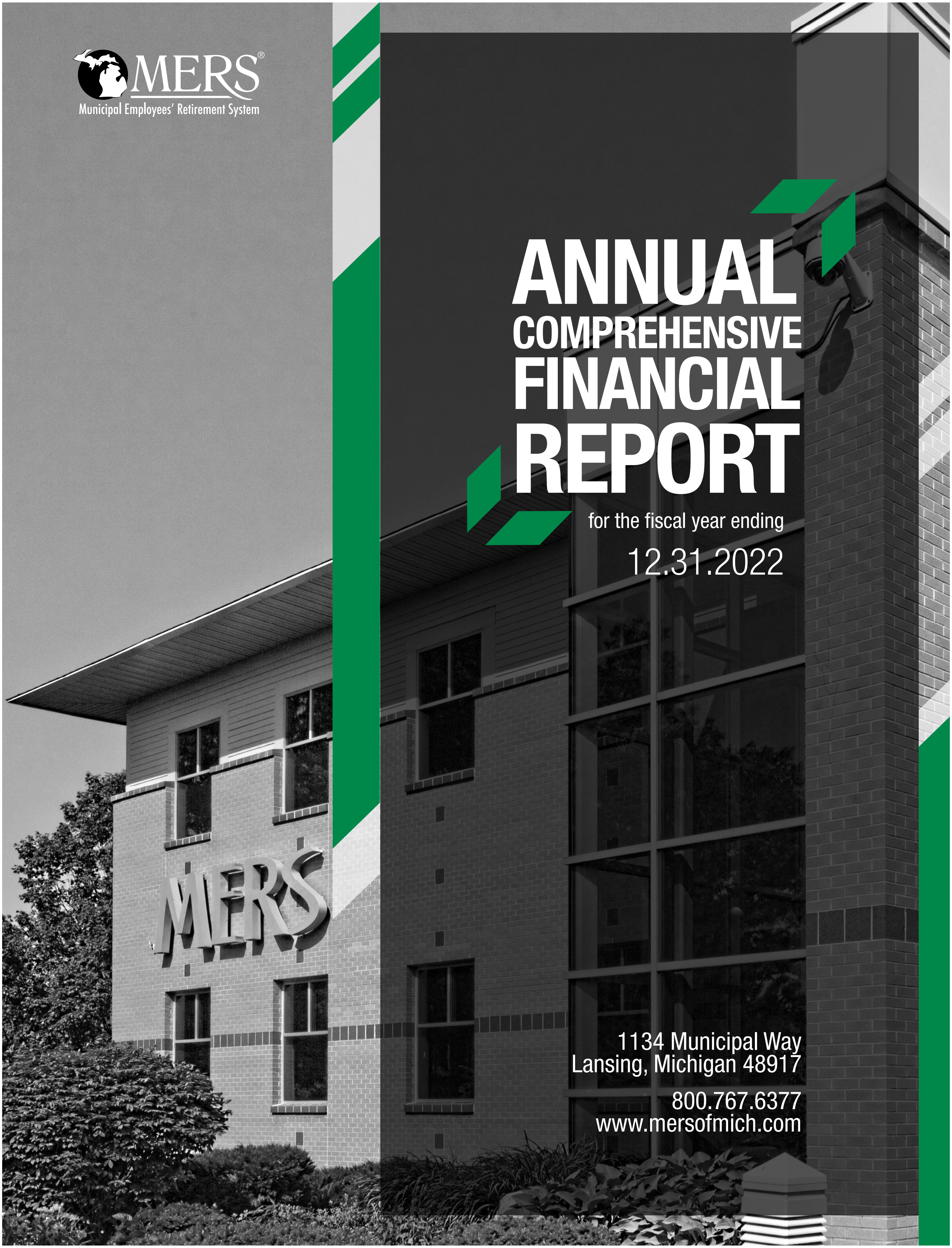

MERS®

Municipal Employees' Retirement System

ANNUAL COMPREHENSIVE FINANCIAL REPORT

for the fiscal year ending

12.31.2022

1134 Municipal Way
Lansing, Michigan 48917

800.767.6377
www.mersofmich.com

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ANNUAL COMPREHENSIVE FINANCIAL REPORT

FOR THE YEAR ENDED DECEMBER 31, 2022

PREPARED BY
The Finance Department of the
Municipal Employees' Retirement System of Michigan
1134 Municipal Way
Lansing, MI 48917

Contact MERS of Michigan
800.767.6377
www.mersofmich.com

Kerrie Vanden Bosch
Chief Executive Officer

INTRODUCTORY SECTION

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FINANCIAL SECTION

The Notes are part of the basic Financial Statements.

INVESTMENTS SECTION

ACTUARIAL SECTION

STATISTICAL SECTION

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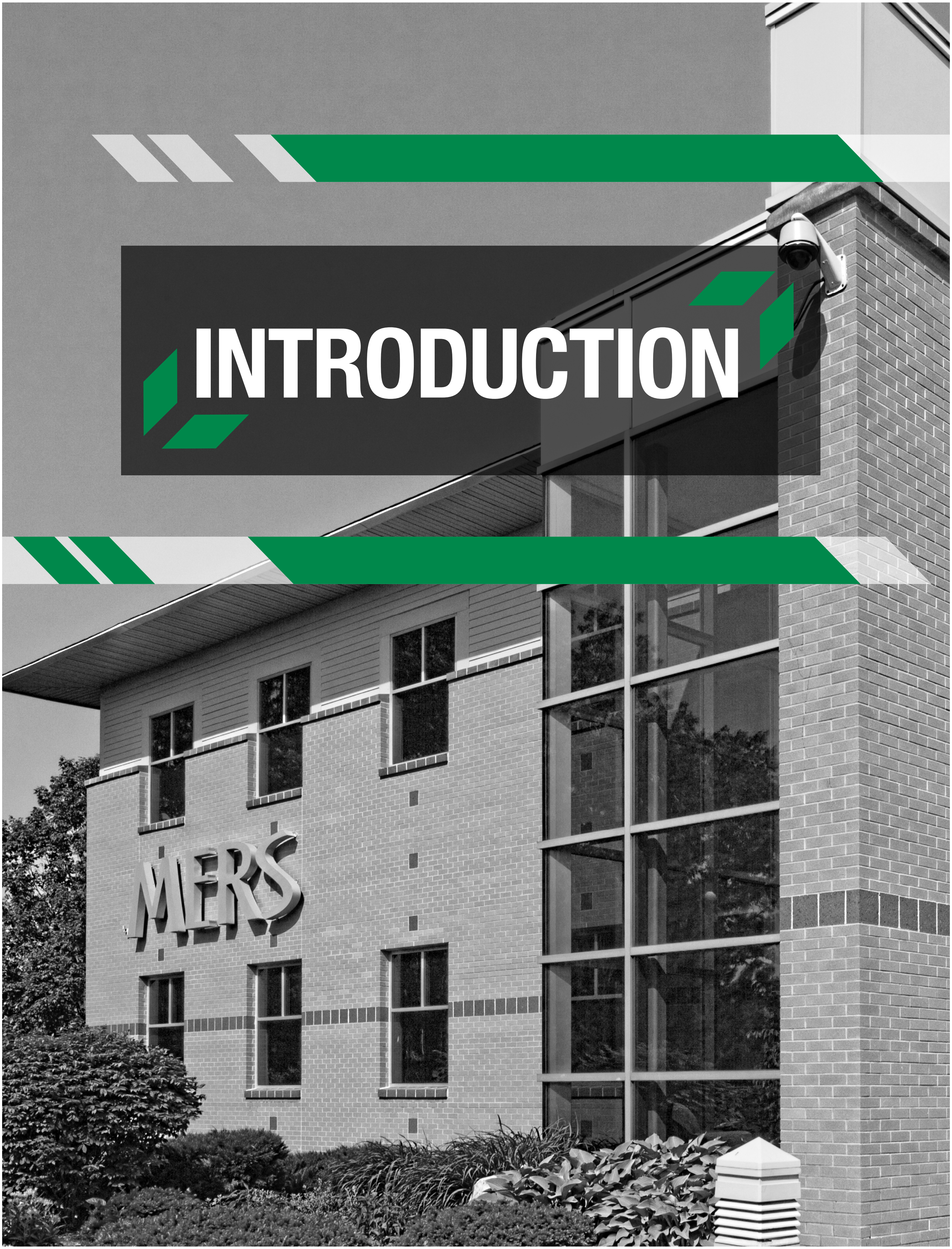
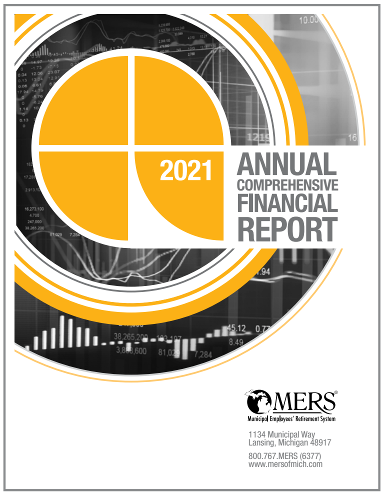
INTRODUCTION



2022 ACHIEVEMENTS



Certificate of Achievement for Excellence in Financial Reporting

The Municipal Employees' Retirement System of Michigan (MERS) received the Certificate of Achievement for Excellence in Financial Reporting from the Government Finance Officers Association for the December 31, 2021 Annual Comprehensive Financial Report. This marks the 34th consecutive year MERS has received this honor.

Public Pension Standards Award

MERS also received the Public Pension Standards Award for 2022 in recognition of meeting the professional standards for plan design and administration as set forth in the Public Pension Standards. This award is presented by the Public Pension Coordinating Council (PPCC), a confederation of the National Association of State Retirement Administrators (NASRA), the National Conference on Public Employee Retirement Systems (NCPERS), and the National Council on Teacher Retirement (NCTR).

Municipal Employees' Retirement System MERS

LETTER OF TRANSMITTAL, MAY 19, 2023

Dear Board Members:

We are pleased to submit the Annual Comprehensive Financial Report for the Municipal Employees' Retirement System of Michigan (MERS) for the fiscal year ending December 31, 2022. In 2022, MERS began a new strategic plan that reaches out to 2030, setting up several objectives and stages of progress along the way.

Our vision is:
Through exceptional service and comprehensive solutions, MERS will deliver a seamless experience that engages and enables customers to achieve their financial goals. In order to help us accomplish this vision, the MERS 2022-2030 Strategic Plan focuses on the following objectives:

- Transform the customer experience through SEAMLESS SERVICE DELIVERY.
- Evolve our suite of products and services to help customers ESTABLISH and ACHIEVE FINANCIAL GOALS.
- POSITION OUR WORKFORCE to achieve business results.
- MAKE IT EASY to work with MERS.
- INCREASE OUR MARKET SHARE and diversify our customer base.

Some highlights of accomplishments made in 2022 include:

- Surpassed all customer satisfaction goals, including feedback showing consistently high scores in providing excellent service and meeting customer needs.
- Deployed an online self-service actuarial dashboard for defined benefit customers to conveniently run projections and compare data any time.
- Expanded Public Safety Insurance Payments by providing easy access to a tax benefit for public safety customers, including the ability for customers to pay insurance premiums directly from their participant directed account (DC or 457).
- Updated cybersecurity standards to align with best practice and protect MERS information and customers.
- Launched the myMERS app, which connects participants with their individual account information allowing secure, convenient viewing, updates, and transactions from their mobile device.
- Completed comprehensive Customer Experience Mapping, enabling the review and improvement of processes that make our participant lifecycles from enrollment through death for all products and accounts.
- Assisted employers in adopting 470 options to manage affordability and plan stability.
- Expanded availability and efficiency of online transactions to improve the ease and accuracy of customers' access to services they need.

MERS Profile

MERS is a statutory public corporation that serves local units of government across the state of Michigan. We are one of the largest, most established, and most successful shared services stories in Michigan, providing administration, investment expertise, fiduciary responsibility, and oversight for benefit plans. Our approach to efficiently managing retirement and other post-employment plans allows local governments to focus on their core services, leaving day-to-day plan administration and long-range management to us. Services we provide include: plan governance, internal auditing, legal counsel, actuarial services, financial management, fiduciary responsibility, information technology support, legislative advocacy, and administration of benefits and investments. The MERS Retirement Board (Board) serves as the fiduciary of the funds and has oversight responsibilities.

Report Structure and Contents

MCL 38.1536 requires the Board to prepare this annual report in accordance with U.S. Generally Accepted Accounting Principles (GAAP). The financial information shown throughout this report meets that requirement. The MERS management team, under the oversight of the Board, is responsible for the preparation, integrity, and fairness of the financial statements and other information presented in this report.

Section 38.1536 also requires the Board to arrange for an annual audit of the MERS financial statements. Plante Moran, PLLC, MERS external auditor, conducted an independent audit of the financial statements in accordance with Generally Accepted Auditing Standards. This audit is described in the Independent Auditor's Report in the Financial Section following this letter. MERS management provides the external auditors with unrestricted access to records and staff. This external audit is conducted annually to ensure the sufficiency of the internal controls and that our financial statements are fairly stated.

As a part of our financial statement process, we have identified necessary internal controls and have them in place to ensure that transactions are authorized, assets are safeguarded, and all supporting records are properly retained and managed. The cost of a control should not exceed the benefits to be derived. The internal control objective is to provide reasonable assurance that the financial statements are free of any material misstatements. We have an internal auditor on staff to help ensure we meet high standards for internal control. As part of continually strengthening internal controls, MERS completed a Service Organizational Control Audit (SOC 1, Type II audit) that disclosed no deficiencies in MERS internal control.

This Annual Comprehensive Financial Report is divided into five sections:

- **Introduction** – Achievements and structure of MERS
- **Financial** – Financial statements, notes, required supplemental information, Management's Discussion and Analysis (MD& A), which is the MERS management team's narrative and overview of the financial statements
- **Investment** – Investment activities and performance information
- **Actuarial** – Actuarial assumptions and methods as well as the actuary's certification letter
- **Statistical** – Various schedules on member data and ten-year trends

Financial Summary

Like many investors, MERS has benefited from strong investment markets in most years since 2008. Despite these good returns, MERS expects a market correction or downturn as has happened in every business cycle since the early 1900s. In 2022, MERS experienced a market downturn with the DB Portfolio recording an investment loss of -10.24% based on a gross rate of return. However, the defined benefit portfolio did outperform the policy benchmark by 6.57 percentage points. This means that while the return for the year was negative, the MERS loss in a down market was much less than many of its peers experienced. MERS designs its investment strategy to perform this way, providing more protection against losses when markets are down. More information regarding our investment management performance, policies and processes are found with the Schedule of Fees and Commissions in the Investments Section.

MERS ended the year with a net position of $14.1 billion for all plan types, down $1.9 billion from 2021. The reduction in asset size occurred primarily due to the investment loss for the year. Contributions in, benefit payments and transfers out, and other expenses remained fairly level from the prior year. Despite the negative investment results, the IRA Program experienced asset growth due increased participation. The program first began in 2018.

One measure of a defined benefit retirement system's financial health is the percentage of its actuarial liabilities owed that is covered by its available actuarial assets. Using this ratio, 87% of MERS' municipalities were funded at 60% or higher (647 municipalities) as of 12/31/2021 Annual Actuarial Valuations.

More detail on these financial metrics is included in the Management Discussion & Analysis document. A complete copy of the Annual Comprehensive Financial Report is provided to the Governor, the members of both the State House and Senate, and the Office of the State Treasurer, as required by law. The Annual Comprehensive Financial Report and Summary Report are available on our website at www.mersofmich.com.

Acknowledgements

We are honored that for the 34th consecutive year, the Government Finance Officers Association (GFOA) awarded MERS its Certificate of Achievement for Excellence in Financial Reporting for our 2021 Annual Comprehensive Financial Report.

We are very grateful to our Board members for their time and dedication. Their diligence and conscientious oversight of our well-run system is greatly appreciated.

We also express our deep gratitude to the entire staff for their hard work and attention to detail in ensuring successful MERS operations. Our staff applies their energy, innovation, skill and a commitment to excellent service every day to deliver the security of a retirement plan for all of our participants.

Respectfully submitted,

Kerrie Vanden Bosch
Chief Executive Officer

LETTER FROM THE CHAIRPERSON, MAY 19, 2023

Dear MERS Customers:

On behalf of the MERS Retirement Board, it is my pleasure to present the Annual Comprehensive Financial Report of the Municipal Employees' Retirement System of Michigan (MERS). This is the 76th year MERS has provided professional retirement services to municipalities across the state. Included in this year's report is all of the required financial information for the fiscal year ending December 31, 2022.

Despite the ongoing challenges of climbing inflation and downturns in the investment markets, MERS continues to provide steadfast service, while making progress toward achieving our goals. Staff partner with our customers to help them meet their financial goals and workforce needs. Some of these efforts include improving the flexibility of plan options, improving online reporting and administrative tools, improving the security of our online account access, and providing educational resources to assist participants in their overall financial wellness.

Through innovation and strong leadership, MERS completed the first year of a new comprehensive strategic plan. The plan is grounded in our mission, which is to partner with those that serve Michigan communities to provide retirement benefits and related services to support a secure retirement. Through exceptional service and comprehensive solutions, MERS will deliver a seamless service experience that engages and enables customers to achieve their financial goals. This is our vision that drives our priorities going forward through 2030.

The MERS Retirement Board remains committed to fairness, transparency and accountability, holding the line on administrative costs and watching out for the best interests of our members. Our Board adheres to strong conflict of interest provisions and best fiscal practices, all of which have made MERS the go-to expert for retirement security in Michigan.

We continue to grow in the number of employers and participants we serve. MERS manages retirement and employee benefit plans for 1,020 municipal employers across the state with a combined net position value of over $14 billion. MERS proudly serves nearly 180,000 accounts, owned by police officers and firefighters, road crew members, medical staff, librarians, clerks and countless other public servants who protect and serve the many communities across Michigan that we call home.

In closing, I would like to thank the Board members and staff for their expertise and professionalism. It is my pleasure to serve as your MERS Chairperson and, like all of you, I am proud to play a role in serving all MERS employers and participants in our mission to provide a secure retirement.

Sincerely,

Michael Brown, Chairperson
MERS Retirement Board

MERS RETIREMENT BOARD

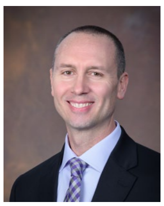
Officer Members

Michael Brown
(Chairperson)
Barry County

Andrea Herman
Wexford County
Road Commission

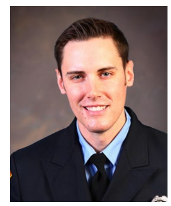
Mark Link
Marquette Board
of Light and Power

Employee Members



Jason Sarata
Delta Township

Erin Rotman
Ottawa County



Kyle Lewis
Northville
Township

Expert Members

Michael Gilmore
The 4100 Group,
Inc., Lansing

James Wiersma
Family Investment
& Resource
Management, LLC,
Holland

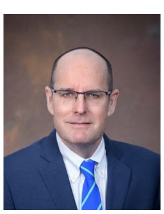
Retiree Member

John Ogden
City of Port Huron
(Retired)

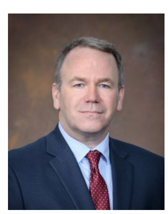
MERS OFFICERS

Kerrie Vanden Bosch
MERS Chief Executive Officer

Carrie Lombardo
Chief Strategic and
External Affairs Officer

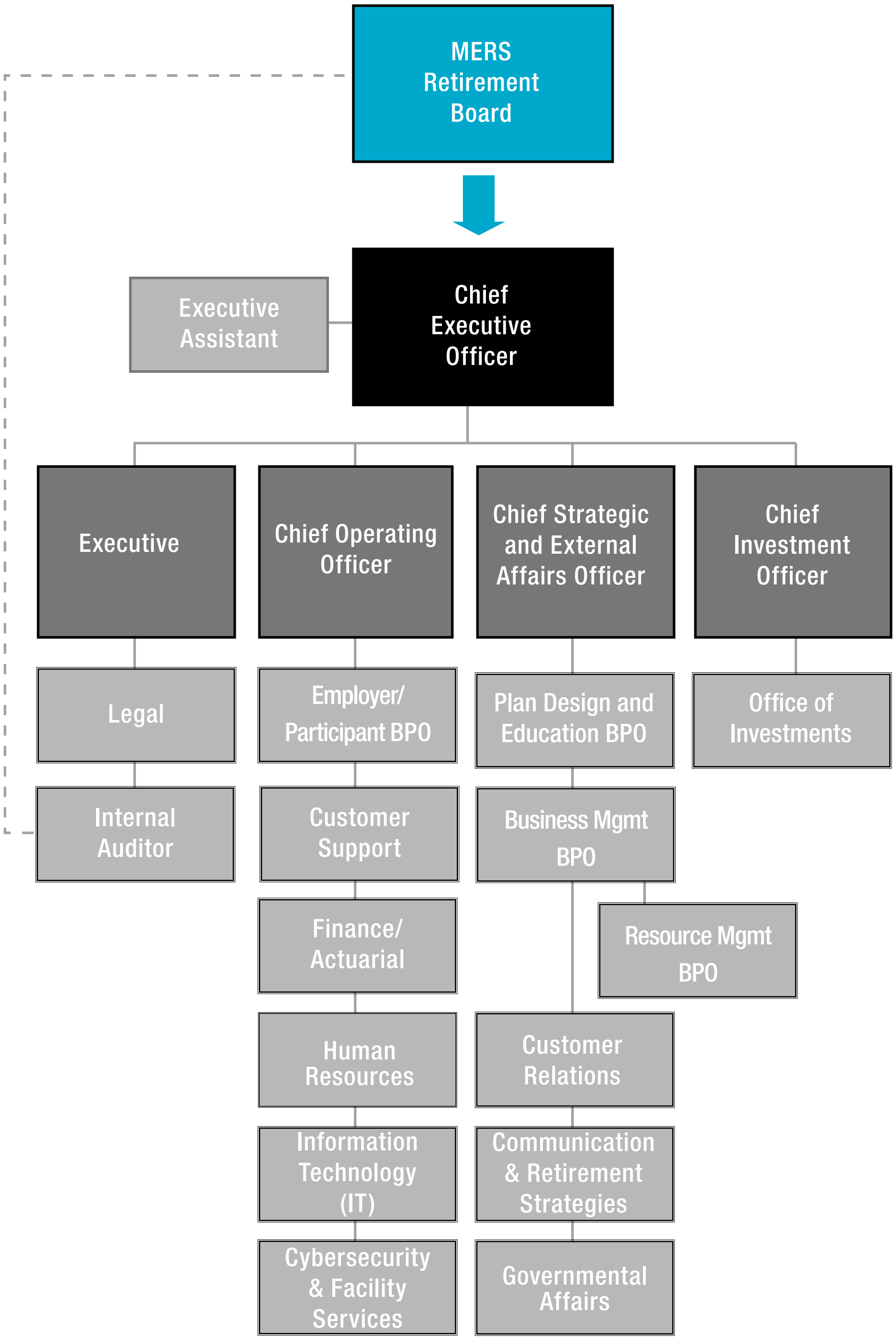


Jeb Burns
Chief Investment Officer



Brom Stibitz
Chief Operating Officer

MUNICIPAL EMPLOYEES' RETIREMENT SYSTEM OF MICHIGAN ORGANIZATIONAL STRUCTURE – 2022



The Schedule of Fees and Commissions is found in the Investment Section on page 73.

OUTSIDE PROFESSIONAL SERVICES

Actuarial
Gabriel, Roeder, Smith & Company

Auditing
Plante & Moran, PLLC

Banking
Commerce
JP Morgan Chase

Business Consulting
Accurint
Byrum & Fisk Advocacy
LexisNexis
Martin Commercial Properties, Inc.
Pension Benefit Information

Human Resource Consulting
Advisa
Arbinger
American Society of Employers
Droste Group
Gallagher Benefit Services, Inc.
McLagan Partners, Inc.
Right Management
Robert Half International Inc.

Insurance
Marsh USA Inc.

Custodial Banking and Securities Lending
BNY Mellon

Investment Consulting/Research
Backstop Solutions
BCA Research
BDO USA, LLC
Bloomberg Finance LP
Boulay PLLP
Broadridge Proxy Edge
Carta
Duff & Phelps Investment Management Co.
Evestment Alliance
Gavekal Capital
Global Financial Data, Inc.
Informa Investment Solutions
Morningstar
MSCI
Ned Davis Research
NEPC
NYSE
Stephen Morrow
The Townsend Group
Pricewaterhouse Coopers LLP
Vergence Institutional Partners LLC
Vergence
WTax

Legal Consulting
Bernstein, Litowitz, Berger and Grossmann, LLP
Clark Hill
Dickinson Wright PLLC
Ice Miller, LLP
Kessler Topaz Meltzer and Check, LLP
Labaton Sucharow, LLP
Miller, Canfield, Paddock and Stone, PLC
Robbins Geller Rudman and Dowd, LLP

Legislative Consulting
Karoub Associates
Michigan Legislative Consultants

Medical Advising
Managed Medical Review Organization

Systems Implementation
Analysts International Corporation
Cobalt Labs
Avtex Solutions, LLC
Databank IMX LLC
Dewpoint Inc.
Gartner Inc.
GovInvest Inc.
InfoLock
Maner Costerisan Consulting LLC
MOH Mikero
Presidio
Networked Solutions
Randall Dean Consulting & Training
Rapid7
Riverside Integrated Systems Inc.
Tegrit Software Ventures, Inc.
Winklevoss Technologies LLC

Third-Party Administration
Alerus Retirement Solutions

Investment Management
10T Capital
Acadian Asset Management Inc.
ACP Peru
Alliance Bernstein
Alpine Lake Capital Partners, LLC (Barings LLC)
AlpInvest Partners
Altaris Capital Partners
Angelo Gordon & Co.
Aperia Technologies
Appian Natural Resources
Arlington Capital Partners
Asterion Industrial Partners
Barings
Belstar
Bentall GreenOak
Blackrock
Blackstone Real Estate Partners
Blackstone Alternative Asset Management, LP
Brookwood U.S. Real Estate
Burford Capital
Calysta, Inc
Cargill
Carnelian Energy
Colony Capital, LLC
Comvest Partners
Consilium Investment Management
Domain Capital Advisors
Electrum Group, LLC
Exeter Property Group, LLC
Fortress Investment Group, LLC
Frontier Market Asset Management, LLC
Goldman Sachs
Grantham, Mayo, Van Otterloo & Co., LLC
Grosvenor Capital Management, LP
H/2 Capital Partners
Hancock Natural Resource Group, Inc
Harbert Management Corporation
Hunter Point Capital
IL&FS Capital Advisors Limited
Influence Media Partners
Invictus Growth Partners
Ionetix Corporation
J.P. Morgan Asset Management
Keen Growth Capital
Kennedy Capital Management
LaSalle Investment Management
Lead Edge Capital Management, LLC
Lumira Capital
MC Credit Partners, LP
Merrowie Property Trust
Metropolitan Real Estate
Michigan eLab Capital Partners, LP
MiddleGround Capital
Miravast Asset Management, LLC
Mubadala Capital
Napier Park Global Capital
Nu-Tek Food Science
Oak Hill Advisors, LP
Oak Street Real Estate Capital, LLC
Oberland Capital Management, LLC
Orchard Global Asset Management
Parametric Portfolio Associates
Petrichor Healthcare Capital Mgt, LP
Pioneer Asset Management SA
Polunin Capital Partners Punch & Associates
Punch & Associates
Rialto Capital Management
Sculptor Real Estate
Silver Hill Energy Partners III, LP
Starwood Capital Group
State Street Global Advisors
Ten Coves Capital
Terra Partners Asset Management
Townsend Group
Trace Energy Resources
Trice Medical Inc.
Valar Ventures
Verdantƒ
Veritas Capital
Walden International

ACKNOWLEDGEMENTS

The Office of Finance and Actuarial Services prepared the MERS Annual Comprehensive Financial Report for the year ended December 31, 2022. Special thanks to the individuals who contributed significant amounts of time and energy to help complete this report.

Office of Internal Operations

Betsy Waldofsky, Finance Director

Luke Huelskamp, Senior Finance Manager

Danielle Williams, Senior Accountant

Courtney Allen, Senior Accountant

Office of Investments

Furat Zomay, Investment Analyst

Lauren Dabkowski, Investment Officer and Portfolio Manager (Private Markets)

Peter Wujkowski, Investment and Administrative Officer

Office of Strategic and External Affairs

Betsy Schaeffer, Digital Print and Mail Services Supervisor

James Scofield, Creative Design Manager

Janie Olivarez, Office Administrator

Jennifer Mausolf, Communications & Retirement Strategies Director

Executive Office

Brian LaVictoire, Deputy General Counsel for Investments and Compliance

Carri Simon, Internal Auditor

Special thanks are also extended to Plante & Moran PLLC, Alerus Retirement Solutions, Gabriel Roeder Smith & Company, Bank of New York Mellon and Tegrit Software Ventures, Inc.

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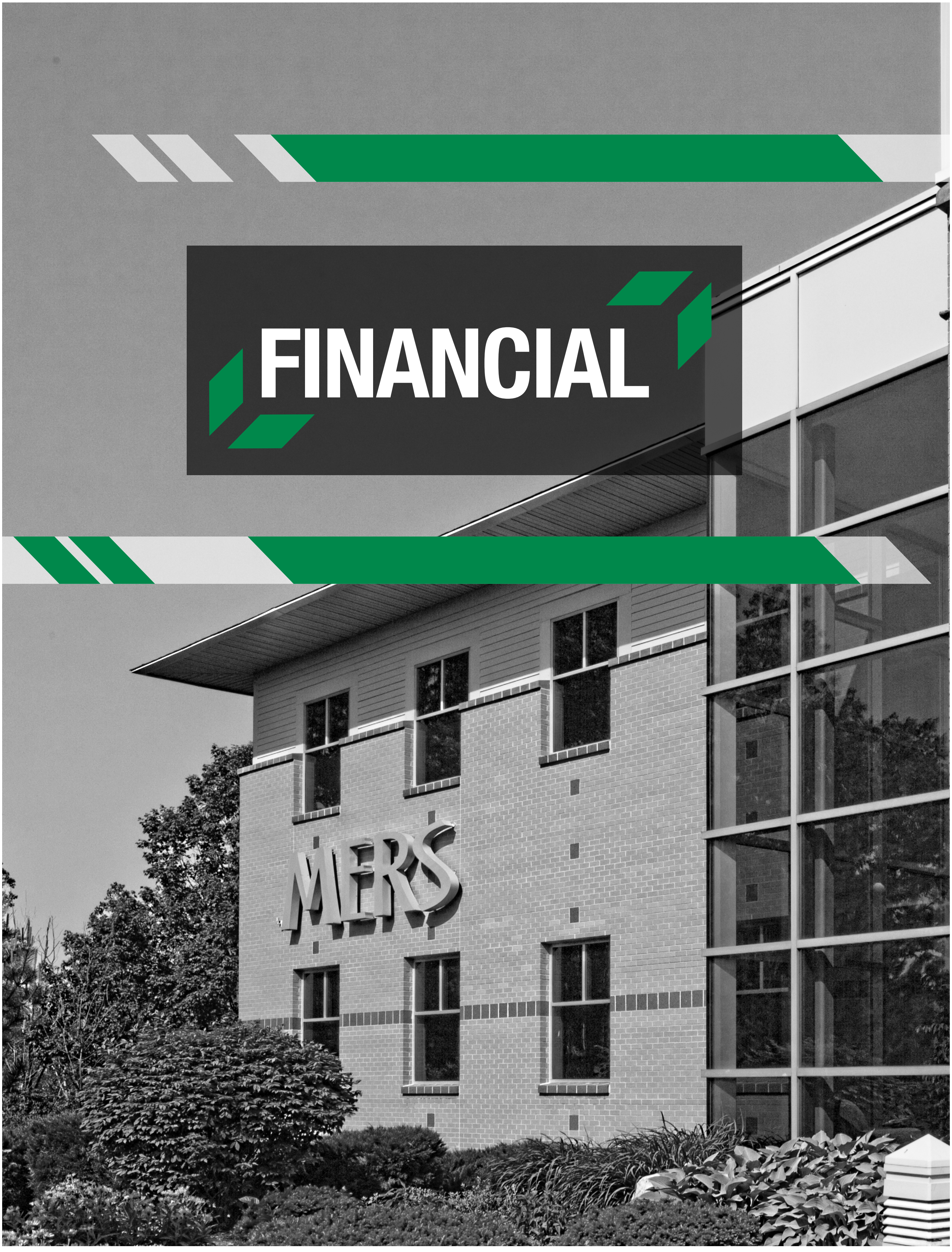
FINANCIAL



INDEPENDENT AUDITOR'S REPORT

Plante & Moran, PLLC
27400 Northwestern Highway
P.O. Box 307
Southfield, MI 48037-0307
Tel: 248.352.2500
Fax: 248.352.0018
plantemoran.com

Independent Auditor's Report

To the Retirement Board
Municipal Employees' Retirement System of Michigan

Report on the Audit of the Financial Statements

Opinion

We have audited the financial statements of Municipal Employees' Retirement System of Michigan (MERS) as of and for the year ended December 31, 2022 and the related notes to the financial statements, which collectively comprise MERS' basic financial statements, as listed in the table of contents.

In our opinion, the accompanying financial statements referred to above present fairly, in all material respects, the fiduciary net position of Municipal Employees' Retirement System of Michigan as of December 31, 2022 and the changes in fiduciary net position for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Basis for Opinion

We conducted our audit in accordance with auditing standards generally accepted in the United States of America (GAAS) and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States. Our responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Financial Statements* section of our report. We are required to be independent of MERS and to meet our other ethical responsibilities in accordance with the relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Emphasis of Matter

As explained in Note 4, the financial statements include investments valued at approximately $1 billion at December 31, 2022, whose fair values have been estimated by management in the absence of readily determinable fair values. Management's estimates are based on information provided by fund managers, general partners, third-party valuation firms, etc. Our opinion is not modified with respect to this matter.

Responsibilities of Management for the Financial Statements

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

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

To the Retirement Board
Municipal Employees' Retirement System of Michigan

Auditor's Responsibilities for the Audit of the Financial Statements

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

In performing an audit in accordance with GAAS and *Government Auditing Standards*, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances but not for the purpose of expressing an opinion on the effectiveness of MERS' internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about MERS' ability to continue as a going concern for a reasonable period of time.

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

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis and other required supplementary information, as identified in the table of contents, be presented to supplement the basic financial statements. Such information is the responsibility of management and, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, which considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

To the Retirement Board
Municipal Employees' Retirement System of Michigan

Other Supplementary Information

Our audit was conducted for the purpose of forming an opinion on the financial statements that collectively comprise Municipal Employees' Retirement System of Michigan's basic financial statements. The schedule of administrative expenses, schedule of investment expenses, and schedule of payments to consultants are presented for the purpose of additional analysis and are not a required part of the basic financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. The information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the schedule of administrative expenses, schedule of investment expenses, and schedule of payments to consultants are fairly stated in all material respects in relation to the basic financial statements as a whole.

Other Information

Management is responsible for the other information included in the Annual Comprehensive Financial Report. The other information comprises the introductory, investments, actuarial, and statistical sections but does not include the basic financial statements and our auditor's report thereon. Our opinion on the basic financial statements does not cover the other information, and we do not express an opinion or any form of assurance thereon.

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

Report on Summarized Comparative Information

We have previously audited Municipal Employees' Retirement System of Michigan's December 31, 2021 financial statements, and we expressed an unmodified audit opinion on those audited financial statements in our report dated May 17, 2022. In our opinion, the summarized comparative information presented herein as of and for the year ended December 31, 2021 is consistent, in all material respects, with the audited financial statements from which it has been derived.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated May 18, 2023 on our consideration of Municipal Employees' Retirement System of Michigan's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, grant agreements, and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of Municipal Employees' Retirement System of Michigan's internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering Municipal Employees' Retirement System of Michigan's internal control over financial reporting and compliance.

Plante & Moran, PLLC

May 18, 2023

MANAGEMENT'S DISCUSSION AND ANALYSIS

This narrative overview and analysis of Municipal Employees' Retirement System of Michigan's (MERS or System) financial condition for the year ended December 31, 2022, is presented in conjunction with the Chief Executive Officer's Letter of Transmittal. The Financial Section is comprised of the Independent Auditor's Report, Management's Discussion and Analysis, 2 basic financial statements with explanatory notes, 3 required supplementary schedules with explanatory notes, and 3 supplementary expense schedules.

Financial Highlights

The following financial highlights occurred during the year ended December 31, 2022:

- Total fiduciary net position for the Defined Benefit Plan, Defined Contribution Plan, Health Care Savings Program, Retiree Health Funding Vehicle, 457 Program, Investment Services Program, and Individual Retirement Account Program decreased by 12%, primarily due to market decreases for the year. MERS finished the year with over $14 billion in net fiduciary position.
- The portfolio investment returns saw a money-weighted loss of –10.42% net of investment expenses for the year. The 10-year return was 6.79% net of investment expenses, which is below the long-term target of MERS' expected investment rate of return of 7.35%. The portfolio investment income declined over $1.8 billion in 2022.
- Revenue from contributions and transfers-in decreased by 9% in 2022.
- Total annual benefits, transfers, and withdrawals remained constant at a total of $1.2 billion. Increases were experienced within the Defined Benefit Plan.
- Administrative expenses increased by 43% in 2022 going from $20.4 million in 2021 to $29.2 million in 2022. This is due to a shift in reporting service fees that were netted with administrative expenses in 2021 and being reported as a part of miscellaneous income for 2022. The amount of service fees are $8.8 million and $7.8 million for 2021 and 2022 respectively.
- Investment expenses increased from $10.3 million to $10.5 million due to incentive fees.
- The most recent MERS actuarial valuation, dated December 31, 2021, showed 647 of 744 Defined Benefit municipalities were funded 60% or better, with 101 municipalities over 100% funded.
- The difference between the MERS actuarial and fair value assets decreased from last year, as the actuarial calculation for 2021 is 99.85% of the fair value of assets as calculated by the actuaries (the ratio was 97% as of December 31, 2020). Total Defined Benefit Plan actuarial assets and fair value of assets were valued at $12.5 billion on December 31, 2021.
- As part of the MERS 2022 Strategic Plan, MERS invested $6.4 million in capital assets with a large portion of this dedicated to key projects to upgrade the pension administration. The MERS investment in all capital assets is $25.6 million, net of accumulated depreciation.

This Management's Discussion and Analysis is an introduction to the MERS basic financial reporting statements:

1. Statement of Fiduciary Net Position
2. Statement of Changes in Fiduciary Net Position
3. Notes to Basic Financial Statements

The "Comparison Statement of Fiduciary Net Position" and "Comparison Statement of Changes in Fiduciary Net Position" provide a comparative summary of the financial condition of the plan as a whole with the prior year results.

The "Statement of Fiduciary Net Position" and "Statement of Changes in Fiduciary Net Position" provide the current financial condition of each MERS product.

Required Supplemental Information

1. Schedule of Annual Money Weighted Rates of Return
2. Schedule of Employer Contributions
3. Schedule of Changes in Employer Net Pension Liability/ (Asset) and Related Ratios

Supplementary Expense Schedules

1. Schedule of Administrative Expenses
2. Schedule of Investment Expenses
3. Schedule of Payments to Consultants

The expense schedules summarize all expenses associated with administering all MERS' programs.

Comparison Statement of Fiduciary Net Position (Dollars in Thousands)

	December 31, 2022	December 31, 2021	$ Increase (Decrease)	% Increase (Decrease)
Assets				
Cash and Short-Term Investments	$62,051	$29,523	$32,528	110%
Receivables	56,467	57,239	(772)	-1%
Loans	9,086	7,942	1,144	14%
Investments, at fair value	13,946,009	15,917,122	(1,971,113)	-12%
Invested Securities Lending Collateral	378,287	1,056,038	(677,751)	-64%
Prepaids/Other Assets	7,403	507	6,896	1360%
Net Capital Assets	25,580	23,602	1,978	8%
Total Assets	**14,484,883**	**17,091,973**	**(2,607,090)**	**-15%**
Deferred Outflow of Resources				
Outflows Related to Pension	9,724	4,912	4,812	98%
Liabilities				
Purchase of Investments	3,776	4,541	(765)	-17%
Securities Lending Collateral	378,287	1,056,038	(677,751)	-64%
Administrative/Investment Costs/Reserves	7,578	5,817	1,761	30%
Total Liabilities	**389,641**	**1,066,396**	**(676,755)**	**-63%**
Deferred Inflow of Resources				
Inflows Related to Pension	4,130		4,130	
Net Position - Restricted for:				
Pensions	**12,043,976**	**13,801,715**	**(1,757,739)**	**-13%**
Postemployment Benefits Other than Pensions	**2,004,110**	**2,167,280**	**(163,170)**	**-8%**
Pool Participants	**52,750**	**61,493**	**(8,743)**	**-14%**
	$14,100,836	**$16,030,489**	**$(1,929,653)**	**-12%**

Comparison Statement of Changes in Fiduciary Net Position (Dollars in Thousands)

	December 31, 2022	December 31, 2021	$ Increase (Decrease)	% Increase (Decrease)
Additions				
Contributions/Transfers-In	$1,128,579	$1,238,676	$(110,097)	-9%
Investment Net Income (Loss) Investing Activities	(1,849,365)	1,913,220	(3,762,585)	-197%
Investment Net Income-Securities Lending	3,014	1,985	1,029	52%
Miscellaneous Income	8,421	87	8,334	9580%
Total Additions	**(709,351)**	**3,153,968**	**(3,863,319)**	**-122%**
Deductions				
Benefits/Transfers and Withdrawals	1,191,070	1,222,831	(31,761)	-3%
Forfeitures, Miscellaneous	15	13	2	15%
Administrative Expense	29,217	20,420	8,797	43%
Total Distributions	**1,220,302**	**1,243,264**	**(22,962)**	**-2%**
Net Increase/Decrease	**(1,929,653)**	**1,910,704**	**(3,840,357)**	**-201%**
Net Position - Beginning of Fiscal Period	16,030,489	14,119,785	1,910,704	14%
Net Position - End of Fiscal Period	**$14,100,836**	**$16,030,489**	**$(1,929,653)**	**-12%**

Analysis of Fiduciary Net Position

The fiduciary net position decreased by $1.9 billion over the previous fiscal year primarily due to investment losses.

The MERS receivables consist chiefly of investment and employer contribution billings that settled in early 2023. The bulk of the receivables are employer contributions that were incurred in 2022 and then settled in 2023.

Combined employer and employee contributions decreased by $110 million compared to 2021. This is due to a decrease in bonding proceeds and employer extra voluntary contributions by nearly $126 million and $42 million respectively. Offsetting this are regular employer and employee contributions that have increased by $55 million.

Deductions to the plan for 2022 are primarily due to investment losses as well as retirement benefit payments. The total net investment losses for the year were at $1.9 billion. Benefit payments paid out to participants and employers totaled $1.2 billion, which is down 3% from December 31, 2021. This decrease is due to the 2021 payments accounting for a disbursement to a large employer who terminated participation in RHFV.

MERS had capital assets, net of accumulated depreciation, of $25.6 million. Of the total, $17.9 million is software needed to run the pension administration and financial programs; $600 thousand is office furniture and equipment; and $7 million is buildings, leasehold improvements and land.

MERS has no long-term liabilities. The bulk of MERS' liabilities at year-end are related to investment purchases that did not settle until early 2023, accrued administrative and investment expenses, and securities' lending collateral.

Investment Activities

The performance of the Defined Benefit Portfolio was up for the year and surpassed the investment benchmark. The money-weighted return (net of investment expenses) of –10.42% was below the 7.00% actuarial return assumption target for the year. By comparison, for 3-, 5-, and 10-year periods, the net returns were 5.13%, 4.95%, and 6.79%, respectively. Net investment losses (net depreciation in fair value less investment expenses plus securities lending income) totaled $1.4 billion in losses. A further detailed analysis of investment returns is in the Investments Section.

Investments are managed to control downside risk while maximizing long-term gain potential. This strategy positions MERS to limit the impact of adverse market conditions. Portfolio diversification by asset class and style is an important element of investment risk control.

MERS is an investment fiduciary under the Public Employee Retirement System Investment Act, PA 314 of 1965, MCL 38.1132 et seq., as amended, and, as such, is subject to the "prudent person" standard of care with respect to the management and investment of the System's assets. This standard requires that MERS discharge its duties solely in the interest of the System's participants and beneficiaries with the diligence, care, and skill that a prudent person would ordinarily exercise under similar circumstances.

In accordance with its fiduciary duties, the Board has adopted an investment policy that outlines the investment goals, objectives and policies of the System's pension fund. The purpose of the policy is to ensure that the investment activities are carried out within the framework established by the MERS policy and administrative documents. The investment policy assists the Board, Investment Committee and Office of Investments in effectively and prudently monitoring and administering MERS investments. A summary of the total assets is found in the Investments section of the Annual Comprehensive Financial Report.

Funding Status

A pension plan is well funded when it has sufficient assets invested to meet all the expected future obligations to participants. The greater the level of funding, the larger the ratio of assets to actuarial accrued liability. While some municipalities are not fully funded, annual contributions are made at an actuarially determined rate to reach full funding over a fixed period of years. There is no single all-encompassing test for measuring a retirement System's funding progress and current funded status. However, some common indicators that a retirement system has achieved progress in funding its obligations include observing the changes over time of the ratio of valuation assets to actuarial accrued liabilities and the pattern of the unfunded actuarial accrued liability as a percentage of active payroll.

The Board has adopted a funding policy for MERS to achieve the following major objectives:

- Adequacy
- Inter-Period Equity (in particular intergenerational equity) and Transparency
- Contribution Stability and Governance

The actuarial method for calculating the accrued liability for all plans is entry age normal with the objective of maintaining employer contributions approximately level as a percentage of member payroll. A detailed discussion of the funding method is in the Actuarial Section.

MERS is an agent multiple-employer retirement system that pools assets of the participating employers for investment purposes but maintains separate trusts for each individual employer. For this reason, MERS does not have a "funded status;" rather, each municipality has its own funded level. Each municipality is responsible for its own plan liabilities; a municipality cannot borrow from another municipality's account to pay for pension expenses. A measure of a municipality's funding progress is the ratio of its actuarial assets to actuarial accrued liabilities.

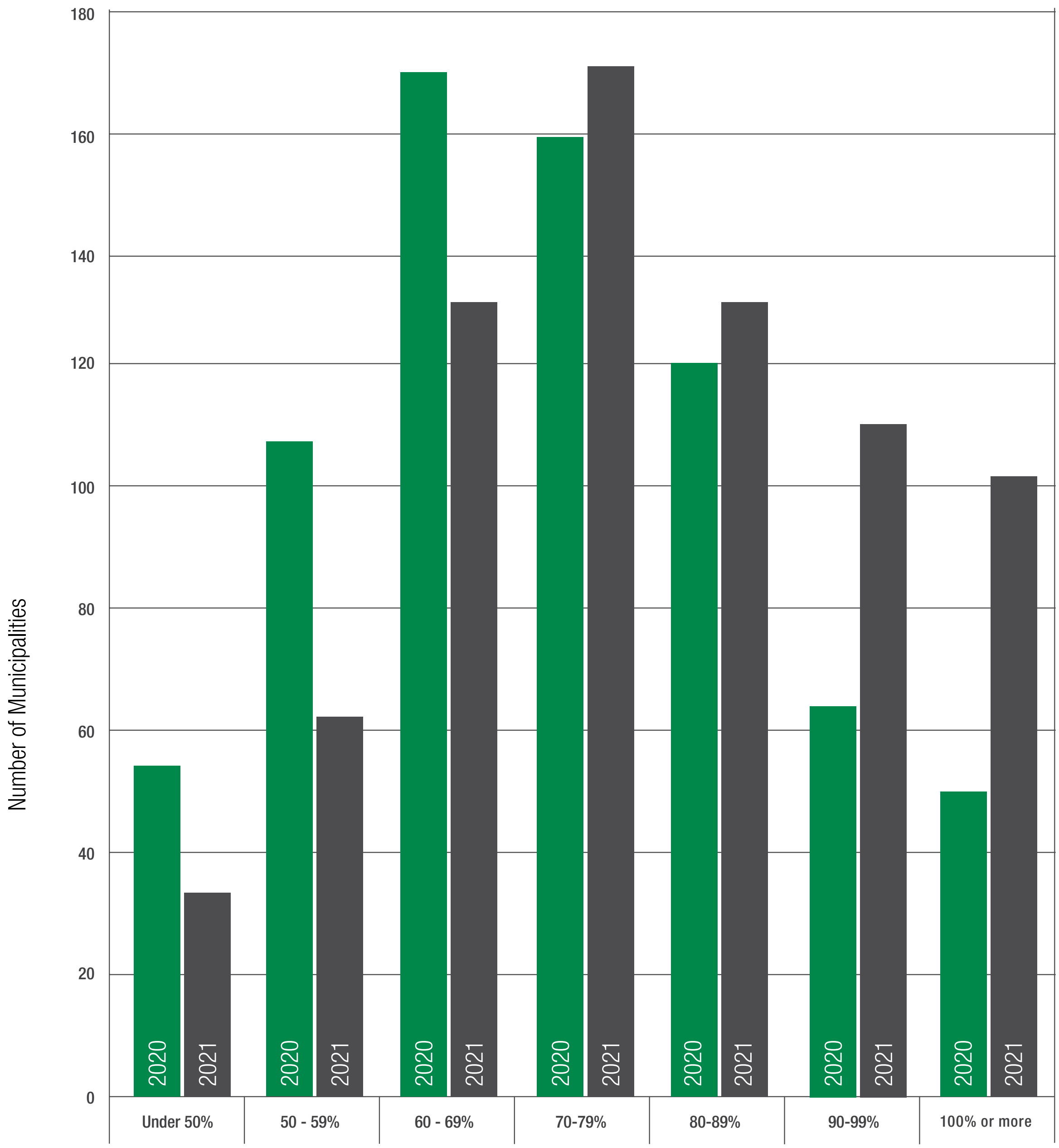
The most recent MERS actuarial valuation is as of December 31, 2021. On that date, of all 744 Defined Benefit and Hybrid municipalities, 647 municipalities in MERS were funded at 60% or higher (87% of all Defined Benefit and Hybrid municipalities) and 101 municipalities (7.1% of all Defined Benefit and Hybrid municipalities) are funded at 100% or more. The median funded percentage based on actuarial assets was 78% in 2021, which was 71% in 2020.

MERS partners with our local governments to achieve the following:

- Determine the best retirement fit for each municipality
- Offer cost-reducing strategies
- Provide fiscal best practices

For the December 31 valuation, the actuarial value of assets is equal to 99.85% of fair value (compared to 97.24%, 101.32%, 109.53% and 101.13% in 2020, 2019, 2018 and 2017, respectively). This means that the rate of return on the actuarial value of assets should exceed the actuarial assumption in the next few years provided that the annual market returns exceed the 7.00% investment return assumption.

Distribution of Funded Percentage of Actuarial Accrued Liability among the 744 participating municipalities as of December 31, 2021, and the 742 participating municipalities as of December 31, 2020



BASIC FINANCIAL STATEMENTS

Statement of Fiduciary Net Position as of December 31, 2022 (Dollars in Thousands)

	Pension (and Other Employee Benefits) Trust Funds		
	Defined Benefit	Defined Contribution	Health Care Savings Program
Assets			
Cash and Short-Term Investments	$57,441	$678	$99
Receivables			
Employer and Member Contributions	48,701	571	337
Sale of Investments	627	15	2
Investment Income	3,440	80	12
Loans		7,945	
Intercompany Receivables		59	53
Other	568		
Total Receivables/Loans/Other	53,336	8,670	404
Investments			
Global Equities	5,547,142	129,050	18,874
Global Fixed Income	1,939,228	45,115	6,598
Private Investments	3,043,297	70,800	10,355
Short Term Interest Fund	310,088	7,214	1,055
Land	1,402		
Mutual Funds		796,510	330,377
Self Directed Accounts		6,323	
Investments, at Fair Value	10,841,157	1,055,012	367,259
Invested Securities Lending Collateral	326,643	7,599	1,112
Prepaid Expenses/Other Assets	7,403		
Capital Assets, at cost, net of accumulated depreciation	25,580		
Total Assets	**11,311,560**	**1,071,959**	**368,874**
Deferred Outflow of Resources			
Outflows related to pension	9,724		
Liabilities			
Purchase of Investments	3,260	76	11
Securities Lending Collateral	326,643	7,599	1,112
Intercompany Payables	1,434		
Administrative and Investment Costs	6,125		
Total Liabilities	**337,462**	**7,675**	**1,123**
Deferred Inflow of Resources			
Inflows Related to Pension	4,130		
Net Position - Restricted for:			
Pensions	**10,979,692**	**1,064,284**	
Postemployment Benefits Other Than Pensions			**367,751**
Pool Participants			
Balance End of Fiscal Period	**$10,979,692**	**$1,064,284**	**$367,751**

The accompanying notes are an integral part of these Financial Statements.

Pension (and Other Employee Benefits) Trust Funds			Investment Trust Funds		
457 Program	Individual Retirement Account	Retiree Health Funding Vehicle	Investment Services Program	As of December 31, 2022	As of December 31, 2021
$127	$6	$3,559	$141	$62,051	$29,523
125	1			49,735	52,255
3		76	3	726	177
14	1	420	17	3,984	535
1,141				9,086	7,942
188		1,104	49	1,453	
				568	4,272
1,471	2	1,600	69	65,552	65,181
24,186	1,047	676,969	26,895	6,424,164	7,829,774
8,455	366	236,662	9,402	2,245,825	2,843,830
13,269	574	371,402	14,755	3,524,452	3,338,642
1,352	58	37,843	1,504	359,114	405,345
				1,402	1,402
247,820	7,523			1,382,230	1,487,847
2,499				8,822	10,282
297,582	9,568	1,322,876	52,556	13,946,010	15,917,122
1,424	62	39,863	1,584	378,287	1,056,038
				7,403	507
				25,580	23,602
300,604	**9,638**	**1,367,898**	**54,350**	**14,484,883**	**17,091,973**
				9,724	4,912
14	1	398	16	3,776	4,541
1,424	62	39,863	1,584	378,287	1,056,038
	19			1,453	
				6,125	5,817
1,438	**82**	**40,261**	**1,600**	**389,641**	**1,066,396**
				4,130	-
				12,043,976	**13,801,715**
299,166	**9,556**	**1,327,637**		**2,004,111**	**2,167,280**
			52,750	**52,750**	**61,493**
$299,166	**$9,556**	**$1,327,637**	**$52,750**	**$14,100,836**	**$16,030,489**

Statement of Changes in Fiduciary Net Position for the Year Ended December 31, 2022 (Dollars in Thousands)

	Pension (and Other Employee Benefits) Trust Funds		
	Defined Benefit	Defined Contribution	Health Care Savings Program
Additions			
Contributions and Transfers-In			
Employer Contributions and Other	$785,582	$57,232	$31,744
Plan Member Contributions	88,520	39,800	13,949
Total Contributions and Transfers-In	874,102	97,032	45,693
Net Appreciation/Depreciation in Fair Value	(1,535,248)	(187,255)	(59,644)
Interest and Dividend Income	158,897	3,697	541
Subtotal of Investment Income/(Loss)	(1,376,351)	(183,558)	(59,103)
Less Investment Expense	9,501	353	101
Net Investment Income/(Loss) Before Securities Lending Activities	(1,385,852)	(183,911)	(59,204)
Securities Lending Activities			
Securities Lending Income	11,776	274	40
Securities Lending Expenses			
Borrower Rebates (Income)	9,112	212	31
Management Fees	62	1	
Total Securities Lending Expenses	9,174	213	31
Net Income from Securities Lending	2,602	61	9
Total Net Investment Income/(Loss)	**(1,383,250)**	**(183,850)**	**(59,195)**
Miscellaneous Income	123	3,177	1,054
Total Additions	**(509,025)**	**(83,641)**	**(12,448)**
Deductions			
Benefits/Transfers and Withdrawals	1,069,058	70,069	16,475
Forfeitures and Other Miscellaneous	15		
Administrative Expenses	23,046	2,885	918
Total Deductions	**1,092,119**	**72,954**	**17,393**
Net Increase/(Decrease)	(1,601,144)	(156,595)	(29,841)
Net Position - Beginning of Fiscal Period	12,580,836	1,220,879	397,592
Net Position - End of Fiscal Period	**$10,979,692**	**$1,064,284**	**$367,751**

The accompanying notes are an integral part of these Financial Statements.

Pension (and Other Employee Benefits) Trust Funds			Investment Trust Funds		
	Individual Retirement Account	Retiree Health Funding Vehicle	Investment Services Program	For the Year Ended December 31, 2022	For the Year Ended December 31, 2021
$3,011		$50,421	$950	$928,940	$1,067,526
53,473	$3,897			199,639	171,150
56,484	3,897	50,421	950	1,128,579	1,238,676
(46,577)	(1,322)	(184,656)	(7,673)	(2,022,376)	1,788,545
693	30	19,392	770	184,020	134,928
(45,884)	(1,292)	(165,264)	(6,903)	(1,838,356)	1,923,473
92	3	923	36	11,009	10,253
(45,976)	(1,295)	(166,187)	(6,939)	(1,849,365)	1,913,220
51	2	1,437	57	13,637	1,545
40	1	1,112	44	10,552	(516)
		8		71	76
40	1	1,120	44	10,623	(440)
11	1	317	13	3,014	1,985
(45,965)	**(1,294)**	**(165,870)**	**(6,926)**	**(1,846,351)**	**1,915,205**
841	24	3,077	125	8,421	87
11,360	**2,627**	**(112,372)**	**(5,851)**	**(709,351)**	**3,153,968**
15,846	366	16,429	2,827	1,191,070	1,222,831
				15	13
584	41	1,678	65	29,217	20,420
16,430	**407**	**18,107**	**2,892**	**1,220,302**	**1,243,264**
(5,070)	2,220	(130,479)	(8,743)	(1,929,653)	1,910,704
304,235	7,336	1,458,116	61,493	16,030,489	14,119,785
$299,165	**$9,556**	**$1,327,637**	**$52,750**	**$14,100,836**	**$16,030,489**

NOTES TO BASIC FINANCIAL STATEMENTS

Year ended December 31, 2022

1. REPORTING ENTITY AND PLAN DESCRIPTION

MERS is a statutory public corporation and governmental retirement plan qualified under Section 401(a) of the Internal Revenue Code, independent from the State of Michigan, which was established to provide a pooled Program for retirement benefits on a voluntary basis to the State of Michigan's municipal and court employees. MERS has helped provide retirement plans for municipal and court employees for over 70 years.

MERS was established by the Michigan Legislature under Public Act 135 of 1945. This act was repealed and replaced by the successor Municipal Employees' Retirement Act of 1984 (PA 427) (MERS Act). On August 15, 1996, pursuant to 1996 PA 220, MERS became independent from the State of Michigan.

Since 1996, MERS is solely administered by a 9-member retirement board (Board). The Board consists of the following members, each of whom, except for the Retiree Member and the Board Appointees, shall be from a different county at the time of election:

- Expert Members: 2 members, appointed by the Board, who have knowledge or experience in retirement systems, administration of retirement systems, investment management, or advisory services
- Retiree Member: 1 member, a retiree of the System, is appointed by the Board
- Officer Members: 3 officers of participating municipalities or courts, who are elected by the delegates at the MERS Annual Conference
- Employee Members: 3 employees who are not officers of a participating municipalities or courts, who are elected by the delegates at the MERS Annual Conference

The regular term of office for members of the Board is 3 years. Members of the Board serve without compensation with respect to their duties but are reimbursed by the System for their actual and necessary expenses incurred in the performance of their duties.

The Board establishes in its Plan Document the benefit plans and provisions that are available for adoption. The participating employer's governing body adopts the benefits of the plan. The various plans are discussed in the Actuarial Section. Pursuant to Article 9, Section 24 of the Constitution of the State of Michigan: "The accrued financial benefits of each pension plan and retirement system of the state and its political subdivisions shall be a contractual obligation thereof which shall not be diminished or impaired thereby. Financial benefits arising on account of service rendered in each fiscal year shall be funded during that year and such funding shall not be used for financing unfunded accrued liabilities."

MERS is an agent multiple-employer retirement system that pools assets of the participating employers for investment purposes but maintains separate accounts for each individual employer.

Employee contribution rates vary depending on the benefit plan adopted by the local government. If an employee leaves employment or dies before becoming eligible for retirement benefits, accumulated employee contributions (plus interest) are refunded to the employee or designated beneficiary upon application.

The Internal Revenue Service (IRS) has determined that MERS' Defined Benefit, Defined Contribution and Hybrid Plans are governmental plans that are tax-qualified trusts under Internal Revenue Code (the Code or IRC) Section 401(a) and tax exempt under Section 501(a). The IRS issued the most recent Letter of Favorable Determination for MERS on October 18, 2016. The benefits of tax-qualified status include the preferential deferred taxability of contributions, accumulated earnings, pensions, rollovers, annual compensation limits, and benefit limitations.

Under the Code, the retiree's pension becomes subject to taxation upon periodic distribution unless the Distribution is "rolled over" if permitted by law. Pursuant to IRC Section 72(d), any "after tax contributions" are recovered tax-free over the life expectancy of the retiree (or beneficiary, if applicable).

IRC Section 401(a) (17) limits the amount of compensation that can be taken into account for benefit calculation purposes and, correspondingly, limits the amount of employer and employee contributions. Compensation in excess of the limit ($305,000 and $330,000 for 2022 and 2023 respectively) will not be included by MERS in any benefit determination. Employee contributions in excess of the limit will not be collected or accepted, nor included in final average compensation for benefit purposes.

In addition, IRC Section 415(b) (1) (a) imposes certain limitations on pension benefit payments from the MERS qualified trust. Any amounts that exceed the limitations shall be paid from a Qualified Excess Benefit Arrangement (QEBA), as authorized by IRC Section 415(m) and the Michigan Public Employee Benefit Protection Act, MCL 38.1686 (2002 PA 100). The QEBA is a separate plan and is annually cash funded by the affected participating municipality or court. The Board established the MERS QEBA in 2003 solely for the purpose of providing retirees and beneficiaries that portion of the retirement allowance exceeding the Section 415 limits, which is otherwise not payable by the trust under the terms of the MERS qualified plan. The IRS approval of the QEBA was pursuant to a Private Letter Ruling issued December 15, 2003. Retirees and beneficiaries do not have an election, directly or indirectly, to defer compensation to the QEBA.

The MERS Defined Contribution Plan became operative July 8, 1997, under Section 401(a) of the IRC. On this date, the MERS Plan Document of 1996 was first determined by the IRS Letter of Favorable Determination to meet qualifications as a “governmental plan” trust under Code Section 401(a), and tax exempt under Section 501(a). MERS has contracted with a third-party administrator for recordkeeping and administrative functions. The plan is available to all MERS participating municipalities and may be adopted on a division-by-division basis. Plan provisions and requirements are specified in the MERS Plan Document. MERS’ Defined Contribution Plan provides participants with an account they manage. At retirement, benefits are based solely on the amount contributed by the participant and employer and the performance of investments. IRC Section 415(c) imposes certain limitations on the annual additions that can be accepted by the MERS qualified trust (for 2022, the limit was the lesser of $61,000 or 100% of compensation). The plan has several strategic investment categories designed to help participants meet their retirement goals. All participants have access to the MERS streamlined investment menu that allows for simple and strategic investing.

The MERS Hybrid Plan is an option for municipalities that includes both a defined benefit and a defined contribution component. The defined benefit component (Part I) is employer funded, with benefit multipliers of 1.0, 1.25, and 1.5%. The defined contribution component (Part II) is a combination of employer and participant contributions that are invested in mutual funds selected by the individual participant. On the financial statements, the Hybrid Plan is reflected in both Defined Benefit and Defined Contribution columns.

MERS received a Private Letter Ruling dated January 13, 2004, allowing the establishment of an IRC Section 115 Integral Governmental Trust, giving MERS the ability to create two programs – the Health Care Savings Program and the Retiree Health Funding Vehicle.

The MERS Health Care Savings Program became operational in June 2004 and was made available to all municipalities in Michigan. The employer-sponsored program provides medical reimbursement accounts to participants. Medical expenses are reimbursed, as defined in Code Section 213, once participants terminate employment, are on medical leave for 6 months or longer, or are on disability from any public pension plan.

There are 4 types of contributions that may be used in the program: 1) Basic Employer (tax-favored); 2) Mandatory Salary Reductions (tax-favored); 3) Mandatory Leave Conversions (tax-favored); and 4) Voluntary Employee Contributions (post-tax). As a result of the Private Letter Ruling and Code Sections 106 and 213, reimbursements for medical expenses are tax-exempt for the participant, their spouse, and/or Code Section 152 dependent(s). The Health Care Savings Program accounts are invested in the MERS Investment Menu, and earnings are tax exempt as a result of the MERS Private Letter Ruling. Plan provisions and requirements are specified in the MERS Health Care Savings Program and Retiree Health Funding Vehicle Plan Document and Trust.

The MERS Retiree Health Funding Vehicle became operational in the fall of 2004 and was made available to all municipalities in Michigan. Participating municipalities can contribute monies to the Trust as desired and no contribution method is imposed. These funds constitute a health care fund, which enables municipalities to accumulate monies to provide or subsidize health benefits for retirees and beneficiaries. MERS does not provide benefits, only the funding vehicle for local governments. The Retiree Health Funding Vehicle accounts are invested in the MERS portfolio choices and earnings are tax exempt as a result of the MERS Private Letter Ruling. Plan provisions and requirements are specified in the MERS Health Care Savings Program and Retiree Health Funding Vehicle Plan Document and Trust.

The MERS 457(b) Deferred Compensation Program was established as a deferred compensation plan and trust and became operational November 8, 2011. Its purpose is to provide benefits under the Program to participants and beneficiaries upon retirement, termination, disability, or death, upon the terms and conditions, and subject to the limitations contained in the Program. The Program was created for the exclusive benefit of eligible participants and their beneficiaries of any employer electing to participate in the Program. The Program is intended to comply with Code Section 457(b). All assets held in connection with the Program, including all contributions and amounts of compensation deferred pursuant to the Program, all property and rights acquired or purchased with such amounts, and all income attributable to such amounts, property, or rights shall be held in trust for the exclusive benefit of participants and their beneficiaries under the Program. No part of the assets and income shall be used for, or diverted to, purposes other than for the exclusive benefit of participants and their beneficiaries and for defraying reasonable expenses of the Program.

The Investment Services Program is an investment trust fund that is available to all municipalities in Michigan to invest IRC 401(a) funds through the MERS portfolio while maintaining administrative functions at the municipal level. The program was established by the Board in March 2006 and began operations in June 2006. The Investment Services Program trust fund complies with all the requirements imposed by the Public Employee Retirement System Investment Act, 1965 PA 314. Like the other non-retirement plans, participation in the Investment Services Program alone does not qualify as membership in MERS, and the participating employer that does not otherwise participate in MERS' 401(a) plan, does not have a vote at the MERS Annual Conference.

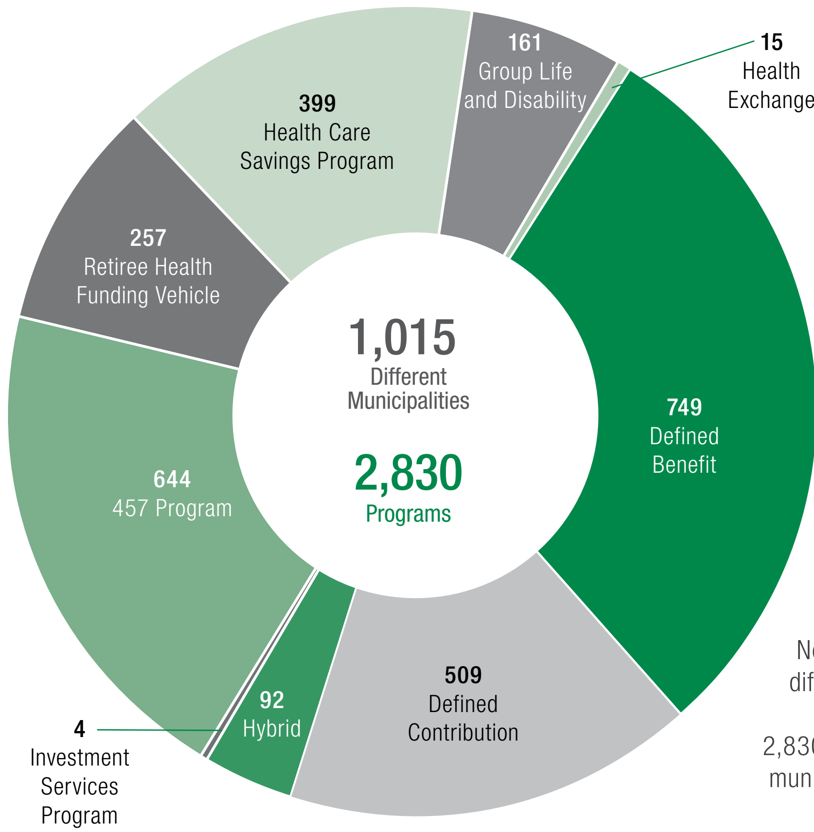
The MERS deemed Individual Retirement Account (IRA) was established in 2018 and is a tax-advantaged retirement account for the exclusive benefit of current and former employees of MERS-partnered municipalities and their spouses. MERS offers 2 types of IRAs: A Roth IRA that provides tax-free income in retirement and a traditional IRA that allows tax-deductible contributions now. Both allow the participant to withdraw money at any time, without penalty, for qualified expenses including education expenses, buying a first home, and some medical expenses.

Through The Standard Insurance Company, MERS offers quality group life and disability insurance to Michigan municipalities. This group buying program offers comprehensive benefit features, a variety of plan designs, and family-friendly provisions at an affordable cost. The Standard Insurance Company fully administers the plan and MERS does not have any financial liability for the arrangement. In exchange for offering the insurance, MERS receives a small reimbursement that is reported in the service fee line item of the Defined Benefit administrative expenses.

MERS partners with the Mercer Marketplace 365 to offer a private health care exchange for eligible members. A private exchange is a marketplace where retirees can purchase benefits from the carrier of their choice with a wide variety of coverage options for pre-65 and Medicare-eligible retirees. Participants may use their MERS Health Care Savings Program funds for insurance premiums, co-payments, deductibles, etc., paid to providers available on the Exchange. The individual Health Care Savings Program account would reflect any reimbursement for eligible expenses as a distribution. As part of its collaboration agreement, MERS receives a quarterly reimbursement from Mercer to promote this partnership that is reported in the service fee line item of the Defined Benefit administrative expenses. Employers who partner with Mercer to manage their retiree group health plan receive a reimbursement for their retiree member list.

Any "municipality" (a term defined by Section 2b(2) of the MERS Act, MCL 38.1502b(2)) within the state may elect to become a participating member of MERS by a majority vote of the municipality's governing body or by an affirmative vote of the qualified electors. Changes in retirement plan coverage are subject to approval by a majority vote of the municipality's governing body.

MERS Participating Municipalities



Note: There are 1,015 different municipalities that make up the 2,830programs, as many municipalities have more than 1 product.

MERS Participants

	Defined Benefit	Defined Contribution	Hybrid	Health Care Savings Program	457	Health Exchange	IRA
Active	26,320	18,171	4,328	21,883	9,808	463	936
Deferred	9,678	NA	610	NA	NA	NA	NA
Retired	45,185	NA	225	NA	NA	NA	NA
Contributions not Vested	15,796	NA	14	NA	NA	NA	NA
Terminated	NA	9,242	NA	14,675	2,586	NA	NA
Product Totals	96,979	27,413	5,177	36,558	12,394	463	936
Total MERS Accounts*							**179,920**

** Total MERS Accounts represents the total number of accounts within MERS; individuals may be represented multiple times across categories.*

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Reporting Entity

The Board is responsible for the administration of the System, has fiduciary responsibility for the investment of assets, and oversees all funds included in these financial statements. The Board appoints the Chief Executive Officer who manages and administers the System under the supervision and direction of the Board.

MERS' financial statements are not included in the financial statements of any other organization.

Blended Component Units

MERS Real Estate Corporation (MREC) is governed by a 3-member board appointed by MERS as the sole member. Although it is legally separate from MERS, MREC is reported as if it were part of MERS because it is solely owned by MERS to function as a real estate holding company for the properties owned by MERS.

Cost Allocation

The costs of administering the MERS Defined Benefit Plan are allocated proportionally based on the average daily balance asset size to the municipalities along with investment gains/losses on a quarterly basis.

The costs of administering the MERS Defined Contribution Plan, Health Care Savings Program, Retiree Health Funding Vehicle, Investment Services Program and IRAs are allocated out to the employers and participants based on an administrative expense percentage for each employer and participant as well as their investment expenses based on fund choices.

Basis of Accounting

The financial statements for MERS are prepared on an economic resource measurement focus and accrual basis in accordance with Generally Accepted Accounting Principles (GAAP) as applicable to government organizations in the U.S. The preparation of financial statements, in conformity with GAAP, requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from these estimates.

MERS Defined Benefit Plan employer and employee contributions are recognized when due pursuant to legal, statutory, and contractual requirements. Benefits and refunds are recognized when due and payable in accordance with the terms of the Plan. Expenses and the associated liabilities for those expenses are also recorded using the accrual method when the liability is incurred.

The Defined Contribution Plan, 457 Program, Health Care Savings Program, Retiree Health Funding Vehicle, Investment Services Program and IRA financial statements are prepared using the accrual accounting method for revenues which are recorded when either payroll reports and/or funds are received. Expenses and the associated liabilities for those expenses are also recorded using the accrual method when the liability is incurred.

Plan investments are presented at fair value using the accrual method for those investments which are invested in the MERS portfolio. Investment purchases, sales and associated payables and receivables are recorded on their trade date. Investments invested outside of the MERS portfolio (primarily mutual funds) are recorded at fair value.

Post-Employment Benefits

MERS offers pension benefits to its retirees through the MERS Defined Benefit Plan. MERS records a net pension asset or liability for the difference between the total pension liability calculated by the actuary and the pension Plan's fiduciary net position. For the purpose of measuring the net pension asset or liability, deferred outflows of resources and deferred inflows of resources related to pensions and pension expense, information about the fiduciary net position of the pension plan and additions to/deductions from the pension plan's fiduciary net position have been determined on the same basis as they are reported by the pension plan. For this purpose, benefit payments including refunds of employee contributions, are recognized when due and payable in accordance with the benefit terms. Investments, which are part of the plan assets credited to MERS, are reported at fair value.

MERS does not provide other post-employment benefits to its employees and accordingly does not have any expense or liabilities for these benefits.

Fair Value of Investments

Plan investments are presented at fair value. Short-term investments are valued at cost plus accrued interest, which approximates fair value. Securities traded on a national or international exchange are valued at the last reported sales price at current exchange rates. Corporate bonds not traded on a national or international exchange are based upon equivalent values of comparable securities with similar yield and risk. Independent appraisals are the basis for valuing the fair value of real estate. Other investments that do not have established markets are recorded at an estimated fair value. Real estate and private equity investments typically have a quarter lag in reporting, but the values as of December 31 are estimated based on the third quarter capital statements plus fourth quarter cash flows, adjusted for any other known events.

Investment Act Disclosures

The Public Employee Retirement System Investment Act, MCL 38.1132, et seq. 1965 PA 314 requires MERS to follow certain financial management practices and provide related disclosures, as defined by Act 314. Compliance with these requirements is achieved in this Annual Comprehensive Financial Report found at mersofmich.com. MERS limits board member professional training, education and travel expenses in compliance with MCL 38.1133(6) and is reported in the Schedule of Administrative Expenses.

Capital Assets

Capital assets represent land, buildings, office furniture, equipment and software with a value of $5,000 or more. Assets are carried at cost, less accumulated depreciation. Depreciation expense is calculated by allocating the net cost of assets over their estimated useful lives using the straight-line method. Useful lives of the related assets vary from 3 to 30 years.

Capital Assets

Capital Assets	Buildings	Land	Leasehold Improvements	Office Furniture and Equipment	Software	Total Capital Assets
Balances Dec 31, 2021	$7,707,825	$1,266,516	$357,715	$3,528,950	$32,020,990	$44,881,996
Additions	305,819			318,037	5,746,913	6,370,770
Deletions and Transfers				(123,599)		(123,599)
Balances Dec 31, 2022	**8,013,644**	**1,266,516**	**357,715**	**3,723,388**	**37,767,904**	**51,129,167**
Accumulated Depreciation						
Balances Dec 31, 2021	1,937,917		252,011	2,931,865	16,157,838	21,279,631
Depreciation Expense	367,299		27,486	331,368	3,666,735	4,392,888
Deletions and Transfers				(123,599)		(123,599)
Balances Dec 31, 2022	**2,305,215**		**279,497**	**3,139,635**	**19,824,573**	**25,548,920**
Net Capital Assets Dec 31, 2022	**$5,708,429**	**$1,266,516**	**$78,218**	**$583,754**	**$17,943,331**	**$25,580,247**

Total Columns on Statements

The “Total” columns on the “Statement of Fiduciary Net Position” and “Statement of Changes in Fiduciary Net Position” are presented to facilitate financial analysis. Amounts in these columns do not present the plan net position and changes in plan net position in conformity with GAAP, nor is such data comparable to a Consolidation. Transactions between the Defined Benefit Plan, Defined Contribution Plan, Health Care Savings Program, 457 Program, Retiree Health Funding Vehicle, Investment Services Program and IRAs have not been eliminated from the “Total” columns.

The basic financial statements include certain prior year summarized comparative information in total but not at the level of detail required for a presentation in conformity with generally accepted accounting principles. Accordingly, such information should be read in conjunction with the government’s financial statements for the year ended December 31, 2022, from which the summarized information was derived.

New Accounting Pronouncements

In May 2020, the Governmental Accounting Standards Board issues GASB Statement No.96, Subscription-Based Information Technology Arrangements. This Statement provides guidance on the accounting and financial reporting for subscription-based information technology arrangements (SBITAs) for government end users (governments). This Statement (1) defines a SBITA; (2) establishes that a SBITA results in a right-to-use subscription asset (an intangible asset) and a corresponding subscription liability; (3) provides the capitalization criteria for outlays other than subscription payments, including implementation costs of a SBITA; and (4) requires note disclosures regarding a SBITA. To the extent relevant, the standards for SBITAs are based on the standards established in Statement No.87, Leases, as amended. The requirements of this Statement are effective for fiscal years beginning after June 15, 2022, and all reporting periods thereafter. MERS will implement this standard in the 2023 fiscal year.

In June 2022, the Governmental Accounting Standards Board issues GASB Statement No.101, Compensated Absences. This Statement provides guidance on the accounting and financial reporting for the recognition and measurement of compensated absences. The Statement requires that liabilities for compensated absences be recognized for leave that has not been used and leave that has been used but not settled through cash or non-cash means. The requirements of this Statement are effective for fiscal years beginning after December 15, 2023, and all reporting periods thereafter. MERS will implement this standard in the 2024 fiscal year.

3. CONTRIBUTIONS AND RESERVES

Contributions

The Defined Benefit Plan contribution funding requirements are actuarially determined using the entry age normal actuarial cost method and are based upon the benefit plan adopted by the municipality. Some municipalities fund their entire pension obligations solely from employer contributions. Most municipalities jointly fund pension obligations from employee and employer contributions. Monthly employee contributions are based upon a percentage of actual compensation as determined by the employer. Employer contributions are based upon projected or accrued compensation as determined by an annual actuarial valuation. For details about normal cost and total employer contributions by employer, please see the MERS Summary Actuarial Report found on our website at www.mersofmich.com. Employee contributions are held in individual member accounts that are credited with interest annually. Pursuant to the Board resolution adopted November 9, 2005, the interest rate for each year beginning in 2005 is the 1-year T-bill rate as of December 31 each year for the ensuing December 31 employee interest calculation. It is also used for interest calculations the subsequent year for those employees requesting a refund of their contributions.

Contributions to the Defined Contribution Plan are reported directly to the MERS third-party administrator by the participating municipalities and are separate from contributions made to the MERS Defined Benefit Plan. Both employer contributions and employee voluntary and mandatory contributions are governed by the contribution limits under the IRC. Municipalities may elect to have mandatory employee contributions where the participant pays a fixed dollar or percentage. If the municipality has a match contribution type, the participant will elect the amount of contribution at the time of enrollment and will not be allowed to make any changes to that contribution amount. Municipalities may also choose to allow additional voluntary after-tax contributions through payroll deduction. Municipalities may also choose to offer matching contributions into the Defined Contribution Plan based on elective deferrals made by participants to the MERS 457(b) Program.

Participating municipalities may, upon adoption of a Defined Contribution Plan resolution for new hires, offer current Defined Benefit employees an opportunity to opt into the Defined Contribution Plan. MERS transfers the actuarial present value of the employee’s accrued benefit in the Defined Benefit Plan into the employee’s Defined Contribution Plan account (at a stipulated funded ratio between 80%-100%). Employees direct their contributions to various investment options offered by the MERS Office of Investments and may transfer their account balances between investment categories or make changes to the percentage allocation on a daily basis.

Contributions to the 457 Program are made pre-tax and can be either a flat dollar amount or a percentage of payroll. An employer may also adopt a Roth provision allowing for after-tax contributions. Participation in the program is voluntary, so contributions can start and stop at any time, as well as increase or decrease.

Participants can make contributions to the MERS IRAs at any frequency and work directly with MERS third-party administrator to set this up. It is the participant's responsibility to ensure they do not exceed the IRA limits. Contributions are made post-tax to the Roth IRA, and participants may be able to deduct the contributions on their federal income tax returns for the traditional IRA.

Contributions to the Health Care Savings Program can come in many different forms based on the election of the employer. Mandatory pre-tax salary reductions can be elected based on a fixed dollar or required percentage that is mandatory for the entire group of participants or through a leave conversion election where vacation, personal time, sick time, or severance can be deposited into a Health Care Savings Program upon termination. In addition, post-tax voluntary employee contributions can be elected and can start or stop at any time.

Contributions to the Retiree Health Funding Vehicle and Investment Services Program can be made at any frequency for any amounts the employer wishes.

Defined Benefit Plan Reserves

Pursuant to the MERS Plan Document, 3 reserves have been established. See "Schedule of Changes in Reserves" in the Statistical Section.

- Reserve for Employee Contributions

  All additions to and deductions from this reserve are for the Defined Benefit Plan and the Defined Benefit portion of the Hybrid Plan. Employee contributions and interest are credited to this reserve. Also credited are monies received from the purchase of service credit and monies received in repayment of previously refunded contributions. The reserve is reduced by amounts paid to employees who terminate employment and request refunds, and by amounts transferred into the "Reserve for Employer Contributions and Benefit Payments" upon an employee's retirement. Interest is credited to each employee's account, as provided in the Board's November 9, 2005 resolution. The December 31, 2022 balance was $949.6 million

- Reserve for Employer Contributions and Benefit Payments

  All additions to and deductions from this reserve are for the Defined Benefit Plan and the Defined Benefit portion of the Hybrid Plan. All employer contributions are credited to this reserve. Net income is allocated to this reserve from the "Reserve for Expenses and Undistributed Investment Income". At retirement, the employee's accumulated contributions, if any, and interest are transferred into this reserve from the "Reserve for Employee Contributions." Monthly benefits paid to retirees reduce this reserve. The December 31, 2022 balance was $10 billion.

- Reserve for Expenses and Undistributed Investment Income

  All additions to and deductions from this reserve are for the Defined Benefit Plan and the Defined Benefit portion of the Hybrid Plan. All investment earnings and other monies received that are not dedicated to other areas are credited to this reserve. All administrative and investment expenses are paid from this reserve. Transfers from this reserve to the "Reserve for Employer Contributions and Benefit Payments" are at allocation rates determined by the Board. The unallocated reserve at the end of December 31, 2022 was ($2.8) million.

Other Reserves

Each of the products outside of the Defined Benefit Plan has its own reserve for additions and deductions to be recorded. MERS maintains separate employer account records for each municipality within the products. The December 31, 2022 reserve balances were as follows: Defined Contribution Plan $1.1 billion, Health Care Savings Program $368 million, Retiree Health Funding Vehicle $1.3 billion, Investment Services Program $52.7 million, 457(b) Program $298.9 million and Individual Retirement accounts $9.6 million. A more detailed analysis of the reserves can be found in the Statistical Section.

4. INVESTMENTS AND DEPOSITS

The Board has the fiduciary responsibility and authority to oversee the investment portfolio. Various professional investment managers are contracted to manage the System's assets. All investment decisions are subject to the Michigan Public Employee Retirement System Investment Act (PERSIA), 1965 PA 314, MCL 38.1132, et seq., and the investment policy established by the Board. Michigan law allows diverse investment in stocks, corporate and government bonds, mortgages, real estate, and other investments. PERSIA requires that the System invest its assets prudently and solely in the interest of the participants and beneficiaries. Under Plan Document Section 87(6), PERSIA, and Internal Revenue Code Section 401(a) (2), the investments shall be made for the exclusive purpose of providing benefits to the participants and their beneficiaries, and defraying reasonable expenses of the System.

The investment policy requires independent performance measurement of investment managers and establishes total return objectives for the total portfolio and major categories of investments. As of December 31, 2022, all securities held met the required statutory provisions and Board policy. As of the same date, no investments were in default or subject to bankruptcy proceedings that had not been previously recorded.

MERS' asset allocation policy is an important determinant of achieving the investment goals of the Plan. MERS follows a Valuation Based Allocation (VBA) approach to allocate the Plan's assets. A proprietary model is utilized to evaluate market opportunities across investable asset classes and determine appropriate allocations. The VBA model is updated on a real-time basis, resulting in ongoing asset allocation and portfolio rebalancing within established risk parameters and Board approved asset class allocation ranges. Factors influencing the Plan's asset allocation include projected actuarial liabilities, historical and expected long-term asset class returns and risk, future economic conditions, inflation and interest rate risks, and liquidity requirements.

Investment manager selection is an important decision involving complex due diligence. Managers are selected after a lengthy and time-consuming process involving a review of quantitative and qualitative components. Policy objectives include focusing on stable, long-term, financially secure, experienced, and disciplined investment managers in the selection decision. Once selected, managers are monitored and reviewed for investment returns, asset allocation compliance, and market related factors. Other investment processes and procedures include capital calls, cash flow reconciliations, trade settlements, regular portfolio review, monthly account reconciliation, performance reporting and review, periodic manager conference calls, and asset allocation reviews.

The annual money weighted rate of return on pension plan investments is calculated as the internal rate of return on pension plan investments, net of investment expenses. This expresses investment performance adjusted for the changing amounts actually invested throughout the year, measured on monthly inputs with expenses measured on an accrual basis. For the year 2022, the annual money weighted rate of return, net of investment expenses, measured on monthly inputs was -10.29% for the Defined Benefit Plan. (See Required Supplemental Information).

The MERS Investment Policy is adopted by the Board with the Chief Executive Officer (CEO) being responsible for all activities and duties of the System. The CEO has delegated to the Office of Investments authority to manage MERS pension funds, other trust funds, and direct all investment management activities not reserved by the Board. The Board is the System's sole fiduciary and sets general investment policy, including the Plan's asset allocation, Investment Guidelines, and Investment Policy Statements. The Board's investment authority and fiduciary responsibility is found in 1945 PA 135 and 1965 PA 314.

The Board has appointed an Investment Committee (IC) delegated with authority to make certain investment decisions and assist in investment policy development. The IC monitors investment management activity and policy recommendations developed by the MERS Office of Investments. The IC is composed of 3 voting Board members, including 2 public members with investment experience. The CEO and Chief Investment Officer also serve on the committee as non-voting members. The IC approves recommendations to hire and terminate managers. The IC also appoints 1 additional non-voting Board member to observe meetings.

The Office of Investments carries out investment activity for the System, provides a quarterly report on investment activities and performance, monitoring external investment managers, and reporting any material changes to the IC and the Board.

The 2022 base allocation was as follows:

- Global Equity 60.0%
- Global Fixed Income 20.0%
- Private Investments 20.0%

There were 2 investment managers who exceed 5% of the pension plan's net position: State Street Global Advisors and Blackrock. These firms, however, have many individual diversified investments under each firm's control, so that no one specific position exceeds the investment guideline or PERSIA limits.

MERS offers a variety of investment choices to participants and municipalities:

- The Defined Benefit plan invests in the whole portfolio of MERS including global equities, global bonds, and private investments.
- The Defined Contribution Plan, Health Care Savings Program, 457 Program and IRAs have several investment options. One is a Retirement Strategies option whereby a participant can choose a target date fund that adjusts their investment allocation automatically over time as they approach retirement. Another choice is the Premium Select Option whereby a participant can select from various pre-built select funds. A third option for only the Defined Contribution and 457 participants is the self-directed brokerage account for those investors who understand the risks of selecting their own investment choices.
- The Retirement Health Funding Vehicle and Investment Services Program have several investment options available under the Premium Select Options of various pre-built select funds of which employers may choose. The Net Asset Value (NAV) per unit for each investment option as of December 31, 2022, is as follows:

Name	Fund Identifier	Net Asset Value Price per Unit
MERS Total Market Portfolio	99VVB0842	25.859247
Emerging Market Stock	99VVB0834	10.784016
International Stock Index	99VVB08S9	10.911066
Large Cap Stock Index	99VVB0800	21.373162
MERS Diversified Bond Portfolio (0/100)	99VVB08T7	15.460598
MERS Est Market Portfolio (60/40)	99VVB08U4	8.710977
Mid Cap Stock Index	99VVB0818	18.485071
Short Term Income	99VVB08V2	3.431953
Small Cap Stock Index	99VVB0826	15.228209

Cash Deposits

Custodial credit risk for cash deposits is the risk that, in the event of a failure of a depository financial institution, the system may not be able to recover its deposits. Balances on deposits are insured by the Federal Deposit Insurance Corporation (FDIC) up to specified limits. MERS has not experienced any losses in its accounts and believes it is not exposed to a significant credit risk on its cash, as we keep low cash balances on the Custodial Banks balance sheet.

Credit Risk

Credit risk is the financial risk that an issuer, or other counterparty, will not fulfill its obligations to MERS. Credit risk exposure is dictated by each investment manager's agreement. MERS investments in fixed income are primarily in Exchange Traded Funds (ETFs) that are not individually rated for credit risk. There are a few fixed income investments that are not in ETFs.

As of December 31, 2022, the domestic fixed income portfolio consisted of fixed income investments with respective quality ratings, excluding those obligations of the U.S. government.

Credit Ratings Summary

Investment Type	Fair Value	Credit Ratings
Exchange Traded Funds	1,389,208,843	Not Rated
Exchange Traded Funds (High Yield Index Fund)	39,719,483	A+
Emerging Country Debt	815,747,514	Not Rated
Corporate (Residual Account)	74,168	Not Rated
Corporate (Residual Account)	2,256	A+
Corporate (Residual Account)	1,073,427	BBB+
Total Fair Value of Debt Securities	**$2,245,825,691**	

Concentration of Credit Risk Debt Securities

Concentration of credit risk is the risk of loss attributed to the magnitude of an entity's exposure in a single issuer. The MERS investment policy states securities representing debt and equity of any one company shall not exceed 5% of the fair value of the portfolio. MERS did not hold any organization's securities that exceeded 5% of the investment portfolio other than investments in mutual funds, external investment pools, ETFs, and those issued or explicitly guaranteed by the U.S. government as of December 31, 2022.

Interest Rate Risk

Interest rate risk is the risk that an investment's value will change due to a change in the absolute level of interest rates. Interest rate risk is controlled through diversification of portfolio management styles. Duration is a measure of interest rate risk. The greater the duration of a bond or a portfolio of bonds, the greater its price volatility will be in response to a change in interest rates and vice versa. MERS investments in fixed income are primarily in Exchange Traded Funds (ETFs) that are invested in numerous individual investments with various range of durations. There are a few fixed income investments that are not in ETFs. Sensitivity to changing interest rates may derive from prepayment options embedded in an investment.

The term duration has a special meaning in the context of bonds. It is a measurement of how long, in years, it takes for the price of a bond to be repaid by its internal cash flows. It is an important measure for investors to consider, as bonds with higher durations carry more risk and have higher price volatility than bonds with lower durations.

Effective Duration

Investment Type	Fair Value	Weighted Effective Duration
Exchange Traded Funds	$1,428,928,325	Not available
Emerging Country Debt	815,747,514	Not available
Corporate (Residual Account)	1,149,851	1-15 years
Total Fair Value of Debt Securities	**$2,245,825,691**	

Foreign Currency Risk

Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment. MERS currency risk exposure, or exchange rate risk, is primarily derived from its holdings in foreign currency denominated equities and fixed income investments. The Board investment policy for the global non-investment grade fixed income portfolio allows currency hedging to mitigate currency exposure.

Hedging the non-U.S. dollar currency exposure of the portfolio is permitted.

The MERS exposure to foreign currency risk in U.S. dollars is summarized below as of December 31, 2022.

Foreign Currency Risk in U.S. Dollar Denominations

Currency	Equities	Currency	Private Equity	Real Estate	Total
Australian dollar			$97,100,056		$97,100,056
Canadian dollar		$4,833			4,833
Danish krone		37,921			37,921
Euro		220,071	238,538,626	$45,250,344	284,009,042
Japanese yen		3,260		448,106	451,366
New Taiwan dollar		15,174			15,174
Pound sterling		244			244
Singapore dollar	$69,681	51,007			120,688
Total Investment Securities	**$69,681**	**$332,510**	**$335,638,683**	**$45,698,450**	**$381,739,324**

Custodial Credit Risk of Deposits

Custodial credit risk is the risk that deposits may not be recovered in the event of failure of a depository financial institution. As of December 31, 2022, the $3.7 million carrying amount of deposits of the System's cash and short-term investments was comprised of $3.7 million in deposits, $3.4 million which was subject to custodial credit risk because it was uninsured and uncollateralized.

Securities Lending

The MERS policy and statute authorizes participation in a securities lending program administered by its global custodian, Bank of New York Mellon. MERS receives income as the owner of securities and income from the lending of those securities. There are no dividends or coupon payments owing on the securities on loan. Securities lending earnings are credited to MERS and other participating clients on approximately the 15th day of the following month. The securities are open contracts and, therefore, could be terminated at any time by either party.

Repurchase transactions (including tri-party repurchase agreements) collateralized at 102% or greater at time of purchase are marked to market on each business day. Collateral will consist of one or more approved instruments without limitation on maturity, including equity securities, which are approved only as collateral for repurchase transactions. Equity securities will consist of securities from major global indices. Due to the nature of the program's collateralization of U.S. fixed income securities on loans at 102% plus accrued interest, MERS' management believes that there is no credit risk per GASB 40 because the lender owes the borrower more than the borrower owes the lender. Interest rate risk arises due to the duration of the cash collateral. Cash collateral is invested for MERS in a dedicated short-term investment fund consisting of investment grade fixed income securities. The custodian will, at their expense, make MERS whole for any differences that might occur in the event of borrower default after selling the securities. Securities on loan are marked to fair value daily to ensure the adequacy of the collateral. There are no restrictions on the amount of securities that can be loaned at one time. MERS security lending is also in compliance with PERSIA 38.1140e.

MERS has never experienced a loss on securities lending transactions resulting from the default of a borrower's or lending agent since it commenced lending securities in March 1995. As of December 31, 2022, the fair value of fixed income securities invested in the cash collateral pool was $378 million. Securities lending produced a net income of $3 million excluding unrealized gains and losses.

Collateral Held and Fair Value of Securities on Loan

Fair Value of Securities on Loan	Nature of Collateral	Collateral Held
$370,274,130	Cash	$378,286,676
	Calculated Mark	
	Non-Cash	
$370,274,130		**$378,286,676**

Securities Lending Collateral

S & P Rating	Percentage	Amount
A-1+*	0.00%	
A-1*	2.72%	$10,289,397.59
A-2	0.00%	
AAA	5.31%	20,087,022.50
AA	25.78%	97,522,305.07
A	48.12%	182,031,548.49
BBB+	0.00%	
BBB	0.00%	
BBB-	0.00%	
BB+	0.00%	
BB	0.00%	
NR_Repo	0.00%	
NR Other	18.24%	68,999,489.70
Payable/Receivable	-0.17%	(643,087.35)
Market Value Not Reflected in Amortized Cost		
	100.00%	378,286,676
Invested Securities Lending Collateral		$378,286,676

** A short-term obligation rated A-1 is rated in the highest category by both Standard & Poor's (S&P) and Moody's Investor Services. These Issuers have a superior ability to repay short-term obligations. S&P will designate certain issues with a plus sign (+) to indicate that the obligor's capacity to meet its financial commitment is extremely strong.*

Derivatives

Derivative instruments are financial contracts whose value depends on the values of underlying assets, reference rates, or financial indices. They include futures contracts, swap contracts, credit-linked notes (CLN), and forward foreign currency exchange. While the Board has no formal policy specific to derivatives, MERS holds investments in futures contracts, swap contracts, credit linked notes, and forward foreign currency exchange. MERS enters these derivative contracts primarily to obtain exposure to different markets to enhance the performance and reduce the volatility of the portfolio. It enters swaps and futures contracts to gain or hedge exposure to certain markets. They also manage interest rate risk and forward foreign exchange contracts primarily to hedge foreign currency exposure.

The following tables summarize the various contracts in the portfolio as of December 31, 2022. The notional value associated with these derivative instruments are generally not recorded on financial statements; however, the amounts for the exposure (unrealized gains/losses) on these instruments are recorded. Interest rate risks associated with these investments are included in the table. MERS does not anticipate additional significant market risk from the swap arrangements.

Swap and Foreign Currency Forward Contracts

There are no swap or foreign currency forward contracts as of December 31, 2022.

Futures and Options Contracts

Futures Contract	Expiration Date	Long/Short	Cost	Market Value	Unrealized Gain/ (Loss)
EURO FX CURR FUTURE (CME)	3/13/2023	Short	(179,390,678)	(179,860,650)	(469,973)
C$ CURRENCY FUTURE (CME)	3/14/2023	Short	(88,037,519)	(88,186,560)	(149,041)
AUDUSD CRNCY FUTURE (CME)	3/13/2023	Short	(73,146,677)	(72,518,670)	628,007
S&P500 EMINI FUTURE (CME)	3/17/2023	Long	349,920,429	339,188,850	(10,731,579)
MEXICAN PESO FUTURE (CME)	3/13/2023	Long	8,156,005	8,251,060	95,055

MERS could be exposed to risk if the counterparties to the contracts are unable to meet the terms of the contracts. MERS and its investment managers seek to control this risk through counterparty credit evaluations and approvals, counterparty credit limits, and exposure monitoring procedures. MERS anticipates that counterparties will be able to satisfy their obligations under the contracts. Investments in limited partnerships and combined funds may include derivatives that are not shown in the derivative totals.

Private Equity and Capital Calls

During 2022, $734 million was approved for new private market investments. As of December 31, 2022, the private markets portfolio unfunded commitments totaled $1.173 billion.

MERS has various investments that can be difficult to value in that there are not readily accessible comparable market values. MERS also has level 3 investments of approximately $997 million (private equity, real assets, and diversifying strategies). These investments tend to be illiquid and do not trade frequently. As a result, there may not be readily marketable prices for them

Management's estimates of these values are based on information provided by investment managers, general partners, real estate advisors, and other means. Because alternative investments are not readily marketable, their estimated value is subject to uncertainty and therefore may differ from the values that would have been used had a ready market for these securities existed. The differences could be material.

Fair Value Measurements

Investments are presented at fair value. The System categorizes their 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 in 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 (or NAV) (or its equivalent) as a practical expedient are not classified in the fair value hierarchy. The table on the following page shows the fair value leveling on the investments for MERS.

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. (An investment having both level 2 and level 3 inputs would be categorized as level 3.) The system's assessment of the significance of particular inputs to these fair value measurements requires judgment and considers factors specific to each asset. The table on the following page shows the fair value leveling of the investments for MERS.

Global equities classified in level 1 are valued using prices quoted in active markets for those securities. Global equities classified in level 3 are values with last trade data having limited trading volume.

Global fixed income and short-term investments classified in level 2 and level 3 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. Level 3 fixed income securities use proprietary information or single source pricing. Global fixed income classified in level 3 are investments with values in leases, real estate and credit limited partnerships that are not readily traded and are valued using a pricing model.

Private Investments classified in level 3 are primarily investments in real estate, infrastructure and timber generally valued using the income approach by internal manager reviews or independent external appraisers. Level 2 securities for Private Investments have non-proprietary information that was readily available to market participants, from multiple independent sources, which are actively involved in the market. Level 3 Private Investments are valued using appraisals, cash-flow analysis, and sales of similar investments. MERS policy is to obtain an external appraisal a minimum of every 3 years for properties that MERS has some degree of control or discretion. In practice, some investments are appraised annually. Appraisals are performed by an independent appraiser with preference for Member Appraisal Institute designated appraisers. The appraisals are performed using generally accepted valuation approaches applicable to the investment type.

Self-directed participant accounts are valued at quoted prices for those securities in active markets.

Certain alternative investments such as private equity, real assets, and diversifying strategies do not have readily ascertainable fair value. Management, in consultation with their investment managers, value these investments in good faith based upon audited financials, cash-flow analysis, purchase and sales of comparable investments, other practices used within the industry, or other information provided by the underlying investment managers. The estimated fair value of these investments may differ significantly from values that would have been used had a ready market existed. These investments are classified as level 3.

The valuation method for investments measured at the net asset value (NAV) per share is presented in the table on the following page. The System holds shares or interests in investment companies where the fair value of the investments is measured on a recurring basis using net asset value per share (or its equivalent) of the investment companies as a practical expedient. Global equity and private investments at NAV are generally long-term private market investments that are illiquid with redemptions restricted over the life of the partnership.

During the life of the partnerships, distributions are received as underlying partnership investments are sold and income realized. As of December 31, 2022, it is probable that all of the investments in this type will be sold at an amount different from the NAV per share of MERS ownership interest in partners' capital.

GASB 72 Disclosures for MERS

		Quoted Prices in Active Markets Assets	Significant Other Observable Inputs	Significant Unobservable Inputs	
Fair Value Investments		Level 1	Level 2	Level 3	Totals
Global Equities		$4,263,091,502	$70,580		$4,263,162,082
Global Fixed Income		815,747,515	1,376,138,700		2,191,886,215
Private Investments				997,245,403	997,245,403
Short Term Interest Fund					-
Mutual Funds (DC, 457, HCSP, IRA) (SSGA not publicly traded)					-
Self Directed accounts (DC and 457)		8,822,084			8,822,084
Total investments by fair value		**5,087,661,101**	**1,376,209,280**	**997,245,403**	**7,461,115,784**
Investments at Net Asset Value (NAV)	NAV				Totals
Global Equities	2,161,001,787				2,161,001,787
Fixed Income	53,939,476				53,939,476
Private Investments	2,527,207,013				2,527,207,013
Mutual Funds (DC, 457, HCSP, IRA)	1,371,289,334				1,371,289,334
Total Investments at NAV	**6,113,437,610**				**6,113,437,610**
Total Fair Value and NAV Investments	**6,113,437,610**	**5,087,661,101**	**1,376,209,280**	**997,245,403**	**13,574,553,394**
Securities Lending Collateral			**309,298,774**		**309,298,774**
Total Fair Value and NAV Investments with Securities Lending	**$6,113,437,610**	**$5,087,661,101**	**$1,685,508,054**	**$997,245,403**	**$13,883,852,168**

In accordance with GASB No 79, the System has $439 million of investments reported at amortized cost, of which $69 million directly relates to securities lending. These investments are not subject to any limitations or restrictions on withdrawals.

Reconciliation to Investments on Financial Statements	
Investments at fair value and NAV from above	$13,574,553,394
Investment in Land	1,402,094
Rounding	(536)
Amortized Cost	370,055,048
Investments from financial statements	13,946,010,000

MERS holds shares or interests in investment companies where the fair value of the investments is measured on a recurring basis, using net asset value (NAV) per share (or its equivalent) of the investment companies as a practical expedient.

As of December 31, 2022, the fair value, unfunded commitments, redemption frequency and redemption notice periods of those investments are as follows:

Investment Type	Fair Value	Unfunded Commitments	Redemption Frequency (if Eligible)	Redemption Notice Period
Global Equities	$2,161,001,787		Monthly, quarterly, semi-annually, annually	30 days
Global Fixed Income	53,939,476		Monthly, quarterly, semi-annually, annually	N/A
Private Investments	2,527,207,013	$1,173,000,000	Monthly, quarterly, semi-annually, annually	N/A
	1,371,289,334			N/A
Total Investments at NAV	**$6,113,437,610**	**$1,173,000,000**		

**Redemptions may be subject to penalty depending on fund choice and holding period.*

Investments at NAV

The Global Equities' Portfolios are diversified by geographic region, styles, sectors and market capitalizations. Active management is used to take advantage of less efficient areas of the market. This strategy is expected to perform well in periods of low falling inflation and rising economic growth. It is also projected to provide ongoing income as well as downside protection in volatile markets. The fair value of the investments has been estimated using the net asset value of the investments.

The Global Fixed Income Portfolio includes investments in emerging country debt diversified by geographic region. Investments in this portfolio tend to be illiquid and with longer duration. The fund invests primarily in external sovereign and quasi-sovereign debt instruments of emerging countries. The fair value of the investments has been estimated using the net asset value of the investments.

The Private Investments Portfolio includes investments in real estate, timber, infrastructure, commodities and agriculture and farmland strategies. The real assets strategy is designed to provide a hedge against unexpected spikes in inflation as well as capitalize on long-term themes such as an emerging middle class in developing markets and global population growth. Many of the investments within this portfolio will be private investments, making the portfolio relatively illiquid and longer duration. The fair value of the investments has been estimated using the net asset value of the investments.

Private Investments also include strategies in middle market direct lending, litigation finance, healthcare royalties, bank regulatory capital and opportunistic credit, among others. The strategy is designed to provide downside protection and uncorrelated returns with traditional asset classes – specifically equities. Core fixed income has traditionally been one of the most diversifying asset classes, but the low return expectations for the asset class make it less attractive on a risk- adjusted basis. Consequently, non-traditional asset classes must be considered as an alternative. The fair value of the investments has been estimated using the net asset value of the investments.

Mutual fund investments at NAV are not publicly traded, with a strategy designed to provide participants access to target date funds based on their expected retirement date. The funds automatically adjust based on the participant's age with investments in global equities, fixed income, and other diversified investments with an appropriate level of risk that is consistent with its asset mix. The fair value of the investments has been estimated using the net asset value of the investments.

5. RISK MANAGEMENT AND INSURANCE

MERS maintains a complete portfolio of insurance coverage including, but not limited to, fiduciary liability, workers' compensation, auto, property, cyber liability and general commercial liability.

In addition, MERS provides its employees with insured medical, prescription, vision, life/disability benefits and self-insured dental benefits, among other benefits.

6. COMMITMENTS AND CONTINGENCIES

In the normal course of business, MERS is involved in a number of disputes over benefits or other claims. MERS does not anticipate any material loss as a result of these claims. Furthermore, the cost of a successful benefit claim is ultimately the responsibility of the affected municipality in most cases, as it becomes a funding obligation of that municipality.

7. FUNDED STATUS AND FUNDING PROGRESS

The MERS funded status is summarized in the Management's Discussion and Analysis.

Actuarial valuations are prepared annually as of December 31 for each participating municipality. To facilitate budgetary planning needs, employer contribution requirements are provided for each municipality's unique fiscal year that commences after the following calendar year-end. For example, the contribution requirements for fiscal years that began in 2022 were determined by actuarial valuations as of December 31, 2020. Approximately 78% of the participating municipalities have fiscal years that begin January 1 or July 1.

8. RELATED PARTIES

MERS did not conduct any material transactions with related parties during 2022.

9. GASB 68

The Governmental Accounting Standards Board (GASB) Statement No. 68, "Accounting and Financial Reporting for Pensions", requires certain disclosures for employers who provide pensions. MERS employees participate in the MERS Defined Benefit Plan. The sections below are required and pertain to MERS staff only.

Pensions

For purposes of measuring the Net Pension Liability, deferred outflows of resources and deferred inflows of resources related to pensions, and pension expense, benefit payments (including refunds of employee contributions) are recognized when due and payable in accordance with the benefit terms. Investments are reported at fair value.

Plan Description

The employer's defined benefit pension plan provides certain retirement benefits to plan members and beneficiaries. MERS is an agent multiple employers, statewide public employee pension plan established by the Michigan Legislature under Public Act 135 of 1945 and administered by a 9-member Board. MERS issues a publicly available financial report that includes financial statements and required supplementary information. This report is available on the MERS website at www.mersofmich.com.

Benefits Provided

Benefit Multiplier: 2.25% Multiplier (80% max)

Normal Retirement Age: 60

Vesting: 6 years

Early Retirement (Unreduced): 55/30

Act 88: Yes (Adopted 9/24/1996)

Early Retirement (Reduced): 50/25, 55/15

Final Average Compensation: 3 years

COLA for Future Retirees: 2.50% (Non-Compounded)

Employee Contributions: 4%

At the December 31, 2021 , valuation date, the following employees were covered by the benefit terms:

Inactive Employees or Beneficiaries Currently Receiving Benefits: 55

Inactive Employees Entitled to but Not Yet Receiving Benefits (including refunds): 86

Active Employees: 133

Total Employees: 276

Contributions

The employer is required to contribute amounts at least equal to the actuarially determined rate, as established by the Board. The actuarially determined rate is the estimated amount necessary to finance the cost of benefits earned by employees during the year, with an additional amount to finance any unfunded accrued liability. The actuarial determined contribution rate for 2022 was 16.90% of payroll. MERS total employer contributions totaled $4,547,865. MERS employees are required to contribute 4% of their salaries to help fund the pension.

Net Pension Liability/Asset

MERS Net Pension Asset, measured as of December 31, 2021, was $6,857,595 and the total pension liability used to calculate the Net Pension asset was determined by an annual valuation for that date.

Actuarial Assumptions

The total pension liability in the December 31, 2021 Annual Actuarial Valuation was determined using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation: 2.5%

Salary Increases: 3.00% in the long term

Investment Rate of Return: 7.00% net of investment and administrative expenses, including inflation

This valuation incorporates fully generational mortality. The base mortality tables used are constructed as described below and are based on are amount weighted sex distinct rates:

Pre-Retirement Mortality:

1. 100% of Pub-2010 Juvenile Mortality Tables for Ages 0-17
2. 100% of PubG-2010 Employee Mortality Tables for Ages 18-80
3. 100% of PubG-2010 Healthy Retiree Tables for Ages 81-120

Non-Disabled retired plan members and beneficiaries:

1. 106% of Pub-2010 Juvenile Mortality Tables for Ages 0-17
2. 106% of PubG-2010 Employee Mortality Tables for Ages 18-49
3. 106% of PubG-2010 Healthy Retiree Tables for Ages 50-120

Disabled retired plan members:

1. 100% of Pub-2010 Juvenile Mortality Tables for Ages 0-17
2. 100% of PubNS-2010 Disabled Retiree Tables for Ages 18-120

Future mortality improvements are assumed each year using scale MP-2019 applied fully generationally from the Pub-2010 base year of 2010.

The economic assumptions used in this valuation are a 7.00% investment rate of return and a 3.00% wage inflation assumption, as adopted February 28, 2019. The demographic assumptions used in this valuation are based on the results of a study of plan experience that covered the period from December 31, 2014, through December 31, 2018, which was dated 2020.

The long-term expected rate of return on pension plan investments was determined using a model method in which the best-estimate ranges of expected future real rates of return (expected returns net of investment and administrative expenses 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. The target allocation and best estimates of arithmetic real rates of return for each major asset class are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Gross Return	Long-Term Expected Gross Return Contribution	Price Inflation Assumption	Long-Term Expected Real Rate of Return
Global Equity	60.00%	7.00%	4.20%	2.50%	2.70%
Global Fixed Income	20.00%	4.50%	0.90%	2.50%	0.40%
Private Investments	20.00%	9.50%	1.90%	2.50%	1.40%
Total	**100.00%**		**7.00%**		**4.50%**

Discount Rate

The discount rate used to measure the total pension liability was 7.25% for 2021 net of investment expenses. The projection of cash flows used to determine the discount rate assumes that employer and employee contributions will be made at the rates agreed upon for employees and the actuarially determined rates for employers. Based on these assumptions, the pension plan's fiduciary net position was projected to be available to pay all projected future benefit payments of current active and inactive employees. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Changes in Net Pension Liability/(Asset)

	Total Pension Liability/(Asset) (a)	Plan Fiduciary Net Position (b)	Net Pension Liability/(Asset) (a) - (b)
Balances at December 31, 2020	$45,184,449	$48,872,214	$(3,687,765)
Changes for the Year			
Service Cost	1,750,375		1,750,375
Interest on Total Pension Liability	3,453,001		3,453,001
Changes in benefits	-		-
Difference Between Expected and Actual Experience	144,111		144,111
Changes in Assumptions	2,674,943		2,674,943
Employer Contributions		2,845,369	(2,845,369)
Employee Contributions		1,579,425	(1,579,425)
Net Investment Income		6,848,194	(6,848,194)
Benefit Payments, Including Employee Refunds	(1,250,821)	(1,250,821)	-
Administrative Expenses		(80,729)	80,729
Other Changes	(1)		(1)
Net changes	6,771,609	9,941,439	(3,169,830)
Balances as of December 31, 2021	**$51,956,058**	**$58,813,653**	**$(6,857,595)**

Sensitivity of the Net Pension Liability/(Asset) to Changes in the Discount Rate

The following presents the Net Pension Liability of MERS, calculated using the discount rate of 7.25%, as well as what the employer's Net Pension Asset would be using a discount rate that is 1% lower (6.25%) or 1% higher (8.25%) than the current rate.

Sensitivity of Net Pension Liability/(Asset)

	1% Decrease (6.25%)	Current Discount Rate (7.25%)	1% Increase (8.25%)
Net Pension Liability (Asset)		$(6,857,595)	
Change in Net Pension Liability	$8,851,412		$(7,156,343)
Adjusted Net Pension Liability	**$1,993,817**	**$(6,857,595)**	**$(14,013,938)**

Note: the current discount rate shown for GASB 68 purposes is higher than the MERS assumed rate of return. This is because GASB 68 requires that the discount rate must be gross of administrative expenses, whereas for funding purposes, it is net of administrative expenses. MERS has a net position asset due to the Plan Fiduciary Net Position exceeding the total Pension Liability.

Pension Expense and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions

For the year ended December 31, 2022, MERS recognized a defined benefit pension expense of $744,678. MERS also reported deferred outflows and inflows of resources related to pensions from the following sources:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences in Experience	$1,238,770	
Differences in Assumptions	3,938,276	
Excess (Deficit) Investment Returns		$(4,130,495)
Contributions Subsequent to the Measurement Date*	4,547,865	
Total	**$9,724,911**	**$(4,130,495)**

**The amount reported as deferred outflows of resources resulting from contributions subsequent to the measurement date will be recognized as a reduction in the Net Pension Liability for the measurement date of December 31, 2022, which is recorded in 2023.*

Amounts reported as deferred outflows and inflows of resources related to pensions will be recognized in pension expense as follows:

Year Ended	Deferred Outflows
2023	$875,710
2024	32,376
2025	177,927
2026	(39,462)

REQUIRED SUPPLEMENTARY INFORMATION

The following schedules are presented to illustrate the requirement to show information for 10 years. However, until a full 10-year trend is compiled, information is presented for those years where information is available.

Annual Money-Weighted Return

The annual money-weighted rate of return on pension plan investments is calculated as the internal rate of return on pension plan investments, net of investment expenses. This expresses investment performance adjusted for the changing amounts actually invested throughout the year, measured on monthly inputs with expenses measured on an accrual basis.

Schedule of Annual Money Weighted Returns

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Annual money-weighted rate of return, net of investment expenses	14.97%	7.32%	-0.99%	10.78%	13.38%	-3.59%	14.05%	13.46%	14.13%	-10.42%

The following schedules refer to MERS' staff only. A measurement date of December 31, 2021 was used. Note that while the measurement date for calculation of the net pension liability and pension expense is December 31, 2021, the schedule of employer contributions shows the actuarial contributions that have been remitted through December 31, 2022, and the preceding 9 years.

Schedule of Employer Contributions

The Schedule of Employer Contributions shows the employer's required annual contributions from the annual actuarial valuation, compared with the actual contributions remitted over the past 10 years.

	2022	2021	2020	2019	2018
Actuarial Determined Contributions	$2,247,865	$1,845,369	$1,629,051	$1,406,884	$1,612,796
Contributions in Relation to the Actuarially Determined Contribution	4,547,865	2,845,369	2,629,051	2,406,884	2,612,796
Contribution Deficiency (Excess)	$(2,300,000)	$(1,000,000)	$(1,000,000)	$(1,000,000)	$(1,000,000)
Covered Payroll	$12,978,361	$12,757,833	$12,669,789	$11,669,868	$11,048,903
Contributions as a Percentage of Covered Payroll	17%	14%	13%	12%	15%

	2017	2016	2015	2014	2013
Actuarial Determined Contributions	$1,367,084	$1,172,934	$1,088,267	$1,089,079	$1,006,942
Contributions in Relation to the Actuarially Determined Contribution	2,367,084	1,672,934	2,099,146	2,089,079	2,506,942
Contribution Deficiency (Excess)	$(1,000,000)	$(500,000)	$(1,010,879)	$(1,000,000)	$(1,500,000)
Covered Payroll	$10,643,044	$10,080,837	$9,694,637	$9,184,670	$9,184,670
Contributions as a Percentage of Covered Payroll	13%	12%	11%	12%	11%

Notes to Schedule of Employer Contributions:

Actuarial Cost Method: Entry Age Normal
Amortization Method: Level percentage of payroll, open
Remaining Amortization Period: 15 years
Asset Valuation Method: 5-year smoothed
Inflation: 2.5% long-term price inflation
Salary Increases: 3.00%

Investment Rate of Return: 7.00% net of investment and administrative expenses
Normal Retirement Age: 60
Mortality: 106% of Pub-2010 Juvenile Mortality Tables for Ages 0-17, 106% of PubG-2010 Employee Mortality Tables for Ages 18-49, 106% of PubG-2010 Healthy Retiree Tables for Ages 50-120

Schedule of Changes in Employer's Net Pension Liability/(Asset) and Related Ratios

The Schedule of Changes in Employer's Net Pension Liability and Related Ratios shows the changes in the total pension liability less the statement of changes in fiduciary net position resulting in the net Pension Liability calculation for the employer.

Schedule of Changes in the Net Pension Liability/(Asset)

Total Pension Liability	2015	2016	2017	2018	2019	2020	2021	2022
Service Cost	$1,203,192	$1,269,997	$1,379,059	$1,457,033	$1,507,070	1,601,106	1,734,494	1,750,375
Interest	1,523,654	1,706,312	1,985,384	2,192,266	2,429,062	2,686,643	2,886,270	3,453,001
Changes of Benefit Terms								
Difference Between Expected and Actual Experience		313,939	(134,179)	95,943	189,688	12,338	1,787,274	144,111
Changes of Assumptions		1,386,692				1,122,227	2,249,052	2,674,943
Payments Including Refunds	(526,561)	(565,862)	(627,619)	(738,847)	(881,777)	(1,024,365)	(1,165,256)	(1,250,821)
Other		1	(1)	(1)	2			(1)
Net Change in Total Pension Liability	2,200,285	4,111,079	2,602,645	3,006,394	3,244,045	4,397,949	7,491,834	6,771,609
Total Pension Liability Beginning Balance	18,130,219	20,330,504	24,441,583	27,044,228	30,050,622	33,294,667	37,692,616	45,184,449
Total Pension Liability Ending Balance	**$20,330,504**	**$24,441,583**	**$27,044,228**	**$30,050,622**	**$33,294,667**	**$37,692,616**	**$45,184,449**	**$51,956,058**
Plan Fiduciary Net Position								
Contributions-Employer	$2,089,079	$2,099,146	$1,672,934	$2,367,084	$2,610,796	2,406,884	2,629,051	2,845,369
Contributions-Employee	398,940	520,710	514,304	525,320	461,803	521,092	852,920	1,579,425
Net Investment Income	1,193,652	(343,573)	2,735,307	3,753,767	(1,378,989)	4,722,235	6,114,163	6,848,194
Payments Including Refunds	(526,561)	(565,862)	(627,619)	(738,847)	(881,777)	(1,024,365)	(1,165,256)	(1,250,821)
Administrative Expense	(44,244)	(48,754)	(53,870)	(59,178)	(66,335)	(81,434)	(84,290)	(80,729)
Net Change Net Position	3,110,866	1,661,667	4,241,055	5,848,147	745,498	6,544,411	8,346,588	9,941,439
Plan Fiduciary Net Position Beginning Balance	18,373,983	21,484,849	23,146,516	27,387,571	33,235,718	33,981,216	40,525,627	48,872,215
Fiduciary Net Ending Balance	**$21,484,849**	**$23,146,516**	**$27,387,571**	**$33,235,718**	**$33,981,216**	**$40,525,627**	**$48,872,215**	**$58,813,654**
Employer Net Liability/(Asset)	**$(1,154,345)**	**$1,295,067**	**$(343,343)**	**$(3,185,096)**	**$(686,549)**	**$(2,833,011)**	**$(3,687,765)**	**$(6,857,595)**
Fiduciary Net Position as a % of the Total Pension Liability/(Asset)	106%	95%	101%	111%	102%	108%	108%	113%
Covered Payroll	$9,184,670	$9,694,637	$10,080,837	$10,643,044	$11,048,903	$11,669,868	$12,669,789	$12,757,833
Employer's Net Pension Liability/(Asset) as a percentage of covered payroll	-13%	13%	-3%	-30%	-6%	-24%	-29%	-54%

There were changes in the actuarial assumptions or methods affecting the 2015, 2019, 2020 and 2021 valuations for smoothing, price and wage inflation, discount rate, and mortality tables based on experience studies and the implementation of a dedicated gains policy. These calculations were done with an effective date of December 31, 2015, 2019, 2020, and 2021, impacting the 2016, 2020, 2021 and 2022 fiscal periods respectively.

OTHER SUPPLEMENTARY INFORMATION

Schedule of Administrative Expenses

	Budget (Unaudited)	Actual	Variance	Percentage of Budget
Personnel Services				
Salaries	$13,053,925	$12,566,614	$487,311	96%
Social Security	933,500	892,898	40,602	96%
Retirement	1,846,476	810,018	1,036,458	44%
Insurance	2,375,600	2,213,072	162,528	93%
Total Personnel Services	**18,209,501**	**16,482,602**	**1,726,899**	**91%**
Professional Services				
Third Party Administrator	2,947,449	2,177,026	770,423	74%
Actuarial Services	1,738,020	1,472,065	265,955	85%
Audit Services	183,300	183,794	(494)	100%
Commercial Banking	58,625	47,619	11,006	81%
IT Services/Continuity/Records	364,400	366,455	(2,055)	101%
Business Consultants	688,560	404,401	284,159	59%
Legal Services	25,000	21,906	3,094	88%
Medical Services	85,000	102,670	(17,670)	121%
Total Professional Services	**6,090,354**	**4,775,936**	**1,314,418**	**78%**
Communication				
Annual Conference	140,000	111,227	28,773	79%
Board Travel, Education and Meetings[1]	45,000	28,432	16,568	63%
Outreach	227,139	191,978	35,161	85%
Postage / Shipping	275,000	92,492	182,508	34%
Printing and Copying Services	112,500	69,535	42,965	62%
Telephone / Communications	231,000	213,918	17,082	93%
Travel and Meetings	182,972	106,619	76,353	58%
Total Communication	**1,213,611**	**814,201**	**399,410**	**67%**
Miscellaneous				
Depreciation	4,040,700	4,288,601	(247,901)	106%
Equipment Purchases & Rental	79,401	109,935	(30,534)	138%
Insurance	602,500	603,992	(1,492)	100%
Building / Maintenance / Utilities	179,700	102,048	77,652	57%
Office Supplies/Subscriptions	130,790	98,779	32,011	76%
Operating Expenses	587,110	75,427	511,683	13%
Personnel Support	213,770	107,471	106,299	50%
Professional Development	234,034	181,890	52,144	78%
Software Support	1,693,600	1,575,959	117,641	93%
Total Miscellaneous	**7,761,605**	**7,144,102**	**617,503**	**92%**
Total Administrative Expenses	**$33,275,071**	**$29,216,841**	**$4,058,230**	**88%**
Less Service Product Fees[2]	(8,970,949)	(7,873,551)	(1,097,398)	88%
Total Net Administrative Expenses	**$24,304,122**	**$21,343,290**	**$2,960,832**	**88%**

[1] Board Travel, Education, and Meetings includes $8,021 for board members training and educations, including related travel expenditures. These expenditures comply with the requirements of Section 38.1133 of the Michigan Compiled Laws.
[2] Service fees come primarily from fees paid on participant directed accounts to cover administrative expenses. They are reported as miscellaneous income.

Note: See accompanying Independent Auditor's Report.

Schedule of Investment Expenses

	Budget (Unaudited)	Actual	Variance	Percentage of Budget
Personnel Services				
Salaries	$1,800,400	$1,802,190	$(1,790)	100%
Incentive Pay	349,400	$1,193,107	(843,707)	341%
Social Security	127,000	104,211	22,789	82%
Retirement	250,851	134,566	116,285	54%
Insurance	232,400	206,299	26,101	89%
Total Personnel Services	**2,760,051**	**3,440,373**	**(680,322)**	**125%**
Professional Services				
Commercial Banking	840,000	863,657	(23,657)	103%
Investment Managers	6,700,000	5,963,188	736,812	89%
Business Consultants	225,000	196,679	28,321	87%
Total Professional Services	**7,765,000**	**7,023,524**	**741,476**	**90%**
Miscellaneous				
Travel	180,000	152,331	27,669	85%
Diligence	30,000	11,000	19,000	37%
Office Supplies	7,000	424	6,576	6%
Professional Development	30,000	18,623	11,377	62%
Operating Expenses	10,000	4,299	5,701	43%
Research and Portfolio Management	420,000	358,558	61,442	85%
Total Miscellaneous	**677,000**	**545,235**	**131,765**	**81%**
Total Investment Expenses	**$11,202,051**	**$11,009,132**	**$192,919**	**98%**
Less Service Product Fees[1]	(576,532)	(505,043)	(71,489)	88%
Total Net Investment Expenses	**$10,625,519**	**$10,504,089**	**$121,430**	**99%**

[1] Service fees come primarily from fees paid on participant directed accounts to cover administrative expenses. They are reported as miscellaneous income.

Schedule of Payments to Consultants

Firm	Nature of Services	Amount
Tegrit Software Ventures, Inc.	Software Consulting and Configuration Services	$4,949,381
Alerus Retirement Solutions	Third Party Administration	2,182,526
Gabriel, Roeder, Smith & Company	Actuarial Consultant	1,489,765
BNY Mellon	Depository Trust Banking Services	867,468
Analysts International Corporation	Software Consulting and Configuration Services	771,345
GovInvest Inc.	Software Consulting and Configuration Services	277,125
Plante & Moran, PLLC	Auditing Services	165,144
Rapid7 LLC	Software Consulting and Configuration Services	159,991
Bloomberg Finance L.P.	Investment Data Services	145,611
Dewpoint Inc.	Software Consulting and Configuration Services	129,396
Ice Miller, LLP	Legal Services	108,188
Managed Medical Review Organization	Medical Advisors	102,670
Presidio Networked Solutions	Software Consulting and Configuration Services	88,072
Stephen Morrow	Investment Consultant	75,000
Gartner Inc.	Software Consulting and Configuration Services	64,439
Byrum & Fisk Advocacy	Marketing and Public Relations Services	57,000
BCA Research	Investment Consultant	54,500
Cobalt	Software Consulting and Configuration Services	50,490
Winklevoss Technologies LLC	Software Consulting and Configuration Services	49,700
Avtex Solutions LLC	Software Consulting and Configuration Services	44,500
Michigan Legislative Consultants	Legislative Consultant	42,840
L.P. Gavekal Capital	Investment Consultant	41,200
Vergence Institutional Partners LLC	Investment Consultant	37,913
Miller, Canfield, Paddock, and Stone, PLC	Legal Services	33,947
Gallagher Benefit Services, Inc.	Benefit Consultant	30,565
Ned Davis Research	Investment Consultant	27,750
Karoub Associates	Legislative Consultant	26,780
PBI Research Services	Research Services	24,977
Pricewaterhouse Coopers LLP	Investment Consultant	22,094
The Townsend Group	Investment Consultant	20,775
Duff & Phelps Investment Management Co.	Investment Consultant	20,600
Total		**$12,161,751**

This schedule only includes firms whose annual payment amount was $20,000 or above. Fees paid to investment managers are included in the Investments Section.

Payments to consultants are already included in the Administrative and Investments Expenses reported in the Statement of Changes in Fiduciary Net Position.

See accompanying Independent Auditor's Report.

INVESTMENTS

CHIEF INVESTMENT OFFICER REPORT

Dear Members and MERS Retirement Board:

I respectfully submit the investment activity for the Municipal Employees' Retirement System (MERS) of Michigan's Annual Comprehensive Financial Report for the year ending December 31, 2022.

As always, our goal is to invest fund assets to achieve the long-term objectives of our member municipalities established by the Board, within prudent risk parameters. Our investment returns consistently outperform various benchmarks and market averages, through a long-term approach designed to provide downside protection and upside market participation.

Economic Overview

Financial markets sold off sharply in 2022. It was the sixth time since 1926 that both the S&P 500 and Bloomberg U.S. Aggregate declined and the only time in history when they each fell by more than 10%. The impact of the Russian invasion of Ukraine in late February weighed heavily on markets to start the year. Russia is a significant producer of several vital commodities, including oil, natural gas, and wheat. Sanctions imposed by Western countries on Russia sent commodity prices soaring, amplifying concerns over inflation pressures. WTI oil reached as high as $123 per barrel in March – the highest in 14 years. Inflation reached a four-decade high of 9.10% in June. The Federal Reserve started an aggressive rate hike cycle in 2022 to fight inflation. The Fed Funds rate rose from 0-0.25% in December 2021 to 4.50%-4.75% as of December 2022. Many measurements of the "yield curve", a market indicator based on the difference between long term and short-term US Treasury bond yields, inverted in 2022, indicating that the bond market expects slowing economic growth and the rising probability of a recession. As a result of rising rates, the Bloomberg U.S. Aggregate Bond index returned -13% on the year. The S&P 500 returned -18.13% as inflation continued to surprise to the upside throughout 2022. Q4 GDP came in at 2.90%, marking two straight quarters of growth. In the Eurozone, fears of an energy crisis resulted in the MSCI Europe index returning -14.86%. Q4 GDP growth, while still positive, came in slower than it's U.S. counterpart, at 0.1% quarter-over-quarter. In emerging markets, the index returned -19.91% in 2022. China makes up over 1/3rd over the emerging markets index. The zero-covid policy that resulted in lockdowns in China stunted growth which led to the MSCI China index returning -21.77% for the year. A strong U.S. dollar also proved to be a tailwind in emerging markets as Bloomberg Dollar Spot index rose 8.21% in 2022.

MERS Total Portfolio

The MERS Total Market Portfolio (gross) returned -10.24% the year, outperforming its policy benchmark by 6.57%. The Portfolio continued to outperform consistently for longer time periods with the 7- and 10-year time periods outpacing the benchmark. The MERS Global Equity Portfolio returned -16.09% outperforming the Global Equity Policy Benchmark by 2.20% due to outperformance within the U.S. Equity Portfolio and overweight to international equities. The MERS Global Fixed Income portfolio delivered negative returns of -11.83% due to rising interest rates but outperformed the Global Fixed Income Policy Benchmark by 2.81%. The MERS Private Investments Portfolio delivered positive returns of 4.84%. The driver of that portfolio was the private equity and real assets sub asset classes as they returned 11.33% and 4.21% respectively. The Liquid Natural Resources portfolio, designed to protect MERS' assets from rising inflation, returned 7.99%.

MERS 2022 highlights:

- MERS Total Market Portfolio returned -10.24% gross of fees for the year, outperforming its policy benchmark by 6.57%.
- MERS Total Market Portfolio outperformed its benchmark at the 7- and 10-year time periods.
- Portfolio returned 6.99% at the 10-year mark and outperformed the policy benchmark by 1.29%.

- Strong fund performance versus industry peers.
- The Office of Investments expands work on a Valuation Based Allocation approach to its investment program.
- The base asset allocation breakdown is shown below:

Global Equity	60.00%
Global Fixed Income	20.00%
Private Investments	20.00%

- At the broad asset class level, absolute returns gross of investment fees for the year were as follows:

Global Equity	-16.09%
Global Fixed Income	-11.83%
Private Investments	
Private Equity	11.33%
Real Assets	4.21%
Diversifying Strategies	-1.57%

In conclusion, I would like to thank the MERS Retirement Board for their continued support of the Office of Investments in their roles as the fiduciaries of the MERS Plan. The clarity of MERS' governance structure and the functional checks and balances has allowed the investment program to be successful for our members. This relationship makes for a more efficient decision-making process, benefiting our membership through stronger risk-adjusted returns.

Respectfully,

Jeb Burns
Chief Investment Officer

REPORT ON INVESTMENT ACTIVITY

The Board, as "investment fiduciary" under the Public Employee Retirement System Investment Act (PERSIA), MCL 38.1132 et seq., has the fiduciary responsibility and authority to direct the investments of MERS' trust assets. Board Members must discharge their duties for the exclusive benefit of plan participants and beneficiaries. PERSIA requires that the Board "act with the same care, skill, prudence, and diligence under the circumstances then prevailing that a prudent person acting in a similar capacity and familiar with those matters would use in the conduct of a similar enterprise with similar aims." MCL 38.1133(3). MERS offers a Defined Benefit Plan (DB), Defined Contribution Plan (DC), Hybrid Plan, Health Care Savings Program (HCSP), 457 Program (457), Deemed Individual Retirement Account (IRA), Retiree Health Funding Vehicle (RHFV), and Investment Services Program (ISP) (the "Plans"). The Board has delegated all investment management operations and activities to the Chief Executive Officer (CEO) and the Board's Investment Committee, except those specifically reserved for the Board. The CEO is directly responsible for all day-to-day activities of MERS. The CEO has delegated management of MERS' trust assets to the Office of Investments, including all investment management activities. All transactions undertaken on behalf of the Plans shall be in the sole interest of the Plans' participants and beneficiaries.

The MERS Investment Policy Statement (IPS) outlines the investment goals, objectives, and policies of the MERS Total Market Portfolio (Portfolio). The purpose of the IPS is to ensure that MERS' investment activities are carried out in accordance with its fiduciary duties. The IPS assists the Board, Investment Committee, and the Office of Investments in effectively and prudently monitoring and administering MERS' investments. The IPS addresses the following:

- The goals of MERS' investment program
- Investment policies
- Performance objectives and evaluation
- Major investment programs
- Investment processes and procedures

The IPS is designed to provide sufficient flexibility in the management and oversight of the Portfolio to reflect the dynamic nature of the capital markets. It is a working document and may be modified as needed or as market conditions change. At a minimum, the IPS is reviewed annually by the Board.

In accordance with GASB Statement No. 67, plan investments are presented at fair value. Short-term investments are valued at cost plus accrued interest, which approximates fair value. Securities traded on a national or international exchange are valued at the last reported sales price using current exchange rates. Corporate bonds not traded on a national or international exchange are based upon equivalent values of comparable securities with similar yield and risk. Other investments that do not have established markets are recorded at an estimated fair value. Real estate, private equity, and certain alternative investments typically have a quarter lag in reporting, which is the industry standard. MERS maintains its books and adjusts to fair market value as statements and valuations are received. Periodic and independent appraisals of these assets are performed to ensure an accurate valuation to determine the fair value of the Portfolio.

MERS uses a time-weighted rate of return calculation methodology based on the market rate of return for the schedule of investment results in this report.

The annual money-weighted rate of return on Portfolio investments is calculated as the internal rate of return on Portfolio investments, net of investment expenses. This expresses investment performance adjusted for the changing amounts actually invested throughout the year, measured on monthly inputs, with expenses measured on an accrual basis. The annual money-weighted rate of return net of investment expenses measured on monthly inputs was -10.29%.

DEFINED BENEFIT PLAN

INVESTMENT OBJECTIVES AND ACTIVITY

In conformity with PERSIA, the primary goal of MERS' investment program is to grow assets at a rate which, when coupled with employer and employee contributions, satisfies promised benefits to MERS members. To achieve this objective, the Investment Committee allocates MERS' assets with a strategic, long-term perspective and a high degree of prudence to reduce risk by:

- Identifying investments that meet or beat the annual actuarial investment assumption of 7.00% on a long- term basis.
- Maintaining adequate liquidity to pay promised benefits.
- Adopting a strategic asset allocation plan that reflects current and future liabilities, minimizes volatility and seeks to exceed the annual actuarial investment assumption.
- Minimizing the costs associated with the implementation of the asset allocation through the efficient use of internal and external resources.
- Maintaining above median peer rankings for the 10-year time period.
- Making investments that will meet or beat the return of the Portfolio's Policy Benchmark. The Policy Benchmark currently consists of 45% Russell 3000, 25% Bloomberg Global Aggregate Bond Index, 20% MSCI ACWI IMI ex-US and 10% Bloomberg Global Aggregate ex US.

PORTFOLIO HIGHLIGHTS

Asset Allocation

The Fund's asset allocation is the single most important determinant of achieving the stated investment goals. The Board adopts and implements an asset allocation policy that is predicated on a number of factors, including:

- Historical and expected long-term capital market risks and returns for each asset class
- Expected correlations of returns among various asset classes
- An assessment of future economic conditions, including growth, inflation and interest rate levels
- Various risk/return scenarios
- Liquidity requirements with a focus on ensuring monthly pension obligations are met

Criteria for Inclusion of Asset Classes

The following criteria are used to assess asset classes for inclusion in the Portfolio:

- Sufficient size and liquidity to permit an investment by the Portfolio.
- Staff, external managers, or consultant expertise to ensure proper due diligence and cost-effective implementation.
- How likely the asset class is to enhance Portfolio return and/or provide further Portfolio diversification.
- Measurability of performance and risk against appropriate benchmarks.

Asset Class Allocation Ranges

MERS' Board has approved the following asset class allocation ranges:

Current Targeted Allocations and Allocation Bands

Asset Class	Base Allocation	Minimum Allocation	Maximum Allocation
Global Equity	60.0%	35.0%	70.0%
Global Fixed Income	20.0%	10.0%	60.0%
Private Investments	20.0%	No Minimum	30.0%

Portfolio Rebalance Policy

In conducting rebalancing activities, the Office of Investments and Portfolio Review Committee (PRC) is responsible for the following:

- Reviewing the asset allocation at least monthly to ensure compliance with the asset allocation set by the Board
- Initiating rebalancing transactions to bring all asset class allocations inside the approved ranges or promptly seeks Board approval to remain outside of the ranges in the event that an asset class falls out of said ranges
- Deviating from an asset class's base allocation, but stay within the asset class ranges when implementing the valuation-based allocation model
- Implementing rebalancing activities at a reasonable cost using either index futures via an external derivatives manager or hard dollars
- Approving all rebalancing transactions

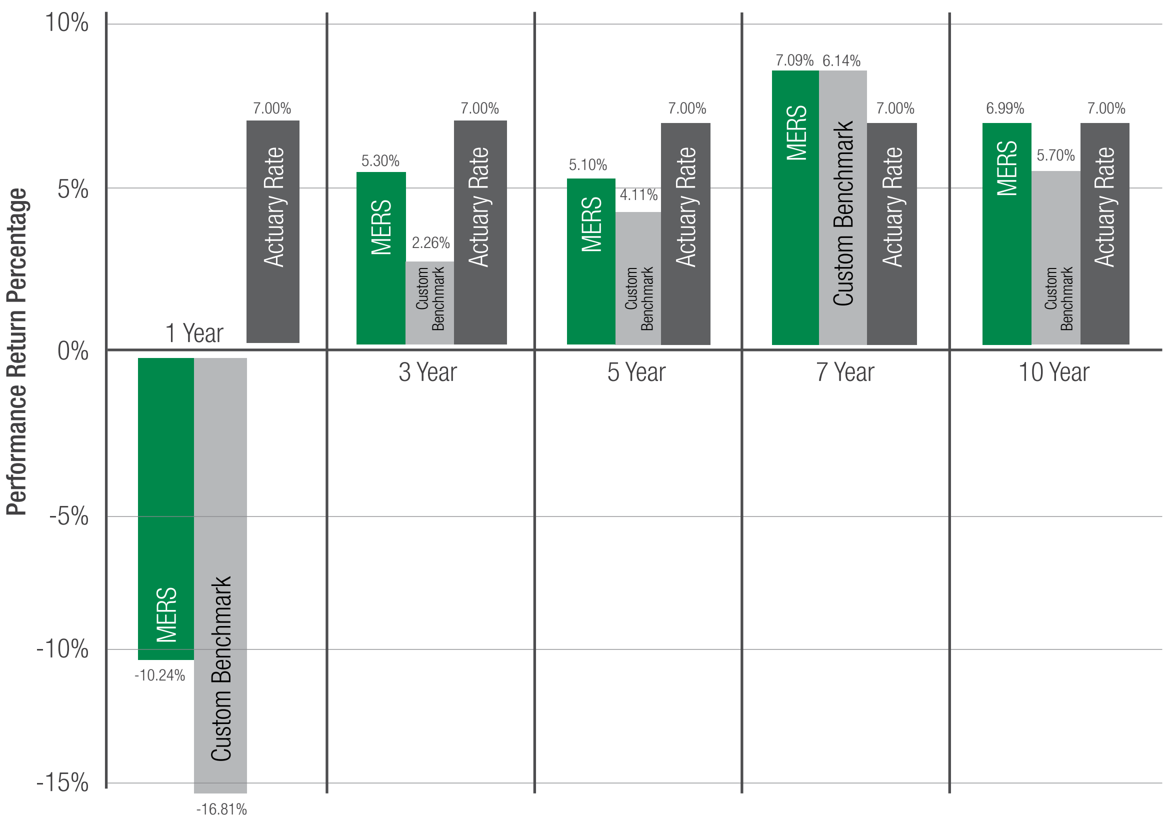
Sub-Asset Class/ Manager Rebalancing

The use of sub-asset class/manager level rebalancing is meant to exploit mean reversion at a more granular level. Sub-asset classes/managers are poised to perform well at different times and in different market environments. Thus, by incorporating market information, rebalancing rules or triggers can be established to guide the desired asset allocation tilts within the Portfolio. When rebalancing at the sub-asset class/manager level, a variety of factors are considered, including, but not limited to:

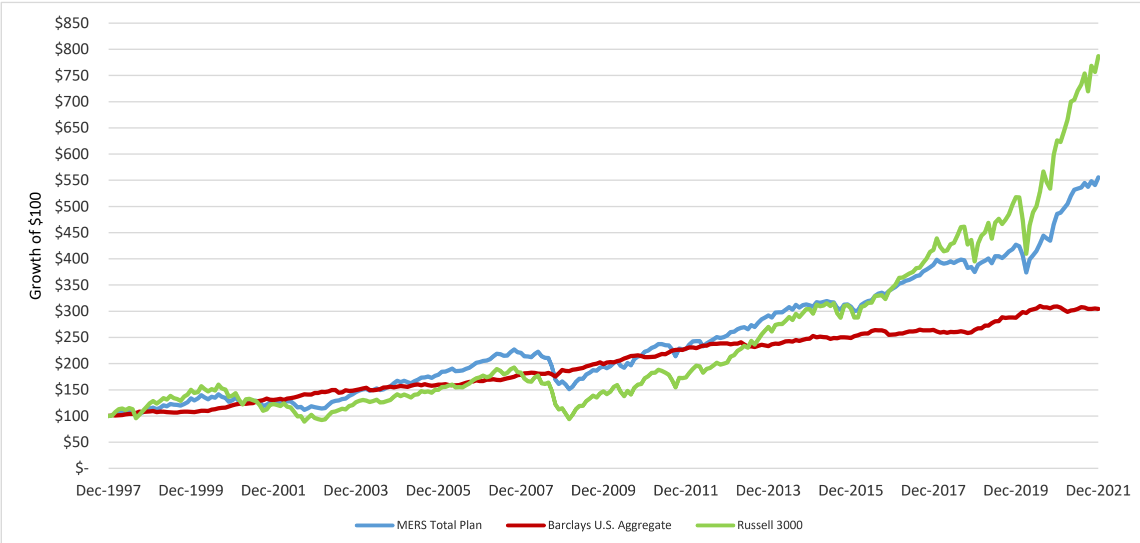
- Allocation level relative to target
- Recent relative performance
- Market correlation
- Valuation — whether an asset class is overvalued or undervalued
- Economic activity — different economic conditions favor different asset classes
- Market sentiment — volume, volatility, risk aversion, fund flows, etc.

The goal in sub-asset class/manager rebalancing is to overweight a sub-asset class/manager when outperformance is likely and underweight a sub-asset class/manager when it is likely to underperform. Doing so systematically helps eliminate emotional decision making which leads to a better risk/return profile for the Portfolio. Allocations to individual external investment managers are limited to 15% of the Portfolio; however, this excludes passive index strategies.

Performance Versus Custom Benchmarks (gross of fees)

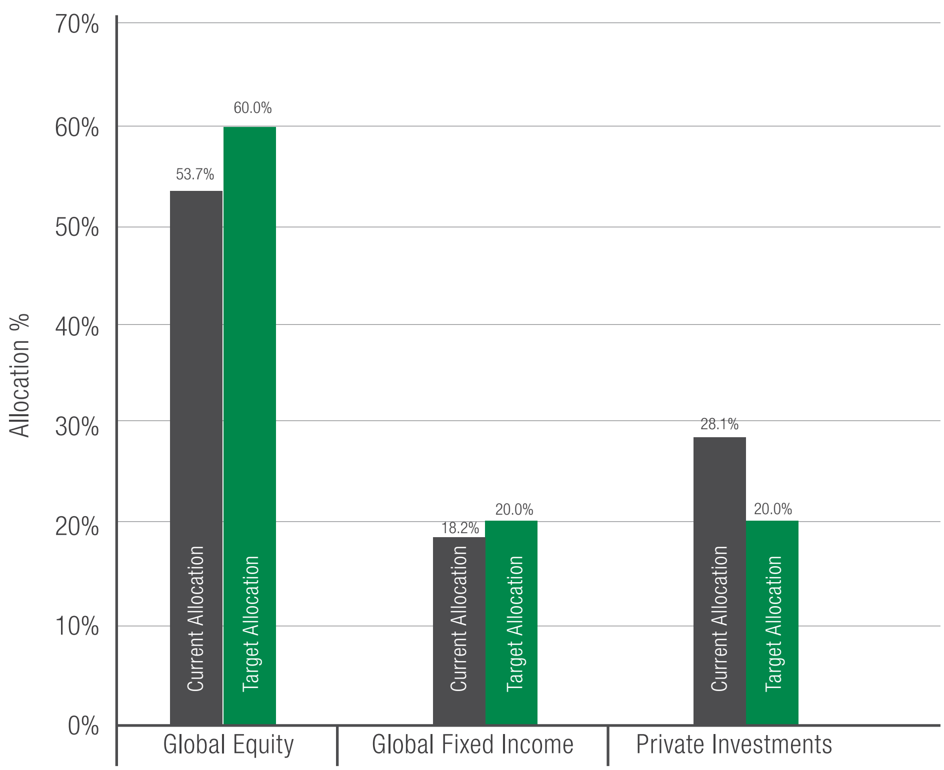


Downside Protection, Upside Participation



Diversification is a portfolio strategy designed to reduce exposure to the volatility of returns by combining a variety of investments (such as stocks, bonds, real estate, and commodities) which are unlikely to all move in the same direction. The goal of diversification is to reduce the risk in a portfolio. While it is impossible to foresee all market risks, the strategic goal of the MERS asset allocation policy and the portfolio is to create a well-diversified portfolio that provides downside market protection with upside market participation.

Current Asset Allocation versus Base Allocation



Statistical Performance

Portfolio Characteristics	1 Year	3 Year	5 Year	7 Year	10 Year
Annualized Return (gross of fees)	-10.24%	5.30%	5.10%	7.09%	6.99%
Annualized Standard Deviation	12.44%	11.84%	9.87%	8.63%	7.87%
Sharpe Ratio	(1.00)	0.38	0.38	0.69	0.79
Excess Return	6.57%	3.04%	0.99%	0.95%	1.29%
Correlation to Policy Benchmark	0.99	0.98	0.98	0.97	0.96
	1 Year	3 Year	5 Year	7 Year	10 Year
MERS Total Portfolio (Gross of Fees)	-10.24%	5.30%	5.10%	7.09%	6.99%
MERS Total Portfolio (Net of Fees)	-10.37%	5.13%	4.95%	6.91%	6.79%
MTP Custom Benchmark*	-16.81%	2.26%	4.11%	6.14%	5.70%
Excess (Gross)	6.57%	3.04%	0.99%	0.95%	1.29%

**45% Russell 3000, 20% MSCI ACWI ex USA IMI (Net), 25% Bloomberg Aggregate, 10% Bloomberg Global Aggregate ex US*

Securities Lending

The System utilizes a securities lending program through its custodial bank, in accordance with Section 20e of PERSIA MCL 38.1140e. The goal of the securities lending program is to increase Fund income and to offset investment management-related expenses.

Securities Lending 2022 Rebates and Fees

	Gross Earnings	Rebates	Agent/Mgr fees	Net earnings
Totals	$13,637,971	$10,008,439	$616,428	$3,013,105

Investment Summary for Defined Benefit Plan, Defined Contribution Plan, Hybrid Plan, Health Care Savings Program, Retiree Health Funding Vehicle, 457 Program, IRA, and Investment Services Program

Type of Investment	Fair Value	Percentage
Global Equities	$6,495,576,254	51.7%
Global Fixed Income	2,245,825,691	17.9%
Private Investments	3,425,500,255	27.3%
Cash	393,896,314	3.1%
Sub Total Investments	**12,560,798,513**	**100.0%**

Reconciliation of Investments to Financial Statements	
Total Investments from above	**12,560,798,513**
Receivables - Sale of Investments, Interest & Dividends	(4,709,720)
Alternative asset adjustment not in BNY portfolio	27,464,255
Investment in Land	1,402,094
Investments in Mutual Funds and Self Directed Accounts	1,391,050,929
Investments in cash	(33,770,776)
Rounding	(535)
Payables - Purchases of Investments	3,775,240
Investments on Financial Statements	**$13,946,010,000**

Note: Includes receivables and payables for sales and purchases of securities with settlement dates after December 31, 2022.

GLOBAL EQUITY ASSET CLASS SUMMARY

As of December 31, 2022, the Global Equity portfolio had a fair value of $6.5 billion, representing 51.7% of the Fund. Performance for this portfolio was -17.07% gross of fees for the year.

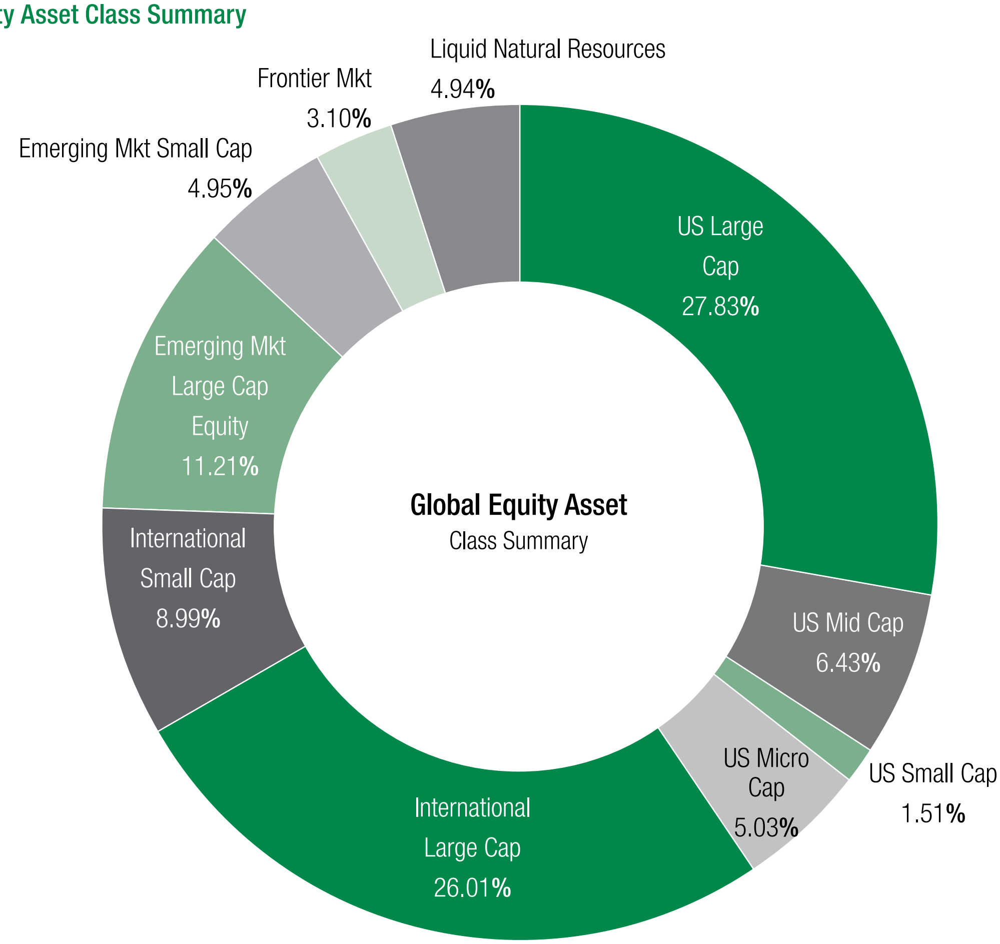
As of December 31, 2022, the Portfolio has a base allocation to Global Equity of 60%, representing the largest portion of MERS' Total Market Portfolio. The Global Equity portfolio is designed to provide long-term capital appreciation, generate current income, and provide a hedge against inflation. To manage risk, the global equity assets are diversified across geographic regions, styles, and the market capitalization spectrum.

A core portion of the Global Equity portfolio is invested in highly liquid equity securities including, but not limited to, U.S. large cap equities, U.S. mid-cap equities, and developed foreign large and mid-cap equities. The portfolio may also include higher risk investments such as small cap equities, micro-cap equities, emerging market equities, and frontier market equities.

The Global Equity portfolio utilizes both internal and external managers. The use of a passive investment approach versus active management will vary based on the composition of the asset class. In efficient markets, such as U.S. large cap equities, passive exposure will be favored in order to reduce management fees. In inefficient markets, such as emerging markets, active management will be favored in order to reduce risk and add value over a passive approach.

MERS uses a time-weighted rate of return calculation methodology based on the market rate of return for the schedule of investment results in this report.

Global Equity Asset Class Summary



Global Equity Performance

	1 Year	3 Years	5 Years	10 Years
Global Equity	-16.09%	3.86%	4.23%	8.41%
Global Equity Blend[1]	-18.29%	5.00%	6.36%	9.30%
Excess	**2.20%**	**-1.14%**	**-2.13%**	**-0.89%**
U.S. Large Cap Equity	-16.90%	7.52%	8.90%	13.03%
S&P 500 Index	-18.11%	7.66%	9.42%	12.56%
Excess	**1.21%**	**-0.14%**	**-0.52%**	**0.47%**
U.S. Mid Cap Equity	-13.32%	7.06%	6.68%	10.37%
S&P 400 Index	-13.06%	7.23%	6.71%	10.78%
Excess	**-0.26%**	**-0.17%**	**-0.03%**	**-0.41%**
U.S. Small Cap Equity	-15.18%	6.64%	6.11%	9.65%
S&P 600 Index	-16.10%	5.80%	5.88%	10.82%
Excess	**0.92%**	**0.84%**	**0.23%**	**-1.17%**
U.S. Micro Cap Index	-14.81%	8.67%	5.82%	10.11%
Russell Micro Cap Index	-21.96%	4.05%	3.69%	7.26%
Excess	**7.15%**	**4.62%**	**2.13%**	
International Large Cap Equity	-16.14%	0.08%	1.72%	
MSCI EAFE	-14.29%	1.27%	1.79%	
Excess	**-1.85%**	**-1.19%**	**-0.07%**	
International Small Cap Equity	-18.62%	2.37%	1.96%	8.62%
MSCI EAFE Small Cap (Net)	-21.39%	-0.93%	-0.05%	6.21%
Excess	**2.77%**	**3.30%**	**2.01%**	**2.41%**
Emerging Market Large Cap Equity	-22.26%	-3.43%	-2.18%	0.57%
MSCI Emerging Markets	-19.83%	-1.82%	-1.10%	1.64%
Excess	**-2.43%**	**-1.61%**	**-1.08%**	**-1.07%**
Emerging Market Small Cap Equity	-17.75%	8.35%	3.80%	
MSCI EM Small Cap Equity	-18.02%	5.11%	1.06%	
Excess	**0.27%**	**3.24%**	**2.74%**	
Frontier Market Equity	-13.18%	2.48%	-0.83%	3.75%
MSCI Frontier Market Index	-26.34%	-3.65%	-2.47%	3.23%
Excess	**13.16%**	**6.13%**	**1.64%**	**0.52%**
Liquid Natural Resources	7.99%			
Policy Benchmark	-16.81%			
Exxcess	**24.80%**			

[1]70% Russell 3000, 30% MSCI ACWI ex U.S. IMI (net)

[2]Performance does not include short positions.

Top 10 Public Equity Holdings

Asset Description	Fair Value	Percentage of Total Fair Value
iShares Core S&P 500 ETF	$776,004,024	6.33%
Invesco S&P 500 QVM Multi-factor ETF	717,047,229	5.85%
iShares Core MSCI Pacific ETF	683,334,329	5.58%
iShares Core MSCI Emerging Market ETF	513,935,041	4.20%
Vanguard FTSE Europe ETF	248,625,947	2.03%
Invesco S&P Midcap 400 QVM Multi-factor ETF	255,763,093	2.09%
iShares Core S&P Mid-Cap ETF	167,560,106	1.37%
iShares International Developed Small Cap Value ETF	138,468,728	1.13%
Invesco S&P Smallcap 600 QVM Multi-factor ETF	96,922,799	0.79%
iShares MSCI Global Metals & Mining Producers ETF	92,869,346	0.76%

A complete list of portfolio holdings is available upon request.

Global Equity Investment Strategies

External Management	Portfolio Fair Value
U.S. Micro Cap	$330,985,345
International Large Cap	691,999,776
International Small Cap	453,574,073
Emerging Markets Large Cap	223,797,718
Emerging Markets Small Cap	326,010,536
Frontier Markets	204,166,057
Liquid Natural Resources	128,889,459
Total	**2,359,422,964**
Internal Management	**Portfolio Fair Value**
U.S. Large Cap	1,832,241,646
U.S. Mid Cap	423,323,627
U.S. Small Cap	99,719,422
International Large Cap	1,020,030,017
International Small Cap	138,469,715
Emerging Markets Large Cap	513,942,566
Liquid Natural Resources	196,134,551
Total	**4,223,861,544**

GLOBAL FIXED INCOME ASSET CLASS SUMMARY

As of December 31, 2022, the Global Fixed Income portfolio, including Cash, had a fair value of $2.2 billion, representing 18.2% of the Portfolio. Performance for fixed income excluding cash was -11.83% gross of fees for the year.

The Global Fixed Income allocation (20% base) plays a vital role in the Total Market Portfolio. The core of the portfolio includes investment grade securities such as U.S. Treasury bonds, corporate bonds, and global investment grade debt. This portfolio is designed to provide downside protection, diversification, stable income, and liquidity. The core fixed income portfolio is expected to preserve capital and provide liquidity that may be used for portfolio rebalancing in stressed market environments.

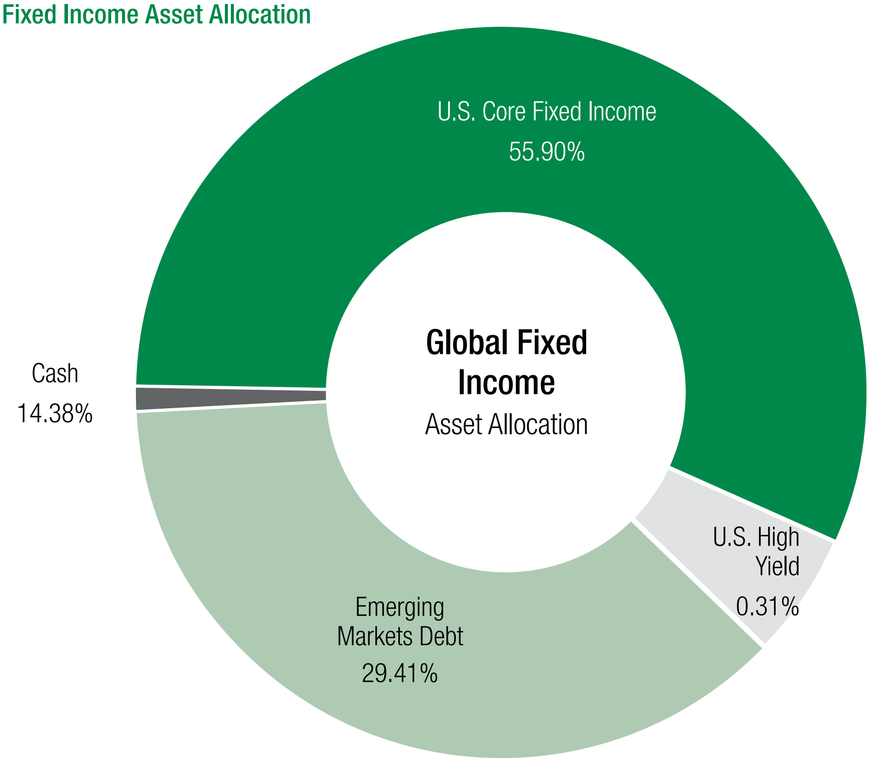
The Global Fixed Income portfolio may also include higher risk investments such as high yield bonds, emerging market debt, structured credit investments, and other sub-investment grade securities. These sub-investment grade securities are higher risk, carrying the potential of capital impairment and low liquidity. However, these securities tend to exhibit equity-like risk/return profiles combined with higher cash yields and will only be purchased when risk premiums are high.

Both internal and external management will be utilized within the Global Fixed Income portfolio.

Internal management will be focused on investment grade core fixed income and will incorporate active decisions regarding duration, sector allocation, and security selection within U.S. Treasuries, corporate bonds, and other sectors. External managers may also be used within core fixed income. Risk characteristics (such as duration) will be monitored on an aggregate basis including both internal and external portfolios. External managers will be used in the management of sub-investment grade securities. The Office of Investments will utilize specialized managers to opportunistically invest in certain portions of the sub-investment grade fixed income market.

Exchange Traded Funds (ETFs) and other index-linked products may also be used to cost-effectively implement bond strategies in lieu of active management.

Global Fixed Income Asset Allocation



Global Fixed Income Performance (gross of fees)

	1 Year	3 Years	5 Years	10 Years
Global Fixed Income	-12.55%	-0.79%	1.47%	2.42%
Global Fixed Income Blend[1]	-14.64%	-3.62%	-0.85%	-0.01%
Excess	**2.09%**	**2.83%**	**2.32%**	**2.43%**
U.S. Core Fixed Income	-10.96%	-2.49%	0.27%	1.20%
Bloomberg Aggragate Bond Index	-13.01%	-2.71%	0.02%	1.06%
Excess	**2.05%**	**0.22%**	**0.25%**	**0.14%**
U.S. High Yield	-10.57%			
Bloomberg U.S. Corporate High Yield	-11.19%			
Excess	**0.62%**			
Emerging Markets Debt	-16.75%	-4.33%	-0.47%	1.37%
JPMorgan EMBI Global Diversified Index	-17.78%	-5.28%	-1.31%	1.59%
Excess	**1.03%**	**0.95%**	**0.84%**	**-0.22%**
Cash/Short Duration	-2.30%	0.67%	1.40%	1.17%
91 Day Treasury Bill	1.47%	0.73%	1.27%	0.77%
Excess	**-3.77%**	**-0.06%**	**0.13%**	**0.40%**

[1]70% Bloomberg U.S. Aggregate Bond Index, 30% Bloomberg Global Aggregate ex U.S. Index

Top 10 Global Fixed Income Holdings

Asset Description	Fair Value	Percentage of Total Fair Value
SPDR Intermediate Term Treasury ETF	$295,464,309	2.41%
SPDR Short Term Treasury ETF	287,974,207	2.35%
Vanguard Short-Term Treasury ETF	236,383,967	1.93%
iShares JP Morgan USD Emerging Markets Bond ETF	198,778,424	1.62%
Vanguard Intermediate Term Treasury ETF	197,645,827	1.61%
Bondbloxx JP Morgan USD Emerging Markets 1-10 Year Bond ETF	174,277,784	1.42%
iShares 20+ Year Treasury Bond ETF	125,162,800	1.02%
SPDR Emerging Markers USD Bond ETF	98,752,225	0.81%
Bondbloxx Bloomberg One Year Target Duration US Treasury ETF	60,797,158	0.50%
Bondbloxx Bloomberg Two Year Target Duration US Treasury ETF	56,356,510	0.46%

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

Global Fixed Income – Investment Strategies

External Management	Portfolio Fair Value
Emerging Markets Debt	$192,738,688
Total	**192,738,688**
Internal Management	**Portfolio Fair Value**
U.S. Core Fixed Income	1,257,625,378
Emerging Markets Debt	630,183,733
U.S. High Yield	128,352,748
Cash/Short Duration	18,999,344
Total	**2,035,161,203**
Grand Total	**$2,227,899,891**

PRIVATE INVESTMENTS CLASS SUMMARY

As of December 31, 2022, the Private Investments portfolio had a fair value of $3.4 billion, representing 28.1% of the Fund's portfolio.

Private Investments is comprised of Private Equity, Real Assets and Diversifying Strategies. The portfolio is designed to provide long-term capital appreciation, generate current income and provide a hedge against inflation. To manage risk, Private Investments are diversified across geographic regions, styles and managers.

Private investments are generally illiquid strategies with contractual lockups that would take greater than a year to liquidate. Examples of illiquid investments include commingled funds, limited partnerships, co-investments or private placements.

MERS uses a time-weighted rate of return calculation methodology based on the market rate of return for the schedule of investment results in this report.

Private Equity

As of December 31, 2022, performance for Private Equity was 11.33% gross of fees for the year. The Private Equity portfolio had a fair value of $835 million, representing 8.5% of the Fund's portfolio.

The primary objective of the Private Equity portfolio is to provide long-term capital appreciation through equity stakes in private companies. Types of Private Equity examples include buyout, special situations, venture capital and growth equity. The Private Equity portfolio is 100% actively managed through either outside management or in-house selection.

Real Assets

As of December 31, 2022, performance for Real Assets was 4.21% gross of fees for the year. The Real Assets portfolio had a fair value of $1.7 billion, representing 13.5% of the Fund's portfolio.

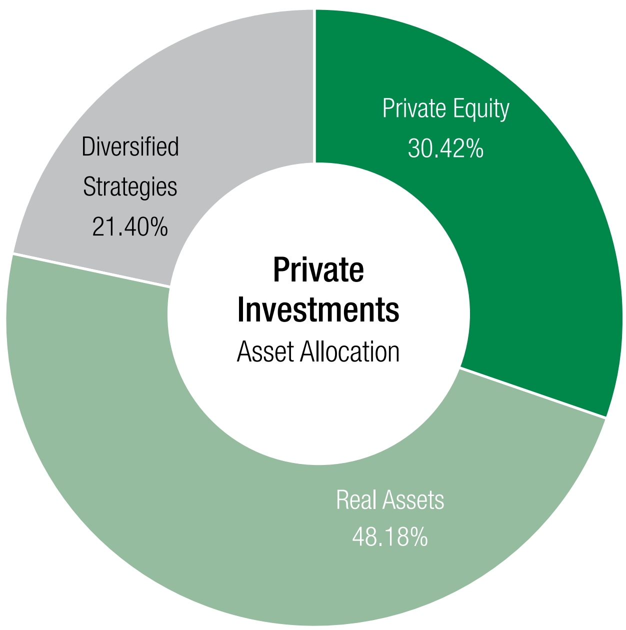
The primary objective of the Real Assets allocation is to provide diversification and degree of protection for the Portfolio against inflation. Secondary objectives are capital growth and if possible, current yield through cash dividends. Examples of potential real asset categories include real estate, commodities, infrastructure, and agriculture/farmland.

Diversifying Strategies

As of December 31, 2022, performance for Diversifying Strategies was -1.57% gross of fees for the year. The Diversifying Strategies portfolio had a fair value of $736 million, representing 6.0% of the Fund's portfolio.

The primary objective of the Diversifying Strategies portfolio is to provide the MERS' portfolio with a source of returns that are less correlated with the equity markets.

Private Investments Asset Allocation



Private Investments Performance

	1 Year	3 Years	5 Years	10 Years
Private Equity	10.66%	25.45%	20.77%	16.14%
Private Equity Blend	-20.71%	1.24%	2.18%	7.78%
Excess	**31.37%**	**24.21%**	**18.59%**	**8.36%**
Real Assets	4.21%	11.01%	9.83%	7.71%
Real Assets Blend	9.45%	7.92%	5.80%	4.84%
Excess	**-5.24%**	**3.09%**	**4.03%**	**2.87%**
Real Estate	14.91%	13.04%	11.35%	12.88%
Real Estate Blend[1]	7.47%	9.93%	8.99%	8.92%
Excess	**7.44%**	**3.11%**	**2.36%**	**3.96%**
Triple Net Real Estate	-62.62%	-21.99%	-7.60%	
Bloomberg CMBS Inv Grd (Bbb) Idx	-13.38%	-3.00%	1.44%	
Excess	**-49.24%**	**-18.99%**	**-9.04%**	
Timber	-1.53%	8.54%	8.09%	7.73%
S&P Global Timber & Forestry Index Net	-19.40%	4.22%	2.12%	6.68%
Excess	**17.87%**	**4.32%**	**5.97%**	**1.05%**
Infrastructure	20.27%	18.95%	11.90%	8.66%
Private Infrastructure Blend[2]	-14.60%	-0.53%	2.13%	3.49%
Excess	**34.87%**	**19.48%**	**9.77%**	**5.17%**
Commodities	-19.16%	2.36%	2.10%	1.55%
Bloomberg Commodity Index Total Return	16.09%	12.65%	6.44%	-1.28%
Excess	**-35.25%**	**-10.29%**	**-4.34%**	**2.83%**
Agriculture & Farmland	0.70%	12.29%	16.40%	
S&P Global Agribusiness Equity Index	2.15%	11.49%	7.81%	
Excess	**-1.45%**	**0.80%**	**8.59%**	
Diversifying Strategies	-1.57%	6.96%	5.41%	6.75%
Diversifying Strategies Blend[3]	-15.82%	-0.33%	1.95%	3.54%
Excess	**14.25%**	**7.29%**	**3.46%**	**3.21%**

[1] 80% FTSE NAREIT All Equity REITS, 20% Investment Grade CMBS BBB Index
[2] 50% DJ Brookfield Global Infrastructure Index, 50% Bloomberg Global Inflation-Linked
[3] 25% Russell 3000, 10% MSCI ACWI ex US IMI Net, 45% Bloomberg US Agg, 20% Bloomberg Global Agg ex US

Investment Management Fees

Since management fees directly affect the returns of a manager, MERS strives to negotiate the lowest fees reasonably practicable, leveraging its asset size to drive down costs. While top performing managers often have higher fee structures, performance expectations and investment costs are carefully balanced. Because management fees are definitive regardless of investment return, all else being equal, managers with lower fees are favored.

Schedule of Investment Fees

Investment Managers	Average Assets Under Management	Annual Fee	Average Basis Points
Global Equity	$6,583,284,507	$5,956,381	9.05
Global Fixed Income	2,227,899,982	6,807	0.03
Private Investments	3,439,636,658	0	0.00
Total	**$12,250,821,147**	**$5,963,188**	**4.87**

Investment Custodian		
Bank of New York Mellon		863,657
Securities Lending Agent		
Bank of New York Mellon		72,030
Total Investment Fees		**$6,898,876**

The above table presents the 2022 investment manager fees MERS incurred, excluding alternative investments and comingled funds. The alternative investments and comingled fund portfolios results are reported to MERS net of fees, therefore the management fees paid for these investments are not reported in the above table.

Schedule of Investment Commissions

Brokerage Firm	Shares Traded	Total Dollars	Commission/Share
Goldman Sachs & Co, NY	21,740,000	$115,837	$0.01
Total Commissions	**21,740,000**	**$115,837**	**$0.01**

Other Investments are traded investment-free.

MERS INVESTMENT MENU SUMMARY
(PARTICIPANT DIRECTED ACCOUNTS AND INSTITUTIONAL FUNDS)

The Board is the sole fiduciary for MERS' institutional funds and participant directed accounts (PDA) with respect to establishing, monitoring and amending the Plans' investment menu and executes its duties solely in the interest of the Plans and their participants and beneficiaries.

The MERS Investment Menu is divided into three categories that PDA participants can use to address his/her investment needs: Retirement Strategies, Premium Select Options and a Self-Directed Brokerage Account. The availability of the investment options in these categories is dependent on the plan of which a participant or municipality partakes.

Retirement Strategies

The Retirement Strategies offer participants a simple way to invest. Each fund is named for a "target date," the approximate year in which the participant is expected to retire and start withdrawing from their account. Funds farthest from the target dates emphasize growth potential by allocating a higher percentage of the portfolio to equities. As investors move closer to and into retirement, the funds automatically adjust to a more conservative asset mix. The Retirement Strategies are expected to meet the general needs of the average participant in different age groups by utilizing a glide path. A glide path represents the changes made to the asset allocation over time as the target date approaches.

The Retirement Strategies glide path shall be based on industry accepted investment theory and investment methodology as well as reasonable capital market assumptions. Plan demographics shall be taken into consideration when developing the glide path. The glide path will be monitored by the MERS Office of Investment and Investment Committee.

Premium Select Options

Premium Select - Asset Allocation Portfolios

The Premium Select Asset Allocation Portfolios are multi-manager investment options built to offer participants the ability to benefit from economies of scale, by utilizing investments MERS' Defined Benefit (DB) portfolio. The options are designed so a participant can select the option that best matches his/her risk tolerance and offer attractive risk-adjusted returns at a below-market fee.

Premium Select - Asset Specific Funds

The Premium Select Asset Specific Funds provide a participant the ability to structure his/her own unique portfolio by allocating his/her investments to a single asset class. These options give a participant the ability to build his/her own portfolio. The funds can either be components of the MERS DB portfolio or outside investment fund options with a preference for index-based investments. Whenever an outside investment is offered, the lowest share class available to MERS will be utilized.

Self-Directed Brokerage Account

Participants who desire additional investment options and are willing to accept all risks and costs related to such alternatives can make his/her own investment decisions through the Self-Directed Brokerage Account (SDBA). The SDBA is available to participants through MERS Defined Contribution (DC) Plan, or 457 programs as long as they maintain a pre-determined account balance.

Participant Directed Accounts

1 Retirement Strategies[1]

Retirement Income Fund
2010 Retirement Strategy
2015 Retirement Strategy
2020 Retirement Strategy
2025 Retirement Strategy
2030 Retirement Strategy
2035 Retirement Strategy
2040 Retirement Strategy
2045 Retirement Strategy
2050 Retirement Strategy
2055 Retirement Strategy
2060 Retirement Strategy
2065 Retirement Strategy

2 Premium Select Options

Portfolios Built for You

MERS Total Market Portfolio
MERS Global Stock Portfolio (100/0)
MERS Capital Appreciation Portfolio (80/20)
MERS Established Market Portfolio (60/40)
MERS Balanced Income Portfolio (40/60)
MERS Capital Preservation Portfolio (20/80)
MERS Diversified Bond Portfolio (0/100)

Funds to Build Your Own Portfolio

Large Cap Stock Index
Mid Cap Stock Index
Small Cap Stock Index
Emerging Market Stock
International Stock Index
Real Estate Stock
Bond Index
High-Yield Bond
Short-Term Income
Stable Value (DC & 457 Only)

3 Self-Directed Brokerage Account

TD Ameritrade (DC & 457 Only)

Institutional Funds

Portfolios Built for You

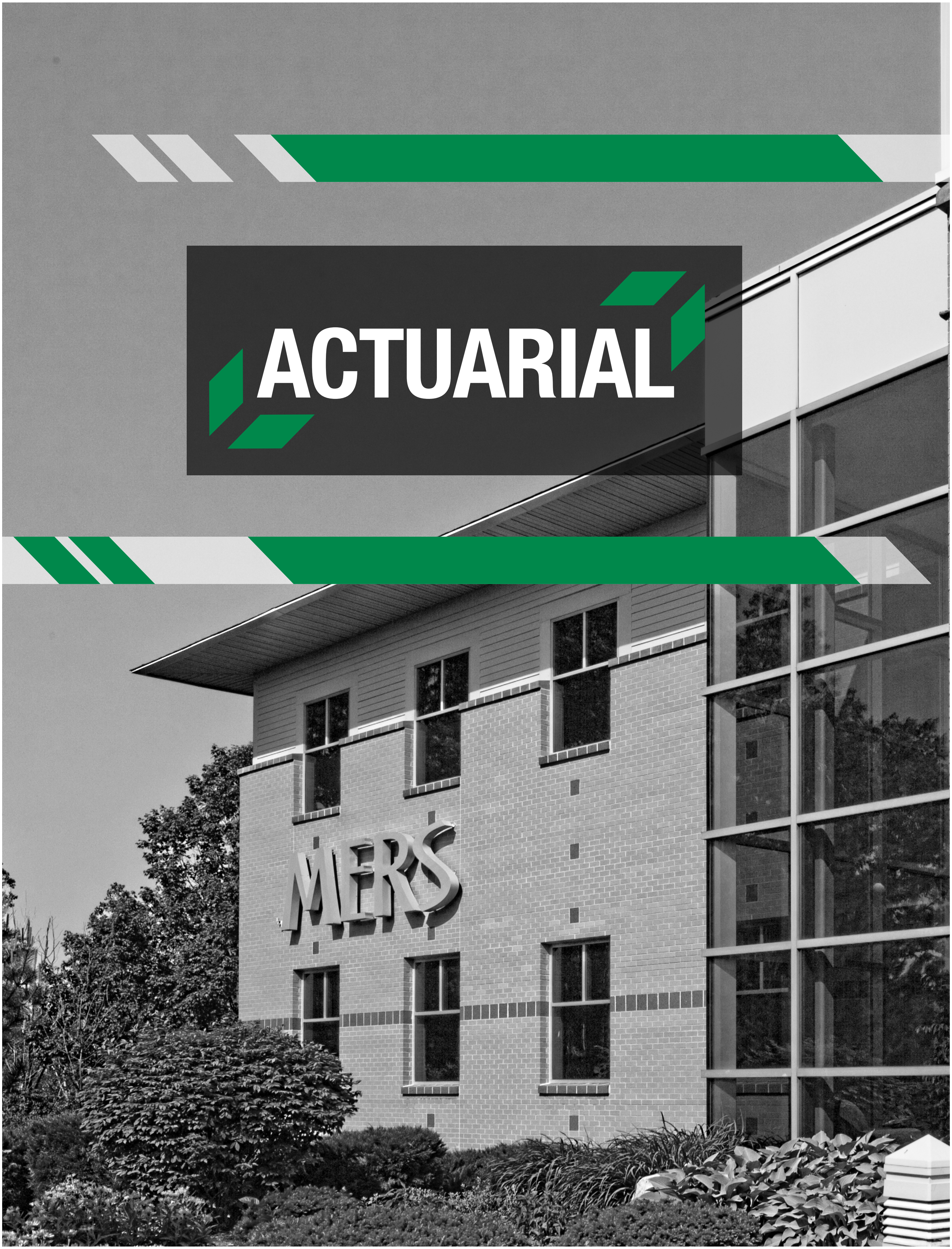
MERS Total Market Portfolio[2]
MERS Global Stock Portfolio (100/0)
MERS Capital Appreciation Portfolio (80/20)
MERS Established Market Portfolio (60/40)
MERS Balanced Income Portfolio (40/60)
MERS Capital Preservation Portfolio (20/80)
MERS Diversified Bond Portfolio (0/100)
Real Estate Stock
Bond Index
High-Yield Bond

Funds to Build Your Own Portfolio

Large Cap Stock Index
Mid Cap Stock Index
Small Cap Stock Index
Emerging Market Stock
International Stock Index
Short-Term Income

Note: [1] *Default investment option for DC, 457, IRA and HCSP*
[2] *Default investment option for RHFV and ISP*

ACTUARIAL



GRS

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September 30, 2022

Retirement Board
Municipal Employees' Retirement System of Michigan
1134 Municipal Way
Lansing, Michigan 48917

Dear Board Members:

The basic financial objective of the Municipal Employees' Retirement System of Michigan (MERS) is to establish and receive contributions for each municipality and court which:

(1) fully cover the cost of benefits that members earn during the coming fiscal year;
(2) amortize the unfunded costs of benefits earned based on past service; and
(3) when combined with present assets and future investment return will be sufficient to meet the financial obligations, of each municipality and court under MERS, to present and future retirees and beneficiaries.

In order to measure progress toward this fundamental objective, MERS has annual actuarial valuations completed. Separate actuarial valuations are prepared for each participating municipality and court. The purposes of the December 31, 2021 annual actuarial valuations were to:

- measure funding progress as of December 31, 2021;
- establish contribution requirements for the fiscal years beginning in 2023;
- provide information regarding the identification and assessment of risk;
- provide actuarial information in connection with applicable Governmental Accounting Standards Board (GASB) Statements; and
- provide information to assist the local unit of government with state reporting requirements.

Each valuation assumed the continuing ability of the plan sponsor to make the contributions necessary to fund the plan. A determination regarding whether or not the plan sponsor is actually able to do so is outside our scope of expertise and was not performed.

The findings of each report are based on data and other information through December 31, 2021. Each valuation was based upon information furnished by MERS concerning Retirement System benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. We checked for internal reasonability and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by MERS.

Retirement Board
Municipal Employees' Retirement System of Michigan
September 30, 2022
Page 2

Each report was prepared at the request of the MERS Retirement Board and may be provided only in its entirety by the municipality to other interested parties (MERS customarily provides the full report on request to associated third parties such as the auditor for the municipality). GRS is not responsible for the consequences of any unauthorized use. Individual reports should not be relied on for any purpose other than the purposes described herein. Determinations of financial results, associated with the benefits described in each report, for purposes other than those identified above may be significantly different.

The Municipal Employees' Retirement Act, PA 427 of 1984 and the MERS' Plan Document Article VI Sec. 71 (1)(d), provides the MERS Board with the authority to set actuarial assumptions and methods after consultation with the actuary. As the fiduciary of the plan, the MERS Retirement Board sets certain assumptions for funding and GASB purposes. These assumptions are checked regularly through a comprehensive study called an Experience Study.

The Michigan Department of Treasury provides required assumptions to be used for purposes of Public Act 202 reporting. These assumptions are for reporting purposes only and do not impact required contributions. For a full list of all the assumptions used, please refer to the division-specific assumptions described in the table(s) in each report and to the Appendix on the MERS website at:

https://www.mersofmich.com/Portals/0/Assets/Resources/AAV-Appendix/MERS-2021AnnualActuarialValuation-Appendix.pdf

Assets are valued on a market related basis that fully recognizes expected investment return and averages unanticipated market return over a five-year period. Effective during 2021, a dedicated gains policy was implemented. The policy accelerates recognition of asset returns in excess of expected returns in conjunction with lowering the assumed rate of investment return.

MERS' staff prepared various supporting schedules in the Annual Comprehensive Financial Report based upon the information included in the annual actuarial valuations prepared by Gabriel, Roeder, Smith & Company (GRS). Specifically, these exhibits are:

- Actuarial Section Schedules
  - Summary of Actuarial Methods and Assumptions
  - Assumptions and Method Changes
  - Schedule of Active Member Valuation Data
  - Schedule of Retirees and Beneficiaries Added to and Removed from Rolls
- Statistical Section Schedules
  - Schedule of Average Benefit Payments – Defined Benefit Plan
  - Schedule of Retired Members by Type of Benefit – Defined Benefit Plan
  - Schedule of Retired Members by Option Selected – Defined Benefit Plan

Retirement Board
Municipal Employees' Retirement System of Michigan
September 30, 2022
Page 3

The actuarial assumptions used for each valuation are reasonable for purposes of the measurement.

Each report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge, the information contained in each report is accurate and fairly presents the actuarial position of the plans as of the valuation date. All actuarial assumptions and methods used for funding purposes have been made in conformity with generally accepted actuarial principles and practices, with the Actuarial Standards of Practice issued by the Actuarial Standards Board, and with applicable statutes.

Rebecca L. Stouffer and Mark Buis are Members of the American Academy of Actuaries (MAAA). These actuaries meet the Academy's Qualification Standards to render the actuarial opinions contained herein. The signing actuaries are independent of the plan sponsors. GRS maintains independent consulting agreements with certain local units of government for services unrelated to the actuarial consulting services provided in this report.

The Retirement Board of the Municipal Employees' Retirement System of Michigan confirms that the System provides for payment of the required employer contribution as described in Section 20m of Act No. 314 of 1965 (MCL 38.1140m).

The information in each report is purely actuarial in nature. It is not intended to serve as a substitute for legal, accounting or investment advice.

Sincerely,
Gabriel, Roeder, Smith & Company

Rebecca L. Stouffer

Rebecca L. Stouffer, ASA, FCA, MAAA

Mark Buis

Mark Buis, FSA, EA, FCA, MAAA

RLS/MB:dj

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

An actuarial valuation is the mathematical model that estimates plan liabilities and employer contribution requirements for purposes of funding the individual employer plans within the Michigan Municipal Employees' Retirement System (MERS), for determining plan costs for Governmental Accounting Standards Board (GASB) accounting purposes, and for State Reporting. This model is updated annually to adjust the liabilities and contribution requirements for changes in member census and plan features, and to reflect actual plan experience in the process. Annual valuations are required by the Municipal Employees' Retirement Act, MCL 38 .1501, et seq., as amended (MERS Act).

Each annual actuarial valuation uses current membership and financial data. In addition, an actuarial valuation requires the use of a series of assumptions regarding uncertain future events. The assumptions and methods used in the December 31, 2021 Actuarial Valuation are those adopted by the Retirement Board on February 27, 2022, and June 25, 2020. The economic assumptions used in this valuation are a 7.00% investment rate of return and a 3.00% wage inflation assumption, as adopted February 28, 2019. The demographic assumptions used in this valuation are based on the results of a study of plan experience that covered the period from December 31, 2014, through December 31, 2018. An alternative contribution phasing in the 2019 and 2020 assumption changes (3 years remaining) is included in each report. All actuarial assumptions are estimates of future experience.

There have been no changes in the funding method that was adopted by the Board commencing with the December 31, 1993 valuations. The basic funding method is entry age normal and employer contribution amounts are developed as a level percentage of payroll. For purposes of determining plan accounting costs under GASB, there has been a modification to the implementation of the individual level percent method of the entry age normal cost method for divisions with bridged benefits or frozen accrued benefits.

Valuation assets were valued for each municipality by taking the difference in investment income between expected return and market return and recognizing it over a 5-year period. This asset valuation method was first adopted for the December 31, 2016 valuation. The transition from the 10-year to the 5-year asset method was fully recognized as of December 31, 2019.

The employer contribution rate is determined for each municipality based on the entry age normal funding method. Under the entry age normal cost funding method, the total employer contribution is comprised of the normal cost plus the amortization payment required to fund the unfunded actuarial accrued liability over a period of years. For open divisions (new hires are included in the division) the amortization period is 18 years. The year period will decline by 1 each year until the initial unfunded accrued liability is paid off. For divisions of active municipalities that closed to new hires prior to 2016 (new hires are not covered by the MERS Defined Benefit Plan or Hybrid Plan (Part I) provisions in a linked division), the employer had 2 amortization options. Under the Accelerated to 5-Year Option, the amortization period decreases annually by 2 years until the period reaches 6 or 5 years. Each year thereafter it decreases by 1 each year until the unfunded liability is paid off. Under the Accelerated to 15-Year Option, the amortization period decreases annually by 2 years until the period reaches 16 or 15 years. Each year thereafter the amortization period decreases annually by 1 year until the unfunded accrued liability is paid off. Negative unfunded accrued liabilities are amortized over 10 years, with the 10-year period reestablished with each annual actuarial valuation. As of December 31, 2021, there were 2,103 closed divisions.

The total normal cost is, for each active participant, the level percentage of payroll contribution (from entry age to retirement) required to accumulate sufficient assets at the participant's retirement to pay for his or her projected benefit. The employer normal cost is the total normal cost reduced by the participant contribution rate. Closed municipalities (no longer actively participating in MERS) are subject to special funding requirements as set forth in the Actuarial Policy. Employers' computed normal cost of benefits expressed as a percentage of valuation payroll is 7.62% and the total required contribution rate expressed as a percentage of valuation payroll is 32.18%.

There have been no recent changes that have had an impact on the System. Municipalities could modify provisions that apply to their individual plan if set forth in a collective bargaining agreement. The individual municipality contribution rates are modified to account for changes in provisions of the plan selected by the municipality.

MERS' staff provided the data about participants and presented assets to GRS for the valuation. Although examined for general reasonableness, the actuary has not audited the data. The actuarial valuation computations were made by or under the supervision of a Member of the American Academy of Actuaries (MAAA). The Board adopted the assumptions used in the actuarial valuations after consulting with the actuary.

Note: The Annual Actuarial Valuation addresses assets and liabilities for participation under the MERS Defined Benefit Plan, including the defined benefit portion (Part I) of the Hybrid Plan. The defined contribution portion of the Hybrid Plan (Part II) is not addressed in the valuation results as it is not a defined benefit plan.

ASSUMPTIONS AND METHOD CHANGES

Actuarial Assumptions

To calculate MERS' contribution requirements, assumptions are made about future events that could affect the amount and timing of benefits to be paid, and the assets to be accumulated. The economic and demographic assumptions include:

- An assumed rate of investment return is used to discount liabilities and project what plan assets will earn.
- A mortality assumption projecting the number of participants who will die before retirement and the duration of benefit payments after retirement.
- Assumed retirement rates project when participants will retire and commence receiving retirement benefits.
- A set of withdrawal and disability rates to estimate the number of participants who will leave the workforce before retirement.
- Assumed rate of pay increases to project participant compensation in future years.

Interest Rate

Funding plan benefits involve the accumulation of assets to pay future benefits. These assets are invested, and the net rate of investment earnings is a significant factor when determining the contributions required to support the ultimate cost of benefits. For the 2021 actuarial valuation, the long-term investment yield, net of administrative and investment expenses, is assumed to be 7.00%. This assumption was first used for the December 31, 2021 actuarial valuations.

Pay Increases

Because benefits are based on a participant's final average compensation (FAC), it is necessary to assume with respect to each participant's estimated pay progression. The pay increase assumption used in the actuarial valuation projects annual pay increases of 3.00% in the long term plus a percentage based on an age-related scale to reflect merit, longevity and promotional pay increases.

The pay increase assumption for sample ages is shown on the following page. The 3.00% long-term wage inflation assumption was first used for the December 31, 2019 actuarial valuations. The merit and longevity pay increase assumption was first used for the December 31, 2020 actuarial valuations.

Annual Percentage Increase in Salary

Sample Years of Service	Base (Wage Inflation)	Merit and Longevity	Total Percentage Increase in Salary
0	3.00%	6.70%	9.70%
5	3.00%	1.90%	4.90%
10	3.00%	1.10%	4.10%
15	3.00%	0.70%	3.70%
20	3.00%	0.60%	3.60%
25	3.00%	0.40%	3.40%
30	3.00%	0.20%	3.20%
35	3.00%	0.10%	3.10%
40 and Over	3.00%	0.00%	3.00%

Inflation

Although no specific price inflation assumption is needed for this valuation, the assumed long-term annual rate of price inflation is 2.50%.

Increase in Final Average Compensation

The last 3 experience studies determined that for some retirees of some municipalities, the actual final average compensation (FAC) at retirement was larger than would be expected based on reported annual pays and FACs for the years just before retirement. Some possible sources for the differences are:

- Lump sum payments for unused paid time off. Unused sick leave payouts have been excluded from FAC since the mid-1970s. However, since that time it has become popular to combine sick and vacation time into paid time off, which is included in the FAC. Consequently, the lump sums that are includible in FAC have grown over the years.
- Extra overtime pays during the final year of employment. Our studies only reflect any increase in overtime during the final year, not any increase that occurs during the full 3 or more year averaging period.

The amount of unexpected FAC increase varies quite a bit between municipalities. Some municipalities show no sign of FAC loading, while other municipalities show increases above the average increase. This is presumably the result of different personnel policies and collective bargaining agreements among municipalities.

The Board adopted new FAC assumptions to be applied to the December 31, 2020 actuarial valuations. These assumptions reflect an FAC load of 1% to 15% for each municipality, based on the municipality's experience in the 2014-2018 experience study. A load of 0% is used for divisions with a definition of compensation equal to base wages. The FAC increase assumption(s) for each municipality are shown in individual actuarial valuation reports. Note that for divisions that adopted Sick Leave in FAC (SLIF), the assumption is developed individually for each division based on the specific SLIF provision and/or past experience.

Retirement Rates

A schedule of retirement rates is used to measure the probability of eligible participants retiring during the next year.

The retirement rates for Normal Retirement are determined by each participant's replacement index at the time of retirement. The replacement index is defined as the approximate percentage of the participant's pay (after reducing participant contributions) that will be replaced by the participant's benefit at retirement. The index is calculated as:

Replacement Index = 100 x Accrued Benefit ÷ by [Pay - Participant Contributions].

Retirement rates for early reduced retirement are determined by the participant's age at early retirement.

The normal retirement rates and early retirement rates below were first used for the December 31, 2020 actuarial valuations.

Normal Retirement – Service Based Benefit F(N) Adopted

Sample Replacement Index	Percent of Eligible Active Participants Retiring Within the Next Year	
	Public Safety	General
5	11.0%	9%
10	14.0%	11%
15	19.0%	15%
20	24.0%	19%
25	24.0%	19%
30	24.0%	19%
35	24.0%	19%
40	24.0%	19%
45	25.0%	20%
50	26.0%	21%
55	26.0%	21%
60	30.0%	24%
65	30.0%	24%
70	31.0%	25%
75	33.0%	27%
80	38.0%	30%
85	42.0%	33%
90	48.0%	38%
95	52.0%	42%
100+	60.0%	48%

Early Retirement – Reduced Benefit

Retirement Ages	Percent of Eligible Active Participants Retiring Within Next Year
All Applicable ages	4.00%

Withdrawal Rates

The withdrawal rates are used to estimate the number of participants at each age that are expected to terminate employment before qualifying for retirement benefits. The withdrawal rates do not apply to participants eligible to retire, and do not include separation on account of death or disability. The assumed rates of withdrawal applied in the current valuation are based on years of service and employment classification. Divisions 02, 20 - 29, 05, and 50 - 59 are considered to be a Public Safety employment classification. All other divisions are considered to be a General employment classification.

Sample rates of withdrawal from active employment, prior to the scaling factor, are shown. These rates were first used for the December 31, 2020 actuarial valuations.

Rates of Withdrawal (Excluding Death or Disability) from Active Employment Before Retirement

Sample Years of Service	% of Active Participants Withdrawing Within the Next Year	
	Public Safety	General
0	13.90%	23.40%
1	11.60%	19.50%
2	9.40%	15.80%
3	7.40%	12.50%
4	6.10%	10.30%
5	4.90%	8.30%
10	3.20%	5.40%
15	2.40%	4.00%
20	1.80%	3.10%
25 and over	1.50%	2.60%

Disability Rates

Disability rates are used in the valuation to estimate the incidence of participant disability in future years.

The assumed rates of disablement at various ages are shown. These rates were first used for the December 31, 2015 actuarial valuations.

Rates of Withdrawal Due To Disability[1]

Sample Ages	Percent of Active Participants Becoming Disabled Within Next Year
20	0.02%
25	0.02%
30	0.02%
35	0.05%
40	0.08%
45	0.20%
50	0.29%
55	0.38%
60 and above	0.39%

[1] 80% of the disabilities are assumed to be non-duty, and 20% of the disabilities are assumed to be duty related. For those plans that have adopted disability provision D-2, 40% of the disabilities are assumed to be non-duty, and 60% are assumed to be duty related.

Mortality Tables

In estimating the amount of reserves required at retirement to pay a participant's benefit for the remainder of their lifetime, it is necessary to make an assumption with respect to the probability of surviving to retirement, and the life expectancy after retirement.

This valuation incorporates fully generational mortality. The base mortality tables used are constructed as described below and are based on the weighted sex distinct rates:

Pre-Retirment Mortality:

1. 100% of Pub-2010 Juvenile Mortality Tables for Ages 0-17
2. 100% of PubG-2010 Employee Mortality Tables for Ages 18-80
3. 100% of PubG-2010 Healthy Retiree Tables for Ages 81-120

Non-Disabled retired plan members and beneficiaries:

1. 106% of Pub-2010 Juvenile Mortality Tables for Ages 0-17
2. 106% of PubG-2010 Employee Mortality Tables for Ages 18-49
3. 106% of PubG-2010 Healthy Retiree Tables for Ages 50-120

Disabled retired plan members:

1. 100% of Pub-2010 Juvenile Mortality Tables for Ages 0-17
2. 100% of PubNS-2010 Disabled Retiree Tables for Ages 18-120

Future mortality improvements are assumed each year using scale MP-2019 applied fully generationally from the Pub-2010 base year of 2010.

These mortality tables were first used for the December 31, 2020 actuarial valuations. Sample life expectancies and mortality rates are shown below.

Pre-Retirement Mortality:

Age on Dec 31, 2021	Expected Years of Life Remaining		Mortality Rates	
	Male	Female	Male	Female
20	70.09	72.81	0.039%	0.015%
25	64.80	67.48	0.034%	0.011%
30	59.52	62.16	0.051%	0.021%
35	54.29	56.86	0.069%	0.031%
40	49.10	51.60	0.084%	0.042%
45	43.94	46.36	0.101%	0.056%
50	38.80	41.14	0.139%	0.080%
55	33.73	35.97	0.213%	0.129%
60	28.76	30.88	0.331%	0.198%
65	23.94	25.88	0.473%	0.287%

Mortality Tables (Non – Disabled)

Age on Dec 31, 2021	Expected Years of Life Remaining		Mortality Rates	
	Male	Female	Male	Female
45	40.27	43.33	0.107%	0.059%
50	35.06	38.04	0.295%	0.226%
55	30.18	33.07	0.444%	0.317%
60	25.49	28.22	0.677%	0.434%
65	21.02	23.51	0.977%	0.629%
70	16.79	18.98	1.509%	1.015%
75	12.88	14.74	2.563%	1.808%
80	9.44	10.95	4.617%	3.330%
85	6.64	7.77	8.443%	6.267%
90	4.60	5.35	14.591%	11.637%

Mortality Tables (Disabled)

Age on Dec 31, 2021	Expected Years of Life Remaining		Mortality Rates	
	Male	Female	Male	Female
45	29.91	32.59	1.037%	0.976%
50	26.07	28.76	1.500%	1.421%
55	22.62	25.33	2.056%	1.820%
60	19.53	22.16	2.600%	2.085%
65	16.66	18.96	3.074%	2.183%
70	13.86	15.62	3.640%	2.578%
75	11.10	12.34	4.700%	3.626%
80	8.54	9.42	6.703%	5.616%
85	6.35	7.06	10.027%	8.891%
90	4.60	5.29	15.248%	13.060%

Schedule of Active Member Valuation Data

Valuation Dec 31	Participating Municipalities	Active Participants	Active Participants Annual Payroll	Annual Average Pay	Percent Increase in Average Pay	Participants on Deferred Status
2012	726	34,187	$1,640,390,877	$47,983	0.9%	7,262
2013	728	34,809	1,687,391,045	48,476	1.0%	7,620
2014	728	35,302	1,743,799,124	49,397	1.9%	7,690
2015	732	35,274	1,786,825,334	50,656	2.5%	8,340
2016	735	34,843	1,779,919,980	51,084	0.8%	8,252
2017	743	34,787	1,812,477,401	52,102	2.0%	8,361
2018	745	33,891	1,812,758,776	53,488	2.7%	8,605
2019	745	33,710	1,850,299,634	54,889	2.6%	8,638
2020	742	32,314	1,851,572,891	57,299	4.4%	8,663
2021	744	31,019	1,833,562,238	59,111	3.2%	8,916

Schedule of Retirees and Beneficiaries Added to and Removed from Rolls

	Added to Rolls		Removed from Rolls	
Valuation Dec 31	Retirees/ Beneficiaries Number	Annual Allowance	Retirees/ Beneficiaries Number	Annual Allowance
2012	2,348	$53,957,105	811	$9,477,177
2013	3,578	73,762,997	857	11,138,379
2014	4,242	107,064,445	948	12,090,122
2015	2,714	68,984,180	1,001	13,947,540
2016	2,847	70,269,768	1,540	25,743,252
2017	2,479	60,140,628	1,105	16,084,776
2018	2,406	60,508,490	1,204	18,264,095
2019	2,304	58,870,634	1,168	18,699,589
2020	2,555	68,137,414	1,444	24,315,326
2021	2,488	66,827,838	1,362	23,046,770

	End-of-Year Rolls			
Valuation Dec 31	Retirees/ Beneficiaries Number	Annual Allowance	% Increase in Annual Allowance	Average Annual Allowance
2012	29,739	$565,478,715	8.5%	$19,015
2013	32,460	628,103,333	11.1%	19,350
2014	35,754	723,077,656	15.1%	20,224
2015	37,467	778,114,296	7.6%	20,768
2016	38,774	822,640,812	5.7%	21,216
2017	40,148	866,696,664	5.4%	21,588
2018	41,350	908,941,059	4.9%	21,982
2019	42,486	949,112,105	4.4%	22,339
2020	43,597	992,934,193	4.6%	22,775
2021	44,723	1,036,715,280	4.4%	23,181

SUMMARY OF PLAN DOCUMENT PROVISIONS

There were no recent changes in the nature of the Defined Benefit Plan that would have a material impact on the actuarial valuations for December 31, 2021. Pursuant to a collective bargaining agreement, a participating municipality may provide for retirement benefits that are modifications of some of the MERS standard retirement benefits otherwise included, although the Hybrid Plan and Defined Contribution Plan are not modifiable. The actuary took the known modifications into consideration when determining the municipality contribution rates in the December 31, 2021 actuarial valuations for the Defined Benefit Plan.

The benefits summarized in this section are intended only as general information regarding MERS. The Annual Financial Report and valuation are not a substitute for the language of the MERS Act and the MERS Plan Document, as revised. If any conflict occurs between the information in this summary and the MERS Act or the MERS Plan Document, as revised, the provision of the Act and the MERS Plan Document governs.

The December 31, 2021 actuarial valuations were based on the provisions of the MERS Plan Document as of that date.

Defined Benefit Plan

Eligibility for Retirement

Monthly retirement payments are made over the lifetime of the retiree, the lifetime of the retiree and a beneficiary, or the lifetime of the retiree and a period certain. The final payment option is elected by the retiring participant.

Participants are eligible to retire after vesting and meeting age and service requirements. Vesting occurs after a number of years of credited service as selected by the municipality.

Early retirement benefits are available if the vested participant meets eligibility requirements. The monthly payment is reduced for each month the participant is younger than the normal retirement age selected by the municipality. If selected by the municipality, an unreduced early retirement benefit may be payable if the eligibility requirement for that benefit is met.

Benefit Formula

The annual benefit equals a specified percentage of the participant's final average compensation, multiplied by the number of years and months of credited service. The plan has several benefit multipliers available. The benefit multipliers vary and are adopted by a participating municipality.

Mandatory Retirement

There is no mandatory retirement age; however, participants must take a required minimum distribution as required by law.

Deferred Vested Benefits

When a participant leaves MERS covered employment after earning the required number of years of service for vesting, that former participant may apply for a deferred vested benefit any time at or after the vested former participant meets the age eligibility requirements. Vested deferred benefits commence effective as of the first day of the month next following the month in which the vested former participant both meets the age eligibility requirements and submits an application for benefits, accompanied by all required documentation.

Maximum Benefit Payable by MERS

The maximum benefit that may be paid by MERS is governed by Section 415 of the Internal Revenue Code (IRC). Benefits in excess of the maximum benefit will be paid by the MERS Qualified Excess Benefit Plan under Plan Section 88.

Act 88 (Reciprocal Retirement Act)

If a municipality elects to come under the provision of Act 88, service with former and future public employers in Michigan may be used to satisfy the eligibility requirements for that municipality.

Final Average Compensation

Final average compensation (FAC) is the highest monthly average of a participant's compensation over a consecutive period of months of credited service. The municipality selects the number of months. A FAC-3 is over a 36-month period and a FAC-5 is over a 60-month period. The compensation used in calculating the final average compensation cannot exceed the limit set by IRC Section 401(a) (17)).

Disability Retirement Allowance – Duty or Non-Duty

A disability retirement benefit is available to an active participant who becomes totally and permanently disabled from performing his/her job while employed by a participating municipality after meeting the vesting requirement of the benefit program. If the disability is determined to be the natural and proximate result of a personal injury or disease arising out of and in the course of the participant's actual performance of duty with a municipality, the service requirement is waived.

The allowance is computed in the same manner as a service retirement allowance, except that the reduction for retirement before normal retirement age is not applied.

If disability is duty-related, the amount of the retirement allowance shall be the greater of 25% of the members' FAC or a benefit based on 10 years of credited service in addition to the member's actual period of service, provided the total years of service do not exceed the greater of 30 years or the member's actual period of service.

A disability retirement benefit commences the first day of the month next following the date on which the completed application for disability retirement benefits is received by the System, or, if later, the date of the participant's termination of employment with the participating municipality or court resulting from the incapacity. Applications for disability retirement benefits must be filed within 2 years of termination of employment.

Death Allowance – Duty or Non-Duty

If a participant or vested former participant with the minimum years of service required to be vested dies before retirement, a monthly allowance may be made payable. If the participant is married, the spouse is the automatic beneficiary unless the spouse, in writing, declines a benefit in favor of another named beneficiary.

A monthly pension beneficiary of a deceased active participant will receive a retirement allowance computed in the same manner as a service retirement allowance, based on service and final average compensation at death, but reduced to reflect a 100% joint and survivor election. The reduction for retirement before attainment of normal retirement age is not applied. If the monthly pension beneficiary of a deceased active participant is a spouse, the spouse will receive a monthly benefit in the amount of 85% of the deceased active participant's accrued retirement allowance computed in the same manner as a service retirement allowance, based on service and final average compensation at the time of death (but not less than the amount that would have been payable under the 100% form, above). Payment to the monthly pension beneficiary of a deceased active participant commences on the first day of the month in which the deceased active died.

Payment to the monthly pension beneficiary of a deceased active participant commences immediately. If the beneficiary of a deceased vested former participant is a spouse, the spouse will receive a monthly benefit in the amount of 85% of the deceased vested form participant's accrued retirement allowance computed in the same manner as a service retirement allowance, based on service and final average compensation at the time of death (but not less than the amount that would have been payable under the 100% form, above). Payment to the pension beneficiary of a deceased vested former participant commences on the later of the first day of the month following the month in which the vested former participant would have first satisfied the age requirement for an unreduced service retirement allowance, or upon the receipt by MERS of a completed application on the form prepared by the System, along with other forms and documents required by the System.

The amount of a surviving spouse's benefit is always the larger of (1) the benefit computed as a monthly pension beneficiary, and (2) the 85% of accrued retirement allowance benefit described above. If there is no named beneficiary and no retirement allowance being paid to a surviving spouse, unmarried children under 21 will be paid an equal share of 50% of the deceased participant's or the deceased former vested participant's accrued retirement allowance. The reduction for retirement before age 60 is not applied.

If no retirement benefits are payable on death, the beneficiary or, if none, the decedent's estate would receive a refund of any remaining participant's contributions.

A duty death allowance, computed in the same manner as a non-duty death allowance, may be payable to a spouse or child/children if death occurs as the natural and proximate result of a personal injury or disease arising out of and in the course of the participant's actual performance of duty with a municipality. The vesting requirement is waived, and the minimum benefit is 25% of the deceased participant's final average compensation.

Participant Contributions

If selected by the municipality, each participant must contribute a percentage of their annual compensation on a pre-tax basis. The weighted average of participant contributions in 2021 was 4.36%. Interest is credited to accumulated participant contributions each December 31 at a rate determined by MERS. Currently MERS is using the 1-year U.S. Treasury bill rate determined as of December 31.

If a participant dies without a retirement allowance or other benefit payable on their account, the participant's accumulated contributions plus interest are refunded upon application to the participant's surviving spouse or a beneficiary named by the participant (with spousal consent). If a participant terminates employment, the participant may take a refund of participant contributions, which has the effect of forfeiting all service credit.

Post-Retirement Adjustments

Each municipality may elect to provide post-retirement adjustments to retirees and their beneficiaries. The municipality can choose a one-time adjustment, an annual adjustment for all retirees, or an adjustment for future retirees only. This cost-of-living adjustment (COLA) increase is effective in January of each year. The COLA may be compounded, or based upon the original retirement benefit, as selected by the municipality in the adoption agreement.

Forms of Benefit Payment

The participant elects a payment option as part of the retirement application process. Once the election is made, the selection is irrevocable after receipt of the first payment. The payment options include:

- Straight Life paid over the retiree's life only.
- A reduced benefit paid over the joint lives of the retiree and beneficiary and continuing at 100% of the original reduced amount for the life of the beneficiary if s/he survives the retiree. If the retiree survives the beneficiary, the retiree's benefit is prospectively converted to a straight life benefit.
- A reduced benefit paid over the life of the retirement, continuing as 75% or 50% of the original reduced amount for the life of the beneficiary if s/he survives the retiree. If the retiree survives the beneficiary, the retiree's benefit is prospectively converted to a straight life benefit.
- A reduced benefit paid to the retiree for life, and if the retiree dies before the number of monthly benefits elected at retirement (60, 120, 180, or 240) is reached, the reduced benefit continues to the beneficiary until the sum of the number of the monthly benefits paid to the retiree and to the beneficiary reaches the number elected at retirement.

Deferred Retirement Option Program (DROP): Traditional

If a municipality has added a DROP benefit to its plan, a participant covered by the Benefit Program DROP may, when eligible for retirement, choose a specified DROP period in which s/he will cease to accrue any additional retirement benefits, but remain employed by the participating municipality or court. The participant must elect a DROP end date at least 6 months after the beginning date, but no more than 60 months after the beginning date, in 1-month increments.

Upon the participant's election of DROP and the receipt of an application to enroll in DROP, MERS will calculate the participant's service retirement and benefit payment as of the beginning date. The System shall also calculate any age differential between the participant and the participant's beneficiary as of the calendar year of the DROP exit date in accordance with Treasury Regulation 26 CFR § 1.401(a)(9)-6. Upon the beginning date of the DROP period, the participant shall be responsible to continue paying participant contributions, if any.

On the next available benefit payment date after processing is complete, and monthly thereafter, an amount equal to 100% of the monthly service retirement benefit payment the participant would have received if he or she had retired as of the DROP beginning date will be credited to a notional account for the benefit of the participant.

Funds in the DROP account are credited with interest in the amount of 3% annually, or prorated in the event of a DROP period that is less than 12 months.

Upon the end date, the participant shall receive a lump-sum distribution of the participant's DROP account and on the first day of the calendar month following end date, the participant will begin receiving monthly service retirement benefit payments.

Deferred Retirement Option Program (DROP+) Partial Lump Sum

If a participant is covered by the Benefit Program DROP+ and retires at least 12 months after first becoming eligible for unreduced benefits, they have the option to receive a partial lump sum and a reduced monthly benefit:

- The participant can elect a lump sum equal to 12, 24, 36, 48, or 60 times their monthly accrued benefit.
- For each 12 months included in the lump sum, the participant's lifetime benefit is reduced by the DROP+ percentage adopted by the employer. The employer can adopt any of the following DROP+ reduction percentages: 6, 7, 8, 9, or 10%.

As of June 30, 2013, Benefit Program DROP+ may no longer be adopted; 2 employers adopted the program prior to it ending.

Annuity Withdrawal

Under the Annuity Withdrawal Program, a retiring participant may elect to receive a refund of their accumulated participant contributions with interest in a lump sum at retirement. The participant's monthly pension would then be reduced by the actuarial equivalent of the lump sum payment. The employer has 2 options for the interest discount rate used to compute the actuarial equivalent reduction: the current investment return assumption used in the annual actuarial valuations or the most recent December 31 interest rate used for crediting interest on participant contributions.

HYBRID PLAN

PART I - DEFINED BENEFIT PORTION OF HYBRID PLAN

Eligibility for Retirement

Monthly retirement payments are made over the lifetime of the retiree and/or over the lifetime of the beneficiary. Payments are based on the choice of benefits adopted by each municipality and the final payment option elected by the retiring participant.

The normal retirement age shall be an age between 60 and 70, as selected by the participating municipality or court in the Hybrid Plan Adoption Agreement, with 6 years of service. The unreduced early retirement age shall be an age between 55 and 65, as selected by the participating municipality or court in the Hybrid Plan Adoption Agreement, with 25 years of service.

Benefit Formula

Where the employee division has Social Security coverage, the choices of multipliers are 1.00%, 1.25% or 1.50%.

Where the employee division does not have Social Security coverage, the choices of multipliers are 1.00%, 1.25%, 1.50%, 1.75% or 2.00%.

Service credit purchases are not permitted in the Hybrid Plan.

Mandatory Retirement

There is no mandatory retirement age; however, all benefits must commence by the required beginning dated determined under IRC Section 401(a) (9).

Deferred Vested Benefits
When a participant leaves MERS covered employment after earning the required number of years of service for vesting, that former participant may apply for a deferred vested benefit any time at or after the vested former participant meets the age eligibility requirements. Vested deferred benefits commence effective as of the first day of the month next following the month in which the vested former participant both meets the age eligibility requirements and submits an application for benefits, accompanied by all required documentation.

Maximum Benefit Payable by MERS
The maximum benefit that may be paid by MERS is governed by Section 415 of the Internal Revenue Code (IRC). Benefits in excess of the maximum benefit will be paid by the MERS Qualified Excess Benefit Plan under Plan Section 88.

Act 88 (Reciprocal Retirement Act)
If the municipality has elected to come under the provision of Act 88, service with former and future public employers in Michigan may be used to satisfy the eligibility requirements for that municipality.

Final Average Compensation
Final average compensation (FAC) is computed using the FAC-3 under the Defined Benefit Plan. The compensation used in calculating final average compensation cannot exceed the limit set by IRC Section 401(a) (17).

Disability Benefit – Duty or Non-Duty
Benefits are the same as are provided in the Defined Benefit Plan, except that optional benefit program D-2 does not apply.

Death Allowance – Duty or Non-Duty
Benefits are the same as are provided in the Defined Benefit Plan, except that the optional benefit program D-2 does not apply.

Participant Contributions
In the event the municipality elects an employer cap under Plan Document section 66(3), each participant is required to contribute a percentage of their annual compensation, up to the compensation limit under IRC Section 401(a) (17), once the employer cap is exceeded. Interest is credited to accumulated participant contributions each December 31 at a rate determined by MERS.

Currently MERS is using the 1-year U.S. Treasury bill rate determined as of December 31.

If a participant leaves the municipality or dies without a retirement allowance or other benefit payable on their account, the participant's accumulated contributions plus interest are refunded with spousal consent to the participant, if living, or to the participant's surviving spouse or a named beneficiary.

Post-Retirement Adjustments
There are no post-retirement adjustments within the Hybrid Plan.

Forms of Benefit Payment
The participant elects a payment option as part of the retirement application process. Once the election is made, the selection is irrevocable after receipt of the first payment. The payment options include:

- Straight Life paid over the retiree's life only.
- A reduced benefit paid over the joint lives of the retiree and beneficiary and continuing as 100% of the original reduced amount for the life of the beneficiary if s/he survives the retiree. If the retiree survives the beneficiary, the retiree's benefit is prospectively converted to a straight life benefit.
- A reduced benefit paid over the life of the retirement, continuing as 75% or 50% of the original reduced amount for the life of the beneficiary if s/he survives the retiree. If the retiree survives the beneficiary, the retiree's benefit is prospectively converted to a straight life benefit.

A reduced benefit paid to the retiree for life, and if the retiree dies before the number of monthly benefits elected at retirement (60, 120, 180, or 240) is reached, the reduced benefit continues to the beneficiary until the sum of the number of the monthly benefits paid to the retiree and to the beneficiary reaches the number elected at retirement.

Deferred Retirement Option Program (DROP): Traditional
There is no DROP option in the Hybrid Plan.

Deferred Retirement Option Program (DROP+) Partial Lump Sum
There is no DROP+ option in the Hybrid Plan.

Annuity Withdrawal
There is no Annuity Withdrawal option in the Hybrid Plan.

Part II - Defined Contribution Portion of Hybrid Plan

Contributions — Employer
The employer shall contribute the amount determined under the contribution plan elected in the Adoption Agreement. Such contribution plans may include contributions determined as a flat dollar amount, as a percentage of compensation, as a combination of these, or contingent upon and/or in proportion to the amount of employee contributions elected under this or a related plan sponsored by the employer. Contributions are limited by the requirements of Internal Revenue Code Section 415.

There are 3 vesting schedules from which an employer may choose to adopt:

- Immediate vesting upon participation
- 100% vesting after stated years (the maximum vesting period is 5 years)
- Graded vesting percentages per year of service, with the following limitations

  (i) Not less than 25% vesting after 3 years of service

  (ii) Not less than 50% vesting after 4 years of service

  (iii) Not less than 75% vesting after 5 years of service

  (iv) Not less than 100% vesting after 6 years of service

Notwithstanding the above, a participant shall be vested in his/her entire employer contribution account, to the extent that the balance of such account has not previously been forfeited, if s/he is employed on or after his/her Normal Retirement Age. “Normal Retirement Age” is age 60 or as otherwise specified by the employer in the Adoption Agreement.

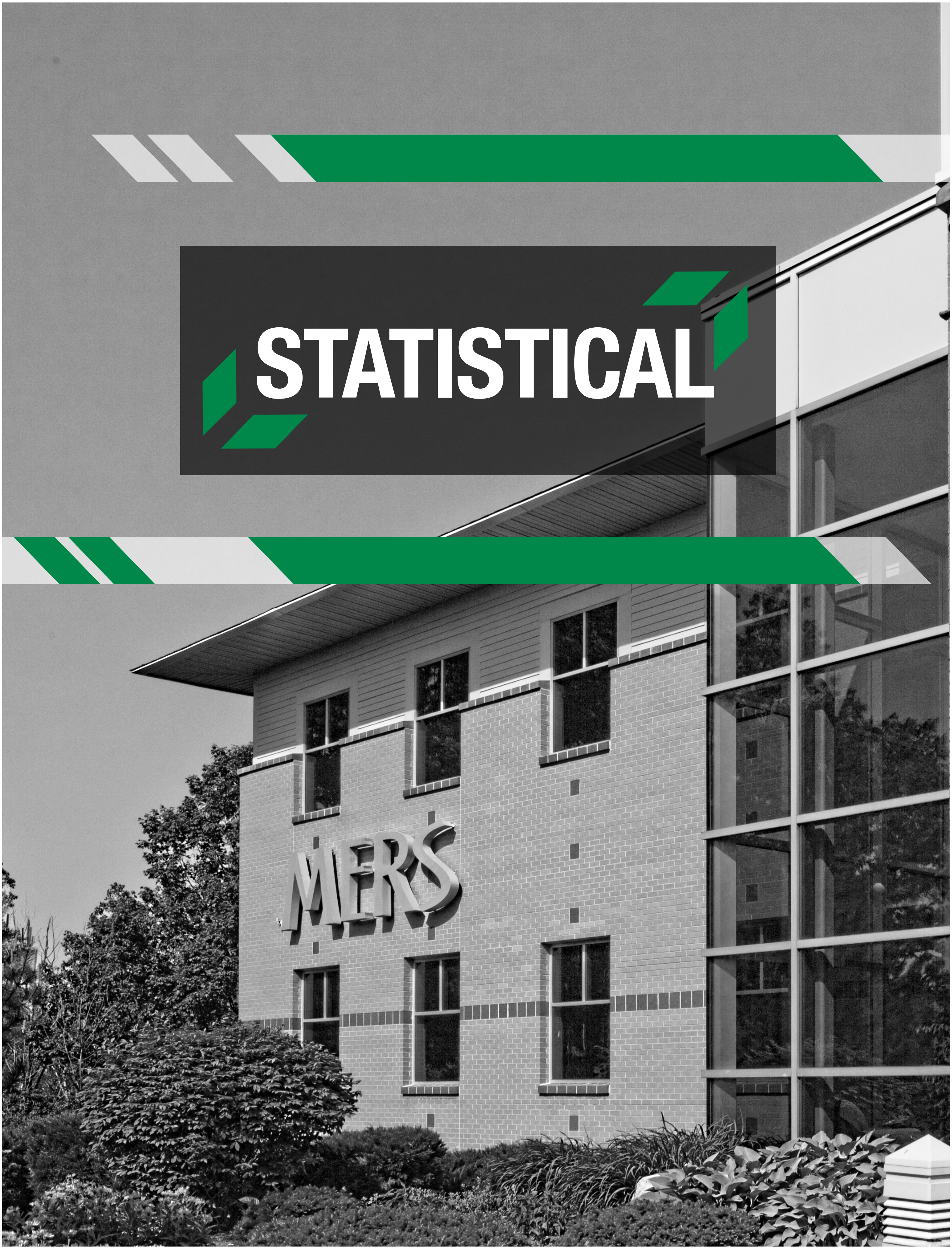
In the event of the disability or death of an active participant, the participant shall be 100% vested in his/her entire employer contribution account.

Contributions — Participant
Mandatory employee pre-tax employee contributions and voluntary after-tax employee contributions are allowed. No pre-tax elective deferral contributions are permitted. Participant contributions are vested immediately.

Contributions are limited by the requirements of Internal Revenue Code Section 415.

Note: The Annual Actuarial Valuation addresses assets and liabilities for participation under the MERS Defined Benefit Plan and the Defined Benefit portion of the Hybrid Plan. The Defined Contribution portion of the Hybrid Plan is not addressed in the valuation results.

STATISTICAL



STATISTICAL SUMMARY

The Statistical Section provides pertinent information to assist readers when viewing the Financial Statements, Notes to the Financial Statements, and Required Supplementary Information to help in understanding and assessing the System's overall financial condition. The information reported here is in compliance with GASB Statement No. 44, Economic Condition Reporting: The Statistical Section. This statement establishes standardized reporting requirements for the supplementary information provided in this section.

The schedules and graphs beginning on the next page show financial trend information about the growth of the MERS assets for the past 10 years. These schedules provide detailed information about the trends of key sources of additions and deductions to the System's assets, and assist in providing a context framing of how MERS' financial position has changed over time. The financial trend schedules presented are:

- Changes in Fiduciary Net Position – Last 10 Years
- Schedule of Changes in Reserves

The schedules below show demographic, economic, operating and trend information about the MERS environment.

- Schedule of Average Benefit Payments
- Schedule of Benefit Payments by Type
- Schedule of Retired Members by Type of Benefit
- Schedule of Retired Members by Type of Option Selected

Changes in Fiduciary Net Position – Last 10 Years (Dollars in Thousands)

Year	2013	2014	2015	2016
Defined Benefit Plan				
Additions:				
Plan Member Contributions	$88,410	$102,446	$86,553	$87,043
Employer Contributions	409,563	523,372	635,581	566,815
Net Investment Gain (Loss)	988,639	501,254	(140,903)	867,584
Total Additions to Net Assets	**1,486,612**	**1,127,072**	**581,231**	**1,521,442**
Deductions:				
Benefits and Employee Refunds	662,708	707,268	754,978	917,084
Special Litigation Expense				
Administrative Expenses	20,342	17,822	17,665	17,446
Total Deductions from Net Assets	**683,050**	**725,090**	**772,643**	**934,530**
Net Increase (Decrease)	803,562	401,982	(191,412)	586,912
Net Position				
Balance Beginning of Fiscal Period	6,872,980	7,676,542	8,078,524	7,887,112
Balance End of Fiscal Period	**$7,676,542**	**$8,078,524**	**$7,887,112**	**$8,474,024**
Defined Contributions				
Additions:				
Plan Member Contributions	$20,370	$20,805	$23,496	$20,882
Employer Contributions	42,706	26,112	38,151	56,696
Net Investment Gain (Loss)	63,614	25,208	(7,482)	45,744
Total Additions to Net Assets	**126,690**	**72,125**	**54,165**	**123,322**
Deductions:				
Benefits and Withdrawals	26,021	63,304	34,797	61,088
Administrative Expenses	812	623	601	619
Total Deductions from Net Assets	**26,833**	**63,927**	**35,398**	**61,707**
Net Increase (Decrease)	99,857	8,198	18,767	61,615
Net Position				
Balance Beginning of Fiscal Period	372,864	472,721	480,919	499,686
Balance End of Fiscal Period	**$472,721**	**$480,919**	**$499,686**	**$561,301**
Health Care Savings Program				
Additions:				
Employer Employee Contributions	$12,164	$11,649	$20,275	$27,158
Net Investment Gain (Loss)	7,979	3,480	(1,779)	11,393
Miscellaneous Income				
Total Additions to Net Assets	**20,143**	**15,129**	**18,496**	**38,551**
Deductions:				
Medical Disbursements Paid	2,316	3,011	3,694	4,925
Forfeitures and transfers	723	469	355	
Administrative Expenses	125	163	145	165
Total Deductions from Net Assets	**3,164**	**3,643**	**4,194**	**5,090**
Net Increase (Decrease)	16,979	11,486	14,302	33,461
Net Position				
Balance Beginning of Fiscal Period	68,790	85,769	97,255	111,557
Balance End of Fiscal Period	**$85,769**	**$97,255**	**$111,557**	**$145,018**

2017	2018	2019	2020	2021	2022
$88,192	$87,739	$86,400	$88,986	$88,179	$88,520
609,707	707,958	622,384	722,022	899,518	785,582
1,176,099	(394,517)	1,193,686	1,404,124	1,503,832	(1,383,633)
1,873,998	**401,180**	**1,902,470**	**2,215,132**	**2,491,529**	**(509,531)**
849,734	892,536	934,739	975,756	1,029,742	1,069,073
4,250					
17,389	17,463	19,708	17,854	17,801	22,540
871,373	**909,999**	**954,447**	**993,610**	**1,047,543**	**1,091,613**
1,002,625	(508,818)	948,023	1,221,522	1,443,986	(1,601,144)
8,473,498	9,476,123	8,967,305	9,915,328	11,136,850	12,580,836
$9,476,123	**$8,967,305**	**$9,915,328**	**$11,136,850**	**$12,580,836**	**$10,979,692**
$22,259	$25,412	$28,036	$45,952	$35,335	$39,800
32,666	49,077	76,517	54,032	64,154	57,232
85,984	(41,168)	136,874	111,772	155,438	(180,503)
140,909	**33,321**	**241,427**	**211,756**	**254,927**	**(83,471)**
34,722	39,015	39,619	47,353	58,600	70,069
648	555	628	717	905	3,055
35,370	**39,570**	**40,247**	**48,070**	**59,505**	**73,124**
105,539	(6,249)	201,180	163,686	195,422	(156,595)
561,301	666,840	660,591	861,771	1,025,457	1,220,879
$666,840	**$660,591**	**$861,771**	**$1,025,457**	**$1,220,879**	**$1,064,284**
$23,477	$27,846	$36,192	$35,495	$44,519	$45,693
19,926	(6,817)	30,913	33,788	44,348	(58,080)
43,403	**21,029**	**67,105**	**69,283**	**88,867**	**(12,387)**
5,645	5,954	7,267	7,623	9,545	16,475
187	168	195	229	299	979
5,832	**6,123**	**7,462**	**7,852**	**9,844**	**17,454**
37,571	14,906	59,643	61,431	79,023	(29,841)
145,018	182,589	197,495	257,138	318,569	397,592
$182,589	**$197,495**	**$257,138**	**$318,569**	**$397,592**	**$367,751**

Changes in Fiduciary Net Position – Last 10 Years (Dollars in Thousands)

Year	2013	2014	2015	2016
Retiree Health Funding Vehicle				
Additions:				
Employer Contributions	$58,111	$64,161	$73,764	$71,741
Net Investment Gain (Loss)	59,826	32,947	(8,833)	70,585
Total Additions to Net Assets	**117,937**	**97,108**	**64,931**	**142,326**
Deductions:				
Disbursements Paid to Municipalities	14,341	9,556	22,002	24,893
Transfers and Special Expenses	4			
Administrative Expenses	659	692	732	773
Total Deductions from Net Assets	**15,004**	**10,248**	**22,734**	**25,666**
Net Increase (Decrease)	102,933	86,860	42,197	116,660
Net Position				
Balance Beginning of Fiscal Period	404,363	507,296	594,156	636,352
Balance End of Fiscal Period	**$507,296**	**$594,156**	**$636,352**	**$753,012**
Investment Services Program				
Additions:				
Employee and Employer Contributions		$74,660	$19,721	$289
Net Investment Gain (Loss)	$1,148	2,781	138	6,699
Total Additions to Net Assets	**1,148**	**77,441**	**19,859**	**6,988**
Deductions:				
Disbursements and Transfers	300	280	40,798	3,309
Administrative Expenses	10	81	82	74
Total Deductions from Net Assets	**310**	**361**	**40,880**	**3,383**
Net Increase (Decrease)	838	77,080	(21,021)	3,605
Net Position				
Balance Beginning of Fiscal Period	8,216	9,054	86,134	65,113
Balance End of Fiscal Period	**$9,054**	**$86,134**	**$65,113**	**$68,718**

2017	2018	2019	2020	2021	2022
$59,219	$88,650	$98,326	$57,878	$57,450	$50,421
107,415	(42,560)	133,376	164,540	170,147	(162,578)
166,634	**46,090**	**231,702**	**222,418**	**227,597**	**(112,157)**
12,286	35,004	14,531	16,291	106,822	16,429
841	731	811	913	1,107	1,893
13,127	**35,735**	**15,342**	**17,204**	**107,929**	**18,322**
153,507	10,355	216,360	205,214	119,668	(130,479)
753,012	906,519	916,874	1,133,234	1,338,448	1,458,116
$906,519	**$916,874**	**$1,133,234**	**$1,338,448**	**$1,458,116**	**$1,327,637**

$142			$3,479	$535	$950
7,385	$(2,035)	$6,207	7,067	7,458	(6,793)
7,527	**(2,035)**	**6,207**	**10,546**	**7,993**	**(5,843)**
3,355	10,554	16,459	4,105	2,738	2,827
71	55	42	39	45	73
3,426	**10,609**	**16,501**	**4,144**	**2,783**	**2,900**
4,101	(12,644)	(10,294)	6,402	5,210	(8,743)
68,718	72,819	60,175	49,881	56,283	61,493
$72,819	**$60,175**	**$49,881**	**$56,283**	**$61,493**	**$52,750**

Changes in Fiduciary Net Position – Last 10 Years (Dollars in Thousands)

Year	2013	2014	2015	2016
457 Program				
Additions:				
Employee Contributions	$4,582	$5,788	$12,442	$20,646
Employer Contributions	77	132		
Net Investment Gain (Loss)	1,558	786	(747)	3,643
Total Additions to Net Assets	**6,217**	**6,706**	**11,695**	**24,289**
Deductions:				
Benefits	584	1,230	1,066	1,717
Administrative Expenses	34	70	51	66
Total Deductions from Net Assets	**618**	**1,300**	**1,117**	**1,783**
Net Increase (Decrease)	5,599	5,406	10,578	22,506
Net Position				
Balance Beginning of Fiscal Period	8,306	13,905	19,311	29,889
Balance End of Fiscal Period	**$13,905**	**$19,311**	**$29,889**	**$52,395**
IRA Program				
Additions:				
Employee Contributions				
Employer Contributions				
Net Investment Gain (Loss)				
Total Additions to Net Assets				
Deductions:				
Benefits				
Administrative Expenses				
Total Deductions from Net Assets				
Net Increase (Decrease)				
Net Position				
Balance Beginning of Fiscal Period				
Balance End of Fiscal Period				

The Changes in Fiduciary Net Position over the last 10 years chart shows contributions being received from municipalities, investment gains/ losses and disbursements to retirees/municipalities. The IRA program has been in existence for less than 10 years.

2017	2018	2019	2020	2021	2022
$22,566	$36,803	$52,039	$48,986	$44,007	$53,473
	1,048	1,254	1,944	2,332	3,011
11,698	(7,729)	24,199	22,596	33,332	(45,073)
34,264	**30,122**	**77,492**	**73,526**	**79,671**	**11,411**
3,389	4,386	8,550	11,068	15,131	15,846
86	93	129	173	229	634
3,475	**4,479**	**8,679**	**11,241**	**15,360**	**16,480**
30,789	25,642	68,813	62,285	64,311	(5,069)
52,395	83,184	108,826	177,639	239,924	304,235
$83,184	**$108,826**	**$177,639**	**$239,924**	**$304,235**	**$299,166**

	$53	$2,022	$1,791	$2,647	$3,897
	(2)	139	537	735	(1,269)
	51	**2,161**	**2,328**	**3,382**	**2,628**
	5	5	244	266	366
		9	23	34	42
	5	**14**	**267**	**300**	**408**
	46	2,147	2,061	3,082	2,220
		46	2,193	4,254	7,336
	$46	**$2,193**	**$4,254**	**$7,336**	**$9,556**

Schedule of Changes in Reserves (Dollars in Thousands)

	Reserve for Employee Contributions	Reserve for Employer Contributions and Benefit Payments	Reserve for Expenses and Undistributed Investment Income	Total Reserve for Defined Benefit Plan
Additions				
Member Contributions	$88,520			$88,520
Employer Contributions		$785,582		785,582
Net Investment Income			$(1,383,250)	(1,383,250)
Miscellaneous Income			123	123
Total Additions	**88,520**	**785,582**	**(1,383,127)**	**(509,025)**
Deductions				
Benefits and Withdrawals	14,706	1,054,367		1,069,073
Administrative Expense			23,046	23,046
Total Deductions	**14,706**	**1,054,367**	**23,046**	**1,092,119**
Net Increase (Decrease)	**73,814**	**(268,785)**	**(1,406,173)**	**(1,601,144)**
Other Changes in Reserves				
Investment Income Allocations	39,196	(1,354,554)	1,315,358	
Retirement and Division Transfers	(80,137)	80,137		
Total Other Changes in Reserves	**(40,941)**	**(1,274,417)**	**1,315,358**	
Net Increase in Reserves After Other Changes	32,873	(1,543,202)	(90,815)	(1,601,144)
Reserve Balance Beginning of Year	916,756	11,576,113	87,967	12,580,836
Reserve Balance End of Year	**$949,629**	**$10,032,911**	**$(2,848)**	**$10,979,692**

The Schedule of Changes in Reserves shows the balance in each of the reserves and changes to those reserve balances over the year. The Employee Contributions, Employer Contributions and Reserve for Expenses and Undistributed Investment Income are components of the Defined Benefit Plan. A balance in the Reserve for Expenses and Undistributed Investment Income will be allocated at a future date.

Reserve for Defined Contribution	Reserve for Health Care Savings Program	Reserve for Individual Retirement Account	Reserve for Retiree Health Funding Vehicle	Reserve for Investment Services Program	Reserve for 457 Program	Total Reserve for Pension Trust Funds
$39,800	$13,949	$3,897		$950	$53,473	$200,589
57,232	31,744		$50,421		3,011	927,990
(183,680)	(59,134)	(1,293)	(165,655)	(6,918)	(45,914)	(1,845,844)
3,177	1,054	24	3,077	125	841	8,421
(83,471)	**(12,387)**	**2,628**	**(112,157)**	**(5,843)**	**11,411**	**(708,844)**
70,069	16,475	366	16,429	2,827	15,846	1,191,085
3,055	979	42	1,893	73	634	29,722
73,124	**17,454**	**408**	**18,322**	**2,900**	**16,480**	**1,220,807**
(156,595)	**(29,841)**	**2,220**	**(130,479)**	**(8,743)**	**(5,069)**	**(1,929,651)**
(156,595)	(29,841)	2,220	(130,479)	(8,743)	(5,069)	(1,929,651)
1,220,879	397,592	7,336	1,458,116	61,493	304,235	16,030,489
$1,064,284	**$367,751**	**$9,556**	**$1,327,637**	**$52,750**	**$299,166**	**$14,100,836**

Schedule of Average Benefit Payments – Defined Benefit Plan

Valuation Date December 31	Number of Retirees and Beneficiaries	Average Yearly Benefit
2012	29,739	$19,015
2013	32,460	19,350
2014	35,754	20,224
2015	37,467	20,768
2016	38,774	21,216
2017	40,148	21,588
2018	41,350	21,982
2019	42,486	22,339
2020	43,597	22,775
2021	44,723	23,181

The Schedule of Average Benefit Payments shows the historical record and trends of retirees and the benefits they are drawing.

Schedule of Benefit Payments by Type – Defined Benefit Plan (Dollars in Thousands)

Fiscal Year Ended	Pension Benefits and Employer Withdrawals	Disability Benefits	Employee Refunds and Withdrawals	Total
December 31, 2013	$631,906	$20,913	$9,889	$662,708
December 31, 2014	670,032	27,959	9,277	707,268
December 31, 2015	715,638	31,364	7,976	754,978
December 31, 2016	870,741	35,829	10,514	917,084
December 31, 2017	802,037	37,250	10,432	849,719
December 31, 2018	845,688	38,209	8,633	892,530
December 31, 2019	885,698	38,858	10,182	934,738
December 31, 2020	927,312	39,210	9,220	975,742
December 31, 2021	978,676	39,524	11,529	1,029,729
December 31, 2022	1,013,932	40,420	14,706	1,069,058

The Schedule of Benefit Expenses by Type shows the benefits paid as regular pension benefits, disability benefits and refunds for employees who have been terminated and requested refunds of their employee contributions.

Schedule of Retired Members by Type of Benefit – Defined Benefit Plan

Tabulated by Optional Form of Benefit Being Paid, Tabulated by Type of Benefit Being Paid

Type of Benefit	Number of Retirees	Total Monthly Benefits
Normal Retirement for age and service	36,821	$76,149,369
Non-Duty Disability[1]	1,107	1,632,458
Duty Disability[1]	565	1,119,515
Beneficiaries[2]	5,298	6,327,266
Non-Duty Death	881	1,101,422
Duty Death	51	62,911
Totals	**44,723**	**$86,392,941**

[1] At age 60, these benefit types are converted to normal retirement for age and service
[2] Includes EDRO alternate payees

Schedule of Retired Members by Type of Option Selected – Defined Benefit Plan

Tabulated by Optional Form of Benefit Being Paid

Type of Benefit	Number of Retirees	Total Monthly Benefits
Beneficiary draws 100% of retiree's benefit	14,562	$29,519,270
Beneficiary draws 67% of retiree's benefit	3	$12,816
Beneficiary draws 75% of retiree's benefit	3,181	8,148,288
Beneficiary draws 60% of retiree's benefit	394	1,469,246
Beneficiary draws 50% of retiree's benefit	6,221	14,094,134
Equated Option (changing at Social Security age)	296	304,460
5 year certain and life	339	598,923
10 year certain and life	796	1,611,761
15 year certain and life	296	513,385
20 year certain and life	604	975,540
Straight life allowance	18,031	29,145,118
Totals	**44,723**	**$86,392,941**

The Schedule of Retired Members by Type of Benefit and by Type of Option Selected present distributions of retirees and beneficiaries on the rolls by the types of benefit being paid and option selected.

Municipal Employees' Retirement System

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PUB 10386 (version 2023-05-04)