 31,109,986	\$ 28,517,335	\$ 21,006,080	\$ 20,329,625	\$ 19,968,537	\$ 19,781,514
Member contributions	16,291,609	15,698,324	14,415,927	13,799,759	13,115,748	11,899,932
Net investment return (loss)	96,095,624	(16,373,659)	64,596,939	21,571,995	99,571	17,958,335
Benefit payments, including refunds of member contributions	(40,972,463)	(37,249,168)	(34,808,444)	(31,460,383)	(29,901,257)	(27,411,906)
Defined contribution plan match	(4,117,722)	(3,698,619)	(3,200,949)	(3,133,484)	(2,861,751)	(2,696,164)
Administrative and other expenses	(3,150,622)	(3,121,552)	(3,249,395)	(2,841,954)	(2,522,685)	(2,125,444)
Net change in Plan fiduciary net position	95,256,412	(16,227,339)	58,760,158	18,265,558	(2,101,837)	17,406,267
Plan fiduciary net position - beginning of year	493,302,868	509,530,207	450,770,049	432,504,491	434,606,328	417,200,061
Plan fiduciary net position - end of year	<u>588,559,280</u>	<u>493,302,868</u>	<u>509,530,207</u>	<u>450,770,049</u>	<u>432,504,491</u>	<u>434,606,328</u>
Net pension liability - end of year	<u>\$ 197,030,343</u>	<u>\$ 249,328,781</u>	<u>\$ 197,994,591</u>	<u>\$ 225,018,714</u>	<u>\$ 193,355,441</u>	<u>\$ 116,699,380</u>

Note: This schedule is intended to show information for ten years. Additional years will be displayed as they become available.

COUNTY EMPLOYEES' RETIREMENT FUND

REQUIRED SUPPLEMENTARY INFORMATION SCHEDULE OF NET PENSION LIABILITY

For the Years Ended December 31, 2019, 2018, 2017, 2016, 2015 and 2014

Year Ended	Total Pension Liability (TPL) (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (NPL) (a - b)	Plan Fiduciary Net Position as a % of TPL (b/a)	Covered Payroll (c)	NPL as a % of Covered Payroll ((a-b)/c)
12/31/2019	\$ 785,589,623	\$ 588,559,280	\$ 197,030,343	74.92%	\$ 433,125,201	45.49%
12/31/2018	742,631,649	493,302,868	249,328,781	66.43%	414,454,785	60.16%
12/31/2017	707,524,798	509,530,207	197,994,591	72.02%	401,037,836	49.37%
12/31/2016	675,788,763	450,770,049	225,018,714	66.70%	391,801,920	57.43%
12/31/2015	625,859,932	432,504,491	193,355,441	69.11%	372,165,232	51.95%
12/31/2014	551,305,708	434,606,328	116,699,380	78.83%	366,151,670	31.87%

Note: This schedule is intended to show information for ten years. Additional years will be displayed as they become available.

COUNTY EMPLOYEES' RETIREMENT FUND

REQUIRED SUPPLEMENTARY INFORMATION SCHEDULE OF EMPLOYER CONTRIBUTIONS

Year Ended December 31	Actuarially Determined Contribution	Actual Employer Contributions	401a Matching Contributions	Net Defined Benefit Contributions	Contribution Excess/ (Deficiency)	Actual Covered Member Payroll	Actual Contribution as a % of Covered Payroll
2010	\$ 19,353,216	\$ 19,739,918	\$ 2,126,632	\$ 17,613,286	\$ (1,739,930)	\$ 356,101,368	4.95%
2011	17,641,319	19,364,023	2,224,641	17,139,382	(501,937)	349,451,052	4.90%
2012	18,663,294	19,919,125	2,472,044	17,447,081	(1,216,213)	352,112,336	4.95%
2013	19,441,738	20,348,888	2,531,548	17,817,340	(1,624,398)	358,016,680	4.98%
2014	18,623,038	19,781,514	2,696,164	17,085,350	(1,537,688)	366,151,670	4.67%
2015	22,051,507	19,968,537	2,861,751	17,106,786	(4,944,721)	372,165,232	4.60%
2016	25,608,251	20,329,625	3,133,484	17,196,141	(8,412,110)	391,801,920	4.39%
2017	26,677,238	21,006,080	3,200,949	17,805,131	(8,872,107)	401,037,836	4.44%
2018	28,267,433	28,517,335	3,698,619	24,818,716	(3,448,717)	414,454,785	5.99%
2019	30,817,130	31,109,986	4,117,722	26,992,264	(3,824,866)	433,125,201	6.23%

COUNTY EMPLOYEES' RETIREMENT FUND

REQUIRED SUPPLEMENTARY INFORMATION SCHEDULE OF INVESTMENT RETURNS

Year Ended December 31	Investment Returns, Net of Investment Expenses	
	Time Weighted	Money Weighted
2010	14.00%	*
2011	-0.50%	*
2012	13.20%	*
2013	19.30%	*
2014	4.30%	4.34%
2015	0.00%	0.00%
2016	5.03%	5.06%
2017	14.42%	14.55%
2018	-3.21%	-3.24%
2019	19.50%	19.62%

**CERF has calculated the annual time-weighted returns since inception in 1995. However, data for the money-weighted returns is only available starting with 2014.*

COUNTY EMPLOYEES' RETIREMENT FUND

NOTES TO REQUIRED SUPPLEMENTARY INFORMATION

The information presented in the required supplementary information was determined as part of the most recent actuarial valuation as of December 31, 2018, rolled forward to December 31, 2019. Additional information as of these actuarial valuations follows.

Changes in benefit terms: On October 1, 2007, significant benefit improvements were made for members retiring on or after that date. The cost impact of the improvements was first incorporated in 2008.

Actuarial methods and assumptions: The actuarially determined contribution rates in the schedule of employers' contributions are calculated as of January 1 of the respective calendar year.

The following actuarial methods and assumptions were used to determine contribution rates reported in the schedule as of December 31, 2019.

Actuarial cost method	Entry age normal
Amortization method:	
Level percent or dollar	Level percent
Closed, open, or layered periods	Layered
Amortization period	20 years
Amortization growth rate	2%
Asset valuation method	Actuarial value of assets with 5 years smoothing of gains and losses
Investment rate of return	7.25%
Inflation	2.5%
Compensation increases	2.7%, plus merit
Cost of living adjustments	1.0% per annum; 50% cap on initial benefit
Retirement age	Rates vary by age as shown in Appendix A of the January 1, 2020 Actuarial Valuation Report
Turnover	Select and ultimate rates based on age and service as shown in Appendix A of the January 1, 2020 Actuarial Valuation
Mortality rates	Pub-2010 General Annuitant Median Table, no adjustment for males and 110% scaling for females, and a one-year age set forward for both males and females. Future mortality improvements assumed using 75% of the MP-2018 Scale.

COUNTY EMPLOYEES' RETIREMENT FUND

SCHEDULE OF ADMINISTRATIVE EXPENSES

For the Year Ended December 31, 2019

Personnel services	
Staff salaries	\$ 1,431,994
Payroll taxes	97,368
Retirement	87,601
Insurance	211,189
	<hr/>
Total personnel services	1,828,152
	<hr/>
Professional services	
Actuarial	86,355
Audit	77,226
Legal counsel	172,951
Legislative consultant	77,000
Litigation	10,673
Plan design and implementation consultants	239,395
	<hr/>
Total professional services	663,600
	<hr/>
Communication	
Printing	16,037
Postage	21,730
Telephone and internet	40,151
	<hr/>
Total communication	77,918
	<hr/>
Rentals	
Equipment leasing and maintenance	61,682
	<hr/>
Total rentals	61,682
	<hr/>
Depreciation	292,350
	<hr/>
Miscellaneous	
Utilities	23,343
Board of directors expenses	13,847
County visits and association conferences	9,994
Due diligence visits	150
Business risk insurance premiums	74,755
Staff development and Board education	15,912
Office	88,919
	<hr/>
Total miscellaneous	226,920
	<hr/>
Total administrative expenses	\$ 3,150,622
	<hr/>

COUNTY EMPLOYEES' RETIREMENT FUND

SCHEDULE OF INVESTMENT EXPENSES For the Year Ended December 31, 2019

Investment management expenses	
Domestic stocks	\$ 1,312,689
International stocks	509,671
Bonds	156,724
Private equity	219,408
Real estate	229,008
	<hr/>
Total investment management expenses	2,427,500
	<hr/>
Other investment expenses	
Investment consultants	275,597
Investment custodian	118,289
Bank depository	935
	<hr/>
Total other investment expenses	394,821
	<hr/>
Total investment expenses	\$ 2,822,321
	<hr/> <hr/>
Securities lending expenses	
Borrower rebates	\$ 1,317,782
Agent fees	28,805
	<hr/>
Total securities lending expenses	\$ 1,346,587
	<hr/> <hr/>

INVESTMENT SECTION





**COUNTY EMPLOYEES'
RETIREMENT FUND**

June 8, 2020

Dear Board of Directors and CERF members:

CERF's investment portfolio for the fiscal year ended December 31, 2019, had a gain of 20.37%, as calculated using a time-weighted rate of return methodology based upon market values. All of the plan's underlying asset class pools had positive returns. The returns across the three major asset classes were dispersed, illustrating the impact on asset allocation to help reduce the volatility of annual returns while focusing on the long-term performance objectives.

CERF's US Large Cap Equity portfolio had a gain of 34.85% compared to the equity benchmark of 31.49%. The US Small/Mid Cap Equity portfolio returned 33.73% compared to the benchmark of 27.77%, Non-US Equity returned 18.61% compared to the benchmark of 22.66%, Global Equity had a return of 15.31% compared to the benchmark of 13.73%, and Private Equity returned 7.69% compared to the benchmark of 31.49%. Outperformance by the domestic equity portfolios for the year was mainly driven by strong stock selection in large cap growth and small cap value. Underperformance in Non-US Equity was due in part to poor stock selection in France.

CERF's Fixed Income portfolio returned 9.46%, compared to the fixed income benchmark of 8.72%. Outperformance for the year was mainly driven by security selection, high yield bonds, and being underweight in U.S. Treasury Bills.

CERF's Real Assets portfolio returned 4.39%, compared to the real assets benchmark of 5.35%. Underperformance for the year was mainly driven by the disposition of malls.

These returns were calculated by CERF's investment consultant, Asset Consulting Group.

The success of the investment program is defined by its adherence to the investment policy guidelines, and its performance compared to the stated return objectives and risk parameters.

The following chart shows the pension fund's annualized performance and risk since its inception compared to the stated objectives:

**Total Pension Fund Performance vs. Objectives
December 31, 1994 - December 31, 2019**

Return Objectives	Benchmark	CERF
At a minimum, it is the objective of CERF to exceed its actuarial interest rate assumption on an ongoing basis.	7.5%	8.8%
The pension fund's annualized total return should equal or exceed the annualized rate of inflation as indicated by the Consumer Price Index by 5%	7.3%	8.8%

Total Pension Fund Performance vs. Objectives
December 31, 1994 - December 31, 2019

Risk Objective	Benchmark	CERF
The pension fund's total return should exceed the total return of the Policy Index.	8.7%	8.8%
The pension fund's level of risk, as measured by Standard Deviation, should be consistent with the risk the Policy Index.	9.5%	9.3%

The Policy Index consists of 65% MSCI ACWI, 30% BloomBar US Aggregate, and 5% NFI ODCE.

As reflected above, CERF is meeting or exceeding our performance objectives. The pension plan asset will continue to be managed with a long term focus, as it is expected that over shorter time periods, investment performance will remain volatile. CERF will also continue to manage investments with a belief that asset allocation remains the most significant driver of investment performance and the consistent execution of the investment process will have a significant influence on achieving the plan's objectives.

Respectfully submitted,



Richard Anderson
Investment Officer



Kelly Schwartze, CPA
Deputy Director

Investment Objectives

CERF's investment program exists for the purpose of providing retirement income to the plan's participants. The pension plan's assets are invested in a manner that is consistent with its investment policy; a formal document that articulates the fund's goals, objectives, and risk parameters, and states the importance of diversification, risk management and a long-term, strategic investment time horizon.

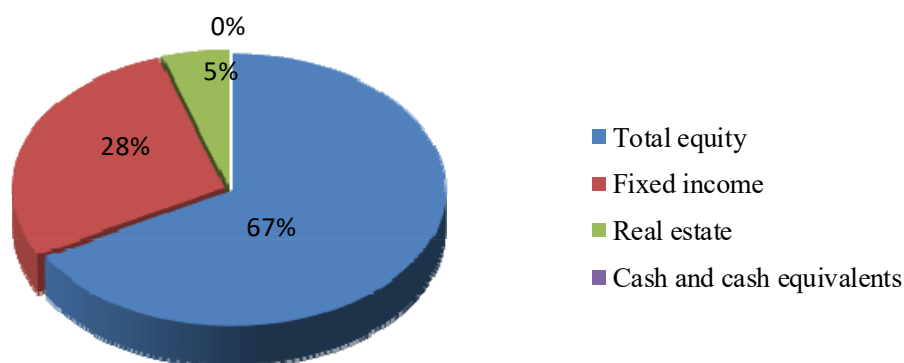
CERF's investment portfolio has exposures to each of the broad investment categories (stocks, bonds, and real estate), sub-asset classes (large cap stocks, small cap stocks, etc.) and geographic regions (U.S., non-U.S.). There are three major asset categories used – equity, fixed income, and real estate. CERF has established a target allocation for each of these categories, which includes a variance of up to 5%.

The following table summarizes the fair value of investments as of December 31, 2019, along with the target allocations as set forth in the investment policy:

Asset Allocation			
Asset Class *	Fair Value	% of Total Fair Value	Target Allocation
Equity			
U.S. Large Cap equity	\$ 162,821,338	28%	25%
U.S. Small/Mid Cap equity	74,831,475	13%	10%
Non-U.S. equity	81,913,520	14%	15%
Global equity	49,682,114	8%	10%
Private equity	22,268,893	4%	5%
Total equity	391,517,340	67%	65%
Fixed income	163,708,235	28%	30%
Real estate	26,652,141	5%	5%
Cash and cash equivalents	2,655,573	0%	0%
Total investments	\$ 584,533,289	100%	100%

*Certain investments have been reclassified for investment management purposes. As such, classifications may not agree with the audited financial statements.

Asset Allocation - Asset Class



CERF's portfolio structure is regularly monitored by the investment consultant, CERF's internal staff, and its Board of Directors. The portfolio is rebalanced when appropriate to keep allocations to various investments within the stated ranges defined in the investment policy. New asset classes are periodically added to the mix to enhance diversification. Although long-term focused, the portfolio is adjusted as needed to take into consideration near-term risks and opportunities.

Equity Investments

CERF invests in different types of equities (stocks) for the growth opportunities they provide. CERF's portfolio currently has exposure to domestic stocks, international stocks, hedged equity funds, and private equity in different size categories (small, mid, and large capitalization), in different styles (value and growth), and with different investment management organizations.

Fixed Income Investments

CERF's fixed income (bond) portfolio is in place to enhance diversification and provide liquidity and downside protection. The fixed income portfolio is also diversified and invested across the fixed income markets, with an emphasis on high quality bonds. The portfolio has exposure to various quality, sector, geography, and security types.

Real Assets Investments

Real estate investments provide an additional layer of diversification to the portfolio, as they behave differently than stocks and bonds.

CERF's current allocation to real estate is achieved through a diversified real estate fund. The fund has exposure to different geographic locations and property types, while maintaining strict quality requirements for each property, including leverage limits and occupancy rates.

The following investment results were prepared by CERF's consultant using a time-weighted rate of return methodology based upon market values, and are gross of fees.

Investment Results For the Year Ended December 31, 2019

Asset Class *	Fair Value	Annualized Rate of Return				Since Inception
		1 Year	3 Years	5 Years	10 Years	Performance
Equity						
U.S. Large Cap equity	\$ 162,821,338	34.85%	16.41%	11.37%	13.65%	9.13%
S&P 500		31.49%	15.27%	11.70%	13.56%	7.34%
U.S. Small/Mid Cap equity	74,831,475	33.73%	17.27%	11.93%	14.98%	9.37%
Russell 2500		27.77%	10.33%	8.93%	12.58%	9.36%
Non-U.S. equity	81,913,520	18.61%	8.65%	6.63%	5.85%	8.75%
MSCI EAFE		22.66%	10.11%	6.18%	6.00%	7.92%
Global equity	49,682,114	15.31%	6.76%	3.75%	4.84%	3.63%
HFRI FOF: Strategic		13.73%	6.16%	4.56%	4.69%	3.72%
Private equity	22,268,893	7.69%	14.60%	11.30%	11.67%	10.78%
S&P 500		31.49%	15.27%	11.70%	13.56%	14.19%
Fixed income	163,708,235	9.46%	4.52%	2.70%	4.48%	5.01%
BloomBar US Aggregate		8.72%	4.03%	3.05%	3.75%	4.28%
Real estate	26,652,141	4.39%	6.53%	8.43%	11.50%	5.82%
NFI ODCE		5.53%	7.10%	8.97%	11.42%	8.70%
Cash and cash equivalents	2,655,573	2.07%	1.51%	0.96%	0.00%	0.71%
Total Fund	\$ 584,533,289	20.37%	10.57%	7.50%	8.94%	8.84%
Total Fund Policy Index **		20.54%	10.16%	8.05%	9.88%	8.70%

* Certain investments have been reclassified for investment management purposes. As such, classifications may not agree with the audited financial statements.

** Effective January 1, 2017, the index consists of 65% MSCI ACWI, 5% NFI ODCE, and 30% BloomBar US Aggregate. Prior to this date, it was comprised of 65% S&P 500 and 35% BloomBar US Aggregate.

Performance calculations in the above schedule were prepared using time-weighted rates of return.

2019 Year in Review

The global economy began 2019 in an uncertain state, with concerns including US-China trade tensions, a slowing manufacturing base, and Brexit prominent among a host of political and social fractures. Although the perceived threat of a US or global recession intensified throughout the summer, widespread policy accommodation and progress toward key resolutions fostered a more constructive outlook by year-end.

A strong year for global equities, 2019 saw US stocks leading the way, with the S&P 500 returning 31.4%. Non-US developed and emerging markets also saw strong double-digit returns, with the MSCI EAFE Index returning 22.7% and the MSCI Emerging Markets Index gaining 18.9%.

US bonds performed well, benefiting from falling interest rates and the Federal Reserve's shift to an accommodative monetary policy in the back half of the year. Given sensitivity to interest rates, the BloomBar US Aggregate Index clearly outpaced expectations in 2019 with a total return of 8.7%, while robust demand for income allowed lower-quality credit to also perform quite well.

Largest Equity Holdings (Non-Commingled Funds)
December 31, 2019

	Security	Fair Value	Shares
1)	Microsoft Corp.	\$ 4,112,501	26,078
2)	Zoetis, Inc.	3,890,428	29,395
3)	Visa, Inc.	3,720,984	19,803
4)	Amazon.com, Inc.	3,708,615	2,007
5)	Thermo Fischer Scientific, Inc.	3,451,744	10,625
6)	JPMorgan Chase & Co.	3,415,300	24,500
7)	SBA Communications Corp.	3,404,707	14,128
8)	Sherwin-Williams Co.	3,186,712	5,461
9)	Autodesk, Inc.	3,097,355	16,883
10)	Roper Technologies, Inc.	3,027,250	8,546

Note: A complete list of holdings is available upon request.

Schedule of Advisor Fees
For the Year Ended December 31, 2019

Investment management expenses	
Domestic stocks	\$ 1,312,689
International stocks	509,671
Bonds	156,724
Private equity	219,408
Real estate	229,008
	<hr/>
Total investment management expenses	2,427,500
Other investment expenses	
Investment consultants	275,597
Investment custodian	118,289
Bank depository	935
	<hr/>
Total other investment expenses	394,821
	<hr/>
Total investment expenses	\$ 2,822,321
	<hr/>

**Schedule of Brokerage Commissions
For the Year Ended December 31, 2019**

Broker name	Shares	Commissions	Per Share
TCW	1,251,835	\$ 49,845	\$ 0.04
Brown Advisory	161,220	4,206	0.03
William Blair	586,079	14,166	0.02
Burgundy Asset Management	534,343	6,214	0.01
Total commissions	<u>2,533,477</u>	<u>\$ 74,431</u>	<u>\$ 0.10</u>

ACTUARIAL SECTION





Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

Actuary's Certification Letter

June 8, 2020

The Board of Trustees
County Employees' Retirement Fund 2121 Schotthill Woods Drive Jefferson City, MO 65101

The annual actuarial valuation of the County Employees' Retirement Fund (CERF) as of January 1, 2019 for assessing plan funded status and calculating the actuarially determined contribution for the 2019 plan year was performed by Milliman, Inc. The major findings of the valuation are contained in an actuarial valuation report dated June 13, 2019. During 2019, CERF issued a Request for Proposal and selected Cavanaugh Macdonald Consulting, LLC (CMC) as the new retained actuary. As part of the transition, CMC replicated the January 1, 2019 actuarial valuation and results were within an acceptable range of the valuation prepared by Milliman. The replication valuation was then used by CMC to develop the information in the valuation report prepared under Governmental Accounting Standard Board Statement Number 67 as of December 31, 2019.

In preparing that report, we relied, without audit, on information supplied by CERF, Williams Keepers, LLC and Milliman, Inc. This information includes, but is not limited to, statutory provisions, member census data, and financial information. We found this information to be reasonably consistent and comparable with information in prior years. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

Actuarial assumptions, including discount rates, mortality tables, and others identified in this report, and actuarial cost methods are prescribed by CERF's Board. The Board is responsible for selecting the plan's funding policy, actuarial valuation methods, the asset valuation method, and the actuarial assumptions. The policies, methods and assumptions used are those that have been so prescribed and are described in the Actuarial Basis section of this report. In our opinion the assumptions and methods used meet the requirements of the applicable Actuarial Standards of Practice.



The valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While the valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Actuarial computations presented in the funding valuation report are for purposes of evaluating the sufficiency of CERF's funding sources (employee contributions and county revenues) to meet long term funding needs of the System. The calculations in the January 1, 2019 valuation report have been made on a basis consistent with the System's funding policy and goals.

Cavanaugh Macdonald Consulting LLC's work is prepared solely for the use and benefit of the County Employees' Retirement Fund ("System"). No third party should rely upon Cavanaugh Macdonald Consulting LLC's work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

In addition to the annual actuarial funding valuation report, a separate report is issued to provide financial reporting information in accordance with Governmental Accounting Standards Board (GASB) Statement Nos. 67 and 68.

The following schedules in the Actuarial Section of the CAFR were prepared based upon certain information presented in the previously mentioned funding and financial reporting valuation reports:

Summary of Actuarial Methods and Assumptions
Retirees and Beneficiaries Added and Removed
Financial Experience
Summary of Plan Provisions

Schedule of Active Member Valuation Data
Employer Schedule of Funding Progress
Short-Term Solvency Test

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

The signing actuaries are independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Sincerely,

A handwritten signature in blue ink, appearing to read 'LL'.

Larry Langer ASA, MAAA, EA
Principal and Consulting Actuary

A handwritten signature in blue ink, appearing to read 'Patrice Beckham'.

Patrice Beckham FSA, MAAA, EA
Principal and Consulting Actuary

The defined benefit pension actuarial information presented in this *2019 Comprehensive Annual Financial Report* (CAFR) is based on CERF's most current actuarial valuation data as of December 31, 2019. The Financial Section of the CAFR presents additional actuarial valuation information on a financial reporting basis, or accounting basis, as required by GASB 67. This section presents actuarial valuation information on a funding basis, and has been updated to reflect pension funding results as of December 31, 2019. The actuarial assumptions in this section are applicable to 2019, unless otherwise noted.

Summary of Actuarial Methods and Assumptions

Actuarial cost method: Entry age cost method. Entry age is the age of the members' hire date. Normal cost and actuarial accrued liability are calculated on an individual basis and are based on costs allocated as a level percent of compensation, as if the current benefit formulas have always been in effect.

Amortization method: Layered, with payments increasing with the expected growth in revenue each year. The Unfunded Actuarial Accrued Liability (UAAL) is amortized with payments that increase each year in an effort for expected revenue to be sufficient to make the payments over the specified amortization period if future experience follows the assumption.

New UAAL arises each year when each new actuarial valuation is published. The newly arising UAAL can be either positive or negative, and can be due either to experience varying from assumptions or to changes in the actuarial accrued liability from modifications to assumptions, plan provisions or actuarial methods. Each year's newly arising UAAL is currently amortized over a closed 20-year period with increasing payments.

Amortization period: 20 years

Amortization payment growth rate: 2.0%

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 as of the valuation date is reduced by the sum of the following:

- i. 80% of the prior year gain/loss
- ii. 60% of the second preceding year's gain/loss
- iii. 40% of the third preceding year's gain/loss
- iv. 20% of the fourth preceding year's gain/loss

Actuarial assumptions:

Investment rate of return:	7.25%, net of investment expenses
Inflation:	2.5%
Compensation increases:	2.7%, plus merit
Cost of living adjustments:	1.0% per annum, 50% cap on initial benefit
Mortality rates:	Pub-2010 General Annuitant Below Median Table with no adjustment for males and with 110% scaling for females and a one-year age set forward for both males and females. Future mortality improvements assumed using 75% of the MP-2018 Scale.
Retirement age:	Rates vary by age as shown below

Retirement	
Age	Rate
< 55	0.00
55 - 58	0.05
59	0.08
60	0.10
61	0.17
62	0.25
63	0.18
64	0.20
65	0.35
66 - 69	0.25
70	1.00

Turnover:	Select and ultimate rates based on age and service as shown below:
-----------	--

Select rate during the first 4 years of employment:

Years of Service	Non-LAGERS	LAGERS
0	0.30	0.30
1	0.27	0.25
2	0.20	0.20
3	0.18	0.15
4	0.18	0.14

Ultimate rate for members with more than 4 years of service:

**Withdrawal
Males and Females
LAGERS**

<u>Age</u>	<u>5-7 Yrs</u>	<u>8+ Yrs</u>	<u>Age</u>	<u>5-7 Yrs</u>	<u>8+ Yrs</u>	<u>Age</u>	<u>5-7 Yrs</u>	<u>8+ Yrs</u>	<u>Age</u>	<u>5-7 Yrs</u>	<u>8+ Yrs</u>
< 20	0.00	0.00	32	0.13	0.10	45	0.08	0.06	58	0.08	0.07
20	0.23	0.16	33	0.12	0.10	46	0.08	0.06	59	0.08	0.07
21	0.22	0.15	34	0.11	0.09	47	0.08	0.05	60	0.08	0.08
22	0.21	0.15	35	0.11	0.08	48	0.08	0.05	61	0.08	0.08
23	0.20	0.15	36	0.11	0.08	49	0.07	0.05	62	0.10	0.08
24	0.19	0.15	37	0.10	0.07	50	0.07	0.05	63	0.12	0.09
25	0.18	0.15	38	0.10	0.07	51	0.07	0.05	64	0.15	0.09
26	0.17	0.15	39	0.09	0.07	52	0.07	0.05	65	0.15	0.10
27	0.17	0.15	40	0.09	0.07	53	0.07	0.05	66	0.15	0.10
28	0.16	0.15	41	0.09	0.07	54	0.07	0.07	67	0.20	0.10
29	0.15	0.12	42	0.09	0.07	55	0.07	0.07	68	0.20	0.10
30	0.14	0.12	43	0.08	0.07	56	0.07	0.07	69	0.20	0.10
31	0.13	0.10	44	0.08	0.06	57	0.07	0.07	70 +	0.20	0.10

**Withdrawal
Males and Females
Non-LAGERS**

<u>Age</u>	<u>5-7 Yrs</u>	<u>8+ Yrs</u>	<u>Age</u>	<u>5-7 Yrs</u>	<u>8+ Yrs</u>	<u>Age</u>	<u>5-7 Yrs</u>	<u>8+ Yrs</u>	<u>Age</u>	<u>5-7 Yrs</u>	<u>8+ Yrs</u>
< 20	0.00	0.00	32	0.16	0.11	45	0.11	0.08	58	0.08	0.07
20	0.25	0.19	33	0.15	0.10	46	0.11	0.07	59	0.08	0.07
21	0.24	0.18	34	0.15	0.10	47	0.10	0.07	60	0.08	0.07
22	0.23	0.17	35	0.15	0.10	48	0.10	0.07	61	0.09	0.07
23	0.22	0.16	36	0.14	0.10	49	0.10	0.07	62	0.09	0.08
24	0.21	0.16	37	0.14	0.10	50	0.10	0.07	63	0.09	0.08
25	0.21	0.16	38	0.13	0.09	51	0.10	0.07	64	0.10	0.08
26	0.21	0.16	39	0.13	0.09	52	0.10	0.07	65	0.10	0.09
27	0.20	0.15	40	0.12	0.08	53	0.10	0.07	66	0.12	0.09
28	0.20	0.14	41	0.12	0.08	54	0.09	0.07	67	0.12	0.10
29	0.19	0.13	42	0.12	0.08	55	0.08	0.07	68	0.12	0.10
30	0.17	0.12	43	0.12	0.08	56	0.08	0.07	69	0.12	0.10
31	0.16	0.11	44	0.11	0.08	57	0.08	0.07	70 +	0.15	0.11

Schedule of Active Member Valuation Data

Valuation Date	Number of Members	Annual Payroll	Average Annual Salary	% Increase	Average Age	Average Years of Service
12/31/2019	11,879	\$460,722,845	\$ 38,785	4.0%	45.0	8.2
12/31/2018	11,616	433,125,201	37,287	3.5%	44.9	8.3
12/31/2017	11,500	414,454,785	36,040	1.6%	45.0	8.4
12/31/2016	11,303	401,037,836	35,481	2.2%	45.2	8.7
12/31/2015	11,291	391,801,920	34,700	2.7%	45.3	8.7
12/31/2014	11,010	372,165,232	33,802	1.7%	45.3	9.1
7/1/2013	10,891	361,898,865	33,229	2.1%	45.6	9.1
7/1/2012	10,987	357,441,466	32,533	1.2%	45.4	8.9
7/1/2011	11,010	353,991,192	32,152	0.0%	45.2	8.8
7/1/2010	11,237	361,334,336	32,156	1.9%	45.1	8.5

Retirees and Beneficiaries Added and Removed

Fiscal Year	Number of Retired Members and Beneficiaries		Annual Benefit of Retired Members and Beneficiaries		Total Number of Retired Members and Beneficiaries	Total Annual Benefit	Percentage Increase in Total Annual Benefits	Average Annual Benefit
	Added During the Year	Removed During the Year	Added During the Year	Removed During the Year				
2019	483	169	\$ 3,963,048	\$940,068	5,529	\$ 36,480,147	10.49%	\$ 6,598
2018	347	136	2,468,400	759,108	5,321	33,017,109	6.91%	6,205
2017	476	152	3,469,824	776,892	5,086	30,881,826	9.60%	6,072
2016	329	117	2,069,760	578,325	4,774	28,175,645	6.48%	5,902
2015	376	114	3,025,143	533,604	4,519	26,460,002	10.48%	5,855
2014	334	96	2,644,864	562,560	4,303	23,950,417	8.57%	5,566
2013	439	111	3,712,765	730,599	3,669	22,059,430	10.04%	6,012
2012	325	82	2,448,310	394,302	3,443	20,047,115	8.31%	5,823
2011	396	78	3,620,281	349,898	3,135	18,508,288	15.40%	5,904
2010	286	64	2,371,671	286,190	2,940	16,038,186	9.17%	5,455

Employer Schedule of Funding Progress

CERF uses the entry-age normal actuarial cost method which allocates the actuarial present value of each member's projected benefits on a level basis over the member's pensionable compensation between the entry age of the member and assumed exit ages.

Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liability (AAL) Entry Age	Unfunded AAL (UAAL)	Funded Ratio	Covered Payroll	UAAL as a % of Covered Payroll
6/30/2010	\$294,482,927	\$ 423,561,319	\$129,078,392	69.5%	\$361,334,336	35.7%
6/30/2011	318,320,084	452,366,458	134,046,374	70.4%	353,991,192	37.9%
6/30/2012	331,189,281	482,565,132	151,375,851	68.6%	357,441,466	42.3%
6/30/2013	360,289,802	511,278,478	150,988,676	70.5%	361,898,865	41.7%
12/31/2014	422,283,987	593,982,414	171,698,427	71.1%	372,165,232	46.1%
12/31/2015 *	448,784,038	640,399,679	191,615,641	70.1%	391,801,920	48.9%
12/31/2016	477,065,373	672,625,878	195,560,505	70.9%	401,037,836	48.8%
12/31/2017	507,132,934	706,804,505	199,671,571	71.8%	414,454,785	48.2%
12/31/2018	529,029,220	748,838,283	219,809,063	70.6%	433,125,201	50.7%
12/31/2019 *	563,619,328	784,702,819	221,083,491	71.8%	460,722,845	48.0%

* New assumptions and/or methods adopted

Financial Experience

Actual experience will never coincide exactly with assumed experience (except by coincidence). Gains and losses may offset each other over a period of years, but sizeable year-to-year variations from assumed experience are common. Detail on the analysis of the financial experience gain (loss) is shown below.

UAAL Beginning of Year at January 1, 2019	\$ 219,809,063
Normal Cost	23,656,537
Contributions (net 401(a) match)	(43,283,873)
Interest	16,666,119
Change in UAAL due to Actuarial Assumption Changes	282,612
Change in UAAL due to Change in Actuary	395,639
Expected UAAL as of December 31, 2019	217,526,097
Actual UAAL as of December 31, 2019	221,083,491
Gain/(Loss) for Plan Year Ending December 31, 2019	(3,557,394)

Short-Term Solvency Test

Actuarial Valuation Date	Actuarial Accrued Liability for:				Percentage of Actuarial Liabilities Covered by Net Assets for:			
	Member	Retirees and	Active and	Actuarial Value				
	Contributions	Beneficiaries	Inactive Members		(1)	(2)	(3)	Total
	(1)	(2)	(3)	of Assets				
6/30/2010	\$ -	\$144,396,614	\$279,164,705	\$294,482,927	100%	100%	53.8%	69.5%
6/30/2011	-	152,989,362	299,377,096	318,320,084	100%	100%	55.2%	70.4%
6/30/2012	-	175,934,134	306,630,998	331,189,281	100%	100%	50.6%	68.6%
6/30/2013	-	188,843,433	322,435,045	360,289,802	100%	100%	53.2%	70.5%
12/31/2014	-	221,786,947	372,195,467	422,283,987	100%	100%	53.9%	71.1%
12/31/2015 *	-	255,947,474	384,452,205	448,784,038	100%	100%	50.2%	70.1%
12/31/2016	-	270,475,166	402,150,712	477,065,373	100%	100%	51.4%	70.9%
12/31/2017	-	302,124,758	404,679,747	507,132,934	100%	100%	50.7%	71.8%
12/31/2018	-	320,463,405	428,374,878	529,029,220	100%	100%	48.7%	70.6%
12/31/2019 *	-	338,258,572	446,444,247	563,619,328	100%	100%	50.5%	71.8%

* New assumptions and/or methods adopted

Summary of Plan Provisions

Summarized below are the major provisions of CERF, as established by Sections 50.1000-50.1300 of the Missouri Revised Statutes (RSMo).

Eligibility

CERF is a mandatory cost-sharing multiple employer retirement system for each county in the state of Missouri, except any city not within a county (which excludes the City of St. Louis) and counties of the first classification with a charter form of government, other than any county adopting a charter form of government after January 1, 2008. CERF covers county elective or appointive officers or employees whose position requires the actual performance of duties not less than 1,000 hours per year; including employees of circuit courts located in a first class, non-charter county which is not participating in the Local Government Employees Retirement System (LAGERS); and does not cover circuit clerks, deputy circuit clerks, county prosecuting attorneys, and county sheriffs. Until January 1, 2000, employees hired before January 1, 2000 could opt out of the system.

Contributions

Member contributions are required, the amount of which is based on the member's most recent date of hire as well as if the member is also participating in LAGERS. The amount of the required member contribution is summarized in the table below:

<u>Most Recent Date of Hire</u>	<u>Percent of Compensation</u>	
	<u>Non-LAGERS</u>	<u>LAGERS</u>
Before February 25, 2002	2.0%	0.0%
On or After February 25, 2002	6.0%	4.0%

Employer contributions are a combination of taxes, fees, and penalties as provided by Statute 50.1020. In addition, some counties have elected to contribute a portion of or all of the required member contribution up to 4% for employees hired on or after February 25, 2002, in lieu of payroll deductions. Nearly all of the funding for CERF comes from county receipts in the form of contributions, fees and penalties.

Vesting

A participant is vested after eight years of continuous creditable service during which pay is earned and received for at least 1,000 hours in each of those eight years.

Prior Service

Employees who were employed on June 10, 1999, and remained employed through January 1, 2000, do not have to purchase prior service. Members who terminated vested or retired prior to January 1, 2000, must purchase any service accrued prior to August 28, 1994, in order to include that service in their retirement benefit.

Average Final Compensation

Average final compensation represents the average of the two highest years of compensation from the county. Lump sum payments for unused sick leave, unused vacation, and other types of back pay attributed to prior years of employment are excluded from the calculation of average final compensation.

Early Retirement

Members have the option of retiring as early as age 55 (with eight years of continuous creditable service) and receiving an actuarially-reduced benefit. To be eligible for early retirement, a participant must terminate employment on or after January 1, 2000, and meet other eligibility requirements.

Normal Retirement Eligibility

Participants are eligible to retire at age 62 with eight years of credited service.

The Normal Retirement Benefit is the greater of A, B, and C below:

- A) Frozen Minimum Benefit as of 12/31/1999
- B) Flat \$29 per month times years of Credited Service (maximum of 29 years)
- C) Replacement Ratio Formula (i + ii as defined below)
 - i) Average Final Compensation times the replacement ratio from the table below minus the age 62 Social Security Primary Insurance Amount. The result is then multiplied by service (up to 25 years) and divided by 25.
 - ii) Average Final Compensation times 1% times service in excess of 25 years but no more than 29 years.

Average Final Compensation	Replacement Ratio
\$36,000 or less	80%
\$36,000.01 - \$48,000	77%
Over \$48,000	72%

For LAGERS service, the resulting benefit is multiplied by two-thirds.

Survivor Benefits

Active employees: If a participant dies while actively employed, his or her named beneficiary will receive a lump-sum death benefit of \$10,000.

Non-vested members: Senate Bill 625, effective August 28, 2012, allows a refund of contributions to the beneficiary(ies) of active members who die after December 31, 2002, and before becoming vested.

Married, vested members: If a vested participant dies before his or her pension begins, his or her surviving spouse can apply for a 50% spousal pension benefit.

Single, vested members: House Bill 795, effective August 28, 2004, allows a refund of contributions to the beneficiary(ies) of a single, vested member who dies on or after August 28, 2004.

Retired members: Depending on which option the member chooses, the designated survivor will receive the appropriate amount of benefits under the survivor option selected on his or her benefit calculation. Members who terminated employment or retired on or after January 1, 2000, have the option to designate someone other than a spouse as the beneficiary of their retirement annuity.

STATISTICAL SECTION



Statistical Summary

The objectives of the statistical section are to provide additional historical perspective, context, and relevant details to assist readers in using information in the financial statements, notes to the financial statements, and required supplementary information in order to understand and assess CERF's overall financial condition. All non-accounting data in this section was derived from internal sources and the annual actuarial valuation reports.

The schedules and graphs beginning on page 52 show financial trend information about the change in CERF's financial position for the past 10 years. The financial trend schedules presented are:

- Change in Fiduciary Net Position
- County Fee Receipts
- Schedule of Contributions
- Benefits Paid
- Comparison of Actuarial Assets and Total Actuarial Liabilities

The schedules and graphs beginning on page 57 show demographic and economic information of CERF's membership. This data includes the number of members, average compensation, average age, and average monthly benefits.

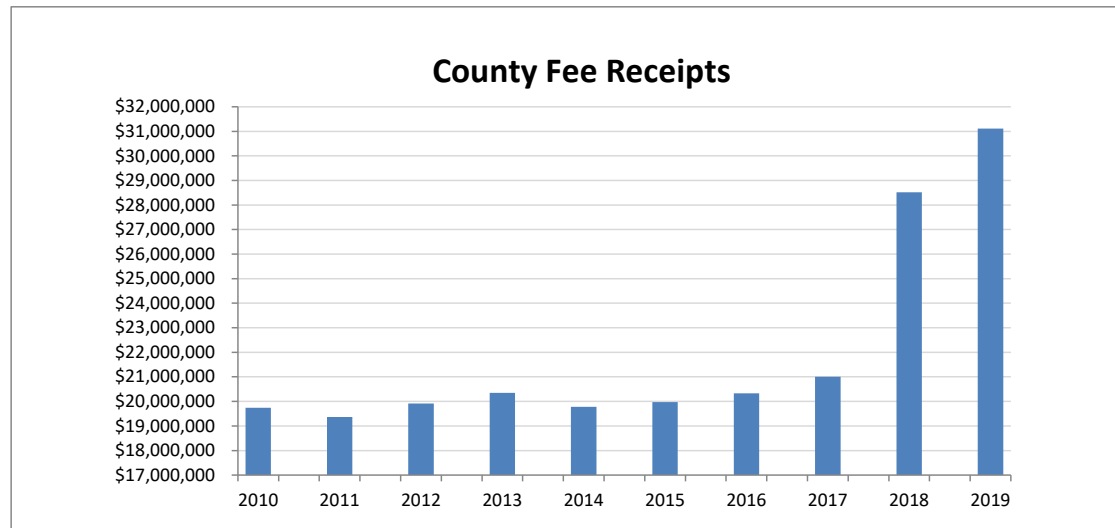
The map on page 60 reflects the 2019 payments made to retirees and beneficiaries by county. The map identifies all the counties in Missouri that are participating employers in CERF.

County Employees' Retirement Fund
Statements of Changes in Fiduciary Net Position
Last Ten Fiscal Years

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Additions:										
County receipts	\$ 19,739,918	\$ 19,364,023	\$ 19,919,125	\$ 20,348,888	\$ 19,781,514	\$ 19,968,537	\$ 20,329,625	\$ 21,006,080	\$ 28,517,335	\$ 31,109,986
Member contributions	8,405,810	8,929,581	9,412,122	10,034,205	10,599,321	11,519,437	11,588,772	12,366,187	13,303,261	13,959,900
Member contributions, paid by counties	1,078,475	1,032,000	1,150,772	1,063,647	1,235,779	1,517,407	2,142,332	1,977,497	2,300,484	2,255,331
Other contributions and income	79,666	86,155	88,926	104,316	70,024	83,849	73,942	78,684	103,387	81,471
Net investment income (loss)	36,938,011	(1,593,844)	40,515,139	67,381,460	17,958,335	94,626	21,566,708	64,590,498	(16,382,467)	96,090,531
Total additions	66,241,880	27,817,915	71,086,084	98,932,516	49,644,973	33,183,856	55,701,379	100,018,946	27,842,000	143,497,219
Deductions:										
Retirement benefits	16,246,166	18,825,068	20,273,110	22,368,902	24,242,805	26,758,453	28,423,305	31,129,540	33,439,139	36,768,803
Refunds of member contributions	2,616,254	3,316,811	3,185,425	3,658,100	3,169,101	3,142,804	3,037,078	3,678,904	3,810,029	4,203,660
Defined contribution plan matching contribution	2,126,632	2,224,641	2,472,044	2,531,548	2,696,164	2,861,751	3,133,484	3,200,949	3,698,619	4,117,722
Administrative expense	1,841,979	1,917,436	1,964,117	2,089,424	2,130,636	2,522,685	2,841,954	3,249,395	3,121,552	3,150,622
Total deductions	22,831,031	26,283,956	27,894,696	30,647,974	32,238,706	35,285,693	37,435,821	41,258,788	44,069,339	48,240,807
Change in fiduciary net position	\$ 43,410,849	\$ 1,533,959	\$ 43,191,388	\$ 68,284,542	\$ 17,406,267	\$ (2,101,837)	\$ 18,265,558	\$ 58,760,158	\$ (16,227,339)	\$ 95,256,412

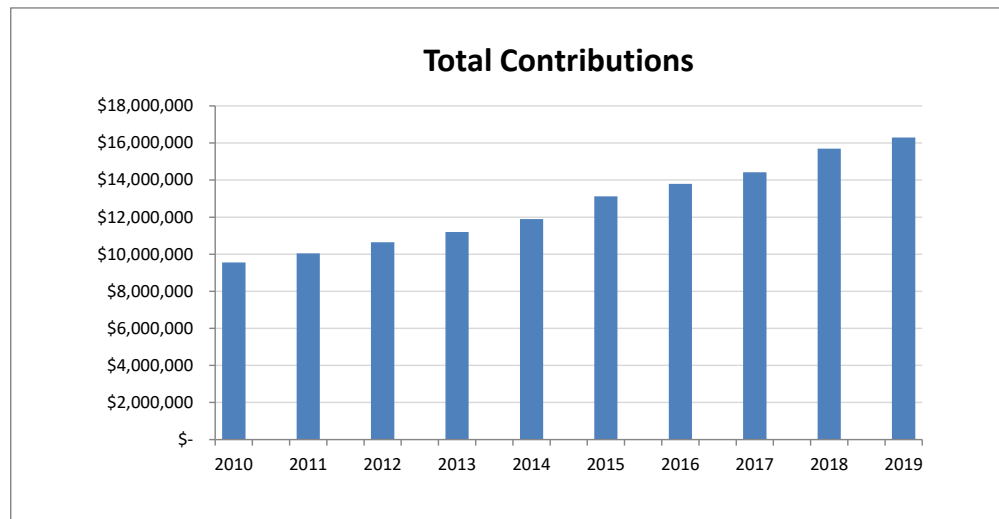
**County Employees' Retirement Fund
County Fee Receipts
Last Ten Fiscal Years**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Delinquent property tax fees	\$ 8,202,492	\$ 8,039,013	\$ 7,798,546	\$ 8,056,301	\$ 8,055,102	\$ 7,916,205	\$ 7,792,473	\$ 8,141,782	\$ 13,827,358	\$ 14,599,160
Assessor late assesment filing fees	5,234,220	5,230,653	5,500,327	5,762,731	5,874,232	6,066,688	6,472,823	6,851,017	7,767,778	9,149,069
Recorder document fees	5,120,560	4,898,134	5,478,788	5,376,260	4,657,422	4,857,464	4,955,962	4,890,231	4,843,494	4,811,847
Merchants licenses fees	1,123,795	1,142,799	1,086,122	1,093,740	1,133,720	1,069,838	1,046,869	1,057,071	1,042,619	1,024,158
Delinquent land list fees	-	-	-	-	-	-	-	-	948,285	1,405,814
Interest on above fees	58,851	53,424	55,342	59,856	61,038	58,342	61,498	65,979	87,801	119,938
Total	\$ 19,739,918	\$ 19,364,023	\$ 19,919,125	\$ 20,348,888	\$ 19,781,514	\$ 19,968,537	\$ 20,329,625	\$ 21,006,080	\$ 28,517,335	\$ 31,109,986



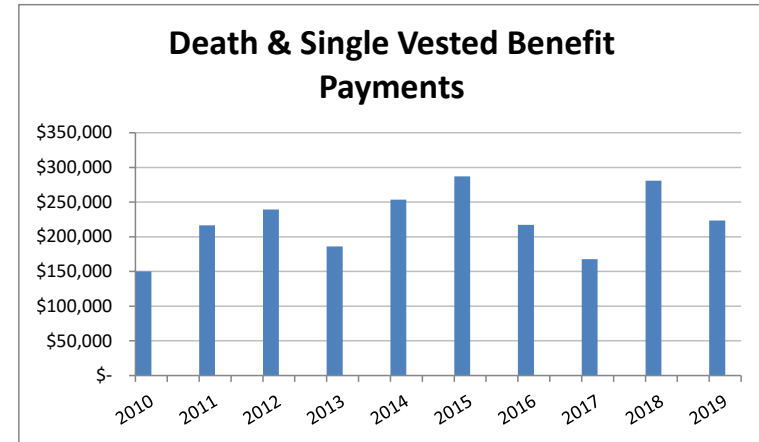
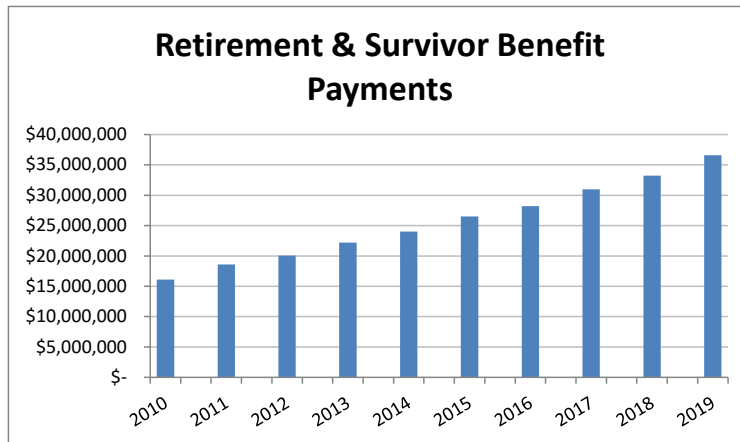
County Employees' Retirement Fund
Schedule of Contributions
Last Ten Fiscal Years

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Member contributions	\$ 8,405,810	\$ 8,929,581	\$ 9,412,122	\$ 10,034,205	\$ 10,599,321	\$ 11,519,437	\$ 11,588,772	\$ 12,366,187	\$ 13,303,261	\$ 13,959,900
Member contributions, paid by counties	1,078,475	1,032,000	1,150,772	1,063,647	1,235,779	1,517,407	2,142,332	1,977,497	2,300,484	2,255,331
Member contributions, purchase of prior service	75,165	81,043	85,145	100,398	64,832	78,904	68,655	72,243	94,579	76,378
	<u>\$ 9,559,450</u>	<u>\$ 10,042,624</u>	<u>\$ 10,648,039</u>	<u>\$ 11,198,250</u>	<u>\$ 11,899,932</u>	<u>\$ 13,115,748</u>	<u>\$ 13,799,759</u>	<u>\$ 14,415,927</u>	<u>\$ 15,698,324</u>	<u>\$ 16,291,609</u>



**County Employees' Retirement Fund
Benefits Paid
Last Ten Fiscal Years**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Normal retirement benefits	\$ 14,980,781	\$ 17,421,069	\$ 18,701,715	\$ 20,725,606	\$ 22,352,319	\$ 24,695,932	\$ 26,165,898	\$ 28,731,165	\$ 30,717,503	\$ 33,777,998
Survivor retirement benefits	1,115,385	1,193,999	1,345,403	1,479,288	1,660,486	1,824,522	2,047,407	2,258,375	2,501,636	2,820,805
Death benefits	150,000	210,000	225,992	164,000	230,000	250,000	210,000	162,000	220,000	170,000
Single vested death benefits *	-	6,616	13,426	22,037	23,636	37,131	7,404	5,768	60,816	53,481
Total	<u>\$ 16,246,166</u>	<u>\$ 18,831,684</u>	<u>\$ 20,286,536</u>	<u>\$ 22,390,931</u>	<u>\$ 24,266,441</u>	<u>\$ 26,807,585</u>	<u>\$ 28,430,709</u>	<u>\$ 31,157,308</u>	<u>\$ 33,499,955</u>	<u>\$ 36,822,284</u>

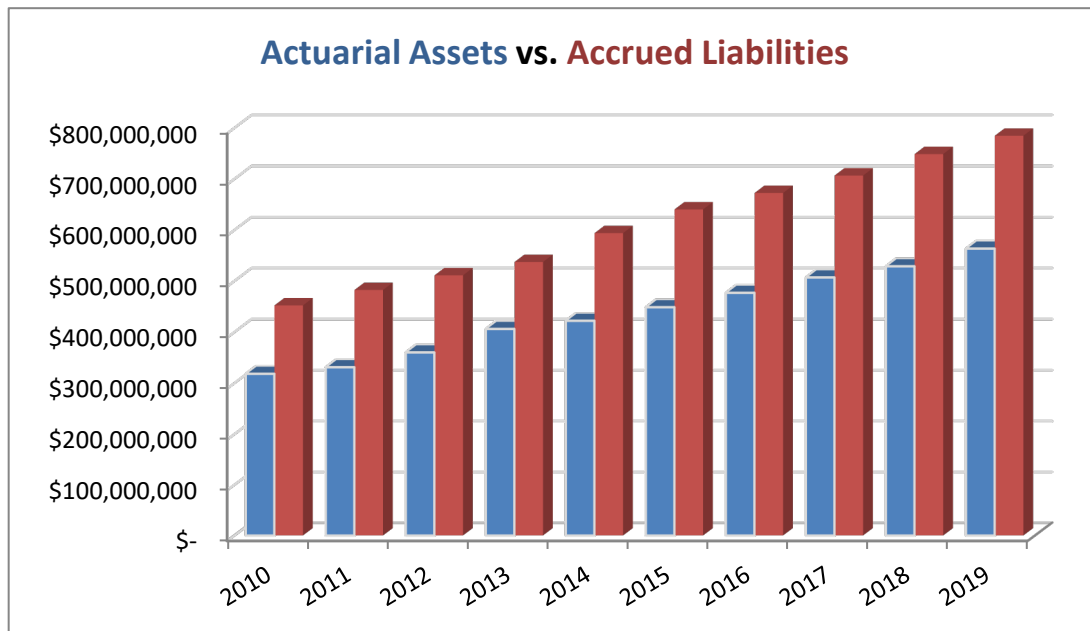


Note: All benefit amounts above are reflected at gross.

* Single vested death benefits are recorded as refunds of member contributions on the Statements of Changes in Fiduciary Net Position.

County Employees' Retirement Fund
Comparison of Actuarial Assets and Total Actuarial Liabilities
Last Ten Fiscal Years

Fiscal Year	Actuarial Assets	Unfunded Liabilities	Accrued Liabilities	Funded Ratios
2010	\$ 318,320,084	\$ 134,046,374	\$ 452,366,458	70.4%
2011	331,189,281	151,375,851	482,565,132	68.6%
2012	360,289,802	150,988,676	511,278,478	70.5%
2013	406,209,618	131,165,166	537,374,784	75.6%
2014	422,283,987	171,698,427	593,982,414	71.1%
2015	448,784,038	191,615,641	640,399,679	70.1%
2016	477,065,373	195,560,505	672,625,878	70.9%
2017	507,132,934	199,671,571	706,804,505	71.8%
2018	529,029,220	219,809,063	748,838,283	70.6%
2019	563,619,328	221,083,491	784,702,819	71.8%



County Employees' Retirement Fund
Average Monthly Benefit Payments
Last Ten Fiscal Years

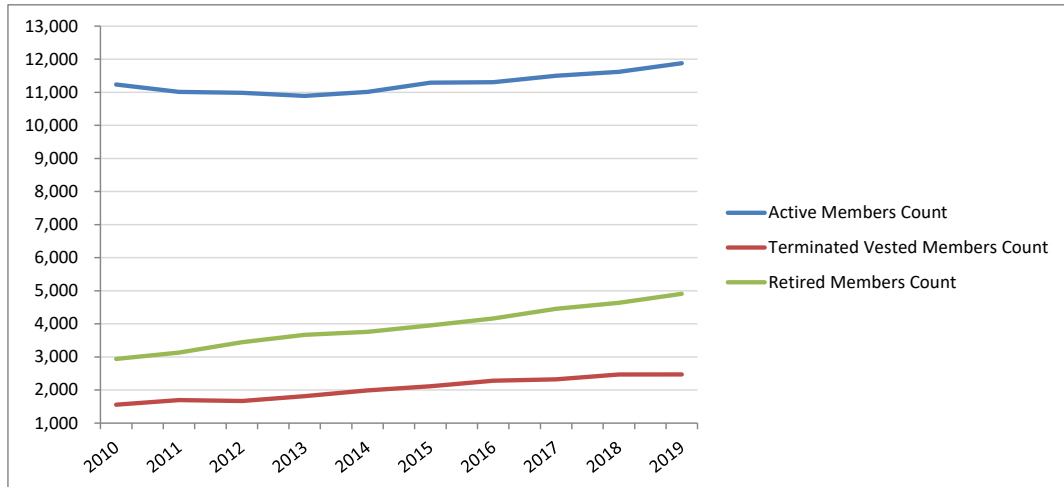
	Years of Service					
	5-10	11-15	16-20	21-25	26-30	31 +
2019						
Average monthly benefit	\$ 252	\$ 386	\$ 558	\$ 727	\$ 845	\$ 793
Average final average salary	\$ 27,933	\$ 29,635	\$ 34,151	\$ 38,125	\$ 40,958	\$ 53,448
Number of retirees	1,005	1,315	1,247	815	571	808
2018						
Average monthly benefit	\$ 243	\$ 372	\$ 546	\$ 700	\$ 816	\$ 766
Average final average salary	\$ 27,506	\$ 29,166	\$ 33,638	\$ 37,507	\$ 40,434	\$ 52,549
Number of retirees	949	1,254	1,178	745	541	736
2017						
Average monthly benefit	\$ 242	\$ 366	\$ 542	\$ 684	\$ 811	\$ 748
Average final average salary	\$ 27,021	\$ 28,679	\$ 33,217	\$ 36,848	\$ 39,974	\$ 51,413
Number of retirees	921	1,222	1,132	707	520	689
2016						
Average monthly benefit	\$ 239	\$ 362	\$ 527	\$ 654	\$ 769	\$ 721
Average final average salary	\$ 26,610	\$ 28,130	\$ 32,773	\$ 36,289	\$ 39,824	\$ 51,493
Number of retirees	863	1,120	1,052	664	474	643
2015						
Average monthly benefit	\$ 237	\$ 364	\$ 513	\$ 638	\$ 768	\$ 711
Average final average salary	\$ 26,118	\$ 27,799	\$ 32,493	\$ 35,906	\$ 40,049	\$ 51,810
Number of retirees	809	1,050	1,006	641	463	619
2014						
Average monthly benefit	\$ 237	\$ 356	\$ 506	\$ 620	\$ 730	\$ 685
Average final average salary	\$ 25,705	\$ 27,335	\$ 32,176	\$ 35,435	\$ 38,925	\$ 50,343
Number of retirees	763	983	938	603	419	584
2013						
Average monthly benefit	\$ 231	\$ 356	\$ 493	\$ 609	\$ 724	\$ 680
Average final average salary	\$ 25,504	\$ 26,811	\$ 31,831	\$ 35,181	\$ 37,702	\$ 48,751
Number of retirees	709	927	910	574	399	555
2012						
Average monthly benefit	\$ 224	\$ 340	\$ 477	\$ 588	\$ 702	\$ 662
Average final average salary	\$ 25,008	\$ 26,071	\$ 31,622	\$ 34,679	\$ 37,733	\$ 48,453
Number of retirees	646	827	840	541	360	520
2011						
Average monthly benefit	\$ 222	\$ 333	\$ 475	\$ 578	\$ 695	\$ 646
Average final average salary	\$ 24,594	\$ 25,674	\$ 31,195	\$ 33,641	\$ 37,444	\$ 47,791
Number of retirees	601	775	782	510	345	491
2010						
Average monthly benefit	\$ 217	\$ 332	\$ 450	\$ 559	\$ 653	\$ 617
Average final average salary	\$ 24,008	\$ 25,020	\$ 30,319	\$ 32,922	\$ 36,331	\$ 46,704
Number of retirees	559	725	704	457	310	439

County Employees' Retirement Fund
Member Data
Last Ten Fiscal Years

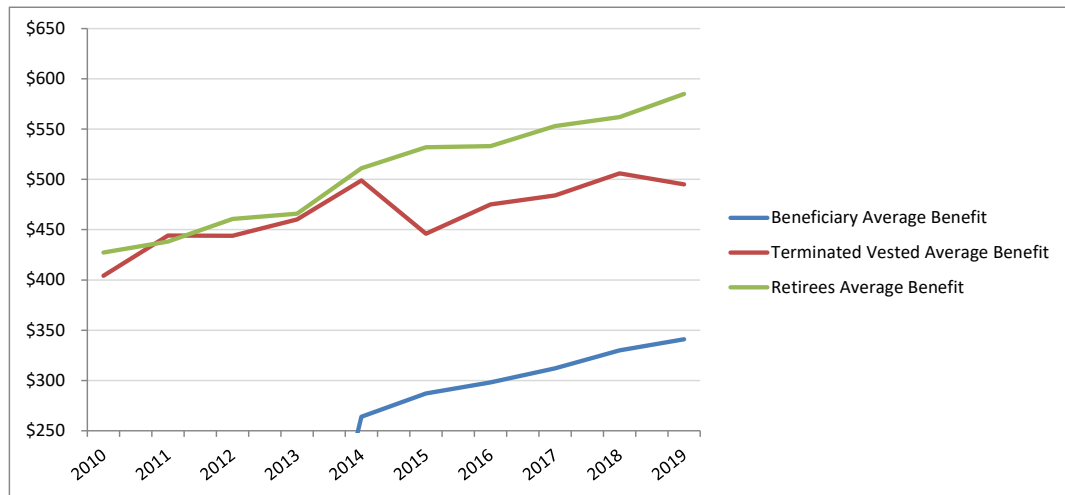
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Active Members										
Count	11,237	11,010	10,987	10,891	11,010	11,291	11,303	11,500	11,616	11,879
Average Compensation	\$32,156	\$32,152	\$32,533	\$33,229	\$33,802	\$34,700	\$35,481	\$36,040	\$37,287	\$38,785
Average Age	45.1	45.2	45.4	45.6	45.3	45.3	45.2	45.0	44.9	45.0
Average Service	8.5	8.8	8.9	9.1	9.1	8.7	8.7	8.4	8.3	8.2
Terminated Vested Members										
Count	1,557	1,696	1,672	1,815	1,991	2,115	2,280	2,324	2,468	2,472
Average Age	49.3	50.2	50.2	50.3	49.8	49.2	50.1	49.5	50.1	50.2
Average Monthly Benefits	\$404	\$444	\$444	\$460	\$499	\$446	\$475	\$484	\$506	\$495
Retired Members										
Count	2,940	3,135	3,443	3,669	3,761	3,951	4,163	4,454	4,636	4,909
Average Age	70.0	70.1	70.2	70.3	71.0	71.2	71.4	71.4	71.6	71.6
Average Monthly Benefits	\$427	\$438	\$461	\$466	\$511	\$532	\$533	\$553	\$562	\$585
Beneficiaries										
Count	***	***	***	***	542	568	611	632	685	620
Average Age	***	***	***	***	69.8	71.2	71.5	71.9	71.9	73.4
Average Monthly Benefits	***	***	***	***	\$264	\$287	\$298	\$312	\$330	\$341

***: Until the January 1, 2015 valuations, beneficiary information is included within the retired members section.

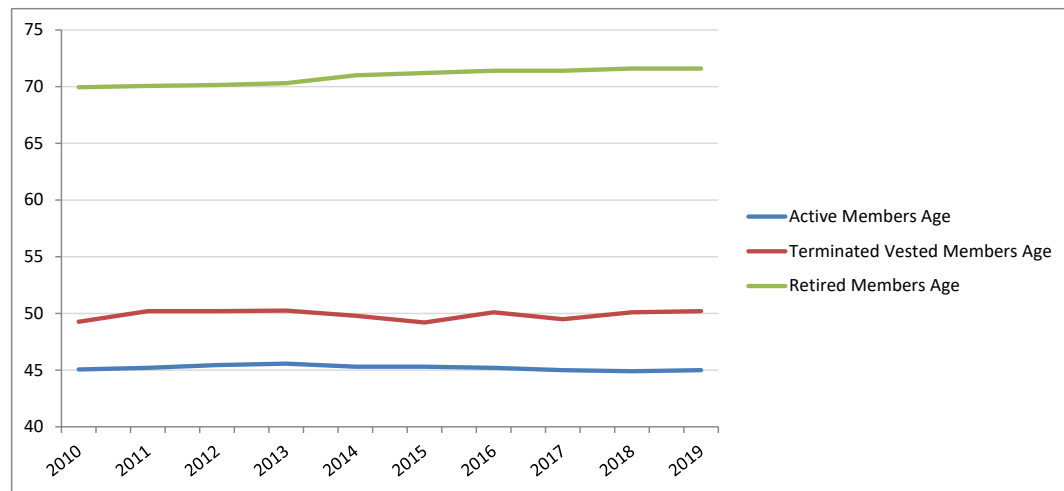
Growth in Membership



Average Monthly Benefit



Average Age



CERF

2019 Retiree and Beneficiary Payouts by County

>\$1,000,000	\$500,000 - \$999,999	\$250,000 - \$499,999	\$100,000 - \$249,999	\$1 – \$99,999	Non-CERF Counties
--------------	-----------------------	-----------------------	-----------------------	----------------	-------------------

