

MICHIGAN STATE EMPLOYEES' RETIREMENT SYSTEM

**Annual Comprehensive Financial Report
for the Fiscal Year Ended September 30, 2021**

M S E R S

A Fiduciary Component Unit of the State of Michigan

Prepared by:
Financial Services
For
Office of Retirement Services
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TABLE OF CONTENTS

INTRODUCTORY SECTION.....	1
Certificate of Achievement.....	2
Public Pension Standards Award.....	3
Letter of Transmittal.....	4
Administrative Organization.....	8
Retirement Board Members.....	8
Advisors and Consultants.....	8
Organization Chart.....	9
FINANCIAL SECTION.....	11
Independent Auditor's Report.....	12
Management's Discussion and Analysis.....	14
Financial Highlights.....	14
The Statement of Plan Fiduciary Net Position and the Statement of Changes In Plan Fiduciary Net Position.....	14
Financial Analysis.....	14
Additions To Plan Fiduciary Net Position.....	15
Deductions From Plan Fiduciary Net Position.....	15
Retirement System as a Whole.....	16
Contacting System Financial Management.....	16
Basic Financial Statements.....	18
Statement of Pension Plan and Other Postemployment Benefit Plan Fiduciary Net Position.....	18
Statement of Changes in Pension Plan and Other Postemployment Benefit Plan Fiduciary Net Position.....	19
Notes to Basic Financial Statements.....	20
Note 1 – Plan Description.....	20
Note 2 – Summary of Significant Accounting Policies.....	26
Note 3 – Contributions.....	28
Note 4 – Net Pension Liability.....	29
Note 5 – Net OPEB Liability.....	32
Note 6 – Investments.....	35
Note 7 – Commitments and Contingencies.....	45
Note 8 – Accounting changes and restatements.....	45
Note 9 – Subsequent Events.....	45
Required Supplementary Information.....	46
Schedule of Changes in Net Pension Liability.....	46
Schedule of Changes in Net OPEB Liability.....	47
Schedules of Contributions.....	48
Schedules of Investment Returns.....	49
Note to Required Supplementary Information.....	50
Note A – Description.....	50
Supporting Schedules.....	52
Summary Schedule of Pension Plan Administrative and Other Expenses.....	52
Summary Schedule of OPEB Plan Administrative and Other Expenses.....	53
Schedule of Investment Expenses.....	54
Schedule of Payments for Professional Services.....	54
Detail of Changes in Plan Fiduciary Net Position.....	55
INVESTMENT SECTION.....	57
Report on Investment Activity.....	58
Introduction.....	58
Investment Policy & Goals.....	58
Asset Allocation.....	59
Investment Authority.....	59
Investment Results.....	59
Investment Results.....	66

Pension Plan Investment Results	66
OPEB Investment Results.....	67
Largest Assets Held.....	68
Largest Stock Holdings	68
Largest Bond Holdings	68
Schedule of Investment Fees	69
Schedule of Investment Fees.....	69
Schedule of Investment Commissions.....	70
Investment Summary	71
ACTUARIAL SECTION	73
Actuary's Certification	74
Summary of Actuarial Assumptions and Methods.....	77
Schedule 1.....	78
Schedule 2.....	78
Schedules of Active Member Valuation Data	79
Schedule of Active Member Pension Valuation Data	79
Schedule of Active Member OPEB Valuation Data	79
Schedule of Changes in Retirement Rolls	80
Schedule of Changes in the OPEB Rolls	80
Prioritized Solvency Test	81
Pension Benefits	81
Other Postemployment Benefits	82
Analysis of System Experience – Pension	83
Gains/(Losses) in Accrued Liabilities	83
Analysis of System Experience – OPEB	84
Gains/(Losses) in Accrued Liabilities	84
Summary of Plan Provisions.....	85
Regular Retirement	85
Early Retirement.....	85
Deferred Retirement.....	85
Duty Disability Retirement.....	85
Nonduty Disability Retirement.....	85
Duty Death Before Retirement	85
Nonduty Death Before Retirement	86
Postretirement Cost-of-Living Adjustments.....	86
Postretirement Healthcare Benefits	86
Member Contributions	86
Defined Contribution Legislation (Public Act 487 of 1996)	86
Former Tier 1 Members.....	86
Schedules of Funding Progress.....	87
Schedule of Funding Progress – Pension Plan	87
Schedule of Funding Progress – OPEB Plan.....	87
STATISTICAL SECTION	89
Contents.....	90
Financial Trends.....	90
Operating Information.....	90
Schedules of Additions by Source	91
Schedule of Pension Plan Additions by Source	91
Schedule of OPEB Plan Additions by Source	91
Total Additions.....	91
Schedules of Deductions by Type	92
Schedule of Pension Plan Deductions by Type	92
Schedule of OPEB Plan Deductions by Type	92
Total Deductions	92
Schedules of Changes in Fiduciary Net Position.....	94

Schedule of Changes in Fiduciary Net Position – Pension Plan.....	94
Schedule of Changes in Fiduciary Net Position – OPEB Plan.....	94
Schedules of Benefits and Refunds by Type.....	96
Schedule of Pension Benefits and Refunds by Type.....	96
Schedule of OPEB Benefits and Refunds by Type.....	96
Total Benefit Deductions.....	96
Schedules of Retired Members by Type of Benefit.....	97
Schedule of Retired Members by Type of Pension Benefits.....	97
Schedule of Retired Members by Type of Other Postemployment Benefits.....	97
<i>Schedule of Retired Members by Type of Retirement.....</i>	98
<i>Schedule of Retired Members by Type of Retirement.....</i>	98
Schedule of Other Postemployment Benefits.....	99
Schedules of Average Benefit Payments.....	100
Schedule of Average Benefit Payments – Pension.....	100
Schedule of Average Benefit Payments – Health.....	101
Schedule of Average Benefit Payments – Dental.....	102
Schedule of Average Benefit Payments – Vision.....	103
Ten Year History of Membership.....	104
ACKNOWLEDGMENTS.....	105

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INTRODUCTORY SECTION

Certificate of Achievement
Public Pension Standards Award
Letter of Transmittal
Retirement Board Members
Advisors and Consultants
Organization Chart

INTRODUCTORY SECTION

CERTIFICATE OF ACHIEVEMENT



Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

Michigan State Employees' Retirement System

For its Annual Comprehensive
Financial Report
For the Fiscal Year Ended

September 30, 2020

Christopher P. Morill

Executive Director/CEO

INTRODUCTORY SECTION

PUBLIC PENSION STANDARDS AWARD



Public Pension Coordinating Council

***Public Pension Standards Award
For Funding and Administration
2021***

Presented to

Michigan Office of Retirement Services

In recognition of meeting professional standards for
plan funding and administration as
set forth in the Public Pension Standards.

Presented by the Public Pension Coordinating Council, a confederation of

National Association of State Retirement Administrators (NASRA)
National Conference on Public Employee Retirement Systems (NCPERS)
National Council on Teacher Retirement (NCTR)

A handwritten signature in black ink, reading 'Alan H. Winkle'.

Alan H. Winkle
Program Administrator

INTRODUCTORY SECTION

LETTER OF TRANSMITTAL

Michigan State Employees'
Retirement System
P.O. Box 30171
Lansing, Michigan 48909-7671
Telephone 517- 284-4400
Outside Lansing 1-800-381-5111

STATE OF MICHIGAN

GRETCHEN WHITMER, Governor

DEPARTMENT OF TECHNOLOGY, MANAGEMENT & BUDGET

February 16, 2022

The Honorable Gretchen Whitmer
Governor, State of Michigan,

Members of the Legislature
State of Michigan,

Retirement Board Members
and
Members, Retirees and Beneficiaries

Ladies and Gentlemen:

We are pleased to present the annual comprehensive financial report of the Michigan State Employees' Retirement System (System) for fiscal year 2021.

INTRODUCTION TO REPORT

The System was established by legislation under Public Act 240 of 1943 (the Michigan State Employees' Retirement Act) and is administered by the Office of Retirement Services (ORS). The number of active and retired members and beneficiaries of the System is presented in Note 1 of the financial statements in the Financial Section in this report. The purpose of the System is to provide retirement, disability, death, and healthcare benefits for all State employees. The services performed by ORS staff provide benefits to members, retirees, and beneficiaries.

Responsibility

Responsibility for both the accuracy of the data and the completeness and fairness of the presentation, including all disclosures, rests with the leadership team of the System. To the best of our knowledge and belief, the enclosed data is accurate in all material respects and is reported in a manner designed to present fairly the financial position and results of operations of the System.

Internal Control Structure

The leadership team of the System is responsible for maintaining adequate internal accounting controls designed to provide reasonable assurance that transactions are executed in accordance with management's general or specific authorization, and are recorded as necessary to maintain accountability for assets and to permit preparation of financial statements in accordance with accounting principles generally accepted in the United States of America. The internal control structure is designed to provide reasonable assurance regarding the safekeeping of assets and reliability of all financial records.

The concept of reasonable assurance recognizes that the cost of a control should not exceed the benefits likely to be derived and that the valuation of costs and benefits requires estimates and judgments by management. This internal control structure includes maintaining written policies and procedures. Discussion and analysis of fiduciary

INTRODUCTORY SECTION

LETTER OF TRANSMITTAL

net position and related additions and deductions are presented in the Management Discussion and Analysis which can be found immediately following the Independent Auditor's Report.

Independent Auditors and Actuary

The Office of the Auditor General (OAG), independent auditors, conducted an annual audit of the System. The independent auditor's report on the System's financial statements is included in the Financial Section in this report.

An actuarial valuation is conducted annually. The purpose of the valuation is to evaluate the mortality, service, compensation, and other financial experience of the System and to recommend employer contribution rates. The annual actuarial valuation was completed by Gabriel Roeder Smith & Company for the fiscal year ended September 30, 2020, and recommends employer contribution rates for the fiscal year ended September 30, 2023. Actuarial certification and supporting statistics are included in the Actuarial Section in this report.

Management's Discussion and Analysis (MD&A)

Generally Accepted Accounting Principles (GAAP) require that management provide a narrative introduction, overview, and analysis to accompany the Basic Financial Statements in the form of an MD&A. This letter of transmittal is intended to complement the MD&A and should be read in conjunction with it. The MD&A can be found immediately following the Independent Auditor's Report.

PROFILE OF THE GOVERNMENT

The System was established by Public Act 240 of 1943. A 9-member board and the director of the Department of Technology, Management, and Budget (DTMB), govern the System. Executive order 2015-13 created a State of Michigan Retirement Board responsible for the functions, duties, and responsibilities of the State Employees' Retirement System, the Judges' Retirement System, and the Military Retirement Provisions. Effective March 31, 1997, Public Act 487 of 1996 closed the plan to new members and all new employees become participants of the State's defined contribution (DC) plan. The System serves over 68,000 members and is funded by employer contributions, member contributions, and investment earnings. A detailed plan description is included in Note 1 of the Financial Section in this report.

ECONOMIC CONDITIONS AND OUTLOOK

Despite a long-term mix of both challenging and robust economic times, the System continues to show steady performance.

Investments

The State of Michigan Investment Board is the investment fiduciary and custodian of all investments of the System pursuant to State law. The primary investment objective is to maximize the rate of return on the total investment portfolio, consistent with a high degree of prudence and sufficient diversity to eliminate inordinate risks and to meet the actuarial assumption for the investment rate of return. The investment activity for the year produced a total rate of return on the portfolio of 27.3 percent for the pension plan and 26.9 percent for the other postemployment benefits (OPEB) plan. For the last five years, the System has experienced an annualized rate of return of 12.1 percent for the pension plan and 11.9 percent for the OPEB plan. A summary of asset allocation and rates of return is presented in the Investment Section in this report.

Accounting System

Transactions of the System are reported on the accrual basis of accounting. Revenues are recorded when earned, and expenses are recorded when incurred. Participants' benefits are recorded when payable by law. We believe that the accounting and administrative internal controls established by the System provide reasonable assurance the System is carrying out its responsibilities in safeguarding its assets, in maintaining the reliability of the financial records for preparing financial statements, and in maintaining accountability for its assets.

Funding

Funds are derived from the excess of additions to plan fiduciary net position over deductions from plan fiduciary net position. Funds are accumulated by the System to meet future benefit obligations to retirees and beneficiaries. The percentage computed by dividing the actuarial value of assets by the actuarial accrued liability is referred to as the

INTRODUCTORY SECTION

LETTER OF TRANSMITTAL

“funded ratio.” This ratio provides an indication of the funding status of the System and generally, the greater this percentage, the stronger the System.

Pension – The actuarial value of the assets and actuarial accrued liability for pension benefits of the System were \$12.3 billion and \$18.7 billion, respectively, resulting in a funded ratio of 65.6 percent on September 30, 2020. A historical perspective of funding levels for the Pension Plan is presented on the Schedule of Funding Progress in the Actuarial section in this report.

OPEB – Prefunding for OPEB began in fiscal year 2013. The actuarial value of the assets and actuarial accrued liability for OPEB were \$3.7 billion and \$8.7 billion, respectively, resulting in a funded ratio of 42.5 percent as of September 30, 2020. A historical perspective of funding levels is presented on the Schedule of Funding Progress in the Actuarial section in this report.

MAJOR GOALS ACCOMPLISHED

Pension statements go paperless for online account holders – In October, pension statements for members of the public school, state employee, and state police retirement systems with active online accounts went paperless. Nearly 185,000 customers, which is almost half of the retiree population served by ORS, shifted to digital statements. The statements are still available in the retiree’s miAccount. Retirees can choose to opt back in to paper statements if desired. After five statement cycles we have saved over \$560,000 in printing and mailing costs.

Newsletters shift to quarterly publications – Beginning in March 2021, both the Connections and Proactive newsletters — for our retired and active customers, respectively — changed from biannual to quarterly publications. The printed Connections newsletter also went entirely digital. (The Proactive newsletter was already digital.) We doubled our efforts to deliver more timely and relevant information in a predictable format, maintaining a digital presence through the pandemic and beyond. Historically the printed Connections newsletter required preparations months in advance, which was a limiting factor in the production process. We also will save over \$30,000 a year in printing costs by moving Connections to digital delivery.

Infographics share remote work successes – As we adapted to remote work, ORS staff found new ways to engage customers and keep our work visible. Over the course of a year, leaders of each process reported notable work that was completed in their area each month. These reports were then converted into infographics representing the accomplishments of the business processes and shared regularly on our Facebook page. These posts were consistently among the top five in engagement for every month of the campaign.

Regular one-on-one meetings sustain relationships, performance – One-on-one meetings between leaders and their direct reports have been a standard practice for several years at ORS. But with the disruption and isolation of remote work, these no-less-than-biweekly meetings have proved vital to build and maintain positive relationships, foster effective communication, and support performance management. Every leader is expected to establish one-on-one meetings with each of their direct reports and to adhere to specific outcomes.

Leadership fosters open communication with town halls, blogs, videos – Over the past year, we have normalized more frequent communications from our leadership team to staff. In addition to the biweekly blogs produced by ORS Director Anthony Estell, the ORS division directors and senior executive assistant began producing biweekly videos for staff. The result is a weekly cadence of leadership communication. Additionally, we have continued quarterly town hall events that have been heavily dedicated to recognition, significant updates from leadership, and leadership fielding questions and answers from staff. These have all proved beneficial in maintaining an executive presence and being open and transparent with timely communications.

ORS exploring different approach to IT development – In fall 2021, we began exploring a new method to develop technical solutions for the business with our partners in the DTMB Application Support Team. Historically, ORS has used a waterfall approach to IT projects which involves fully developing a product before delivery. Value is gained upon project completion, not during development and testing. This pivot in practice adopts an iterative approach, reducing the cycle from development to market. The time savings comes from first delivering simple, viable products and adding features and complexity in subsequent releases. ORS has already completed one release using this methodology. The new approach also introduced ORS to Azure DevOps software for planning and organizing the related business activities.

INTRODUCTORY SECTION

LETTER OF TRANSMITTAL

ORS reaches new milestone for monthly pension payments – This July, for the first time in ORS' history, we issued over 300,000 pension payments in a single month. The new milestone was confirmed after the monthly pension payroll processed in mid-July for all retirement systems administered by ORS.

HONORS

Public Pension Standards Award – ORS was awarded the 2021 Standards Award from the Public Pension Coordinating Councils Standards Program (PPCC) for both funding and administration. ORS has received these awards every year since 2004. The PPCC Standards reflect expectations for public retirement system management and administration and serve as a benchmark for all DB public plans to be measured.

Government Finance Officers Association Award – The Government Finance Officers Association (GFOA) of the United States and Canada awarded the retirement system with the Certificate of Achievement for Excellence in Financial Reporting for the fiscal year 2020 Annual Comprehensive Financial Report (ACFR). This marks the 30th consecutive year ORS has received this prestigious award.

ACKNOWLEDGEMENTS

The preparation of this report was accomplished with the dedication and cooperation of many people. It is intended to provide complete and reliable information as a basis for making management decisions, as a means of determining compliance with legal provisions, and as a means for determining responsible stewardship of the funds of the System.

We would, therefore, like to express our appreciation for the assistance given by staff, the advisors, and the many people who contributed to its preparation. We believe their combined efforts have produced a report that will enable employers and plan members to better evaluate and understand the Michigan State Employees' Retirement System. Their cooperation contributes significantly to the success of the System.

Sincerely,



Michelle Lange, Acting Director
Department of Technology, Management & Budget



Anthony J. Estell, Director
Office of Retirement Services

INTRODUCTORY SECTION

ADMINISTRATIVE ORGANIZATION

RETIREMENT BOARD MEMBERS*

As of February 16, 2022

Phillip Thompson
General Public
Term Expires Dec. 31, 2023

Ann Marie Storberg
Ex-officio Member Representing
State Treasurer

David A. Berridge
Chair
Active State Employee
Term Expires Dec. 31, 2024

John Gnodtke
Ex-officio Member
Representing State Personnel
Director

Lauri Schmidt
Vice Chair
Retired State Employee
Term Expires Dec. 31, 2023

Lisa Geminick
Ex-officio Member Representing
Attorney General

Craig Murray
Ex-officio Member
Representing Auditor General

Judge Leo Bowman
Active Judge
Term Expires Dec. 31, 2025

Col. Felipe Torres
Michigan National Guard
Term Expires Dec. 31, 2022

* Statute provides that board members may continue to serve after their term expires until they are replaced or reappointed.

ADVISORS AND CONSULTANTS

As of February 16, 2022

Actuaries

Gabriel Roeder Smith & Co.
Mita D. Drazilov
Southfield, Michigan

Independent Auditors

Doug A. Ringler, C.P.A., C.I.A.
Auditor General
State of Michigan

Investment Manager and Custodian

Rachael Eubanks
State Treasurer
State of Michigan

Legal Advisor

Dana Nessel
Attorney General
State of Michigan

Investment Performance Measurement

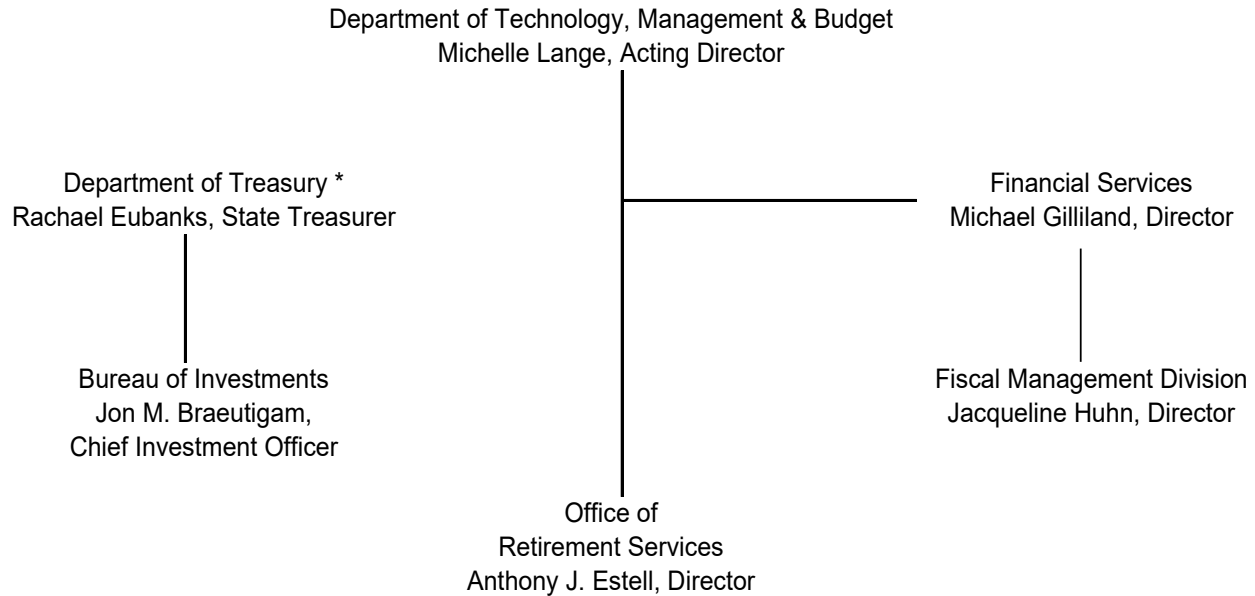
State Street Corporation
State Street Investment Analytics
Boston, MA

INTRODUCTORY SECTION

ADMINISTRATIVE ORGANIZATION

ORGANIZATION CHART

As of February 16, 2022



* The investments of the System are managed by the Michigan Department of Treasury. Information on the investments and the fiduciary, Michigan Department of Treasury, can be found in the Investment Section, Introduction. In addition, see the Investment Section, Schedule of Investment Fees (page 69) and Schedule of Investment Commissions (page 70), for information regarding the investment fees and commissions paid as well as investment professionals utilized by the System.

INTRODUCTORY SECTION

ADMINISTRATIVE ORGANIZATION

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FINANCIAL SECTION

Independent Auditor's Report
Management's Discussion and Analysis
Basic Financial Statements
Notes to Basic Financial Statements
Required Supplementary Information
Note to Required Supplementary Information
Supporting Schedules



OAG

Office of the Auditor General

201 N. Washington Square, Sixth Floor • Lansing, Michigan 48913 • Phone: (517) 334-8050 • audgen.michigan.gov

Doug A. Ringler, CPA, CIA
Auditor General

Independent Auditor's Report on the Financial Statements
and Other Reporting Required by *Government Auditing Standards*

Mr. David A. Berridge, Chair
State of Michigan Retirement Board
and
Ms. Michelle Lange, Acting Director
Department of Technology, Management, and Budget
and
Mr. Anthony J. Estell, Director
Office of Retirement Services

Dear Mr. Berridge, Ms. Lange, and Mr. Estell:

Report on the Financial Statements

We have audited the accompanying financial statements of the Michigan State Employees' Retirement System, a fiduciary component unit of the State of Michigan, as of and for the fiscal year ended September 30, 2021 and the related notes to the financial statements, which collectively comprise the System's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

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

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

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

Opinion

In our opinion, the financial statements referred to in the first paragraph present fairly, in all material respects, the fiduciary net position of the Michigan State Employees' Retirement System as of September 30, 2021 and the changes in fiduciary net position for the fiscal year then ended in accordance with accounting principles generally accepted in the United States of America.

Emphasis of Matters

As discussed in Note 8 to the financial statements, beginning net position for the pension and OPEB plans was increased by \$44.7 million and \$49.7 million, respectively, to account for additional employer contributions due to the System that should have been recognized in the prior fiscal year. Also, the System adopted Governmental Accounting Standards Board Statement No. 84, *Fiduciary Activities*, for the fiscal year ended September 30, 2021. Our opinion is not modified with respect to these matters.



OAG

Office of the Auditor General

Doug A. Ringler, CPA, CIA
Auditor General

Mr. David A. Berridge, Chair
Ms. Michelle Lange, Acting Director
Mr. Anthony J. Estell, Director
Page 2

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis, schedule of changes in net pension liability, schedule of changes in net OPEB liability, schedules of contributions, schedules of investment returns, and related note, as listed in the table of contents, be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with 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.

Other Information

Our audit was conducted for the purpose of forming an opinion on the financial statements that collectively comprise the System's basic financial statements. The supporting schedules and the introductory, investment, actuarial, and statistical sections are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The supporting schedules are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. Such 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 supporting schedules are fairly stated, in all material respects, in relation to the basic financial statements as a whole.

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

Other Reporting Required by Government Auditing Standards

In accordance with *Government Auditing Standards*, we will also issue a report on our consideration of the System's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and 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 the System'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 the System's internal control over financial reporting and compliance.

Sincerely,

Doug Ringler
Auditor General
February 16, 2022

FINANCIAL SECTION

MANAGEMENT'S DISCUSSION AND ANALYSIS

Our discussion and analysis of the Michigan State Employees' Retirement System's (System) financial performance provides an overview of the System's financial activities for the fiscal year ended September 30, 2021. Please read it in conjunction with the transmittal letter in the Introductory Section on page 4 and the basic financial statements, which follow this discussion.

FINANCIAL HIGHLIGHTS

- System assets exceeded liabilities at the close of fiscal year 2021 by \$19.6 billion (reported as *net position restricted for Pension Benefits and OPEB*). Fiduciary net position is restricted to meet future benefit payments.
- Additions for the year were \$5.7 billion, which are comprised primarily of contributions of \$1.6 billion and investment gains of \$4.2 billion.
- Deductions increased over the prior year from \$1.9 billion to \$1.9 billion or 2.9%. This net increase is the result of increased pension payments, decreased OPEB benefit payments, an OPEB uncollectible receivable write off, and decreased administrative expenses.

THE STATEMENT OF PLAN FIDUCIARY NET POSITION AND THE STATEMENT OF CHANGES IN PLAN FIDUCIARY NET POSITION

This Annual Comprehensive Financial Report (ACFR) consists of two financial statements; *The Statement of Pension Plan and Other Postemployment Benefit Plan Fiduciary Net Position* (page 18) and *The Statement of Changes in Pension Plan and Other Postemployment Benefit Plan Fiduciary Net Position* (page 19). These financial statements report information about the System, as a whole, and about its financial condition that should help answer the question: Is the System, as a whole, better off or worse off as a result of this year's activities? These statements include all assets and liabilities using the economic resources measurement focus and the accrual basis of accounting. Under the accrual basis of accounting, all revenues and expenses are taken into account regardless of when cash is received or paid.

The Statement of Pension Plan and Other Postemployment Benefit Plan Fiduciary Net Position presents all of the System's assets and liabilities, with the difference between the two reported as fiduciary net position. Over time, increases and decreases in fiduciary net position measure whether the System's financial position is improving or deteriorating. *The Statement of Changes in Pension Plan and Other Postemployment Benefit Plan Fiduciary Net Position* presents how the System's fiduciary net position changed during the most recent fiscal year. These two financial statements should be reviewed along with the Schedule of Changes in Net Pension Liability (page 46), the Schedule of Changes in Net OPEB Liability (page 47), and Schedules of Contributions (page 48) to determine whether the System is becoming financially stronger or weaker.

FINANCIAL ANALYSIS

System total assets as of September 30, 2021, were \$20.2 billion and were mostly comprised of equity in common cash, receivables, investments, and security lending collateral. Total assets increased \$3.9 billion or 24.0% between fiscal years 2020 and 2021, due primarily to higher equity in investments.

Total liabilities as of September 30, 2021, were \$663.0 million and were comprised of unearned revenue, accounts payables and securities lending. Total liabilities decreased \$2.4 million or 0.4% between fiscal years 2020 and 2021, primarily due to decrease in obligations in security lending.

System assets exceeded its liabilities at the close of fiscal year 2021 by \$19.6 billion. Total fiduciary net position restricted for pension and OPEB increased \$3.9 billion or 25.0% from the previous year, primarily due to increased employer contributions and net investment income.

FINANCIAL SECTION

MANAGEMENT'S DISCUSSION AND ANALYSIS

PLAN FIDUCIARY NET POSITION

(in thousands)

	2021	2020	Increase (Decrease)
Assets			
Equity in common cash	\$ 193,801	\$ 224,039	(13.5) %
Receivables	205,495	180,757	13.7
Investments	19,197,511	15,276,574	25.7
Securities lending collateral	630,025	633,795	(0.6)
Total Assets	20,226,832	16,315,165	24.0
Liabilities			
Unearned revenue	721	5	15,433.8
Accounts payable and other accrued liabilities	32,237	31,611	2.0
Obligations under securities lending	630,025	633,795	(0.6)
Total Liabilities	662,983	665,410	(0.4)
Net Position Restricted for Pension Benefits and OPEB	\$ 19,563,849	\$ 15,649,755	25.0 %

ADDITIONS TO PLAN FIDUCIARY NET POSITION

The reserves needed to finance pension and other postemployment benefits are accumulated through the collection of employer and employee contributions and through earnings on investments. Contributions and net investment income for fiscal year 2021 totaled approximately \$5.7 billion.

Total additions for fiscal year 2021 increased approximately \$3.5 billion or 156.2% from those of fiscal year 2020 due to increased employer contributions and net investment income. Total contributions increased between fiscal years 2020 and 2021 by \$116.7 million or 8.9%, while net investment income increased \$3.4 billion or 446.7%. The Investment Section of this report reviews the results of investment activity for fiscal year 2021.

DEDUCTIONS FROM PLAN FIDUCIARY NET POSITION

The primary expenses of the System include the payment of pension benefits to members and beneficiaries, payment for health, dental and vision benefits, refund of contributions, and the cost of administering the System. Total deductions for fiscal year 2021 were \$1.9 billion, an increase of 2.9% from fiscal year 2020 deductions.

The health, dental and vision care expenses during the year decreased \$3.8 million or 0.9%, from \$405.5 million to \$401.7 million. The payment of pension benefits increased \$27.3 million or 1.9% between fiscal years 2020 and 2021. In fiscal year 2021, the increase in pension benefit expenses resulted from an increase in benefit payments to retirees. Administrative expenses decreased by \$3.8 million 17.3% between fiscal years 2020 and 2021, primarily due to decreased health administrative fees. Refunds and transfers to other systems increased by \$88.7 thousand or 26.1% between fiscal years 2020 and 2021 largely due to active member death contribution refunds and service credit purchase overpayments.

FINANCIAL SECTION

MANAGEMENT'S DISCUSSION AND ANALYSIS

CHANGES IN PLAN FIDUCIARY NET POSITION

(in thousands)

	2021	2020	Increase (Decrease)
Additions			
Member contributions	\$ 23,881	\$ 25,265	(5.5) %
Employer contributions	1,434,045	1,317,296	8.9
Other governmental contributions	104,777	123,515	(15.2)
Net investment income (loss)	4,167,279	762,256	446.7
Other non-operating revenue	2	-	N/A
Miscellaneous income	3,639	9,888	(63.2)
Total additions	5,733,624	2,238,221	156.2
Deductions			
Pension benefits	1,459,749	1,432,401	1.9
Health care benefits	401,720	405,513	(0.9)
Refunds and transfers to other systems	428	340	25.9
Uncollectible receivables	33,881	-	N/A
Administrative and other expenses	18,186	21,998	(17.3)
Total deductions	1,913,964	1,860,251	2.9
Net Increase (Decrease) in Net Position	3,819,659	377,970	910.6
Net Position Restricted for Pension Benefits and OPEB:			
Beginning of Year - 2021 Restated	15,744,190	15,271,786	3.1
End of Year	\$ 19,563,849	\$ 15,649,755	25.0 %

RETIREMENT SYSTEM AS A WHOLE

The System's overall Fiduciary Net Position experienced an increase in fiscal year 2021. *The Statement of Changes in Plan Fiduciary Net Position* included an increase in the beginning balance of \$94.4 million for a restatement for the prior year as described in Note 8 – Accounting Changes and Restatements (Page 45). The System's rate of return for the Pension Plan's investments increased an overall 22.3% from a 5.0% return in fiscal year 2020 to a 27.3% return during fiscal year 2021. The System's rate of return for the OPEB Plan's investments increased an overall 22.0% from a 4.9% return in fiscal year 2020 to a 26.9% return during fiscal year 2021. Management believes that the System remains financially sound and positioned to meet its ongoing benefit obligations due, in part, to a prudent investment program, cost controls, and strategic planning.

CONTACTING SYSTEM FINANCIAL MANAGEMENT

This financial report is designed to provide the Retirement Board, our membership, taxpayers, investors, and creditors with a general overview of the System's finances and to demonstrate the System's accountability for the money it receives. If you have any questions about this report or need additional financial information, contact the Office of Retirement Services, P.O. Box 30171, Lansing, MI 48909-7671.

FINANCIAL SECTION

MANAGEMENT'S DISCUSSION AND ANALYSIS

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FINANCIAL SECTION

BASIC FINANCIAL STATEMENTS

STATEMENT OF PENSION PLAN AND OTHER POSTEMPLOYMENT BENEFIT PLAN FIDUCIARY NET POSITION

As of September 30, 2021
(in thousands)

	Pension Plan	OPEB Plan	Total
Assets:			
Equity in common cash	\$ 26,346	\$ 167,455	\$ 193,801
Receivables:			
Amounts due from members	961	-	961
Amounts due from employer	43,551	53,775	97,327
Amounts due from federal agencies	-	22,138	22,138
Amounts due from other	-	23,485	23,485
Amounts due from employer - long term	26,983	29,061	56,044
Amounts due from federal agencies - long term	-	5,310	5,310
Interest and dividends	172	58	230
Total receivables	71,668	133,827	205,495
Investments:			
Short term investment pools	355,973	111,800	467,773
Fixed income pools	1,459,733	489,604	1,949,336
Domestic equity pools	3,319,221	1,111,660	4,430,881
Real estate and infrastructure pools	1,014,802	339,585	1,354,387
Private equity pools	3,359,780	1,125,957	4,485,737
International equity pools	2,349,341	786,797	3,136,138
Absolute return pools	773,452	259,014	1,032,466
Real Return and Opportunistic Pools	1,753,372	587,421	2,340,792
Total investments	14,385,674	4,811,837	19,197,511
Securities lending collateral	474,719	155,305	630,025
Total assets	14,958,408	5,268,424	20,226,832
Liabilities:			
Unearned revenue	-	721	721
Accounts payable and other accrued liabilities	2,101	30,103	32,204
Obligations under securities lending	474,719	155,305	630,025
Other accrued liabilities - long term	-	33	33
Total liabilities	476,820	186,163	662,983
Net Position Restricted for Pension Benefits and OPEB:	\$ 14,481,588	\$ 5,082,262	\$ 19,563,849

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

FINANCIAL SECTION

BASIC FINANCIAL STATEMENTS

STATEMENT OF CHANGES IN PENSION PLAN AND OTHER POSTEMPLOYMENT BENEFIT PLAN FIDUCIARY NET POSITION

For Fiscal Year Ended September 30, 2021
(in thousands)

	Pension Plan	OPEB Plan	Total
Additions:			
Contributions:			
Member contributions	\$ 23,881	\$ -	\$ 23,881
Employer contributions	659,639	774,406	1,434,045
Other governmental contributions	-	104,777	104,777
Total contributions	683,521	879,183	1,562,704
Investment income (loss):			
Net increase (decrease) in fair value of investments	2,979,879	909,342	3,889,221
Interest, dividends, and other	269,354	84,485	353,839
Investment expenses:			
Other investment expenses	(59,029)	(18,839)	(77,868)
Securities lending activities:			
Securities lending income	2,175	708	2,883
Securities lending expenses	(596)	(202)	(798)
Net investment income (loss)	3,191,784	975,495	4,167,279
Other non-operating revenue	-	2	2
Miscellaneous income	64	3,575	3,639
Total additions	3,875,368	1,858,255	5,733,624
Deductions:			
Benefits paid to plan members and beneficiaries:			
Retirement benefits	1,459,749	-	1,459,749
Health benefits	-	360,544	360,544
Dental/vision benefits	-	38,384	38,384
Personal health care	-	2,729	2,729
Health reimbursement account	-	63	63
Refunds of contributions	389	40	428
Uncollectable receivables	-	33,881	33,881
Administrative and other expenses	5,925	12,262	18,186
Total deductions	1,466,062	447,902	1,913,964
Net Increase (Decrease) in Net Position	2,409,307	1,410,353	3,819,659
Net Position Restricted for Pension Benefits and OPEB:			
Beginning of Year - Restated	12,072,281	3,671,909	15,744,190
End of Year	\$ 14,481,588	\$ 5,082,262	\$ 19,563,849

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

FINANCIAL SECTION

NOTES TO BASIC FINANCIAL STATEMENTS

NOTE 1 – PLAN DESCRIPTION

ORGANIZATION

The Michigan State Employees' Retirement System (System) is a single-employer, state-wide, defined benefit public employee retirement plan and a fiduciary component unit of the State of Michigan (State) originally created under Public Act 240 of 1943, as amended. Section 2 of this act establishes the board's authority to promulgate or amend the provisions of the System. Executive Order 2015-13 signed by the Governor on October 27, 2015 established the State of Michigan Retirement Board. The executive order establishes the board's authority to promulgate or amend the provision of the System. The board consists of nine members:

- The Attorney General
- The State Treasurer
- The Legislative Auditor General
- The State Personnel Director
- One member or retirant of the State Employees' Retirement System appointed by the Governor
- One member or retirant of the Judges' Retirement System appointed by the Governor
- One current or former officer or enlisted person in the Michigan Military Establishment who is a member or retirant under the Military Retirement Provisions appointed by the Governor
- One retirant member of the State Employees' Retirement System appointed by the Governor
- One member of the general public appointed by the Governor

The System's pension plan was established by the State to provide retirement, survivor and disability benefits to the State's government employees. In addition, the System's OPEB plan provides all retirees with the option of receiving health, dental, and vision coverage under the Michigan State Employees' Retirement Act as well as eligible special duty officers from the Michigan Military Retirement Provisions (MRP). The System is a qualified pension trust fund under section 401(a) of the Internal Revenue Code. By statute, employees of the following employers are also covered by this plan: American Legion, American Veterans, Veterans of Foreign Wars, Disabled American Veterans, Mackinac Island State Park, Marine Corps League, Michigan Bar Association, Business Enterprise Program, Third Circuit Court, Records Court, and 36th District Court. Although the System reports information for several small employers, the State is legally responsible for almost all contractually required contributions to the System. This level of responsibility is ongoing and is unlikely to change significantly in the foreseeable future. Therefore, the reporting requirements for a single employer plan have been adopted.

The System is included in the pension and other employee benefit trust fund financial statements in the State of Michigan Annual Comprehensive Financial Report .

The System is administered by the Office of Retirement Services within the Michigan Department of Technology, Management & Budget. The Department Director appoints the Office Director, with whom the general oversight of the System resides. The State of Michigan Investment Board serves as the investment fiduciary and custodian for the System.

FINANCIAL SECTION

NOTES TO BASIC FINANCIAL STATEMENTS

MEMBERSHIP

At September 30, 2021, the System's pension plan membership consisted of the following:

Inactive plan members or their beneficiaries currently receiving benefits:	
Regular benefits	49,761
Survivor benefits	7,658
Disability benefits	3,081
Total	<u>60,500</u>
 Inactive plan members entitled to but not yet receiving benefits:	
	<u>2,206</u>
 Active plan members:	
Vested	5,667
Non-vested	47
Total	<u>5,714</u>
 Total plan members	<u><u>68,420</u></u>

Enrollment in the OPEB plan is voluntary. The number of participants is as follows:

Health, Dental and Vision Plan

Eligible participants	
Retirees and survivors	61,045
Inactive vested members	6,570
Active members ^{1, 2}	48,240
 Participants receiving benefits:	
Health	51,888
Dental	53,815
Vision	53,607
 Expenses for the year (in thousands)	\$ 447,902
Employer payroll contributions rate	23.09%

¹ Active member count includes Personal Healthcare Fund members eligible for the \$1,000/\$2,000 lump sum at termination benefit.

² Includes members of the MRP who also participate in this plan.

Applications for enrollment after retirement are accepted anytime during the year, with coverage effective six months.

FINANCIAL SECTION

NOTES TO BASIC FINANCIAL STATEMENTS

BENEFIT PROVISIONS - PENSION

Introduction

Benefit provisions of the defined benefit (DB) pension plan are established by State statute, which may be amended. Public Act 240 of 1943, State Employees' Retirement Act, as amended, establishes eligibility and benefit provisions for the defined benefit pension plan. Retirement benefits are determined by final average compensation and years of service.

Members are eligible to receive a monthly benefit when they meet certain age and service requirements. The System also provides duty disability, nonduty disability and survivor benefits.

A member who has separated from employment may request a refund of his or her member contribution account. A refund may cancel a former member's rights to future benefits. However, former members who return to employment and who previously received a refund of their contributions may reinstate their service through repayment of the refund upon satisfaction of certain requirements.

Effective March 31, 1997, Public Act 487 of 1996 closed the plan to new entrants. All new employees become members of the defined contribution plan. The Public Act allows returning employees and members who left State employment on or before March 31, 1997, to elect the defined benefit plan instead of the defined contribution plan.

Pension Reform 2012

On December 15, 2011, the Governor signed Public Act 264 of 2011 into law. The legislation granted members a choice regarding their future retirement plan. They had the following options:

- **Option 1: DB Classified** Members voluntarily elected to remain in the DB plan for future service and contribute 4% of their annual compensation to the pension fund until they terminate state employment. The 4% contribution began on April 1, 2012.
- **Option 2: DB 30** Members voluntarily elected to remain in the DB plan for future service and contribute 4% of pay until they reach 30 years of service. When they reach 30 years of service, they will switch to the State's DC plan. The 4% contribution began April 1, 2012, and continues until they switch to the DC plan or terminate employment, whichever comes first.
- **Option 3: DB/DC Blend** Members voluntarily elected not to pay the 4% and therefore became participants in the DC plan for future service beginning April 1, 2012. As a DC plan participant they receive a 4% employer contribution to their 401(k) account and are eligible for an additional dollar-for-dollar employer match of up to 3% of pay to the plan.

Deferred members of the DB plan (with 10 or more years of service) who are reemployed by the State on or after January 1, 2012, become participants in the DC plan. Their pension calculation is determined by their final average compensation (FAC) and years of service as of March 31, 2012. They retain their eligibility for the retiree health insurance premium subsidy offered by the State.

Former nonvested members of the DB plan (with less than 10 years of service) who are reemployed by the State on or after January 1, 2012, and before January 1, 2014, become participants in the DC plan. When they have earned sufficient service credit for vesting (10 years) they would be eligible for a pension based on their FAC and years of service in the DB plan as of March 31, 2012. They retain their eligibility for the retiree health insurance premium subsidy offered by the State.

Former nonvested members (with less than 10 years of service) of the DB plan who are reemployed by the State on or after January 1, 2014, become members of the DC plan. Any service credit previously earned would count towards vesting for the DC plan. They will not be eligible for any pension or retiree health insurance coverage premium but will become a participant in the Personal Healthcare Fund where they will contribute up to 2% of their compensation to a 401(k) or 457 account, earning a matching 2% employer contribution. They will also receive a credit into a health reimbursement account (HRA) at termination if they terminate employment with at least 10 years of service. The credit will be \$2,000 for participants who are at least 60 years old or \$1,000 for participants who are less than 60 years old at termination.

FINANCIAL SECTION

NOTES TO BASIC FINANCIAL STATEMENTS

Regular Retirement

The retirement benefit is based on a member's years of credited service (employment) and FAC. The normal benefit equals 1.5% of a member's FAC multiplied by the years and partial year of credited service and is payable monthly over the member's lifetime.

Under PA 264 of 2011, FAC is initially determined as the annual average of the highest three years of compensation (including overtime paid before January 1, 2012, but excluding overtime paid after December 31, 2011). If the end date for the initial FAC calculation is between January 1, 2012, and January 1, 2015, then a prorated amount of post-2008 average overtime will be added to the initial FAC calculation. If the end date for the initial FAC calculation is January 1, 2015, or later, then an annual average of overtime – for the six-year period ending on the FAC calculation date – will be added to that initial FAC calculation to get the final FAC number.

For members who switch to the DC plan for future service, the pension calculation (FAC times 1.5% times years of service) will be determined as of the point the member switches to the DC plan. If the FAC period includes the date of the switch to the DC plan, then the FAC will include up to 240 hours of accrued annual leave multiplied by the rate of pay as of the date of the switch. The hours will be paid at separation.

A member may retire and receive a monthly benefit after attaining:

- age 60 with 10 or more years of credited service; or
- age 55 with 30 or more years of credited service; or
- age 55 with at least 15 but less than 30 years of credited service. The benefit allowance is permanently reduced 0.5% for each month from the member's age on the effective date of retirement to the date the member will attain age 60.

Employees in covered positions are eligible for supplemental benefits and may retire after attaining:

- age 51 with 25 or more years in a covered position; or
- age 56 with 10 or more years in a covered position.

In either case, the three years immediately preceding retirement must have been in a covered position. Employees in covered positions are responsible for the custody and supervision of inmates.

Employees of closing Department of Health and Human Services facilities are eligible for retirement under one of the following conditions:

- age 51 with 25 years of service, the last 5 of which were rendered in the closing facility; or
- age 56 with 10 years of service, the last 5 of which were rendered in the closing facility; or
- 25 years of service at the closing facility regardless of age.

Employees of the State Accident Fund, Michigan Biologic Products, or Liquor Control Commission who were terminated as the result of privatization may retire if the member's age and length of service was equal to or greater than 70 on the date of transfer or termination.

Conservation Officers (CO) with a hire date on or before April 1, 1991, are eligible to retire after 25 years of service, 20 of which must have been rendered as a CO. COs hired after April 1, 1991, and before March 31, 1997, must have 23 years of service as a CO to be eligible for a full retirement benefit with only 25 years of service. In either case, two years immediately preceding retirement must be as a CO.

Deferred Retirement

Any member with 10 or more years of credited service who terminates employment but has not reached the age of retirement is a deferred member and is entitled to receive a monthly pension upon reaching age 60, provided the member's accumulated contributions have not been refunded. Deferred retirement is available after five years of service for State employees occupying unclassified positions in the executive and legislative branches and certain Department of Health and Human Services employees subject to reduction in forced layoffs by reason of deinstitutionalization.

FINANCIAL SECTION

NOTES TO BASIC FINANCIAL STATEMENTS

Nonduty Disability Benefit

A member with 10 or more years of credited service who becomes totally and permanently disabled not due to performing duties as a State employee is eligible for a nonduty disability pension. The nonduty disability benefit is computed in the same manner as an age and service allowance based upon service and salary at the time of disability.

Duty Disability Benefit

A member who becomes totally and permanently disabled from performing duties as a State employee as a direct result of State employment, and who has not met the age and service requirement for a regular pension, is eligible for a duty disability pension. Public Act 109 of 2004 amended the State Employees' Retirement Act to change the calculation of the pension benefit and increase the minimum annual payment. If the member is under age 60, the duty disability allowance is now a minimum of \$6,000 payable annually. At age 60 the benefit is recomputed under service retirement.

Survivor Benefit

Upon the death of a member who was vested, the surviving spouse shall receive a benefit calculated as if the member had retired the day before the date of death and selected a survivor pension. Certain designated beneficiaries can be named to receive a survivor benefit. Public Act 109 of 2004 amended the State Employees' Retirement Act to change the calculation of Duty Death benefits and redefines eligibility for deceased member's survivors. The new minimum duty-related death benefit has been increased to \$6,000.

Pension Payment Options

When applying for retirement, an employee may name a person other than his or her spouse as a beneficiary if the spouse waives this right. If a beneficiary is named, the employee must choose whether the beneficiary will receive 100%, 75% or 50% of the retiree's pension benefit after the retiree's death. The decision is irrevocable. A description of the options follows.

Regular Pension

The pension benefit is computed with no beneficiary rights. If the retiree made contributions while an employee and has not received the total accumulated contributions before death, a refund of the balance of the contributions is made to the beneficiary of record. If the retiree did not make any contributions, there will not be payments to beneficiaries.

100% Survivor Pension

Under this option, after the retiree's death, the beneficiary will receive 100% of the pension for the remainder of the beneficiary's lifetime. If this option is elected, the normal retirement benefit is reduced by a factor based upon the ages of the retiree and of the beneficiary. If the beneficiary predeceases the retiree, the pension "pops up" to the regular pension amount; another beneficiary cannot be named.

75% Survivor Pension

Under this option, after the retiree's death, the beneficiary will receive 75% of the pension for the remainder of the beneficiary's lifetime. If this option is elected, the normal retirement benefit is reduced by a factor based upon the ages of the retiree and of the beneficiary. The reduction factor is lower than the factor used in the 100% option previously described. If the beneficiary predeceases the retiree, the pension "pops up" to the regular pension amount; another beneficiary cannot be named.

50% Survivor Pension

Under this option, after the retiree's death, the beneficiary will receive 50% of the pension for the remainder of the beneficiary's lifetime. If this option is elected, the normal retirement benefit is reduced by a factor based upon the ages of the retiree and of the beneficiary. The reduction factor is lower than the factor used in the 100% or 75% option previously described. If the beneficiary predeceases the retiree, the pension "pops up" to the regular pension amount; another beneficiary cannot be named.

Equated Pension

An equated pension may be chosen by any member under age 65 except a disability retiree and an early supplemental retiree. Equated pensions provide an additional amount until age 65 and may be combined with Regular, 100%, 75% or 50% option. At age 65 the monthly amount is permanently reduced. The initial and

FINANCIAL SECTION

NOTES TO BASIC FINANCIAL STATEMENTS

reduced amounts are based on an estimate of social security benefits at age 65, provided by the Social Security Administration Office. In order to calculate this benefit, members choosing this option must provide ORS with an estimate from the Social Security Administration Office. The actual amount received from social security may vary from the estimate.

Postretirement Adjustments

One-time upward benefit adjustments were made in 1972, 1974, 1976, 1977 and 1987. Beginning October 1, 1988, a 3% non-compounding increase, up to a maximum of \$25 monthly, is paid each October to recipients who have been retired 12 full months. Beginning in 1983, eligible benefit recipients share in a distribution of investment income earned in excess of 8% annually. This distribution is known as the supplemental payment. The supplemental payment is offset by one year's cumulative increases received after the implementation of the annual 3% increase in benefits. These adjustment payments were not issued during fiscal years 1991 through 1994. Members who retired on or after October 1, 1987, are not eligible for the supplemental payment.

Member Contributions

Under Public Act 264 of 2011, members who voluntarily elected to remain in the DB plan contribute 4% of compensation to the retirement system. In addition, members may voluntarily contribute to the System for the purchase of creditable service, such as military service or maternity leave, or a universal buy-in. If a member terminates employment before a retirement benefit is payable, the member's contribution and interest on deposit may be refunded. If the member dies before being vested, the member's contribution and interest are refunded to the designated beneficiaries.

Employer Contributions

The statute requires the employer to contribute to finance the benefits of plan members. These employer contributions are determined annually by the System's actuary and are based upon level-dollar value funding principles so the contribution rates do not have to increase over time.

Banked Leave Time

Public Act 33 of 2004 amended the State Employees' Retirement Act to include Banked Leave Time (BLT) for members. BLT is an extension of the State's current annual leave program, which banks a predetermined number of hours per pay period. However, the BLT program will not have an effect on a member's final average compensation calculation.

BENEFIT PROVISIONS – OTHER POSTEMPLOYMENT

Introduction

Benefit provisions of the other postemployment benefit (OPEB) plan are established by State statute, which may be amended. Public Act 240 of 1943, as amended, establishes eligibility and benefit provisions for the OPEB plan. Defined Benefit (Tier 1) members are eligible to receive health, prescription drug, dental, and vision coverage on the first day they start receiving pension benefits. Defined Contribution (Tier 2) participants who elected to retain the graded premium subsidy benefit under the reform elections of Public Act 264 of 2011 are also eligible to receive subsidized health prescription drug, dental and vision coverage after terminating employment, if they meet eligibility requirements. There is no provision for ad hoc or automatic increases. The State Employees' Retirement Act requires joint authorization by DTMB and the Civil Service Commission to make changes to retiree medical benefit plans. Defined Contribution (Tier 2) participants who elected the Personal Healthcare Fund under Public Act 264 of 2011, and those hired on or after January 1, 2012, are not eligible for any subsidized health, prescription drug, dental or vision coverage in retirement, but may purchase it at their own expense (certain conditions apply).

Former nonvested members of the DB plan who are reemployed by the state on or after January 1, 2014 are not eligible for retiree health insurance coverage premium subsidy but will become a participant in the Personal Healthcare Fund described on page 22.

Public Act 185 of 2010 required that each actively employed member or qualified participants of the System, beginning with the first pay date after November 1, 2010, and ending September 30, 2013, contribute an amount equal to 3% of the member's or qualified participant's compensation toward retiree healthcare. Public Act 264 of 2011 rescinded that provision and refunded any collected contributions to all members.

FINANCIAL SECTION

NOTES TO BASIC FINANCIAL STATEMENTS

In addition to member contributions, the employer funds OPEB benefits for both Tier 1 and Tier 2 members on a prefunded basis. Retirees with the Premium Subsidy benefit contribute 20% of the monthly premium amount for the health (including prescription coverage), dental and vision coverage. Retirees with a graded premium subsidy benefit accrue credit towards insurance premiums in retirement, earnings a 30% subsidy with ten years of service, with an additional 3% subsidy for each year of service thereafter, not to exceed the maximum allowed by statute or 80%.

NOTE 2 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

BASIS OF ACCOUNTING AND PRESENTATION

The System's financial statements are prepared using the accrual basis of accounting. Contributions from the employers are recognized as revenue when due and payable. Benefits and refunds are recognized when due and payable in accordance with the terms of the System. The reserves are described below, and details are provided in the supporting schedules.

Governmental Accounting Standards Board (GASB) Statement No. 67 and Statement No. 74, which were adopted during the year ended September 30, 2014 and 2017, addresses accounting and financial reporting requirements for pension and other postemployment benefit plans, respectively. The requirements for both GASB Statement No. 67 and 74 require changes in presentation of the financial statements, notes to the financial statements, and required supplementary information. Significant changes include an actuarial calculation of total and net pension and other postemployment benefit liabilities. It also includes comprehensive note disclosures regarding the pension and other postemployment benefit liabilities, the sensitivity of the net pension and other postemployment benefit liability to the discount rate, and increased investment activity disclosures. The implementation of GASB Statement No. 67 and 74 did not significantly impact the accounting for accounts receivable and investment balances. The total pension and other postemployment benefit liability, determined in accordance with GASB Statement No. 67 and 74, is presented in Note 4 on page 29, Note 5 on page 32, and in the Required Supplementary Information beginning on page 46.

As of September 30, 2016, the System applied GASB Statement No. 72, *Fair Value Measurement and Application*. GASB Statement No. 72 provides guidance for determining a fair value measurement for reporting purposes and applying fair value to certain investments and disclosures related to all fair value measurements.

RESERVES

Reserve for Employee Contributions

Beginning April 2012, members contribute 4% of their compensation to this reserve as well as purchases of eligible service credit and repay previously refunded contributions. This reserve represents active member contributions and interest less amounts transferred to the Reserve for Retired Benefit Payments for regular and disability retirement, amounts refunded to terminated members and unclaimed amounts transferred to the income account. At September 30, 2021, the balance in this reserve was \$248.7 million.

Reserve for Employer Contributions

All employer contributions are credited to this reserve. Interest from the income account is credited annually. Amounts are transferred annually from this reserve to the Reserve for Retired Benefit Payments to fund that reserve. At September 30, 2021, the balance in this reserve was (\$103.2) million.

Reserve for Retired Benefit Payments

This represents the reserves for payment of future retirement benefits to current retirees. At retirement, a member's accumulated contributions plus interest are transferred into this reserve from the Reserve for Employee Contributions. Monthly benefits, which are paid to the retiree, reduce the reserve. At the end of each fiscal year, an amount determined by an annual actuarial valuation is transferred from the Reserve for Employer Contributions to this reserve to bring the reserve into balance with the actuarial present value of retirement allowances. At September 30, 2021, the balance in this reserve was \$15.3 billion.

FINANCIAL SECTION

NOTES TO BASIC FINANCIAL STATEMENTS

Reserve for Undistributed Investment Income

The net investment earnings (losses) are recorded in this reserve. Interest as authorized by the board is transferred annually to the other reserves. Administrative expenses are paid from this reserve. At September 30, 2021, the net balance of this reserve was (\$937.9) million.

Reserve for Health (OPEB) Related Benefits

This reserve is credited with employee and employer contributions for retirees' health (including prescription coverage), dental, and vision benefits. Starting in fiscal year 2012, the employer contribution is based on a prefunded basis and represents a level of funding that, if paid on an ongoing basis, is projected to cover normal cost each year and amortize any unfunded actuarial liability (or funding excess) over a period not to exceed thirty years. In addition, in fiscal year 2021, this reserve includes revenue from the federal government for the Employee Group Waiver Plan (EGWP). Premiums for health, dental, and vision benefits are paid from this reserve. At September 30, 2021, the balance in this reserve was \$5.1 billion.

REPORTING ENTITY

The System is a fiduciary component unit of the State and, as such, is included in the pension and other employee benefit trust fund financial statements in the State's Annual Comprehensive Financial Report. The System and its Board are not financially accountable for any other entities or other organizations. Accordingly, the System is the only entity included in this financial report.

BENEFIT PROTECTION

Public Act 100 of 2002 was passed by the Michigan Legislature to protect pension benefits of public employees from alienation (being transferred). Alienation is attachment, garnishment, levy, execution, bankruptcy or other legal process except for divorce orders or eligible domestic relation orders. The statutes governing the System contained an "anti- alienation" clause to provide for this protection; however, many smaller public pension systems did not have the benefit of this protection. Therefore, Public Act 100 of 2002 was passed to establish legal protection of pension assets that encompasses all public employees.

INVESTMENTS

Generally, investments are reported at fair value, consistent with the provisions of GASB Statement No. 72, *Fair Value Measurement and Application*. Short-term, highly liquid debt instruments including commercial paper are reported at amortized cost. Additional disclosures describing investments are provided in Note 6.

INVESTMENT INCOME

Dividend and interest income is recognized on the accrual basis. Fair value changes are recorded as investment income or loss. Purchases and sales of investments are recorded as of the trade date (the date upon which the transaction is initiated), except for purchase and sale of mortgages, real estate, and private equity investments which are recorded as of the settlement date (the date upon which the transaction is ultimately completed). The effect of recording such transactions as of the settlement date does not materially affect the financial statements.

COSTS OF ADMINISTERING THE SYSTEM

Each year a restricted general fund appropriation is requested to fund the ongoing business operations of the System. These administrative costs are ultimately funded by the System through the regular transfer of funds from the System to the State's general fund based on either a direct cost or allocation basis depending on the nature of the expense. Costs of administering the System are financed by undistributed investment income of the System.

PROPERTY AND EQUIPMENT

Office space is leased from the State on a year-to-year basis. Office equipment is capitalized if the value exceeds \$5,000. These assets are recorded at cost and are reported net of depreciation in the *Statement of Pension Plan and Other Postemployment Benefit Plan Fiduciary Net Position*. Such assets are depreciated on a straight-line basis over 10 years. As of September 30, 1998, all capitalized equipment was fully depreciated. No additional equipment has been capitalized for the System since that date.

FINANCIAL SECTION

NOTES TO BASIC FINANCIAL STATEMENTS

RELATED PARTY TRANSACTIONS

Leases and Services

The System leases operating space and purchases certain administrative, data processing, legal and investment services from the State. The space and services are not otherwise available by competitive bid. The schedule below summarizes costs incurred by the System for such services.

	2021 (in thousands)
Building Rentals	\$ 162
Technological Support	1,892
Attorney General	104
Investment Services	3,398
Personnel Services	3,679

Cash

At September 30, 2021, the System had \$193.8 million in a common cash investment pool maintained for various State operating funds. The participating funds in the common cash pool earn interest at various rates depending upon prevailing short-term interest rates. Earnings (Losses) from these activities amounted to \$71.0 thousand for the year ended September 30, 2021.

NOTE 3 – CONTRIBUTIONS

The State is required by Public Act 240 of 1943, as amended, to contribute amounts necessary to finance the coverage of members and retiree benefits. Members currently participate in the System on a contributory basis of 4% of the annual compensation to the pension plan. Under certain circumstances, members may contribute to the System for the purchase of creditable service, such as military service or maternity leave. Effective August 1, 1998, the retirement act was amended to permit a universal buy-in. With a universal buy-in, a member may elect to purchase no more than 5 years of service credit (less other service credit purchased). Contribution provisions are specified by State statute and may be amended only by action of the State Legislature.

Employer contributions to the System are determined on an actuarial basis using the entry age normal actuarial cost method. Under this method, the actuarial present value of the projected benefits of each individual included in the actuarial valuation is allocated on a level basis over the service of the individual between entry age and assumed exit age. The normal cost is the annual cost assigned, under the actuarial funding method, to the current and subsequent plan years. The remainder is called the actuarial accrued liability. Normal cost is funded on a current basis.

Pension and OPEB contributions made in the fiscal year ending September 30, 2021, were determined as of the September 30, 2018 actuarial valuations. The pension and OPEB unfunded (overfunded) actuarial accrued liabilities (UAAL) as of September 30, 2018, are amortized over a 16 year period beginning October 1, 2020 and ending September 30, 2036. The UAAL amortization payment portion of the contribution rates is charged across the covered payroll of all current employees in the defined benefit and the defined contribution plans, in accordance with Public Act 240 of 1943, Section 38.38. All sources that fund the covered payroll are charged a proportionate share of the UAAL amortization payment. The schedule on the next page summarizes pension and OPEB contribution rates in effect for fiscal year 2021.

FINANCIAL SECTION

NOTES TO BASIC FINANCIAL STATEMENTS

Pension Contribution Rates

Benefit Structure	Member	Employer
Defined Benefit*	0.0 - 4.0 %	23.90 – 27.80%
Defined Contribution	0.0	18.93

* Employee Contributions are not mandatory if the member's pension is frozen.

OPEB Contribution Rates

Benefit Structure	Member	Employer
Defined Benefit	0.0 %	23.09 %
Defined Contribution – Premium Subsidy	0.0	23.09
Defined Contribution – Personal Health Care	0.0	23.09

The System is required to reconcile with actuarial requirements annually. Any funding deficiency for pension and/or OPEB benefits is smoothed over five years. One fifth (20%) of the funding deficiency is included in each of the subsequent years' contribution and is not recognized as a receivable in the accounting records.

In March 2001, the Internal Revenue Service issued a private letter ruling allowing the System's members to purchase service credit and repay refunds using tax-deferred (pre-tax) dollars. The program was implemented and payments began in fiscal year 2002.

The program allows members to purchase service credit and repay refunds on a tax-deferred basis. Members sign an irrevocable agreement that identifies the contract duration, monthly payment, total contract amount, and years of service credit being purchased. The duration of the contract can range from 1 to 20 years. The amounts are withheld from the members' paycheck and are treated as employer pick-up contributions pursuant to Internal Revenue Code Section 414(h). At September 30, 2021, there were 401 agreements. Agreement amounts that will not be collected within 12 months are discounted using the contractual interest rate of 8.00%. The average length remaining of a contract was approximately 6.5 years for 2021. The short-term receivable was \$773.8 thousand and the discounted long-term receivable was \$1.9 million at September 30, 2021.

NOTE 4 – NET PENSION LIABILITY

MEASUREMENT OF THE NET PENSION LIABILITY

The net pension liability is to be measured as the total pension liability, less the amount of the pension plan's fiduciary net position. In actuarial terms, this will be the accrued liability less the fair value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

Net Pension Liability

(in thousands)

Total Pension Liability	\$	18,546,771
Plan Fiduciary Net Position		14,481,588
Net Pension Liability	\$	<u>4,065,183</u>
Plan Fiduciary Net Position as a Percentage of Total Pension Liability		78.08%
Net Pension Liability as a Percentage of Covered Payroll		121.42%
Total Covered Payroll	\$	3,348,115

FINANCIAL SECTION

NOTES TO BASIC FINANCIAL STATEMENTS

LONG-TERM EXPECTED RETURN ON PLAN ASSETS

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the pension plan's target asset allocation as of September 30, 2021, are summarized in the following table:

<u>Asset Class</u>	<i>Asset Allocation</i>	
	<u>Target Allocation</u>	<u>Long-Term Expected Real Rate of Return*</u>
Domestic Equity Pools	25.0 %	5.4 %
Private Equity Pools	16.0	9.1
International Equity Pools	15.0	7.5
Fixed Income Pools	10.5	(0.7)
Real Estate and Infrastructure Pools	10.0	5.4
Absolute Return Pools	9.0	2.6
Real Return and Opportunistic Pools	12.5	6.1
Short-Term Investment Pools	2.0	(1.3)
TOTAL	100.0 %	

* Long-term rates of return are net of administrative expenses and 2.0% inflation.

RATE OF RETURN

For the fiscal year ended September 30, 2021, the annual money-weighted rate of return on pension plan investment, net of pension plan investment expense, was 27.34%. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

DISCOUNT RATE

The State of Michigan Retirement Board adopted a Dedicated Gains Policy to lower the discount rate in years where the investment returns exceed the current assumption. A single discount rate of 6.70% was used to measure the total pension liability for fiscal year 2021. In fiscal year 2020, the single discount rate used to measure the total pension liability was 6.70%. This single discount rate was based on the expected rate of return on pension plan investments of 6.70%. The projection of cash flows used to determine this single discount rate was based on the assumption that in the future plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the difference between actuarially determined contribution rates and the member rate. Based on these assumptions, the pension plan's fiduciary net position is expected to be available to make all projected future benefit payments of current plan members. 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.

SENSITIVITY OF THE NET PENSION LIABILITY TO CHANGES IN THE DISCOUNT RATE

As required by GASB Statement No. 67, we determined the sensitivity of the net pension liability to changes in the single discount rate. The following table presents the plan's net pension liability, in thousands, calculated using a single discount rate of 6.70%, as well as what the plan's net pension liability would be if it were calculated using a single discount rate that is 1-percentage-point lower or 1-percentage-point higher:

1% Decrease	Current Discount Rate Assumption	1% Increase
5.70%	6.70%	7.70%
\$5,879,370	\$4,065,183	\$2,519,893

FINANCIAL SECTION

NOTES TO BASIC FINANCIAL STATEMENTS

TIMING OF THE VALUATION

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. If the actuarial valuation is not calculated as of the plan's fiscal year end, the total pension liability is required to be rolled forward from the actuarial valuation date to the pension plan's fiscal year end.

The total pension liability as of September 30, 2021, is based on the results of an actuarial valuation date of September 30, 2020 and rolled-forward using generally accepted actuarial procedures.

ACTUARIAL VALUATIONS AND ASSUMPTIONS

Actuarial valuation for the pension plan involves estimates of the value of reported amounts and assumptions about the probability of occurrence of events far into the future. Examples include assumptions about future employment and mortality. Amounts determined regarding the funded status of the plan and the actuarially determined contributions (ADC) are subject to continual revision as actual results are compared with past expectations and new estimates are made about the future.

The Schedules of Contributions in Required Supplementary Information present trend information about the amounts contributed to the plan by employers in comparison to the ADC, an amount that is actuarially determined in accordance with the parameters of GASB Statement No. 67 for pension.

Projections of benefits for financial reporting purposes are based on the substantive plan (the plan as understood by the employer and plan members) and include the types of benefits provided at the time of each valuation and the historical pattern of sharing of benefit costs between the employer and plan members to that point. The actuarial methods and assumptions used include techniques that are designed to reduce the effects of short-term volatility in actuarial accrued liabilities and the actuarial value of assets, consistent with the long-term perspective of the calculations.

The information presented in the Net Pension Liability schedules and notes was determined as part of the actuarial valuations at the dates indicated. Additional information as of the latest actuarial valuation follows:

Summary of Actuarial Assumptions

Valuation Date	September 30, 2020
Actuarial Cost Method	Entry Age, Normal
Asset Valuation Method	Fair Value
Actuarial Assumptions:	
Wage Inflation Rate	2.75%
Investment Rate of Return	6.70%, net of investment expenses
Projected Salary Increases	2.75% - 11.75%, including wage inflation at 2.75%
Cost-of-Living Pension Adjustments	3% annual non-compounded with maximum annual Increase of \$300 for those eligible
Mortality	
Retirees	RP-2014 Male and Female Healthy Annuitant Mortality Tables scaled by 93% for males and 98% for females and adjusted for mortality improvements using projection scale MP-2017 from 2006.
Active	RP-2014 Male and Female Employee Mortality Table scaled by 100% for males and 100% for females and adjusted for mortality improvements using projection scale MP-2017 from 2006.
Disabled Retirees	RP-2014 Male and Female Disabled Annuitant Mortality Table scaled by 100% for males and 100% for females and adjusted for mortality improvements using projection scale MP-2017 from 2006.
Notes	Assumption changes as a result of an experience study for the period 2012 through 2017 have been adopted by the System for use in the determination of the total pension liability beginning with the September 30, 2018 Annual Comprehensive Financial Report.

FINANCIAL SECTION

NOTES TO BASIC FINANCIAL STATEMENTS

NOTE 5 – NET OPEB LIABILITY

MEASUREMENT OF THE NET OPEB LIABILITY

The net OPEB liability is to be measured as the total OPEB liability, less the amount of the OPEB plan's fiduciary net position. In actuarial terms, this will be the accrued liability less the fair value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

Net OPEB Liability (in thousands)

Total OPEB Liability	\$	8,897,633
Plan Fiduciary Net Position		5,082,262
Net OPEB Liability	\$	<u>3,815,371</u>
Plan Fiduciary Net Position as a Percentage of Total OPEB Liability		57.12%
Net OPEB Liability as a Percentage of Covered Payroll		113.96%
Total Covered Payroll	\$	3,348,115

LONG-TERM EXPECTED RETURN ON PLAN ASSETS

The long-term expected rate of return on OPEB plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return were provided by the Bureau of Investments (BOI) for each major asset class included in the pension plan's target asset allocation as of September 30, 2021. These best estimates are summarized in the following table:

<i>Asset Allocation</i>		
<u>Asset Class</u>	<u>Target Allocation</u>	<u>Long-Term Expected Real Rate of Return*</u>
Domestic Equity Pools	25.0 %	5.4 %
Private Equity Pools	16.0	9.1
International Equity Pools	15.0	7.5
Fixed Income Pools	10.5	(0.7)
Real Estate and Infrastructure Pools	10.0	5.4
Absolute Return Pools	9.0	2.6
Real Return and Opportunistic Pools	12.5	6.1
Short-Term Investment Pools	2.0	(1.3)
TOTAL	<u>100.0 %</u>	

* Long-term rates of return are net of administrative expenses and 2.0% inflation.

RATE OF RETURN

For the fiscal year ended September 30, 2021, the annual money-weighted rate of return on OPEB plan investment, net of OPEB plan investment expense, was 26.23%. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

DISCOUNT RATE

The State of Michigan Retirement Board adopted a Dedicated Gains Policy to lower the discount rate in years where investment returns exceed the current assumption. A single discount rate of 6.90% was used to measure the total

FINANCIAL SECTION

NOTES TO BASIC FINANCIAL STATEMENTS

OPEB liability for fiscal year 2021. In fiscal year 2020, the single discount rate used to measure the total OPEB liability was 6.90%. This single discount rate was based on the expected rate of return on OPEB plan investments of 6.90%. The projection of cash flows used to determine this single discount rate was based on the assumption that in the future plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the difference between actuarially determined contribution rates and the member rate. Based on these assumptions, the OPEB plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on OPEB plan investments was applied to all periods of projected benefit payments to determine the total OPEB liability.

SENSITIVITY OF THE NET OPEB LIABILITY TO CHANGES IN THE DISCOUNT RATE

As required by GASB Statement No. 74, we have determined the sensitivity of the net OPEB liability, in thousands, to changes in the single discount rate. The following table presents the plan's net OPEB liability, calculated using a single discount rate of 6.90%, as well as what the plan's net OPEB liability would be if it were calculated using a single discount rate that is 1-percentage-point lower or 1-percentage-point higher:

1% Decrease	Current Discount Rate Assumption	1% Increase
5.90%	6.90%	7.90%
\$4,823,806	\$3,815,371	\$2,965,363

SENSITIVITY OF THE NET OPEB LIABILITY TO HEALTHCARE COST TREND RATE

As required by GASB Statement No. 74, we have determined the sensitivity of the net OPEB liability to changes in the healthcare cost trend rates. The following table presents the plan's net OPEB liability, in thousands, calculated using assumed trend rates, as well as what the plan's net OPEB liability would be if it were calculated using a trend rate that is 1-percentage-point lower or 1-percentage-point higher:

1% Decrease	Current Healthcare Cost Trend Rate Assumption	1% Increase
\$2,918,538	\$3,815,371	\$4,848,217

TIMING OF THE VALUATION

An actuarial valuation to determine the total OPEB liability is required to be performed at least every two years. If the actuarial valuation is not calculated as of the plan's fiscal year end, the total OPEB liability is required to be rolled forward from the actuarial valuation date to the OPEB plan's fiscal year end.

The total OPEB liability as of September 30, 2021, is based on the results of an actuarial valuation date of September 30, 2020, and rolled-forward using generally accepted actuarial procedures.

ACTUARIAL VALUATIONS AND ASSUMPTIONS

Actuarial valuations for the OPEB plan involves estimates of the value of reported amounts and assumptions about the probability of occurrence of events far into the future. Examples include assumptions about future employment, mortality and the healthcare cost trend. Amounts determined regarding the funded status of the plan and the actuarially determined contributions (ADC) are subject to continual revision as actual results are compared with past expectations and new estimates are made about the future.

The Schedules of Contributions in Required Supplementary Information present trend information about the amounts contributed to the plan by employers in comparison to the ADC, an amount that is actuarially determined in accordance with the parameters of GASB Statement No. 74 for OPEB.

Projections of benefits for financial reporting purposes are based on the substantive plan (the plan as understood by the employer and plan members) and include the types of benefits provided at the time of each valuation and the historical pattern of sharing of benefit costs between the employer and plan members to that point. The actuarial methods and assumptions used include techniques that are designed to reduce the effects of short-term volatility

FINANCIAL SECTION

NOTES TO BASIC FINANCIAL STATEMENTS

in actuarial accrued liabilities and the actuarial value of assets, consistent with the long-term perspective of the calculations.

The information presented in the Net OPEB Liability schedules and notes was determined as part of the actuarial valuations at the dates indicated. Additional information as of the latest actuarial valuation follows:

Summary of Actuarial Assumptions

Valuation Date	September 30, 2020
Actuarial Cost Method	Entry Age, Normal
Asset Valuation Method	Fair Value
Actuarial Assumptions:	
Wage Inflation Rate	2.75%
Investment Rate of Return	6.90%, net of investment expenses
Projected Salary Increases	2.75% - 11.75%, including wage inflation at 2.75%
Healthcare Cost Trend Rate ²	Pre-65: 7.50% Year 1 graded to 3.50% Year 15; 3.00% Year 120 Post-65: 6.25% Year 1 graded to 3.50% Year 15; 3.00% Year 120
Mortality	
Retirees	RP-2014 Male and Female Healthy Annuitant Mortality Table scaled by 93% for males and 98% for females and adjusted for mortality improvements using projection scale MP-2017 from 2006.
Active	RP-2014 Male and Female Employee Mortality Table scaled by 100% for males and 100% for females and adjusted for mortality improvements using projection scale MP-2017 from 2006.
Disabled Retirees	RP-2014 Male and Female Disabled Annuitant Mortality Table scaled by 100% for males and 100% for females and adjusted for mortality improvements using projection scale MP-2017 from 2006.
Other Assumptions OPEB only: ¹	
Opt Out Assumption	10% of eligible participants are assumed to opt out of the retiree health plan (0% of MRP participants).
Survivor Coverage	80% of male and 67% of female future retirees are assumed to have coverage continuing after the retiree's death when 2-person coverage was assumed to be elected (100% of MRP participants).
Coverage Election at Retirement	75% of male and 60% of female future retirees and MRP: 90% of male and 90% of female future retirees are assumed to elect coverage for 1 or more dependents.
Notes:	Assumption changes as a result of an experience study for the period 2012 through 2017 have been adopted by the System for use in the determination of the total OPEB liability beginning with the September 30, 2018 Annual Comprehensive Financial Report.

¹ Applies to State employees hired before January 1, 2012.

² Applies to Medical and prescription drug (Rx) payments.

FINANCIAL SECTION

NOTES TO BASIC FINANCIAL STATEMENTS

NOTE 6 – INVESTMENTS

INVESTMENT AUTHORITY

The State of Michigan Investment Board (Board) was created by Executive Order 2018-10 (Order) and serves as the investment fiduciary over the assets of the State sponsored defined benefit retirement systems. The Board is responsible for investing the System's assets in accordance with the duties and powers enumerated in the Order and with Public Act 380 of 1965, as amended. Investments are made subject to the Public Employee Retirement System Investment Act, Public Act 314 of 1965, as amended. The Public Employee Retirement System Investment Act authorizes, with certain restrictions, the investment of pension fund assets in stocks, corporate and government bonds and notes, mortgages, real estate, and certain short-term and private equity investments. Investments must be made for the exclusive purposes of providing benefits to active members, retired members and beneficiaries, and for defraying the expenses of investing the assets.

DERIVATIVE INSTRUMENTS

The Board employs the use of derivative instruments in the investment of the pension and other employee benefit trust funds (the trust funds).

Derivative instruments are used in managing the trust fund portfolios, but uses do not include speculation or leverage of investments. State investment statutes limit total derivative instrument exposure to 15% of a fund's total asset value, and restrict uses to replication of returns and hedging of assets. Swap agreements represent the largest category of derivative instrument investments subject to this limitation. Option and Future contracts traded daily on an exchange and settling in cash daily or having a limited and fully defined risk profile at an identified, fixed cost are not subject to the derivative instrument exposure limitation. Less than 15% of the total trust funds' portfolio has been invested from time to time in future contracts, swap agreements, structured notes, options and forward contracts.

The derivative instrument fair values are reported on the *Statement of Pension Plan and Other Postemployment Benefit Plan Fiduciary Net Position* as of September 30, 2021, in their respective investment pool's fair value. Derivative instrument net increase and decrease are reported on the *Statement of Changes in Pension Plan and Other Postemployment Benefit Plan Fiduciary Net Position* for fiscal year ended September 30, 2021, under "Investment income (loss)", in "Net increase (decrease) in fair value of investments". Bond interest, swap payments, and dividends are reported under "Investment income (loss)", in "Interest, dividends, and other".

Derivative Instrument Investment Table as of September 30, 2021 (in millions):

Investment and Investment Type	Percentage of Fair Value	Notional Value	Investments at Fair Value	Net Increase (Decrease) in Fair Value	Investment Income	Fair Value Subject to Credit Risk
Future Contracts	- %	\$ (126.4)	\$ (0.1)	\$ 5.8	\$ -	\$ -
Fixed Income and International Equity Investments						
Option Contracts	0.3%	6,056.1	63.0	73.2	-	-
Equity, Fixed Income and International Equity Investments						
Swap Agreements	2.5%	795.0	481.0	241.6	(0.5)	63.8
Fixed Income and International Equity Investments						
Total		\$ 6,724.8	\$ 544.0	\$ 320.5	\$ (0.5)	\$ 63.8

FINANCIAL SECTION

NOTES TO BASIC FINANCIAL STATEMENTS

To diversify the trust funds' portfolio, the Board has entered into international swap agreements with investment grade counterparties, which are tied to stock market indices in approximately forty-six foreign countries. Generally, the notional amount of equity swap tied to foreign stock market indices is executed via a net total return USD index. The swap agreements provide that the System will pay quarterly over the term of swap agreements, interest indexed to the three-month London Inter-Bank Offer Rate (LIBOR) or the U.S. Federal Funds Rate, adjusted for an interest rate spread, on the notional amount stated in the agreements. International equity swap agreement maturity dates range from October 2021 to October 2022. U.S. Treasury Bonds, U.S. Corporate Bonds, and other public market fixed income securities, as well as, other investments are held to correspond with the notional amount of the international swap agreements.

The value of the international synthetic equity structures is a combination of the value of the swap agreements and the value of the notes and other investments. The book value represents the cost of the bonds, notes, and other investments. The current value represents the current value of the bonds, notes, and other investments and the change in the value of the underlying indices from the inception of the swap agreements. The current value is used as a representation of the fair value based on the intention to hold all swap agreements until maturity. At the maturity of the swap agreements, the trust funds will either receive the increase in the value of the equity indices from the level at the inception of the agreements or pay the decrease in the value of the indices. The combined swap structure generally realizes gains and losses on a rolling basis.

To reduce the risk in the Fixed Income and International Equity portfolio, the Board has entered into FX swap agreements, interest rate swap agreements and credit default swap agreements with investment grade counterparties. The FX swap agreements are tied to foreign currency forward exchange rates and are used to reduce the currency risk within the Fixed Income portfolio. The swap agreements are entered into on an as-needed basis and are generally tied to the maturity of a foreign government bond indenture denominated in a foreign currency. The purpose of the FX swap agreement that has a final maturity date of less than three months is to reduce or eliminate the currency risk on foreign bond transactions. U.S. Domestic LIBOR-based floating rate notes, U.S. Treasury securities, and portfolio cash are held to correspond with the notional amount of FX swap agreements within the Fixed Income and International Equity portfolio. Interest rate swaps are used to adjust interest rate and yield curve exposure and substitute for physical securities. Long swap positions that receive fixed rate, increase exposure to long-term interest rates; short swap positions that pay fixed rate, decrease exposure. Credit default swaps (CDS) are used to manage credit exposure without buying or selling securities outright. Written CDS increase credit exposure, selling protection, obligating the portfolio to buy bonds from counterparties in the event of a default. Purchased CDS decrease exposure, buying protection, providing the right to "Put" bonds to the counterparty in the event of a default.

Counterparty credit risk is the maximum loss amount that would be incurred if the counterparties to the derivative instrument failed to perform according to the terms of the contract, without respect to any collateral or other security, or netting arrangement. For the Over-The-Counter (OTC) derivative instrument investments, the system held collateral of \$9.7 million in cash deposits and \$22.9 million in securities on behalf of counterparties. Collateral securities in the amount of \$0.0 million were held on our behalf by counterparties.

The Board traded bond future contracts to manage duration, yield curve exposure, adjust interest rate exposures and replicate government bond positions.

To enhance returns while limiting downside risk, the Board traded equity options in single securities and on indices in the Large Cap Core and All Cap GARP funds. Attractively priced equity options were used for the purpose of stock replacement, in order to drive excess returns over the S&P 500, as well as to provide added exposure to strong equity markets while limiting principal at risk. Put options are used to protect against large negative moves in the market indices. Options traded by the Board in the Fixed Income and International Equity pools are used to manage interest rate and volatility exposures. Written options generate income in expected interest rate scenarios and may generate capital losses, if unexpected interest rate environments are realized. Both written and purchased options will become worthless at expiration if the underlying instrument does not reach the strike price of the option. However, purchased options are often sold well before expiration in order to lock in profits at prices well below listed strike prices, and thereby generate consistent returns.

FINANCIAL SECTION

NOTES TO BASIC FINANCIAL STATEMENTS

SECURITIES LENDING

The System, pursuant to a Securities Lending Authorization Agreement, has authorized State Street Bank and Trust Company ("State Street") to act as the System's agent in lending System's securities to approved borrowers. State Street, as agent, enters into Securities Loan Agreements with borrowers.

During the fiscal year, State Street lent, on behalf of the Board, certain securities of the System held by State Street as custodian and received cash or other collateral including securities issued or guaranteed by the United States government. The types of securities lent were equity, and fixed income, which includes government and corporate bonds and notes. State Street does not have the ability to pledge or sell collateral securities delivered absent a borrower default. Borrowers were required to deliver collateral for each loan equal to at least 100% of the fair value of the loaned securities.

Pursuant to the Securities Lending Authorization Agreement, State Street had an obligation to indemnify the System in the event of default by a borrower. There were no failures by any borrowers to return loaned securities or pay distributions thereon during the fiscal year that resulted in a declaration or notice of default of the Borrower.

During the fiscal year, the System and the borrowers maintained the right to terminate securities lending transactions upon notice. The cash collateral received on each loan was invested, together with the cash collateral of other qualified tax-exempt plan lenders, in a collective investment pool. As of September 30, 2021, such investment pool had an average duration of 4 days and an average weighted final maturity of 84 days for USD. Because the loans were terminable at will their duration did not generally match the duration of the investments made with cash collateral. On September 30, 2021, the System had no credit risk exposure to borrowers. The fair value of collateral held and the fair value (USD) of securities on loan for the client as of September 30, 2021, was \$630,025 thousand and \$612,965 thousand, respectively.

RISK

In accordance with GASB Statement No. 40, investments require certain disclosures regarding policies and practices and the risks associated with them. The credit risk, (including custodial credit risk and concentration of credit risk), the interest rate risk, and the foreign currency risk are discussed in the following paragraphs. Amounts represent the pro rata share of the underlying investments as required by GASB Statement No. 40. These investments are held in internal investment pools and reported as such in the financial statements.

Credit Risk

Credit risk is the risk that an issuer will not fulfill its obligations.

- Short-Term Fixed Income Investments – Eligible commercial paper investments must be rated within one of the two highest rating classifications ("1" or "2") at the time of purchase from one of the nationally recognized ratings organizations (NRSROs) specified in Public Act 314 of 1965, as amended. Borrowers must have at least \$400.0 million in commercial paper outstanding, and the Board may not invest in more than 10% of the borrower's outstanding debt.
- Long-Term Fixed Income Investments – Investment grade and noninvestment grade securities may be acquired in compliance with the parameters set forth in Public Act 314 of 1965, as amended, and the Board Investment Policy Statement for the System. Public Act 314 defines investment grade as investments in the top four major grades, rated by one of the NRSROs. At September 30, 2021, the System was in compliance with Public Act 314 and the Investment Policy Statement in all material aspects.

FINANCIAL SECTION

NOTES TO BASIC FINANCIAL STATEMENTS

Rated Debt Investments

(in thousands) As of September 30, 2021				
Investment Type	Fair Value	S&P	Fair Value	Moody's
Short Term	\$ 709,407	A-1	\$ 747,561	P-1
	57,725	A-2	19,571	P-2
Money Market	125,133	AAA	125,133	Aaa
Government Securities				
U.S. Agencies- Sponsored	352	AAA	126,961	Aaa
	126,609	AA	-	Aa
Fixed Income				
	69,220	AAA	119,254	Aaa
	42,583	AA	41,152	Aa
	92,430	A	101,694	A
	264,355	BBB	227,553	Baa
	90,244	BB	83,387	Ba
	50,544	B	64,422	B
	29,343	CCC	33,863	Caa
	21,658	CC	23,278	Ca
	-	C	78	C
	8,379	D	-	D
	505,905	NR	479,981	NR
Securities Lending Collateral				
Short Term	95,208	A-1	100,210	P-1
Corporate	-	AA	82,347	Aa
	508,944	A	218,101	A
	26,012	NR	229,506	NR
Mutual Funds				
	21,020	BBB	21,020	Baa
	27,609	BB	27,609	Ba
Total	<u>\$ 2,872,680</u>		<u>\$ 2,872,680</u>	

NR – Not Rated

* International Investment types consist of domestic floating rate note used as part of a Swap strategy.

Custodial Credit Risk

Custodial credit risk for investments is the risk that, in the event of a failure of the counterparty, the State will not be able to recover the value of the investment or collateral securities that are in the possession of an outside party.

Investment securities are exposed to custodial credit risk if the securities are uninsured, are not registered in the name of the government and are held by either the counterparty or the counterparty's trust department or agent, but not in the government name.

The Board does not have a policy for custodial credit risk. However, the State's custodial bank had a credit rating of A at September 30, 2021. As of September 30, 2021, no securities were exposed to custodial credit risk.

Concentration of Credit Risk

Concentration of credit risk is the risk of loss attributed to the magnitude of a government's investment in a single issuer.

Other than obligations issued, assumed or guaranteed by the United States, its agencies or United States government sponsored enterprises, the System is prohibited by Public Act 314 of 1965, as amended, from investing

FINANCIAL SECTION

NOTES TO BASIC FINANCIAL STATEMENTS

more than 5% of the outstanding obligations of any one issuer or investing more than 5% of a System's assets in the obligations of any one issuer. When calculating the amount of outstanding obligations, the System includes publicly issued and privately held debt.

At September 30, 2021, there were no investments in any single issuer that accounted for more than 5% of the System's assets. The System held two investments that exceeded the 5% cap in obligations of any one issuer. The System is aware of the breach and in accordance with MCL 38.1133(3)(g), is developing a prudent plan for reallocating assets to comply with the prescribed limitations.

Interest Rate Risk – Fixed Income Investments

Interest rate risk is the risk that changes in interest rates of debt investments will adversely affect the fair value of an investment.

The Board's policy states that cash equivalents are invested in short-term fixed income securities with an average weighted maturity of less than one year to provide liquidity and safety of principal from capital market and default risk. At September 30, 2021, the fair value of the System's short-term investments was \$892.3 million with the weighted average maturity of 125 days.

The Board does not have a policy regarding interest rate risk for long-term debt investments. However, the trust funds are invested with a long-term strategy. The goal is to balance higher returns while accepting minimum risk for the return. Analyzing the yield curve on individual securities as compared to U.S. Treasuries determines, in part, what is an acceptable risk for the return. Therefore, market conditions such as lower interest rates result in shorter duration and higher interest rates result in longer duration.

Debt Securities

(in thousands)

As of September 30, 2021

	Fair Value	Effective Duration in Years
Government		
U. S. Treasury	\$ 678,854	7.1
U. S. Agencies - Backed	69,232	3.9
U. S. Agencies - Sponsored	126,961	3.7
Corporate	1,218,255	3.0
International*		
U. S. Treasury	256,082	2.0
Corporate	5,035	0.0
Total	\$ 2,354,418	

Debt securities are exclusive of securities lending collateral.

* International contains Domestic Government and Corporate Debt Securities as a part of their derivative instrument strategies. The interest rates reset on a quarterly basis for these securities.

Foreign Currency Risk

Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment or deposit.

The System invests in various securities denominated in foreign currencies. Authorized global securities include equities, fixed income, mutual funds, real estate, and limited partnerships. These investments are limited to 30% of the total assets of the System with additional limits of not more than 5% of the outstanding global securities of any one issuer and no more than 5% of the System's assets in the global securities of any one issuer. In addition to

FINANCIAL SECTION

NOTES TO BASIC FINANCIAL STATEMENTS

these limits, the Board cannot acquire securities with companies that have active business operations in the state sponsors of terror as identified by the United States Secretary of State. At September 30, 2021, the total amount of foreign investment subject to foreign currency risk was \$2,367.1 million, which amounted to 12.2% of total investments (exclusive of securities lending collateral) of the System.

FINANCIAL SECTION

NOTES TO BASIC FINANCIAL STATEMENTS

Foreign Currency Risk

(in thousands)

As of September 30, 2021

Region	Country	Currency	Equity Fair Value in U.S. \$	Fixed Income Fair Value in U.S. \$	International & Absolute Return Fair Value in U.S. \$	Private Equity, Real Estate & Infrastructure Fair Value in U.S. \$
AMERICA						
	Brazil	Real		\$ 334	\$ 1,478	
	Canada	Dollar	\$ 2,444	266	18,927	
	Mexico	Peso	180	1,509	4,984	
	Peru	Sol		177		
	Colombia	Peso		89		
	Chile	Peso		1,321		
	Argentina	Peso			621	
PACIFIC						
	Australia	Dollar	604	107	20,713	
	Hong Kong	Dollar	5,354		23,750	
	India	Rupee		27		
	Indonesia	Rupiah	609	320		
	Japan	Yen	772	2,041	18,668	
	Malaysia	Ringgit		1,184		
	Taiwan	New Dollar			10,900	
	China	Renminbi			5,148	
	Singapore	Dollar	1,458	168		
	South Korea	Won		5,164	2,759	
	Thailand	Baht		428		
	New Zealand	Dollar			1,707	
	China	Yuan		(500)	89	
	China	Yuan Offshore		571		
EUROPE						
	Denmark	Krone			9,309	
	European Union	Euro	48,582	15,159	121,462	150,933
	Hungary	Forint		314		
	Poland	Zloty		27		
	United Kingdom	Pound Sterling	6,301	3,505	38,254	13,773
	Romania	Leu				
	Sweden	Krona	3,739		34,377	
	Switzerland	Franc	4,076		5,024	
	Turkey	Lira				
	Czech Republic	Koruna		212		
	Russia	Ruble		275		
AFRICA						
	South Africa	Rand	785	660	2,356	
	Egypt	Pound		408		
	Liberia	Dollar	1,017			
	Zambia	Kwacha		155		
MIDDLE EAST						
	Israel	New Shekel		908	9,665	
OTHER						
	Various	Various			1,761,421	
	Total		\$ 75,920	\$ 34,829	\$ 2,091,612	\$ 164,706

FINANCIAL SECTION

NOTES TO BASIC FINANCIAL STATEMENTS

FAIR VALUE MEASUREMENTS

The Retirement System categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles. The hierarchy is based on the valuation inputs used to measure the fair value of the asset. Not all investments held by the Retirement System are recorded at fair value. GASB 72 allows for certain investments to be recorded at cost (or amortized cost or any other valuation method), and therefore, they are not presented in the fair value hierarchy table. Equity and Fixed Income securities classified in Level 1 of the fair value hierarchy are valued using prices quoted in active markets for those securities. Equity Swaps and Fixed Income securities classified in Level 2 of the fair value hierarchy are valued using a matrix pricing technique and other significant observable inputs. Equity and Fixed Income securities classified as Level 3 of the fair value hierarchy are valued using third party data and reports that are unobservable. Securities reported at Net Asset Value (NAV) are valued using the most recent third party statement adjusted for cash flows as of September 30, 2021. Investments that are measured at fair value using the Net Asset Value per share (or its equivalent) as a practical expedient are not classified in the fair value hierarchy below.

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

FINANCIAL SECTION

NOTES TO BASIC FINANCIAL STATEMENTS

	Balance at September 30, 2021	Fair Value Measurement Using (in thousands)		
		Quoted Prices In Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Investments by fair value level:				
Total cash and cash Equivalents	\$ 4,128	\$ 4,128	\$ -	-
Equity				
Depository Receipts	31,140	31,140	-	-
Warrants	11	2	9	-
Common Stocks	3,653,095	3,653,095	-	-
Preferred Stocks	3,271	2,976	294	-
Real Estate Investment Trusts	149,625	149,625	-	-
Swaps	18,512	-	18,531	(19)
Commingled Funds, ETF's and PTP's	2,325,634	2,325,990	(356)	-
Options	62,563	62,563	-	-
Total Equity	6,243,852	6,225,392	18,479	(19)
Fixed Income				
Asset Backed	429,770	-	427,394	\$ 2,377
Corporate Bonds	418,534	-	414,248	4,287
Commercial mortgage-backed	350,364	-	350,277	87
Government Issues	977,560	823,989	153,571	-
Swaps	(2,396)	-	(2,396)	-
US Agency Issues	129,627	-	129,627	-
Commingled Funds, ETF's and PTP's	231,800	231,800	-	-
Options	(3)	-	(3)	-
Total Fixed Income	2,535,257	1,055,790	1,472,717	6,750
Total investments by fair value level	\$ 8,783,236	\$ 7,285,309	\$ 1,491,196	\$ 6,732
Investments measured at the net asset value (NAV)				
Private Equity	\$ 4,424,238			
Real Estate & Infrastructure	1,326,546			
Absolute Return	1,017,312			
Real Return	2,292,895			
Other Limited Partnerships	425,697			
Total investments measured at the NAV	\$ 9,486,688			
Total investments measured at fair value	\$ 18,269,924			

Additional disclosures for fair value measurements of investments in certain entities that calculate the Net Asset Value per Share (or its equivalent):

Private Equity Funds (in thousands)

Total investments measured at the NAV	\$ 4,424,238
Unfunded commitments	1,614,465

This type of investment includes investments in approximately 313 partnerships that invest in leveraged buyouts, venture capital, mezzanine debt, distressed debt, secondary funds and other investments. This type of investments can never be redeemed with the funds, but distributions are received through the liquidation of the underlying assets of the fund. It's expected that the underlying assets of the fund are liquidated over a period of five to eight years. However, as of September 30, 2021, it is probable that all of the investments in this group will be sold at an amount different from the NAV per share (or its equivalent). Therefore, the fair values of the investments in this type have been determined using recent observable transaction information for similar investments and nonbinding bids

FINANCIAL SECTION

NOTES TO BASIC FINANCIAL STATEMENTS

received from potential buyers of the investments. As of September 30, 2021, a buyer for these investments has not been identified.

Real Estate and Infrastructure (in thousands)

Total investments measured at the NAV	\$	1,326,546
Unfunded commitments		418,954

Real Estate and Infrastructure funds include approximately 107 accounts (limited partnerships, limited liability companies, etc.) that invest in real estate or infrastructure related assets. The fair value of the Real Estate and Infrastructure funds have been determined in accordance with generally accepted accounting principles using the NAV per share (or its equivalent) of the Plan's ownership interest in partners' capital. These types of investments cannot be redeemed with the funds. Distributions from these funds will be received as the underlying investments are sold and liquidated over time. It is expected that the underlying assets will be sold over the next 5 – 15 years. However, buyers have not been determined so the fair value has been determined using the NAV per share (or its equivalent) of the Plan's ownership interest in partners' capital.

Absolute Return Portfolio (in thousands)

Total investments measured at the NAV	\$	1,017,312
Unfunded commitments		148,980

This type includes approximately 14 investments that invest in hedge funds and hedge fund of funds that pursue multiple strategies to diversify risks and reduce volatility. The fair values of the investments in this type have been determined using the NAV per share (or its equivalent) of the investments. For 45.8% of the invested capital, investors may redeem at various dates between October 1, 2021 and April 1, 2022; 17.1% of the investments are redeemable between April 1, 2022 through October 1, 2022; 26.2% of the investments are redeemable between October 1, 2022 and October 1, 2032, and the remaining 10.9% is not redeemable on demand.

Real Return and Opportunistic Portfolio (in thousands)

Total investments measured at the NAV	\$	2,292,895
Unfunded commitments		791,408

This type includes approximately 95 funds that invest in private credit, tangible and intangible real assets, or other real return and opportunistic strategies. The fair values of the investments in this type have been determined using the NAV per share (or its equivalent) of the Plan's ownership interest in partners' capital. These investments can never be redeemed with the funds. Distributions from each fund will be received as the underlying investments of the funds are liquidated. It is expected that the underlying assets of the funds will be liquidated over the next 5 to 10 years.

All Other Investments (in thousands)

Total investments measured at the NAV	\$	425,697
Unfunded commitments		139,983

The balance of plan assets reported at fair value includes 15 investments:

- LPs that invest in fixed income investments such as; residential rehabilitation, middle market business loans and senior secured debt financing. These investments cannot be redeemed by limited partners. Distributions are received through the liquidation of the underlying assets of the fund.
- LPs that invest in fixed income type investments permitting partners to request redemption monthly or quarterly, after initial lock up period of 1 year or less, requiring 45 to 65 days' advance notice.
- LPs investing in global investments permitting partners to request partial redemptions quarterly or monthly, with advance notice, subject to the sole discretion of the general partner.

FINANCIAL SECTION

NOTES TO BASIC FINANCIAL STATEMENTS

- LPs that invest in private equity, private credit/loans, and tangible real assets that cannot be redeemed by limited partners. Distributions from each fund will be received as the underlying investments of the funds are liquidated.

NOTE 7 – COMMITMENTS AND CONTINGENCIES

Under the Administrative Procedures Act, members may appeal a decision made by the Retirement Board. Once the administrative procedure has been exhausted, the decision may be appealed in Michigan's court system. Various cases that have exhausted the administrative procedures have been appealed in the court system. These cases are in the normal course of business and the System does not anticipate any material loss as a result of the contingent liabilities.

NOTE 8 – ACCOUNTING CHANGES AND RESTATEMENTS

Beginning net position for the Pension and OPEB plans were increased by \$44.7 million and \$49.7 million, respectively, to account for additional employer contributions due to the System. Accrued revenues due and payable to the system for employer contributions are recognized in accordance with *GASB Statement No. 67, Financial Reporting for Pension Plans* and *GASB Statement No. 74, Financial Reporting for Other Postemployment Benefit Plans*.

For fiscal year 2021, the System adopted *GASB Statement No. 84, Fiduciary Activities*. The objective of this statement is to improve guidance regarding the identification of fiduciary activities for accounting and financial reporting purposes and how those activities should be reported. This Statement also establishes criteria for identifying fiduciary activities of all state and local governments. As a fiduciary component unit of the State, the System will be reported in the pension and other employee benefit trust fund financial statements of the State of Michigan Annual Comprehensive Financial Report.

NOTE 9 – SUBSEQUENT EVENTS

In 2017, the Department of Technology, Management, and Budget Director and the State of Michigan Retirement Board adopted the dedicated gains policy to lower the discount rate in years where investment returns exceed the current assumption based on a schedule determined by the plan actuary. In December 2021, the DTMB Director and the Board modified the dedicated gains policy to limit the reduction in the discount rate to no lower than 6.0%. This change will impact the fiscal year 2021 pension and OPEB valuations and the calculated total pension and OPEB liabilities, however, the dollar value of this impact cannot be determined at this time.

FINANCIAL SECTION

REQUIRED SUPPLEMENTARY INFORMATION

SCHEDULE OF CHANGES IN NET PENSION LIABILITY

(in thousands)

	Fiscal Year							
	2021	2020	2019	2018	2017	2016	2015	2014
Total Pension Liability								
Service Cost	\$ 55,445	\$ 62,891	\$ 64,690	\$ 71,912	\$ 68,311	\$ 74,042	\$ 80,413	\$ 84,040
Interest	1,210,743	1,220,112	1,244,463	1,226,594	1,251,600	1,250,117	1,242,353	1,206,258
Changes of benefit terms	-	-	-	-	-	-	-	-
Differences between expected and actual experience	(32,416)	27,308	25,071	115,726	19,798	3,441	55,072	-
Changes of assumptions	-	-	514,809	1,393,264	710,646	-	-	406,962
Benefit payments, including refunds of member contributions	(1,460,137)	(1,432,712)	(1,398,381)	(1,362,481)	(1,322,657)	(1,289,728)	(1,265,480)	(1,223,033)
Net Change in Total Pension Liability	(226,366)	(122,402)	450,651	1,445,015	727,697	37,872	112,358	474,227
Total Pension Liability - Beginning	18,773,136	18,895,538	18,444,887	16,999,872	16,272,175	16,234,303	16,121,945	15,947,718
Total Pension Liability - Ending (a)	\$ 18,546,771	\$ 18,773,136	\$ 18,895,538	\$ 18,444,887	\$ 16,999,872	\$ 16,272,175	\$ 16,234,303	\$ 16,121,945
Plan Fiduciary Net Position								
Contributions - Employer	\$ 659,639	\$ 613,729	\$ 600,083	\$ 650,740	\$ 703,131	\$ 716,465	\$ 749,332	\$ 705,100
Contributions - Member	23,881	25,265	28,442	35,598	40,839	46,666	46,688	47,527
Net Investment Income	3,191,784	599,246	611,140	1,273,509	1,411,395	781,528	232,588	1,529,626
Benefit payments, including refunds of member contributions	(1,460,137)	(1,432,712)	(1,398,381)	(1,362,481)	(1,322,657)	(1,289,728)	(1,265,480)	(1,223,033)
Administrative and Other Expenses	(5,925)	(5,956)	(6,988)	(6,488)	(6,285)	(6,629)	(6,228)	(6,931)
Other ¹	44,809	73	(4,406)	64	294	278	55	-
Net Change in Plan Fiduciary Net Position	2,454,051	(200,356)	(170,109)	590,942	826,716	248,580	(243,045)	1,052,290
Plan Fiduciary Net Position - Beginning	12,027,536	12,227,892	12,398,002	11,807,059	10,980,343	10,731,762	10,974,806	9,922,516
Plan Fiduciary Net Position - Ending (b)	\$ 14,481,588	\$ 12,027,536	\$ 12,227,892	\$ 12,398,002	\$ 11,807,059	\$ 10,980,343	\$ 10,731,762	\$ 10,974,806
Net Pension Liability - Ending (a) - (b)	\$ 4,065,183	\$ 6,745,600	\$ 6,667,646	\$ 6,046,886	\$ 5,192,813	\$ 5,291,832	\$ 5,502,541	\$ 5,147,139
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	78.08%	64.07%	64.71%	67.22%	69.45%	67.48%	66.11%	68.07%
Covered Payroll*	\$ 3,348,115	\$ 3,380,365	\$ 3,220,895	\$ 3,115,261	\$ 3,050,238	\$ 872,358	\$ 946,977	\$ 1,006,633
Net Pension Liability as a Percentage of Covered Payroll	121.42%	199.55%	207.01%	194.11%	170.24%	606.61%	581.06%	511.32%

* Covered payroll based on implementation of GASB 82.

¹ Includes \$44.7 million restatement of beginning net position for the pension plan in fiscal year 2021 to account for additional contributions due to the System from employers.

FINANCIAL SECTION

REQUIRED SUPPLEMENTARY INFORMATION

SCHEDULE OF CHANGES IN NET OPEB LIABILITY

(in thousands)

	Fiscal Year				
	2021	2020	2019	2018	2017
Total OPEB Liability					
Service Cost	\$ 96,327	\$ 93,810	\$ 90,760	\$ 93,346	\$ 108,530
Interest	645,483	746,333	723,058	760,408	735,979
Changes of benefit terms	-	-	-	-	-
Differences between expected and actual experience	(772,919)	(2,570,285)	(941,588)	(1,055,687)	(71,816)
Changes of assumptions	(223,893)	569,841	975,792	809,101	-
Benefit payments, including refunds of member contributions	(308,060)	(297,051)	(427,977)	(402,543)	(476,200)
Net Change in Total OPEB Liability	(563,062)	(1,457,351)	420,045	204,625	296,493
Total OPEB Liability - Beginning	9,460,695	10,918,046	10,498,001	10,293,376	9,996,883
Total OPEB Liability - Ending (a)	\$ 8,897,633	\$ 9,460,695	\$ 10,918,046	\$ 10,498,001	\$ 10,293,376
Plan Fiduciary Net Position					
Contributions - Employer	\$ 774,406	\$ 703,567	\$ 765,235	\$ 688,884	\$ 703,330
Contributions - Member	-	-	-	-	27
Net Investment Income	975,495	163,011	144,126	229,539	217,955
Benefit payments, including refunds of member contributions	(308,060)	(297,051)	(427,977)	(402,543)	(476,200)
Administrative and Other Expenses	(1,185)	(1,017)	(377)	(459)	(445)
Other ¹	19,386	9,816	66	172	778
Net Change in Plan Fiduciary Net Position	1,460,043	578,325	481,072	515,592	445,447
Plan Fiduciary Net Position - Beginning	3,622,219	3,043,893	2,562,821	2,047,229	1,601,782
Plan Fiduciary Net Position - Ending (b)	\$ 5,082,262	\$ 3,622,219	\$ 3,043,893	\$ 2,562,821	\$ 2,047,229
Net OPEB Liability - Ending (a) - (b)	\$ 3,815,371	\$ 5,838,476	\$ 7,874,153	\$ 7,935,180	\$ 8,246,147
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	57.12%	38.29%	27.88%	24.41%	19.89%
Covered Payroll*	\$ 3,348,115	\$ 3,380,365	\$ 3,220,895	\$ 3,115,261	\$ 3,050,238
Net OPEB Liability as a Percentage of Covered Payroll	113.96%	172.72%	244.47%	254.72%	270.34%

* Covered payroll based on the implementation of GASB 85.

¹ Includes \$49.7 million restatement of beginning net position for the OPEB plan in fiscal year 2021 to account for additional contributions due to the System from employers.

FINANCIAL SECTION

REQUIRED SUPPLEMENTARY INFORMATION

SCHEDULES OF CONTRIBUTIONS

PENSION BENEFITS

(in thousands)

Fiscal Year Ended Sept. 30	Actuarially Determined Contribution (ADC)	Actual Employer Contribution	Contribution Deficiency (Excess)	Covered Payroll ²	Actual Contribution as a % of Covered Payroll
2012 ¹	\$ 512,616	\$ 419,927	\$ 92,689	\$ 1,155,591	36.3 %
2013	611,132	604,845	6,287	1,081,729	55.9
2014	624,467	705,100	(80,633)	1,006,633	70.0
2015 ¹	654,515	749,332	(94,817)	946,977	79.1
2016	752,161	716,465	35,697	872,358	82.1
2017	709,651	703,131	6,520	3,050,238	23.1
2018	627,621	650,740	(23,118)	3,115,261	20.9
2019	592,909	600,083	(7,175)	3,220,895	18.6
2020	601,956	613,729	(11,773)	3,380,365	18.2
2021	670,167	659,639	10,528	3,348,115	19.7

¹ Revised actuarial assumptions

² Beginning fiscal year 2017, Covered payroll was reported to be payroll for all State employees.

OTHER POSTEMPLOYMENT BENEFITS

(in thousands)

Fiscal Year Ended Sept. 30	Actuarially Determined Contribution (ADC)	Actual Employer Contribution	Contribution Deficiency (Excess)	Covered Payroll ²	Actual Contribution as a % of Covered Payroll
2012	\$ 960,640	\$ 672,655	\$ 287,984	\$ 2,895,193	23.2 %
2013 ¹	678,650	729,863	(51,213)	2,881,140	25.3
2014	619,512	755,883	(136,371)	2,857,324	26.5
2015 ¹	645,412	713,661	(68,249)	3,029,113	23.6
2016	659,698	686,652	(26,954)	2,989,101	23.0
2017	676,227	703,330	(27,103)	3,050,238	23.1
2018	744,210	688,884	55,326	3,115,261	22.1
2019	762,743	765,235	(2,492)	3,220,895	23.8
2020	681,397	703,567	(22,170)	3,380,365	20.8
2021	778,656	774,406	4,251	3,348,115	23.1

¹ Revised actuarial assumptions

² Beginning fiscal year 2017, Covered payroll based on implementation of GASB 85.

FINANCIAL SECTION

REQUIRED SUPPLEMENTARY INFORMATION

SCHEDULES OF INVESTMENT RETURNS

PENSION BENEFITS

Fiscal Year	Annual Return¹
2014	14.01 %
2015	1.01
2016	5.90
2017	13.24
2018	11.10
2019	5.12
2020	5.33
2021	27.34

¹ Annual money-weighted rate of return, net of investment expenses.

OPEB BENEFITS

Fiscal Year	Annual Return¹
2017	13.30 %
2018	10.86
2019	5.79
2020	5.17
2021	26.23

¹ Annual money-weighted rate of return, net of investment expenses.

FINANCIAL SECTION

NOTE TO REQUIRED SUPPLEMENTARY INFORMATION

NOTE A – DESCRIPTION

Ten year historical trend information designed to provide information about the System's progress made in accumulating sufficient assets to pay benefits when due is presented in the preceding schedules. Other ten year historical trend information related to the System is presented in the Statistical and Actuarial Sections of the report. This information is presented to enable the reader to assess the progress made by the System in accumulating sufficient assets to pay pension and other postemployment benefits as they become due.

The comparability of trend information is affected by changes in actuarial assumptions, benefit provisions, actuarial funding methods, accounting policies, and other changes. Those changes usually affect trends in contribution requirements and in ratios that use the pension and other postemployment benefit obligations as a factor.

The Schedules of Contributions are presented to show the responsibility of the Employer in meeting the actuarial requirements to maintain the System on a sound financial basis.

The Schedules of Changes in Net Pension and OPEB Liability, Schedules of Contributions, and Schedules of Investment Returns are schedules that are required in implementing GASB Statement No. 67 for pension and No. 74 for OPEB. These schedules are required to show information for ten years; additional years will be displayed as it becomes available. The Schedules of Changes in Net Pension and OPEB Liability represents in actuarial terms, the accrued liability less the fair value of assets represents in actuarial terms, the accrued liability less the fair value of assets. The Schedules of Contributions is a comparison of the employer's contributions to the actuarially determined contributions. The Schedule of Investment Returns represents a money-weighted rate of return that expresses investment performance, net of pension and OPEB plan investment expense, adjusted for the changing amounts actually invested.

The actuarially determined contributions presented in the Schedule of Contributions for pension and OPEB are calculated as of September 30, three years prior to the end of the fiscal year in which contributions are reported. The following actuarial methods and assumptions were used to determine the fiscal year 2021 contributions reported in that schedule.

FINANCIAL SECTION

NOTE TO REQUIRED SUPPLEMENTARY INFORMATION

Methods and Assumptions Used to Determine Contributions for Fiscal Year 2021:

Pension and OPEB

Valuation Date	September 30, 2018
Actuarial Cost Method	Entry Age, Normal
Remaining Amortization Period	16 years, as of October 1, 2020, ending September 30, 2036
Price Inflation	2.25%
Projected Salary Increases ¹	2.75% - 11.75%, including wage inflation at 2.75%
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition.
Mortality ²	
Retirees	RP-2014 Male and Female Healthy Annuitant Mortality Tables scaled by 93% for males and 98% for females and adjusted for mortality improvements using projection scale MP-2017 from 2006.
Active	RP-2014 Male and Female Employee Mortality Table scaled by 100% for males and 100% for females and adjusted for mortality improvements using projection scale MP-2017 from 2006.
Disabled Retirees	RP-2014 Male and Female Disabled Annuitant Mortality Table scaled by 100% for males and 100% for females and adjusted for mortality improvements using projection scale MP-2017 from 2006.

Pension¹

Investment Rate of Return	6.70% net of investment expenses
Asset Valuation Method	5 year smoothed fair value
Amortization Method	Level dollar, closed period

OPEB

Investment Rate of Return	6.90% net of investment expenses
Asset Valuation Method	5 year smoothed fair value
Amortization Method	Level percent of payroll, closed period
Projected Salary Increases	2.75% for MRP special duty officers only.
Healthcare Cost Trend Rates ³	8.25% Year 1 Graded to 3.50% Year 10
Aging Factors	Based on 2013 SOA "Health Care Costs – From Birth to Death"
Notes	Some of the assumptions used to develop the 2021 Total Pension Liability (TPL) and the 2021 Total OPEB Liability (TOL) are different than the assumptions shown above. The assumptions used to develop the TPL are described in Note 4 (page 29) of this report and the assumptions used to develop the TOL are described in Note 5 (page 32) of this report.

¹ Applies to SERS only.

² For MRP special duty officers and their beneficiaries, mortality assumptions apply only for the OPEB plan.

³ Applies to medical and Rx payments.

FINANCIAL SECTION

SUPPORTING SCHEDULES

SUMMARY SCHEDULE OF PENSION PLAN ADMINISTRATIVE AND OTHER EXPENSES

For Fiscal Year Ended September 30, 2021
(in thousands)

Personnel Services:

Staff Salaries	\$ 1,871
Staff Retirement and Social Security	1,049
Staff Other Fringe Benefits	372
Total	3,292

Professional Services:

Accounting	264
Actuarial	138
Attorney General	80
Audit	142
Consulting	8
Medical	129
Total	761

Building and Equipment:

Building Rentals	124
Equipment Purchase, Maintenance, and Rentals	7
Total	131

Miscellaneous:

Travel and Board Meetings	-
Office Supplies	2
Postage, Telephone, and Other	261
Printing	24
Technological Support	1,453
Total	1,740

Total Administrative and Other Expenses	\$ 5,925
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FINANCIAL SECTION

SUPPORTING SCHEDULES

SUMMARY SCHEDULE OF OPEB PLAN ADMINISTRATIVE AND OTHER EXPENSES

For Fiscal Year Ended September 30, 2021

(in thousands)

Personnel Services:

Staff Salaries	\$	220
Staff Retirement and Social Security		123
Staff Other Fringe Benefits		44
Total		<u>387</u>

Professional Services:

Accounting		80
Actuarial		42
Attorney General		24
Audit		43
Consulting		2
Medical		39
Total		<u>230</u>

Building and Equipment:

Building Rentals		38
Equipment Purchase, Maintenance, and Rentals		2
Total		<u>40</u>

Miscellaneous:

Travel and Board Meetings		-
Office Supplies		1
Postage, Telephone, and Other		80
Printing		7
Technological Support		439
Total		<u>528</u>

Retiree Insurance Providers:

Health Fees		9,148
Dental Fees		1,859
Vision Fees		70
Total		<u>11,077</u>

Total Administrative and Other Expenses	\$	<u><u>12,262</u></u>
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FINANCIAL SECTION

SUPPORTING SCHEDULES

SCHEDULE OF INVESTMENT EXPENSES

For Fiscal Year Ended September 30, 2021
(in thousands)

Securities Lending Expenses	\$	798
Other Investment Expenses ¹		
ORS-Investment Expenses ²		3,398
Custody Fees		355
Management Fees		72,030
Research Fees		<u>2,085</u>
Total Investment Expenses	\$	<u>78,665</u>

¹ Refer to the Investment Section for fees paid to investment professionals.

² Does not exclude Treasury Civil Service fees recorded as a pass through in the Schedule of Investment Fees - State Treasurer. As of September 30, 2021, fees totaled \$56,140.

SCHEDULE OF PAYMENTS FOR PROFESSIONAL SERVICES

For Fiscal Year Ended September 30, 2021
(in thousands)

Accounting	\$	344
Actuary		180
Attorney General		104
Independent Auditors		185
Consulting		11
Medical Advisor		<u>168</u>
Total Payments	\$	<u>991</u>

FINANCIAL SECTION

SUPPORTING SCHEDULES

DETAIL OF CHANGES IN PLAN FIDUCIARY NET POSITION

(Pension and other Postemployment Benefits)

For the Fiscal Year Ended September 30, 2021
(in thousands)

	Employee Contributions	Employer Contributions	Retired Benefit Payments	Undistributed Investment Income	OPEB	Total
Additions:						
Contributions:						
Member contributions	\$ 23,881	\$ -	\$ -	\$ -	\$ -	\$ 23,881
Employer contributions:	-	659,639	-	-	774,406	1,434,045
Other governmental contributions	-	-	-	-	104,777	104,777
Total contributions	23,881	659,639	-	-	879,183	1,562,704
Investment income (loss):						
Net increase (decrease) in fair value of investments	-	-	-	2,979,879	909,342	3,889,221
Interest, dividends, and other	-	-	-	269,354	84,485	353,839
Investment expenses:						
Other investment expenses	-	-	-	(59,029)	(18,839)	(77,868)
Securities lending activities:						
Securities lending income	-	-	-	2,175	708	2,883
Securities lending expenses	-	-	-	(596)	(202)	(798)
Net investment income (loss)	-	-	-	3,191,784	975,495	4,167,279
Other non-operating revenue	-	-	-	-	2	2
Miscellaneous income	-	-	64	-	3,575	3,639
Total additions	23,881	659,639	64	3,191,784	1,858,255	5,733,624
Deductions:						
Benefits paid to plan members and beneficiaries:						
Retirement benefits	-	-	1,459,749	-	-	1,459,749
Health benefits	-	-	-	-	360,544	360,544
Dental/vision benefits	-	-	-	-	38,384	38,384
Personal health care	-	-	-	-	2,729	2,729
Health reimbursement account	-	-	-	-	63	63
Refund of contributions	213	175	1	-	40	428
Uncollectible receivables	-	-	-	-	33,881	33,881
Administrative and other expenses	-	-	-	5,925	12,262	18,186
Total deductions	213	175	1,459,749	5,925	447,902	1,913,964
Net Increase (Decrease) before other changes	23,669	659,464	(1,459,685)	3,185,859	1,410,353	3,819,659
Other Changes in Net Position:						
Interest allocation	7,267	-	903,642	(910,910)	-	-
Transfers upon retirement	(47,402)	-	47,402	-	-	-
Transfers of employer shares	-	(796,804)	796,804	-	-	-
Total other changes in net position	(40,135)	(796,804)	1,747,848	(910,910)	-	-
Net Increase (Decrease) in Net Position	(16,466)	(137,340)	288,163	2,274,949	1,410,353	3,819,659
Net Position Restricted for Pension Benefits and OPEB:						
Beginning of Year - Restated	265,195	34,109	14,985,778	(3,212,802)	3,671,909	15,744,190
End of Year	\$ 248,729	\$ (103,231)	\$ 15,273,942	\$ (937,852)	\$ 5,082,262	\$ 19,563,849

FINANCIAL SECTION

SUPPORTING SCHEDULES

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INVESTMENT SECTION

**Prepared by Michigan Department of Treasury, Bureau of Investments
Jon M. Braeutigam, Chief Investment Officer**

Report on Investment Activity
Asset Allocation
Investment Results
Largest Assets Held
Schedule of Investment Fees
Schedule of Investment Commissions
Investment Summary

INVESTMENT SECTION

REPORT ON INVESTMENT ACTIVITY

INTRODUCTION

The State of Michigan Investment Board (Board) was created by Executive Order 2018-10 (Order) and serves as the investment fiduciary over the assets of the State sponsored defined benefit retirement systems (Systems). The Board is responsible for investing the Systems' assets in accordance with the duties and powers enumerated in the Order and State law. Pursuant to powers provided in the Order, the Board duly authorized and delegated duties to the Department of Treasury's Bureau of Investments (BOI) to invest, prudently manage, and oversee the assets of the Systems and to take certain other actions that support the BOI's mandate in this regard. In furtherance of these duties, the BOI delivers quarterly investment activity reports to the Board that detail the investments, goals, and objectives of the Systems.

The Board is comprised of five members: three (3) public members appointed by the Governor and two (2) ex-officio members. The public members serve four (4) year terms and are limited to two (2) such terms. The State Treasurer, as the chair of the Board, and the State Budget Director are the ex-officio members. As of September 30, 2021, members of the Board were as follows: Rachael Eubanks (chair, ex-officio member), Chris Harkins (ex-officio member), James B. Nicholson (public member), Reginald G. Sanders, CFA, CAIA (public member), and Dina L. Richard, CPA (public member). The public members serve without pay but may receive reasonable reimbursement for actual and necessary travel and other expenses to attend official Board meetings.

INVESTMENT POLICY & GOALS

The Board's Investment Policy Statement states that it and the BOI will operate in accordance with Public Employee Retirement System Investment Act (Act No. 314 of 1965) and within standard investment practices of the prudent person. This includes being authorized to invest in government obligations, corporate obligations, various short-term obligations, corporate (domestic and international) stocks, private equity interests, mutual funds, real estate interests, and other investments subject to specific parameters. Above all, Systems' assets are to be invested in a fiduciary capacity for the sole and exclusive benefit of the members of the Systems.

The Systems' Proxy Voting Policy sets forth directives on various issues as holders of publicly traded securities, including but not limited to: Boards of Directors, corporate governance, social issues, and various corporate actions. All proxies are reviewed and voted in accordance with the Systems' policy.

The primary function of the Systems is to provide retirement, survivor, and disability benefits along with health and other postemployment benefits to its members. The Board is investment fiduciary and custodian of the Systems' investments pursuant to the Order and other State law. The goals of the Systems are:

- Maintain sufficient liquidity to pay benefits
- Meet or exceed the actuarial assumption over the long term
- Perform in the top half of the public plan universe over the long term
- Diversify assets to preserve capital and avoid large losses
- Exceed individual asset class benchmarks over the long term

The strategy for achieving these goals is supported by investing the assets of the Systems according to a five-year asset allocation model. The Systems currently invest in eight different asset classes, which provides for a well-diversified portfolio.

INVESTMENT SECTION

REPORT ON INVESTMENT ACTIVITY

ASSET ALLOCATION

(Excludes Collateral on Loaned Securities)

Investment Category	As of 9/30/21 Actual %	Five-Year Target %
Domestic Equity Pools	22.8%	25.0%
International Equity Pools	16.2	15.0
Private Equity Pools	23.1	16.0
Real Estate and Infrastructure Pools	7.0	10.0
Fixed Income Pools	10.1	10.5
Absolute Return Pools	5.3	9.0
Real Return and Opportunistic Pools	12.1	12.5
Short-Term Investment Pools	3.4	2.0
TOTAL	100.0%	100.0%

INVESTMENT AUTHORITY

Pursuant to State law Executive Order 2018-10, which in part transferred to the Board the powers enumerated in (i) Section 91 of Act No. 380 of the Public Acts of 1965, as amended, and (ii) Section 12c of Act No. 314 of 1965), the Board is the investment fiduciary for the System, which is comprised of the State sponsored defined benefit retirement systems: Michigan Public School Employees' Retirement System, State Employees' Retirement System, Michigan State Police Retirement System, Michigan Judges' Retirement System, and the Michigan Military Retirement Provisions. The State Treasurer, State of Michigan, is custodian and ex officio treasurer of the retirement system for the Legislators, State of Michigan (Section 47 of Act no. 261 of the Public Acts of 1957, as amended).

Act No. 314 of the Public Acts of 1965, as amended, authorizes the investment of assets of public employee retirement systems or plans created and established by the State or any political subdivision.

INVESTMENT RESULTS

TOTAL PORTFOLIO RESULTS

For the fiscal year ended September 30, 2021, the total Michigan State Employees Retirement System's (System's) rate of return was 27.3% for the Pension Plan and 26.9% for the OPEB Plan as compiled by State Street Investment Analytics. Annualized rates of return for the Pension Plan for the three, five, and ten-year periods ending September 30, 2021, were: 12.0%, 12.1%, and 11.0% respectively.

Investment return calculations are prepared using a Time-Weighted rate of return.

DOMESTIC EQUITY POOLS

The objective for investments made in domestic equities is to meet or exceed the total return of the S&P Composite 1500 for one, three, and five-year periods and a market cycle.

For active management strategies, the objective is to earn returns that exceed the most relevant S&P Index, adjusting for market capitalization and style, for one, three, and five-year periods and a market cycle. Another objective is to rank above median in a universe of managers possessing a similar market cap and style characteristics.

The pools are invested primarily in equities or equity-related securities of U.S. companies through internal and externally managed strategies. The goal is to build a portfolio of strategies that will provide excess returns relative to the S&P Composite 1500 Index while providing a prudent measure of tracking error to the index. At times, a portion of the pools may be invested in exchange traded funds (ETFs) and fixed-income short-term securities with maturities of less than one year.

INVESTMENT SECTION

REPORT ON INVESTMENT ACTIVITY

The pools invest in equities and equity related securities that are listed on U.S. national securities exchanges, including American Depositary Receipts (ADRs). It may also invest in stocks that are traded over-the-counter. The pools diversify their investments by allocating their equity strategies with consideration of the capitalization weightings of the S&P Composite 1500 Index.

The following summarizes the weightings of the pools as of September 30, 2021:

Active	52.7 %
Passive	47.3
Total	<u>100.0 %</u>

Large-Cap	63.9 %
Multi-Cap	30.9
Mid-Cap	2.9
Small-Cap	2.3
Total	<u>100.0 %</u>

The System's Domestic Equity pools total rate of return was 33.2% for the Pension Plan and 33.6% for the OPEB Plans for fiscal year 2021. This compared with 31.4% for the S&P Composite 1500 Index.

At the close of fiscal year 2021, the Domestic Equity pools represented 22.8% of total investments. The following summarizes the System's 20.3% ownership share of the Domestic Equity pools at September 30, 2021:

Domestic Equity Pools

(In thousands)

Short-Term Pooled Investments	\$	155,416
Equities		4,271,488
Settlement Principal Payable		(2,347)
Settlement Proceeds Receivable		2,473
Accrued Dividends		3,851
Total	\$	<u>4,430,881</u>

INTERNATIONAL EQUITY POOLS

The objective for investments made in International Equity pools is to meet or exceed the total return of the MSCI ACWI Ex-USA Net for one, three, and five-year periods and a market cycle.

For active management strategies, the objective is to earn returns that exceed the most relevant MSCI Index, adjusting for market capitalization, style and geography for one, three, and five-year periods and a market cycle. Another objective is to rank above median in a universe of managers possessing a similar market capitalization, style and geography characteristics.

Active exposure is invested primarily in equities or equity-related securities of non-U.S. companies through externally managed strategies.

The pools diversify their investments by allocating its equity strategies with consideration of the economic development status weightings of the MSCI ACWI Ex-USA Index.

INVESTMENT SECTION

REPORT ON INVESTMENT ACTIVITY

The following summarizes the weightings of the pool as of September 30, 2021:

Active	75.2 %
Passive	24.8
Total	<u>100.0 %</u>

Developed	95.8 %
Emerging	4.2
Total	<u>100.0 %</u>

The System's International Equity pools total rate of return was 25.7% for Pension Plan and 25.8% for the OPEB Plans for fiscal year 2021. This compared with 23.9% for the MSCI ACWI Ex-USA Net.

At the close of fiscal year 2021, the International Equity pools represented 16.2% of total investments. The following summarizes the System's 20.3% ownership share of the International Equity Pools at September 30, 2021:

International Equity Pools

(in thousands)

Short-Term Pooled Investments	\$ 207,572
Equities	2,637,728
Fixed Income Securities	261,116
Market Value of Equity Contracts	28,870
Accrued Dividends and Interest	852
Total	<u>\$ 3,136,138</u>

PRIVATE EQUITY POOLS

The Private Equity pools objective is to meet or exceed the benchmark for all private equity investments over long time periods. The benchmark is the S&P 500 Index plus 300 basis points net of fees, lagged by three months over three, five, seven and ten year periods and a market cycle.

Private Equity Investments are investments in the private equity market, primarily through limited partnerships. The following summarizes the weightings of the pools as of September 30, 2021:

Buyout Funds	47.6%
Funds of Funds	25.2
Venture Capital Funds	13.1
Special Situation Funds	9.5
Liquidation Portfolio	3.1
Mezzanine Funds	1.5
Total	<u>100.0%</u>

The Private Equity pools had a return of 54.1% for the Pension and 54.0% for the OPEB Plans for the fiscal year ended September 30, 2021, versus the benchmark of 44.9%.

INVESTMENT SECTION

REPORT ON INVESTMENT ACTIVITY

At the close of fiscal year 2021, the Private Equity pools represented 23.1% of total investments. The following summarizes the System's 18.2% ownership share of the Private Equity pools at September 30, 2021:

Private Equity Pools

(in thousands)

Short-Term Pooled Investments	\$ 53,153
Equities	4,429,848
Settlement Proceeds Receivable	2,736
Total	<u>\$ 4,485,737</u>

REAL ESTATE AND INFRASTRUCTURE POOLS

The objective of the Real Estate and Infrastructure pools is to provide diversification and favorable risk adjusted returns primarily through income and appreciation of investments. Investments are typically held through investment entities, such as limited partnerships or limited liability companies, established for the specific purpose of owning, leasing, managing, financing, or developing real estate and infrastructure related investments.

The Real Estate and Infrastructure pools diversify its holdings by:

- **Geography** – The pools are invested globally and are diversified geographically so that it is not concentrated in a limited number of markets or geographic areas.
- **Size and Value** – The pools diversify its holdings by size so that it is not concentrated in a limited number of large investments
- **Investment Type** – The pools are diversified by investment type as summarized below.

Multi-family apartments	42.6 %
Commercial office buildings	8.3
Hotel	8.2
Infrastructure	10.7
Industrial warehouse buildings	20.9
Single Family	2.5
Retail shopping centers	4.5
Land	1.2
Short Term Investments	1.1
Total	<u>100.0 %</u>

The Real Estate and Infrastructure pools generated a return of 12.7% for the Pension and OPEB Plans for fiscal year 2021. The Real Estate and Infrastructure pools compare performance with two benchmark returns from the National Council of Real Estate Investment Fiduciaries (NCREIF): the NCREIF Property Index (less 130 basis points) was 10.7% and the NCREIF Fund Index – Open-End Diversified Core Equity (NFI-OCDE) was 13.6%.

INVESTMENT SECTION

REPORT ON INVESTMENT ACTIVITY

At the close of fiscal year 2021, the Real Estate and Infrastructure pools represented 7.0% of total investments. The following summarizes the System's 20.2% ownership share of the Real Estate and Infrastructure pools at September 30, 2021:

Real Estate and Infrastructure Pools

(in thousands)

Short-Term Pooled Investments	\$ 14,473
Real Estate Equities	1,195,402
Infrastructure Equities	144,278
Dividend Receivable	234
Total	<u>\$ 1,354,387</u>

FIXED INCOME POOLS

The objective for investments made in the Fixed Income pools is to meet or exceed the Bloomberg US Aggregate Bond Index over one, three, and five-year periods and market cycles. Another objective is to rank above median in a nationally recognized universe of managers possessing a similar style.

For Fixed Income sub-strategies, the objective return is to meet or exceed the most relevant Bloomberg benchmark index.

The pools are invested primarily in fixed income securities of U.S. companies through internal and externally managed strategies. The goal is to build a portfolio of strategies that will provide excess returns relative to the blended benchmark while providing minimal tracking error to the index. At times, a portion of the pools may be invested in exchange traded funds (ETFs) and fixed-income short-term securities with maturities of less than one year.

The pools invest in fixed income and related securities in a diversified portfolio of investment grade corporate issues, treasuries, agencies, government sponsored enterprises and government guaranteed mortgages. The pools diversify its investments by allocating its strategies with consideration of credit risk.

The System's Fixed Income pools total rate of return was 3.8% for the Pension and OPEB Plans for fiscal year 2021. This compared with (0.9)% for the Bloomberg US Aggregate Bond Index.

At the close of fiscal year 2021, the Fixed Income pools represented 10.1% of total investments. The following summarizes the System's 20.6% ownership share of the Fixed Income pools at September 30, 2021:

Fixed Income Pools

(In thousands)

Short-Term Pooled Investments	\$ 22,897
Fixed Income Securities	1,922,647
Accrued interest	3,792
Total	<u>\$ 1,949,336</u>

ABSOLUTE RETURN POOLS

The primary investment objective of the Absolute Return Strategies Pool is to generate a rate of return that meets or exceeds T-bills by 400 basis points net of fees over the one, three, and five-year periods and a market cycle. Another objective is to exceed the appropriate HFRI Fund of Funds Conservative Index median net of fees over one, three, and five-year periods and a market cycle.

The Absolute Return Strategies pool rate of return for the fiscal year was 15.3% for the Pension and OPEB Plans versus the benchmark's 12.4%.

INVESTMENT SECTION

REPORT ON INVESTMENT ACTIVITY

At the close of fiscal year 2021, the Absolute Return pools represented 5.3% of total investments. The following summarizes the System's 20.2% ownership share of the Absolute Return Strategies pool at September 30, 2021:

Absolute Return Pools

(in thousands)

Short-Term Pooled Investments	\$ 15,154
Equities	1,017,312
Total	<u><u>\$ 1,032,466</u></u>

REAL RETURN AND OPPORTUNISTIC POOLS

The primary investment objective of the Real Return and Opportunistic Pool is to generate a rate of return that meets or exceeds the increase in the CPI by at least four percent (4%) annually net of fees over one, three, and five-year periods and a market cycle. Opportunistic investments are targeted to earn a return that exceeds the current actuarial assumed rate of return, with the overall Real Return and Opportunistic Pool's benchmark an equal blend between the two benchmarks. If a peer universe is available, another objective is to rank above median in a nationally recognized universe of managers possessing a similar style.

The Real Return and Opportunistic pools rate of return for the fiscal year was 23.5% for the Pension and OPEB Plans versus the benchmark's 8.3%.

At the close of fiscal year 2021, the Real Return and Opportunistic pools represented 12.1% of total investments. The following summarizes the System's 20.2% ownership share of the Real Return and Opportunistic pools at September 30, 2021:

Real Return and Opportunistic Pools

(in thousands)

Short-Term Pooled Investments	\$ 26,115
Equities	2,314,677
Total	<u><u>\$ 2,340,792</u></u>

SHORT-TERM INVESTMENT POOLS

The objective of the Short Term Investment pools is to closely match the return performance of its benchmark, the 30 day Treasury bill. The Short Term Investment pools return for the fiscal year was 0.2% for the Pension and 0.2% for the OPEB plans versus the benchmark's 0.1%.

Potential areas of investment are:

- Obligations of the United States or its agencies
- Banker's acceptances, commercial accounts, certificates of deposit or depository receipts
- Repurchase agreements for the purchase of securities issued by the US government or its agencies
- Commercial paper rated at the time of purchase within the two highest classifications established by not less than two national rating services as determined by the State Treasurer
- Short duration investment grade corporate issues

INVESTMENT SECTION

REPORT ON INVESTMENT ACTIVITY

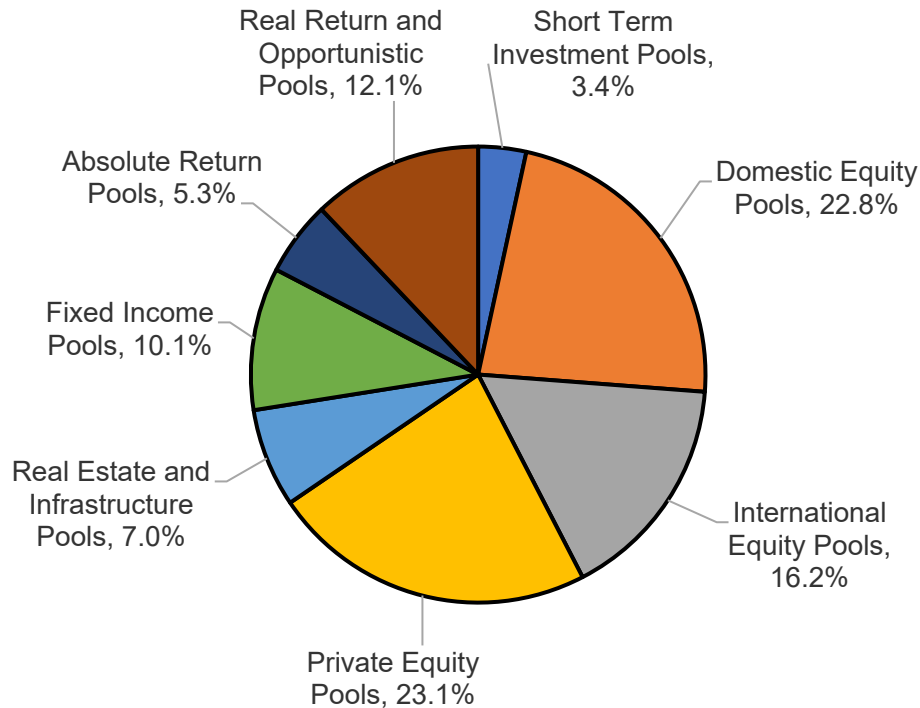
At the close of fiscal year 2021, the Short Term Investment pools represented 3.4% of total investments. The following summarizes the System's 51.2% ownership share of the Short Term Investment pools at September 30, 2021:

Short-Term Investment Pools

(in thousands)

Short-Term Pooled Investments	\$	319,439
Fixed Income Securities		342,228
Accrued interest		3
Total	\$	<u>661,670</u>

ASSET ALLOCATION – SECURITY TYPE ONLY



INVESTMENT SECTION

INVESTMENT RESULTS

PENSION PLAN INVESTMENT RESULTS

For the Period Ending September 30, 2021

Investment Category	Current Year	Annualized Rate of Return ¹			
		3 Years	5 Years	10 Years	
Total Portfolio	27.3 %	12.0 %	12.1 %	11.0 %	
Domestic Equity Pools	33.2	14.7	16.9	16.4	
S&P Composite 1500 Index	31.4	15.5	16.6	16.5	
International Equity Pools	25.7	9.5	10.1	8.8	
International Blended Benchmark ²	23.9	8.0	8.9	7.6	
Private Equity Pools	54.1	21.6	19.6	15.1	
Private Equity Benchmark ³	44.9	22.2	21.1	18.3	
Real Estate and Infrastructure Pools	12.7	3.9	5.9	8.5	
NCREIF Property Blended Index ⁴	10.7	5.4	5.5	7.6	
Fixed Income Pools	3.8	5.5	4.0	4.0	
Bloomberg US Aggregate Bond Index	(0.9)	5.4	2.9	3.0	
Absolute Return Pools	15.3	7.2	7.1	6.0	
HFRI Fund of Funds Conservative Aggregate Index	12.4	5.3	4.8	3.7	
Real Return and Opportunistic Pools	23.5	13.1	12.9	11.0	
Real Return and Opportunistic Benchmark ⁵	8.3	7.0	7.3	7.0	
Short Term Investment Pools	0.2	1.4	1.4	0.9	
30 Day Treasury Bill	0.1	1.1	1.1	0.6	

¹ Calculations used a time-weighted rate of return based on the market rate of return in accordance with industry standards. Excludes income and investment gains and losses from securities lending.

² As of 7/1/14, index is MSCI ACWI Ex-USA Net. History 10/1/10 to 6/30/14 is MSCI ACWI Ex-USA Gross. History 1/1/10 to 9/30/10 is S&P Developed BMI-EPAC Net 75/25. History prior to 1/1/10 is S&P Developed BMI-EPAC Net 50/50.

³ Index is blend of S&P 500 plus 300 bps with a three month lag.

⁴ As of 10/1/05, index is NCREIF less 130 bp. History prior to 10/1/05 reflects NCREIF less 75 bp.

⁵ As of 12/1/18 Benchmark is 50% (CPI+4%) and 50% (actuarial rate 7.05%). History prior to 12/1/18 reflects 50% (CPI+5%) and 50% (actuarial rate 8%).

INVESTMENT SECTION

INVESTMENT RESULTS

OPEB INVESTMENT RESULTS

For the Period Ending September 30, 2021

Investment Category	Current Year	Annualized Rate of Return ¹		
		3 Years	5 Years	10 Years
Total Portfolio	26.9 %	11.8 %	11.9 %	10.6 %
Domestic Equity Pools	33.6	14.8	17.0	16.5
S&P Composite 1500 Index	31.4	15.5	16.6	16.5
International Equity Pools	25.8	9.5	10.1	8.8
International Blended Benchmark ²	23.9	8.0	8.9	7.6
Private Equity Pools	54.0	21.5	19.6	15.1
Private Equity Benchmark ³	44.9	22.2	21.1	18.3
Real Estate and Infrastructure Pools	12.7	3.9	5.9	8.5
NCREIF Property Blended Index ⁴	10.7	5.4	5.5	7.6
Fixed Income Pools	3.8	5.5	4.0	4.0
Bloomberg US Aggregate Bond Index	(0.9)	5.4	2.9	3.0
Absolute Return Pools	15.3	7.2	7.1	6.0
HFRI Fund of Funds Conservative Aggregate Index	12.4	5.3	4.8	3.7
Real Return and Opportunistic Pools	23.5	13.1	12.9	11.0
Real Return and Opportunistic Benchmark ⁵	8.3	7.0	7.3	7.2
Short-Term Investment Pools	0.2	1.4	1.4	0.9
30-Day Treasury Bill	0.1	1.1	1.1	0.6

¹ Calculations used a time-weighted rate of return based on the market rate of return in accordance with industry standards. Excludes income and investment gains and losses from securities lending.

² As of 7/1/14, index is MSCI ACWI Ex-USA Net. History 10/1/10 to 6/30/14 is MSCI ACWI Ex-USA Gross. History 1/1/10 to 9/30/10 is S&P Developed BMI-EPAC Net 75/25. History prior to 1/1/10 is S&P Developed BMI-EPAC Net 50/50.

³ Index is blend of S&P 500 plus 300 bps with a three month lag.

⁴ As of 10/1/05, index is NCREIF less 130 bp. History prior to 10/1/05 reflects NCREIF less 75 bp.

⁵ As of 12/1/18 Real Return Benchmark is CPI + 400 bps net. Opportunistic is current Actuarial Rate of Return. History prior to 12/1/18 reflects 50% (CPI+5%) and 50% (actuarial rate 8%).

INVESTMENT SECTION

LARGEST ASSETS HELD

LARGEST STOCK HOLDINGS

(By Fair Value)
September 30, 2021

Rank	Shares	Stocks	Fair Value
1	597,749	Microsoft Corp.	\$ 168,517,316
2	1,135,339	Apple Inc.	160,650,513
3	33,169	Amazon.com Inc.	108,962,861
4	26,380	Alphabet Inc. CL A	70,527,928
5	1,088,985	Bristol Myers Squibb	64,435,230
6	2,256,271	AT&T Inc.	60,941,868
7	171,348	Facebook Inc. CL A	58,153,772
8	792,420	Athene Holding LTD CL A	54,573,943
9	229,450	Nvidia Corp.	47,532,929
10	17,500	Alphabet Inc. CL C	46,642,835

A complete list of holdings is available from the Michigan Department of Treasury.

The System's investments are commingled in various pooled accounts. Amounts, par value and number of shares represent the System's pro-rata share based on its ownership of the investment pools.

LARGEST BOND HOLDINGS

(By Fair Value)
September 30, 2021

Rank	Par Amount	Bonds & Notes	Fair Value
1	60,371,827	US Treasury N/B 0.25% Due 05/31/2025	\$ 59,334,186
2	33,476,424	FNMA TBA 30 YR 3.5 Single Family Mortgage	35,417,038
3	30,326,092	US Treasury N/B 2.375% Due 05/15/2029	32,525,918
4	28,114,617	US Treasury N/B 1.125% Due 02/15/2031	27,205,285
5	25,154,928	US Treasury N/B 2.5% Due 05/15/2024	26,507,005
6	26,161,125	US Treasury N/B 0.125% Due 09/15/2023	26,080,393
7	19,939,445	US Treasury N/B 3.375% Due 11/15/2048	25,337,894
8	25,154,928	US Treasury N/B 0.125% Due 07/15/2023	25,101,867
9	25,154,928	US Treasury N/B 0.375% Due 08/15/2024	25,060,597
10	24,924,306	US Treasury N/B 2.0 % Due 02/15/2050	24,417,057

A complete list of holdings is available from the Michigan Department of Treasury.

Largest Bond Holdings are exclusive of securities lending collateral.

The System's investments are commingled in various pooled accounts. Amounts, par value and number of shares represent the System's pro-rata share based on its ownership of the investment pools.

INVESTMENT SECTION

SCHEDULE OF INVESTMENT FEES

The State of Michigan Investment Board (Board) is the investment fiduciary and custodian of the System's funds pursuant to State law. Outside advisors are utilized to augment the State of Michigan's internal staff. 70.5% of the total investment portfolio is managed by fully discretionary outside advisors. The Michigan Department of Treasury's cost of operations applicable to the retirement system for the fiscal year end amounted to \$3,398 thousand or five and nine tenths basis points (.059%) of the fair value of the Assets under Management by the Board.

SCHEDULE OF INVESTMENT FEES

Investment Managers' Fees:

	Assets under Management (in thousands)	Fees (in thousands)	Basis Points*
State Treasurer	\$ 5,715,889	\$ 3,398	5.9
Outside Advisors for			
Short Term	78,046	7	0.9
Fixed Income	1,033,030	4,111	39.8
Absolute Return	1,032,466	1,806	17.5
Real Return and Opportunistic	2,318,060	12,577	54.3
International Equity	2,490,508	5,953	23.9
Domestic Equity	896,419	2,232	24.9
Private Equity	4,485,737	33,986	75.8
Real Estate and Infrastructure	1,341,252	11,358	84.7
Total	\$ 19,391,407	\$ 75,428	

Other Investment Services Fees:

Assets in Custody	\$ 19,197,511	\$ 2,440
Security Lending Collateral	630,025	376

* Private Equity partnership agreements that define the management fees, the asset management fees range from 0 to 250 basis points of the committed capital. For Real Estate and Infrastructure, the asset management fees range from 12 to 150 basis points. For Absolute Return, the asset management fees range from 0 to 200 basis points. For Real Return and Opportunistic, the asset management fees range from 0 to 200 basis points. These fees, in most cases, are netted against income.

INVESTMENT SECTION

SCHEDULE OF INVESTMENT COMMISSIONS

Fiscal Year Ended September 30, 2021

	Actual Commissions Paid ¹	Actual Number of Shares Traded ¹	Average Commission Per Share	Estimated Trade Costs Per Share	Estimated Research Costs Per Share	Estimated Trade Costs	Estimated Research Costs
Investment Brokerage Firms:							
BTIG LLC	\$ 132,266	11,119,497	\$ 0.01	\$ 0.01	\$ -	\$ 55,597	\$ -
Capital Institutional Services Inc.	18,545	3,702,947	0.01	0.01	-	37,029	-
Cowen & Company LLC	46,587	2,332,858	0.02	0.01	0.01	23,329	23,329
Drexel Hamilton LLC	2,555	511,147	0.01	0.01	-	5,111	-
J. P. Morgan Securities Inc.	47,430	2,527,481	0.02	0.01	0.01	25,275	25,275
Jefferies & Company	42	5,611	0.01	0.01	-	56	-
Merrill Lynch, Pierce, Fenner & Smith Inc.	33,507	1,340,240	0.03	0.01	0.02	13,402	26,805
MKM Partners LLC	78,444	4,880,104	0.02	0.01	0.01	48,801	48,801
Morgan Stanley & Co. Inc.	10,183	530,467	0.02	0.01	0.01	5,305	5,305
National Financial	41	4,089	0.01	0.01	-	41	-
OTA LLC	5	220	0.02	0.01	0.01	2	2
Raymond James and Associates Inc.	10,784	431,352	0.03	0.01	0.02	4,314	8,627
Roberts & Ryan Inv.	22,511	1,125,525	0.02	0.01	0.01	11,255	11,255
Stifel, Nicolaus & Co. Inc.	209	8,375	0.02	0.01	0.01	84	84
Wayne & Company	57,728	15,891,436	-	0.01	-	79,457	-
Glen Eagle Wealth	4,764	476,345	0.01	0.01	-	4,763	-
Total	\$ 465,601	44,887,694	\$ 0.02 ²	\$ 0.01	\$ 0.01	\$ 313,821	\$ 149,483

¹ Commissions are included in purchase and sale prices of investments. The commissions and shares represent the System's pro-rata share based on ownership of commission and share transactions in the investment pools.

² The average commission per share for all brokerage firms.

INVESTMENT SECTION

INVESTMENT SUMMARY

Fiscal Year Ended September 30, 2021

	<u>Fair Value ¹</u>	<u>Percent of Total Fair Value</u>	<u>Investment & Interest Income²</u>	<u>Percent of Total Investment & Interest Income</u>
Fixed Income Pools	\$ 1,949,336,458	10.1 %	\$ 69,281,628	1.6 %
Domestic Equity Pools	4,430,881,186	22.8	1,111,426,469	26.2
Real Estate and Infrastructure Pools	1,354,387,034	7.0	167,841,572	4.0
Private Equity Pools	4,485,737,068	23.1	1,672,031,162	39.4
International Equity Pools	3,136,137,582	16.2	644,846,029	15.2
Absolute Return Pools	1,032,466,383	5.3	116,682,660	2.8
Real Return and Opportunistic Pools	2,340,792,223	12.1	459,669,118	10.8
Short Term Investment Pools	<u>661,669,796 ³</u>	<u>3.4</u>	<u>1,196,804</u>	<u>0.0</u>
Total	<u>\$ 19,391,407,730</u>	<u>100.0 %</u>	<u>\$ 4,242,975,442</u>	<u>100.0 %</u>

¹ Fair value excludes \$630,024,522 in securities lending collateral for fiscal year 2021.

² Total Investment & Interest Income excludes net security lending income of \$2,085,755 for securities lending collateral.

³ Short term investment pools fair value includes \$193,896,386 of equity in common cash.

INVESTMENT SECTION

INVESTMENT SUMMARY

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ACTUARIAL SECTION

Actuary's Certification
Summary of Actuarial Assumptions and Methods
Schedules of Active Member Valuation Data
Prioritized Solvency Test
Analysis of System Experience - Pension
Analysis of System Experience - OPEB
Summary of Plan Provisions
Schedules of Funding Progress

ACTUARIAL SECTION

ACTUARY'S CERTIFICATION



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January 5, 2022

Ms. Michelle Lange, Acting Director
Department of Technology, Management and Budget
and
The State of Michigan Retirement Board
P.O. Box 30171
Lansing, Michigan 48909

Ladies and Gentlemen:

The basic financial objective of the Michigan State Employees' Retirement System (SERS) is to establish and receive contributions which when combined with present assets and future investment return will be sufficient to meet the financial obligations of the System to present and future benefit recipients. The progress towards meeting those financial objectives is illustrated in the Schedules of Funding Progress and the Schedules of Employer Contributions.

We performed actuarial funding valuations and issued actuarial funding reports for the SERS pension and retiree health (i.e., OPEB) plans as of September 30, 2020. The purpose of the September 30, 2020 annual actuarial valuations was to determine the contribution requirements for the fiscal year ending September 30, 2023, to measure the System's funding progress, and to provide actuarial information in connection with applicable Governmental Accounting Standards Board statements. The valuations should not be relied upon for any other purpose. The valuation process develops employer contributions that are sufficient to fund the System's normal cost (i.e., the costs assigned by the valuation method to the year of service about to be rendered), as well as to fund any unfunded accrued liabilities over a reasonable period. The valuation was completed based upon population data, asset data and plan provisions in effect on September 30, 2020.

In addition to the funding valuation reports, separate reports are issued to provide financial reporting information for SERS in accordance with Governmental Accounting Standards Board (GASB) Statement Nos. 67 and 68 (pension benefits) and Nos. 74 and 75 (retiree health benefits, or OPEB). Reports containing the actuarial results of the financial reporting valuations are produced annually after the publication of this letter. The GASB Statement Nos. 67, 68, 74 and 75 financial reporting valuations are based upon a measurement date of September 30, 2021.

The valuations were based upon information provided by the System's administrative staff concerning System benefit provisions, financial transactions, and individual members, terminated members, retirees and beneficiaries. We checked the data for internal and year to year consistency, but did not audit the data. As a result, we do not assume responsibility for the accuracy or completeness of the data provided by the System's administrative staff. The actuary summarizes and tabulates population data in order to analyze long term trends. The System's auditor audits the actuarial data annually.

One Towne Square | Suite 800 | Southfield, Michigan 48076-3723

ACTUARIAL SECTION

ACTUARY'S CERTIFICATION

Ms. Michelle Lange

January 5, 2022

Page 2

Annual actuarial valuations are based upon assumptions regarding future activity in specific risk areas including the rate of investment return and payroll growth, eligibility for the various classes of benefits and longevity among retired lives. These assumptions are adopted by the Board and the Department after considering the advice of the actuary and other professionals. Each actuarial valuation takes into account all prior differences between actual and assumed experience in each risk area and adjusts the contribution requirements as needed.

The following schedules in the Financial Section, the Actuarial Section, and the Statistical Section of the Annual Comprehensive Financial Report (ACFR) were prepared by the Department of Financial Services based upon certain information presented in the previously mentioned funding and financial reporting valuation reports:

Financial Section

- Note 1 - Table of System's Membership
- Note 4 - Net Pension Liability; Summary of Actuarial Assumptions and Methods
- Note 5 – Net OPEB Liability; Summary of Actuarial Assumptions and Methods
- Note A – Methods and Assumptions Used to Determine Contributions for FY 2021
- Schedules of Changes in the Net Pension Liability (NPL) and the Net OPEB Liability (NOL) and Related Ratios
- Schedules of Contributions Multiyear
- Sensitivity of the NPL to Changes in the Discount Rate
- Sensitivity of the NOL to Changes in the Discount Rate
- Sensitivity of the NOL to Changes in the Healthcare Cost Trend Rate Assumption

Actuarial Section

- Summary of Actuarial Assumptions and Methods used in the September 30, 2020 Pension Funding Valuation
- Percent of Eligible Active Members Retiring Within Next Year
- Separation from Active Employment Before Age and Service Retirement, Disability, and Individual Pay Increase Assumptions
- Schedule of Active Member Pension Valuation Data
- Schedule of Changes in the Retirement Rolls
- Prioritized Solvency Tests
- Analyses of System Experience
- Schedule of Active Member OPEB Valuation Data
- Schedule of Changes in the OPEB Rolls
- Schedules of Funding Progress

Statistical Section

- Schedule of Retired Members by Type of Retirement
- Schedule of Retired Members by Type of Pension Benefit
- Schedule of Retired Members by Type of Health Benefit
- Schedule of Average Benefit Payments – Pension, Medical/Rx, Dental, and Vision

In addition, we provided the information for the Schedule of OPEB Unfunded Actuarial Accrued Liability by Tier.



ACTUARIAL SECTION

ACTUARY'S CERTIFICATION

Ms. Michelle Lange
January 5, 2022
Page 3

The September 30, 2020 funding valuations and the September 30, 2021 financial reporting valuations were based upon assumptions that were recommended in connection with a study of System experience covering the period from October 1, 2012 through September 30, 2017. The pension and retiree health investment return assumptions were updated beginning with the September 30, 2018 funding valuations in accordance with the Dedicated Gains Policy adopted by the Board of Trustees. Future actuarial measurements may differ significantly from those presented in the annual valuations due to such factors as experience differing from that anticipated by actuarial assumptions, or changes in plan provisions, actuarial assumption/methods or applicable law. Due to the limited scope of the assignment, we did not perform an analysis of the potential range of future measurements.


The signing actuaries are independent of the plan sponsor.

The actuarial valuations of SERS were performed by qualified actuaries in accordance with standards of practice prescribed by the Actuarial Standards Board and in compliance with applicable State statutes. The assumptions and methods used for funding and financial reporting purposes are in conformity with the Actuarial Standards of Practice issued by the Actuarial Standards Board. Louise M. Gates and Mita D. Drazilov are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. It is our opinion that the calculated employer contribution meets the financial objective of the Retirement System.

Respectfully submitted,
Gabriel, Roeder, Smith & Company



Louise M. Gates, ASA, FCA, MAAA



Mita D. Drazilov, ASA, FCA, MAAA



ACTUARIAL SECTION

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

1. The investment return rate used in the pension valuation was 6.70% per year net of investment expenses, compounded annually. This rate of return is not the assumed real rate of return. Considering a wage inflation assumption of 2.75%, the 6.70% nominal rate of investment return translates into a real rate of investment return of 3.95% over wage inflation. Adopted 2018.
2. The healthy life mortality table used in evaluating allowances to be paid was the RP-2014 Male and Female Healthy Annuitant Mortality Tables, scaled by 93% for males and 98% for females, adjusted for mortality improvements using projection scale MP-2017 from 2006. Adopted 2018.
3. Sample probabilities of regular, unreduced retirement are shown in Schedule 1 on the next page. Adopted 2018.
4. Sample probabilities of withdrawal from service and disability, together with individual pay increase assumptions, are shown in Schedule 2 on the next page of this report. Adopted withdrawal/pay increase 2018 and disability 2010.
5. The active member population is closed to new hires. This will result in a gradual reduction in the total active member payroll over time.
6. An individual entry age actuarial cost method of valuation was used in determining actuarial liabilities and normal cost. Adopted 1975. Unfunded actuarial accrued liabilities are financed over a declining 40-year period for years beginning October 1, 1996. Adopted 1996.
7. The Department of Technology, Management and Budget approved the use of market value of assets as of September 30, 2006 for valuation purposes. For investment gains and losses that occur after that date, a 5-year smoothing technique will be used. Specifically, the excess (shortfall) of actual investment income (including interest, dividends, realized and unrealized gains or losses) over the imputed-income at the valuation interest rate is considered the gain (loss), which is spread over five years. Adopted 2007.
8. The data about persons now covered and about present assets was furnished by the System's administrative staff. Although examined for general reasonableness, the data was not audited by the actuary.
9. The actuarial valuation computations were made by or under the supervision of a Member of the American Academy of Actuaries (MAAA). The assumptions used in the actuarial valuations were adopted by the System's Board and the Department of Technology, Management and Budget after consulting with the actuary.
10. A 5-year experience investigation, covering the period from October 1, 2012 through September 30, 2017 was completed in 2018. The purpose of the study was to analyze the actual experience of the System versus that anticipated by actuarial assumptions then in use.
11. Gabriel, Roeder, Smith & Company was awarded the actuarial and consulting services contract beginning October 4, 2006.

ACTUARIAL SECTION

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

SCHEDULE 1

PERCENT OF ELIGIBLE ACTIVE MEMBERS RETIRING WITHIN NEXT YEAR

Retirement Ages	Correction Officers	Conservaton Officers	Other Members
45	- %	28 %	- %
48	-	28	-
51	35	28	-
55	23	28	15
58	18	28	10
61	18	28	13
64	22	40	16
67	50	50	21
70	100	100	50
75	100	100	100

SCHEDULE 2

SEPARATION FROM ACTIVE EMPLOYMENT BEFORE AGE & SERVICE RETIREMENT & INDIVIDUAL PAY INCREASE ASSUMPTIONS

Sample Ages	Years of Service	Percent of Active Members Withdrawing Within Next Year (Men and Women)	Percent of Active Members Becoming Disabled Within Next Year		Percent Increase in Pay During Next Year
			Non-Duty Disabilities	Duty Disabilities	
All	0	17.00 %	- %	- %	- %
	1	12.00	-	-	-
	2	8.00	-	-	-
	3	5.50	-	-	-
	4	4.50	-	-	-
25	5 & Over	3.50	0.03	-	8.75
35		2.38	0.10	0.01	3.95
45		1.84	0.34	0.04	3.25
55		1.60	0.92	0.08	3.15
60		1.60	2.10	0.11	2.75

ACTUARIAL SECTION

SCHEDULES OF ACTIVE MEMBER VALUATION DATA

SCHEDULE OF ACTIVE MEMBER PENSION VALUATION DATA

Valuation Date Sept. 30	Number	Reported Annual Payroll*	Average Annual Pay	Increase (Decrease)	Average Age	Average Service
2011	19,650	\$ 1,276,058	\$ 64,939	2.0 %	51.9	23.3
2012 ¹	17,860	1,551,591	64,703	(0.4)	52.5	24.2
2013	16,466	1,081,729	65,695	1.5	53.2	25.0
2014	14,985	1,010,987	67,467	2.7	53.7	25.8
2015	13,404	922,093	68,792	2.0	54.2	26.5
2016	11,965	850,584	71,089	3.3	54.7	27.2
2017	10,459	780,135	74,590	4.9	55.1	27.8
2018	9,128	702,141	76,922	3.1	55.6	28.5
2019	7,788	617,584	79,299	3.1	56.0	29.0
2020	6,515	537,027	82,429	3.9	56.5	29.7

¹ Excludes 516 individuals who became active members of Defined Contribution Plan during the 2011-2012 plan year.

* In thousands of dollars.

SCHEDULE OF ACTIVE MEMBER OPEB VALUATION DATA

Valuation Date Sept. 30	Number	Reported Annual Payroll*	Average Annual Pay	Increase (Decrease)	Average Age	Average Service
2012	50,609	\$ 2,895	\$ 57,207	- %	45.4	13.3
2013	50,419	2,881	57,144	(0.1)	45.5	13.4
2014	49,744	2,857	57,441	0.5	45.5	13.4
2015	49,020	3,209	61,784	7.6	45.5	13.3
2016	53,308	2,989	56,072	(9.3)	44.4	12.2
2017	49,348	3,244	65,730	17.2	45.0	12.7
2018	49,387	3,324	67,298	2.4	45.0	12.4
2019	49,602	3,424	69,025	2.6	44.8	12.0
2020	48,711	3,456	70,949	2.8	45.1	12.1

* In millions of dollars.

* This schedule is required to show information for ten years, additional years will be displayed as they become available.

ACTUARIAL SECTION

SCHEDULES OF ACTIVE MEMBER VALUATION DATA

SCHEDULE OF CHANGES IN RETIREMENT ROLLS

Year	Added to Rolls		Removed from Rolls		Rolls - End of Year		Increase in Annual Allowances	Average Annual Allowances
Ended Sept. 30	No.	Annual Allowances*	No.	Annual Allowances*	No.	Annual Allowances*		
2011	6,656	\$ 205,413	1,470	\$ 25,542	55,648	\$ 1,113,963	19.3 %	\$ 20,018
2012	2,186	59,238	1,546	29,801	56,288	1,143,400	2.6	20,313
2013	2,181	63,061	1,615	31,132	56,854	1,175,329	2.8	20,673
2014	2,421	69,805	1,660	32,801	57,615	1,212,333	3.1	21,042
2015	2,490	76,224	1,652	33,955	58,453	1,254,602	3.5	21,463
2016	2,306	71,644	1,721	35,486	59,038	1,290,760	2.9	21,863
2017	2,452	78,842	1,806	38,217	59,684	1,331,385	3.1	22,307
2018	2,224	74,366	1,898	39,706	60,010	1,366,045	2.6	22,764
2019	2,394	78,936	1,903	41,489	60,501	1,403,492	2.7	23,198
2020	2,089	74,233	1,957	43,331	60,633	1,434,394	2.2	23,657

* In thousands of dollars.

SCHEDULE OF CHANGES IN THE OPEB ROLLS

Year	Added to Rolls ¹		Removed from Rolls ¹		Rolls – End of Year		Increase in Annual Allowances	Average Annual Allowances
Ended Sept. 30	No.	Annual Allowances*	No.	Annual Allowances*	No.	Annual Allowances*		
2011		\$ -	-	\$ -	50,194	\$ 476,201	- %	\$ -
2012	1,915	22,870	1,530	27,052	45,491	472,019	(0.9)	9,332
2013	1,852	20,413	1,630	46,270	50,801	446,162	(5.5)	8,783
2014	2,052	22,366	1,643	25,398	51,210	443,130	(0.7)	8,653
2015	2,168	24,216	1,630	24,904	51,748	442,442	(0.2)	8,550
2016	1,989	60,150	1,716	22,012	52,021	480,580	8.6	9,238
2017	2,080	56,820	1,825	25,580	52,276	511,820	6.5	9,791
2018	1,827	22,642	1,816	28,835	52,287	505,627	(1.2)	9,670
2019	2,130	27,055	1,853	29,146	52,564	503,537	(0.4)	9,580
2020	1,847	37,132	1,912	30,355	52,499	510,314	1.3	9,720

* In thousands of dollars.

* This schedule is required to show information for ten years, additional years will be displayed as they become available.

¹ Annual allowance amounts are not available for fiscal years 2011 and prior.

Notes:

No. refers to number of retiree health contracts

Annual allowances added to rolls includes increases due to medical inflation and contract changes.

Annual allowances removed from rolls includes decreases due to contract changes.

ACTUARIAL SECTION

PRIORITIZED SOLVENCY TEST

The System's funding objective is to meet long-term benefit promises through contributions that remain approximately level from year to year as a percent of member payroll. If the contributions to the System are level in concept and soundly executed, the System will pay all promised benefits when due, the ultimate test of financial soundness. Testing for level contribution rates is the long-term solvency test.

A prioritized solvency test is another means of checking a system's progress under its funding program. In a short condition test, the plan's present assets (cash and investments) are compared with: (1) active member contributions on deposit; (2) the liabilities for future benefits to present retired lives; and (3) the liabilities for service already rendered by active and inactive members. In a system that has been following the discipline of level percent of payroll financing, the liabilities for active member contributions on deposit (liability 1) and the liabilities for future benefits to present retired lives (liability 2) will be fully covered by present assets (except in rare circumstances). In addition, the liabilities for service already rendered by active members (liability 3) are normally partially covered by the remainder of present assets. Generally, if the System has been using level-cost financing, the funded portion of liability 3 will increase over time. Liability 3 being fully funded is not necessarily a by-product of level percent of payroll funding methods.

The schedules that follow illustrate the history of the liabilities of the System and are indicative of the System's policy of following the discipline of level percent of payroll financing.

PENSION BENEFITS

(\$ in millions)

Valuation Date	Actuarial Accrued Liability (AAL)			Valuation Assets	Portion of AAL Covered by Assets			
	(1)	(2)	(3)		(1)	(2)	(3)	(4) ¹
	Active Member Contributions	Retirants and Beneficiaries	Active and Inactive Members (Employer Financed Portion)					
Sept. 30								
2011	\$ 93	\$ 11,197	\$ 4,307	\$ 10,212	100.0 %	90.4 %	- %	65.5 %
2012	121	11,392	4,141	9,447	100.0	81.9	-	60.3
2013	162	11,612	3,874	9,438	100.0	79.9	-	60.3
2014	195	11,869	3,707	9,962	100.0	82.3	-	63.2
2014 ¹	195	12,149	3,829	9,962	100.0	80.4	-	61.6
2015	220	12,483	3,534	10,417	100.0	81.7	-	64.2
2016 ¹	239	13,240	3,537	10,937	100.0	80.8	-	64.3
2017	246	13,549	3,313	11,407	100.0	82.4	-	66.7
2017 ¹	246	14,104	3,531	11,884	100.0	82.5	-	66.5
2018	250	14,337	3,249	12,149	100.0	83.0	-	68.1
2018 ¹	250	15,259	3,846	12,494	100.0	80.2	-	65.8
2019	242	15,564	3,115	12,374	100.0	77.9	-	65.4
2020	232	15,783	2,728	12,297	100.0	76.4	-	65.6

¹ Revised actuarial assumptions.

ACTUARIAL SECTION

PRIORITIZED SOLVENCY TEST

OTHER POSTEMPLOYMENT BENEFITS

(\$ in millions)

Valuation Date Sept. 30	Actuarial Accrued Liability (AAL)			Valuation Assets	Portion of AAL Covered by Assets			
	(1)	(2)	(3)		(1)	(2)	(3)	(4) ¹
	Active Member Contributions	Retirants and Beneficiaries	Active and Inactive Members (Employer Financed Portion) ³					
2011	\$ -	\$ 8,418	\$ 5,833	\$ -	- %	- %	- %	- %
2012 ²	-	5,633	3,124	344	-	6.1	-	3.9
2013	-	5,335	2,864	663	-	12.4	-	8.1
2014 ²	-	5,792	2,957	1,058	-	18.3	-	12.1
2015	-	6,047	2,951	1,302	-	21.5	-	14.5
2016 ²	-	6,680	3,317	1,602	-	24.0	-	16.0
2017	-	6,414	3,035	2,047	-	31.9	-	21.7
2017 ²	-	6,498	3,097	2,047	-	31.5	-	21.3
2018	-	6,500	3,027	2,508	-	38.6	-	26.3
2018 ²	-	7,164	3,466	2,562	-	35.8	-	24.1
2019	-	6,215	3,008	3,078	-	49.5	-	33.4
2020	-	5,925	2,786	3,699	-	62.4	-	42.5

¹ Percent funded on a total valuation asset and total actuarial accrued liability basis.

² Revised actuarial assumptions and/or methods.

³ Includes liability for 'Monetized' members.

ACTUARIAL SECTION

ANALYSIS OF SYSTEM EXPERIENCE – PENSION

GAINS/(LOSSES) IN ACCRUED LIABILITIES

During Year Ended September 30, 2020
Resulting from Differences Between Assumed Experience & Actual Experience

Type of Activity	Gain/(Loss)
1 Retirements (including Disability Retirement). If members retire at older ages or with lower final average pay than assumed, there is a gain. If younger ages or higher average pays, a loss.	\$ (15,251,745)
2 Withdrawal from Employment (including death-in-service). If more liabilities are released by withdrawals and deaths than assumed, there is a gain. If smaller releases, a loss.	11,190,128
3 Pay Increases. If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	8,224,242
4 Investment Income. If there is greater investment income than assumed, there is a gain. If less income, a loss.	(80,212,322)
5 Death After Retirement. If retirants and inactive vested members live longer than assumed, there is a loss. If not as long, a gain.	24,829,189
6 Rehires. Rehires into the System will generally result in an actuarial loss	-
7 Other. Miscellaneous gains and losses resulting from data adjustments, timing of financial transactions, etc.	(4,511,085)
8 Composite Gain (or Loss) During Year.	\$ (55,731,593)

ACTUARIAL SECTION

ANALYSIS OF SYSTEM EXPERIENCE – OPEB

GAINS/(LOSSES) IN ACCRUED LIABILITIES

During Year Ended September 30, 2020
Resulting from Differences Between Assumed Experience & Actual Experience

	Type of Activity	Gain/(Loss)
1	Premiums. Gains and losses from actual premiums in valuation year versus that assumed from prior valuation	\$ 436,445,459
2	Investment Income. If there is greater investment income than assumed, there is a gain. If less income, a loss.	(21,298,165)
3	Demographic and Other. Gain and losses resulting from demographic experience data adjustments, timing of financial transactions, etc.	313,877,503
4	Composite Gain (or Loss) During Year.	<u>\$ 729,024,797</u>

ACTUARIAL SECTION

SUMMARY OF PLAN PROVISIONS

Our actuarial valuation of the System as of September 30, 2020, is based on the present provisions of the Michigan State Employees' Retirement Act (Public Act 240 of 1943, as amended).

REGULAR RETIREMENT

(No reduction factor for age)

- **Eligibility** – Age 55 with 30 years service, or age 60 with 10 or more years of service. Corrections Officers may retire at age 51 with 25 or more years of service, or age 56 with 10 or more years of service. Conservation Officers may retire after 25 years of service regardless of age.
- **Annual Amount** – Total service times 1.5% of FAC. For members with 20 or more years of service, a \$3,000 minimum annual benefit is payable. Corrections Officers receive an additional temporary supplement to age 62 equal to the product of supplemental service times 0.5% of FAC. Conservation Officers retiring after 25 years receive a benefit equal to 60% of FAC.

EARLY RETIREMENT

(Age Reduction Factor Used)

- **Eligibility** – Age 55 with 15 or more years of service.
- **Annual Amount** – Computed as regular retirement benefit but reduced by 0.5% for each month under age 60.

DEFERRED RETIREMENT

(Vested benefit)

- **Eligibility** – 10 years of service (five years for unclassified persons in the executive or legislative branch). Benefit commences at age 60.
- **Annual Amount** Regular retirement benefit based on service and final average compensation at time of termination.

DUTY DISABILITY RETIREMENT

- **Eligibility** – No age or service requirement.
- **Annual Amount** – Disability age 60+: Computed as regular retirement benefit with minimum benefit based on 10 years service. Disability prior to age 60: To age 60, benefit is computed as a regular retirement benefit using service at the time of disability retirement with a minimum benefit of \$6,000 per year. Additional limitation such that benefit plus workers' compensation does not exceed final compensation. At age 60, benefit is recomputed as a regular retirement benefit with service granted for period in receipt of disability benefit before age 60. If the member dies before age 60, benefits are payable to a surviving spouse computed as a regular retirement benefit but based on service at time of disability retirement plus elapsed time between date of retirement and age 60.

NONDUTY DISABILITY RETIREMENT

- **Eligibility** – 10 years of service.
- **Annual Amount** – Computed as regular retirement benefit based on service and FAC at time of disability. Minimum annual benefit is \$600. Eligible Group 2 and Group 3 members may elect this benefit (in lieu of PA 264 benefits).

DUTY DEATH BEFORE RETIREMENT

- **Eligibility** – No age or service requirement.
- **Annual Amount** – Accumulated employee contributions are refunded. Surviving spouse receives annual benefit computed as a regular retirement benefit as if the deceased member retired the day before date of death and elected Option A. Benefit is based on member's service at time of death, or 10 years of service, whichever is greater. A minimum benefit of \$6,000 per year is payable. Children under age 21 each receive equal share of one-half of the benefit payable (surviving spouse receives the other half), to a maximum of one-half for all children. A given child's share of benefits terminates upon the child's marriage, death or attainment of age 21. In the event that there is no surviving spouse, the benefit is allocated equally among

ACTUARIAL SECTION

SUMMARY OF PLAN PROVISIONS

all children subject to the limitations described on prior page. In the event that there is no surviving spouse or eligible children, benefits may be paid to an eligible, dependent parent. Benefits end upon the marriage or death of the surviving parent. Additional limitation such that benefit plus workers' compensation does not exceed final compensation.

NONDUTY DEATH BEFORE RETIREMENT

- **Eligibility** –10 years of service. In the case of a deceased vested former member, the survivor benefit commences when the deceased former member would have attained age 60.
- **Annual Amount** – Computed as regular retirement benefit but reduced in accordance with a 100% joint and survivor election.

POSTRETIREMENT COST-OF-LIVING ADJUSTMENTS

One-time upward adjustments have been made in 1972, 1974, 1976, 1977 and 1987. Beginning in 1983, some benefit recipients share in a distribution of a portion of investment income earned in excess of 8% annually (supplemental payment). Beginning in 1988, all benefit recipients are eligible for automatic 3% annual (non-compounded) benefit increases, with a maximum \$300 annual increase. Eligibility for the above benefits:

Retired before October 1, 1987 Greater of supplemental payment or the combination of the 1987 one-time adjustment and the automatic increases.

Retired on or after October 1, 1987 Automatic increases only.

POSTRETIREMENT HEALTHCARE BENEFITS

Persons in receipt of retirement allowance (including members who did not retire directly from the System, but come from a vested deferred status), and their dependents, are eligible for 90% System paid health insurance coverage and 90% System paid dental and vision insurance.

MEMBER CONTRIBUTIONS

Group 1 Members: 4% of annual pay effective April 1, 2012.

Group 2 Members: 4% of annual pay effective April 1, 2012 until the date of transfer to DC pension plan.

Group 3 Members: N/A

DEFINED CONTRIBUTION LEGISLATION (PUBLIC ACT 487 OF 1996)

New state employees hired on or after March 31, 1997 become participants in Tier 2 (i.e., a defined contribution plan) rather than Tier 1 (i.e., the above described defined benefit plan).

Active members on March 30, 1997 could irrevocably elect to terminate membership in Tier 1 and become participants in Tier 2. Elections had to be in writing and submitted between January 2, 1998 and April 30, 1998. Such members became Tier 2 participants on June 1, 1998, and had the actuarial present value of their Tier 1 accrued benefit transferred into Tier 2 by September 30, 1998.

A defined benefit disability pension or death-in-service pension may be payable if a Tier 2 participant becomes disabled or dies in service.

FORMER TIER 1 MEMBERS

A former non-vested member who is reemployed on or after January 1, 2014 is not eligible for membership in Tier 1. This type of member shall become a qualified participant in Tier 2, and shall be treated as being first employed by the State as of his or her date of reemployment.

ACTUARIAL SECTION

SCHEDULES OF FUNDING PROGRESS

SCHEDULE OF FUNDING PROGRESS – PENSION PLAN

(\$ in millions)

Valuation Date Sept 30	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded (Overfunded) Accrued Liability (UAAL) (b-a)	Funded Ratio (a/b)	Active Payroll (c)	UAAL as a % of Active Payroll ((b-a)/c)
2011	\$ 10,212	\$ 15,597	\$ 5,385	65.5 %	\$ 1,276	422.0 %
2012	9,447	15,654	6,207	60.3	1,156	537.1
2013	9,438	15,648	6,210	60.3	1,082	574.1
2014	9,962	15,771	5,809	63.2	1,011	574.6
2014 ¹	9,962	16,173	6,211	61.6	1,011	614.4
2015	10,417	16,237	5,821	64.2	922	631.3
2016	10,937	16,291	5,353	67.1	851	629.3
2016 ¹	10,937	17,016	6,078	64.3	851	714.6
2017	11,407	17,108	5,700	66.7	780	730.7
2017 ¹	11,884	17,881	5,997	66.5	780	768.7
2018	12,149	17,836	5,687	68.1	702	810.0
2018 ¹	12,494	18,955	6,501	65.8	702	925.9
2019	12,374	18,921	6,547	65.4	618	1,060.1
2020	12,297	18,743	6,446	65.6	537	1,200.4

1 Revised actuarial assumptions.

Source: Gabriel Roeder Smith & Co.

SCHEDULE OF FUNDING PROGRESS – OPEB PLAN

(\$ in millions)

Valuation Date Sept 30	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded (Overfunded) Accrued Liability (UAAL) (b-a)	Funded Ratio (a/b)	Active Payroll (c)	UAAL as a % of Active Payroll ((b-a)/c)
2011	\$ -	\$ 14,251	\$ 14,251	- %	\$ 3,040	468.8 %
2012 ¹	344	8,757	8,413	3.9	2,895	290.6
2013	663	8,199	7,536	8.1	2,881	261.6
2014 ¹	1,058	8,749	7,691	12.1	2,857	269.2
2015	1,302	9,002	7,697	14.5	3,029	254.2
2016	1,602	9,498	7,896	16.9	2,989	264.2
2016 ¹	1,602	9,997	8,395	16.0	2,989	280.9
2017	2,047	9,449	7,402	21.7	3,244	228.2
2017 ¹	2,047	9,595	7,548	21.3	3,244	232.7
2018	2,508	9,527	7,018	26.3	3,324	211.2
2018 ¹	2,562	10,630	8,069	24.1	3,324	242.8
2019	3,078	9,223	6,145	33.4	3,424	179.5
2020	3,699	8,711	5,011	42.5	3,456	145.0

1 Revised actuarial assumptions.

Source: Gabriel Roeder Smith & Co.

ACTUARIAL SECTION

SCHEDULES OF FUNDING PROGRESS

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STATISTICAL SECTION

Contents

Schedules of Additions by Source
Schedules of Deductions by Type
Schedules of Changes in Fiduciary Net Position
Schedules of Benefits and Refunds by Type
Schedules of Retired Members by Type of Benefit
Schedule of Other Postemployment Benefits
Schedules of Average Benefit Payments
Ten Year History of Membership

STATISTICAL SECTION

CONTENTS

This part of the System's annual comprehensive financial report presents detailed information as a context for understanding what the information in the financial statements, note disclosures, and required supplementary information says about the System's overall financial health.

FINANCIAL TRENDS

These schedules contain trend information to help the reader understand how the System's financial performance and fiscal health has changed over time. The schedules are presented for the last ten fiscal years. Schedules included are:

- Schedule of Pension Plan Additions by Source
- Schedule of OPEB Plan Additions by Source
- Schedule of Pension Plan Deductions by Type
- Schedule of OPEB Plan Deductions by Type
- Schedule of Changes in Fiduciary Net Position – Pension Plan
- Schedule of Changes in Fiduciary Net Position – OPEB Plan
- Schedule of Pension Benefit and Refunds by Type
- Schedule of OPEB Benefits and Refunds by Type

OPERATING INFORMATION

These schedules contain contextual information to assist the reader's understanding of how the System's financial information relates to the combination of participating members and the benefits it provides. Schedules are presented for the last ten fiscal years, except where noted. Schedules included are:

- Schedule of Retired Members by Type of Pension Benefit
- Schedule of Retired Members by Type of Other Postemployment Benefits
- Schedule of Retired Members by Type of Retirement
- Schedule of Other Postemployment Benefits
- Schedule of Average Benefit Payments – Pension
- Schedule of Average Benefit Payments – Health
- Schedule of Average Benefit Payments – Dental
- Schedule of Average Benefit Payments – Vision
- Ten Year History of Membership

STATISTICAL SECTION

SCHEDULES OF ADDITIONS BY SOURCE

SCHEDULE OF PENSION PLAN ADDITIONS BY SOURCE

Last Ten Years

Fiscal Year Ended Sept. 30	Member Contributions	Employer Contributions		Net Investment & Other Income	Total
		Dollars	% of Annual Reported Payroll		
2012	\$ 33,290,784	\$ 419,926,997	36.3 %	\$ 1,330,021,741	\$ 1,783,239,522
2013	53,035,321	604,845,495	55.9	1,185,983,179	1,843,863,995
2014	47,527,233	705,100,454	70.0	1,529,625,882	2,282,253,569
2015	46,689,032	749,487,469	81.3	232,642,604	1,028,819,105
2016	46,665,882	716,464,627	84.2	781,651,240	1,544,781,748
2017	40,838,900	703,130,797	90.1	1,411,689,735	2,155,659,433
2018	35,598,366	650,739,520	92.7	1,273,573,539	1,959,911,425
2019	28,442,002	600,083,089	97.2	611,157,571	1,239,682,663
2020	25,264,952	613,728,653	114.3	599,318,388	1,238,311,992
2021	23,881,406	659,639,389	NA	3,191,847,609	3,875,368,405

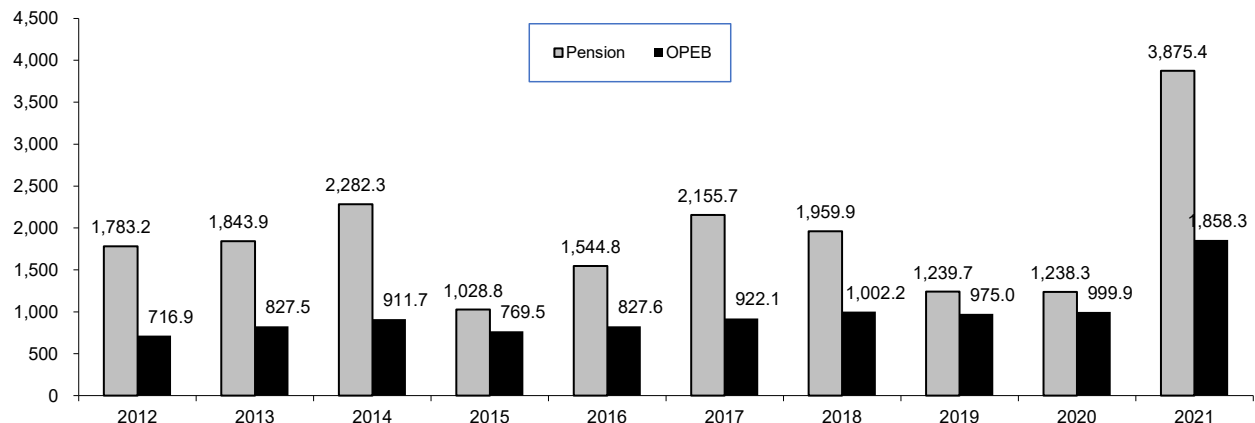
SCHEDULE OF OPEB PLAN ADDITIONS BY SOURCE

Last Ten Years

Fiscal Year Ended Sept. 30	Member Contributions	Employer Contributions		Net Investment & Other Income	Total
		Dollars	% of Annual Reported Payroll		
2012	\$ 27,431,916	\$ 648,881,078	22.4 %	\$ 40,613,600	\$ 716,926,594
2013	43,590,023	688,348,987	23.9	95,530,670	827,469,680
2014	40,441,402	700,938,446	24.5	170,312,487	911,692,335
2015	37,687,750	664,368,713	21.9	67,437,137	769,493,600
2016	38,661,386	617,662,359	20.7	171,309,486	827,633,231
2017	27,000	643,568,646	19.8	278,495,329	922,090,975
2018	-	688,884,013	20.7	313,330,737	1,002,214,750
2019	-	765,235,166	22.4	209,795,649	975,030,816
2020	-	703,567,225	20.4	296,341,673	999,908,898
2021	-	774,405,529	NA	1,083,849,730	1,858,255,259

TOTAL ADDITIONS

Year Ended September 30
(in millions)



STATISTICAL SECTION

SCHEDULES OF DEDUCTIONS BY TYPE

SCHEDULE OF PENSION PLAN DEDUCTIONS BY TYPE

Last Ten Years

Fiscal Year Ended Sept. 30	Benefit Payments	Refunds and Transfers	Administrative and Other Expenses	Total
2012	\$ 1,156,035,451	\$ 188,926	\$ 9,253,880	\$ 1,165,478,257
2013	1,187,911,357	114,053	5,658,318	1,193,683,728
2014	1,222,881,091	151,929	6,930,656	1,229,963,676
2015	1,265,335,477	144,115	6,227,748	1,271,707,340
2016	1,289,597,875	130,258	6,628,719	1,296,356,853
2017	1,322,339,410	318,670	6,284,973	1,328,943,054
2018	1,362,275,032	205,121	6,488,354	1,368,968,507
2019	1,398,264,962	116,402	11,411,169	1,409,792,533
2020	1,432,400,830	311,218	5,955,829	1,438,667,877
2021	1,459,748,602	388,667	5,924,583	1,466,061,852

SCHEDULE OF OPEB PLAN DEDUCTIONS BY TYPE

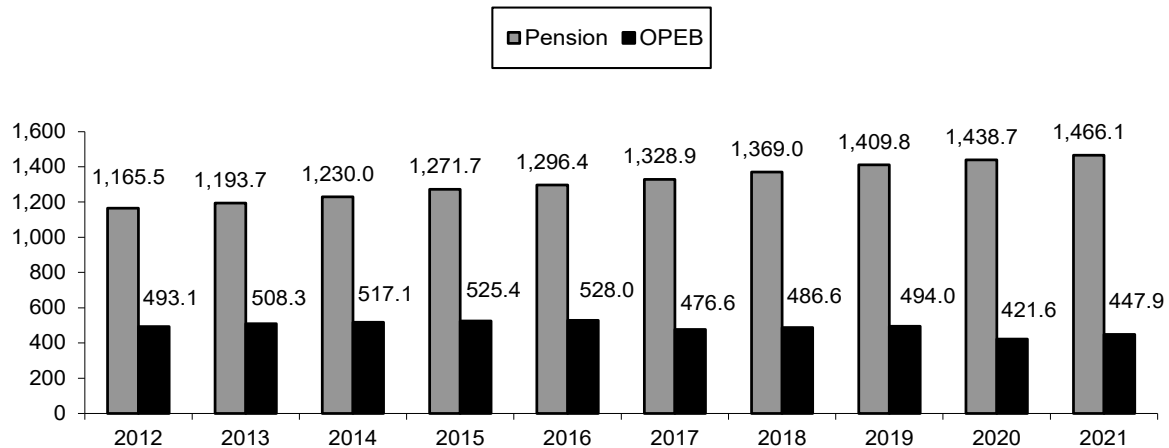
Last Ten Years

Fiscal Year Ended Sept. 30	Benefit Payments	Refunds and Transfers	Administrative and Other Expenses	Total
2012	\$ 476,508,499	\$ 16,904	\$ 16,618,156	\$ 493,143,559
2013	485,707,110	14,735	22,603,899	508,325,744
2014	491,569,369	22,624	25,536,117	517,128,110
2015	500,629,557	17,402	24,754,938	525,401,896
2016	502,316,967	39,053	25,605,860	527,961,880
2017	452,299,965	27,039	24,317,443	476,644,447
2018	461,375,750	14,937	25,231,700	486,622,386
2019	468,671,388	13,129	25,273,990	493,958,508
2020	405,512,811	28,302	16,042,384	421,583,497
2021	401,720,038	39,548	46,142,792	447,902,378

TOTAL DEDUCTIONS

Year Ended September 30

(in millions)



STATISTICAL SECTION

SCHEDULES OF DEDUCTIONS BY TYPE

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STATISTICAL SECTION

SCHEDULES OF CHANGES IN FIDUCIARY NET POSITION

SCHEDULE OF CHANGES IN FIDUCIARY NET POSITION – PENSION PLAN

Last Ten Years
(in thousands)

	Fiscal Year			
	2012	2013	2014	2015
Member contributions	\$ 33,291	\$ 53,035	\$ 47,527	\$ 46,688
Employer contributions	419,927	604,845	705,100	749,487
Net investment income	1,329,925	1,185,726	1,529,583	232,588
Transfer from other systems	-	1	-	1
Miscellaneous income	96	256	43	54
Total Additions	1,783,240	1,843,864	2,282,253	1,028,819
Pension benefits	1,156,035	1,187,911	1,222,881	1,265,335
Refunds of contributions	189	105	152	144
Transfer to other systems	-	9	-	-
Uncollectable account receivables	-	-	-	-
Administrative and other expenses	9,254	5,658	6,931	6,228
Total Deductions	1,165,478	1,193,684	1,229,964	1,271,707
Changes in net position	\$ 617,762	\$ 650,180	\$ 1,052,290	\$ (242,888)

SCHEDULE OF CHANGES IN FIDUCIARY NET POSITION – OPEB PLAN

Last Ten Years
(in thousands)

	Fiscal Year			
	2012	2013	2014	2015
Member contributions	\$ 27,432	\$ 43,590	\$ 40,441	\$ 37,688
Employer contributions	648,881	688,349	700,938	664,369
Other governmental contributions	23,774	41,514	54,945	49,292
Net investment income	16,592	53,592	115,308	18,034
Transfer from other systems	-	-	-	-
Other non-operating revenue	-	-	-	-
Miscellaneous income	248	425	60	111
Total Additions	716,927	827,470	911,692	769,494
Health care benefits	476,508	485,707	491,569	500,630
Refunds of contributions	17	15	23	17
Transfer to other systems	-	-	-	-
Uncollectable accounts	-	-	-	-
Administrative and Other Expenses	16,618	22,604	25,536	24,755
Total Deductions	493,144	508,326	517,128	525,402
Changes in net position	\$ 223,783	\$ 319,144	\$ 394,564	\$ 244,092

STATISTICAL SECTION

SCHEDULES OF CHANGES IN FIDUCIARY NET POSITION

Fiscal Year (continued)					
2016	2017	2018	2019	2020	2021
\$ 46,666	\$ 40,839	\$ 35,598	\$ 28,442	\$ 25,265	\$ 23,881
716,465	703,131	650,740	600,083	613,729	659,639
781,528	1,411,395	1,273,509	611,140	599,246	3,191,784
3	20	-	-	-	-
120	274	64	17	73	64
1,544,782	2,155,659	1,959,911	1,239,683	1,238,312	3,875,368
1,289,598	1,322,339	1,362,275	1,398,265	1,432,401	1,459,749
130	318	205	116	311	389
-	1	-	-	-	-
-	-	-	4,423	-	-
6,629	6,285	6,488	6,988	5,956	5,925
1,296,357	1,328,943	1,368,968	1,409,793	1,438,668	1,466,062
\$ 248,425	\$ 826,716	\$ 590,943	\$ (170,110)	\$ (200,356)	\$ 2,409,307

Fiscal Year (Continued)					
2016	2017	2018	2019	2020	2021
\$ 38,661	\$ 27	\$ -	\$ -	\$ -	\$ -
617,662	643,569	688,884	765,235	703,567	774,406
68,990	59,762	83,620	65,604	123,515	104,777
102,120	217,955	229,539	144,126	163,011	975,495
-	-	-	-	-	-
-	-	-	-	-	2
199	778	172	66	9,816	3,575
827,633	922,091	1,002,215	975,031	999,909	1,858,255
502,317	452,300	461,376	468,671	405,513	401,720
39	27	15	13	28	40
-	-	-	-	-	-
-	-	-	-	-	33,881
25,606	24,317	25,232	25,274	16,042	12,262
527,962	476,644	486,622	493,959	421,583	447,902
\$ 299,671	\$ 445,447	\$ 515,592	\$ 481,072	\$ 578,325	\$ 1,410,353

STATISTICAL SECTION

SCHEDULES OF BENEFITS AND REFUNDS BY TYPE

SCHEDULE OF PENSION BENEFITS AND REFUNDS BY TYPE

Last Ten Years

Fiscal Year Ended Sept. 30	Regular Benefits*	Disability Benefits	Survivor Benefits	Refunds			Investment Income	Total
				Employer	Employee	Retired Benefits		
2012	\$ 1,020,591,855	\$ 44,263,358	\$ 91,180,238	\$ 54,635	\$ 111,837	\$ 20,419	\$ 2,035	\$ 1,156,224,377
2013	1,046,440,379	44,960,182	96,510,796	46,830	47,317	11,111	-	1,188,016,615
2014	1,075,606,289	46,058,694	101,216,109	77,348	75,536	(955)	-	1,223,033,020
2015	1,113,035,295	46,634,211	105,665,971	91,170	50,383	2,562	-	1,265,479,592
2016	1,132,833,858	46,774,427	109,989,590	84,564	23,706	2,164	19,824	1,289,728,133
2017	1,159,969,953	46,735,053	115,634,404	202,297	108,860	6,870	-	1,322,657,438
2018	1,194,267,310	46,440,568	121,567,154	100,673	64,959	39,489	-	1,362,480,153
2019	1,224,920,457	46,334,892	127,009,613	27,970	86,497	1,935	-	1,398,381,364
2020	1,254,553,190	46,049,155	131,798,485	84,575	226,643	-	-	1,432,712,048
2021	1,276,503,269	45,779,315	137,466,017	175,351	212,712	604	-	1,460,137,269

* Includes prior post retirement adjustments

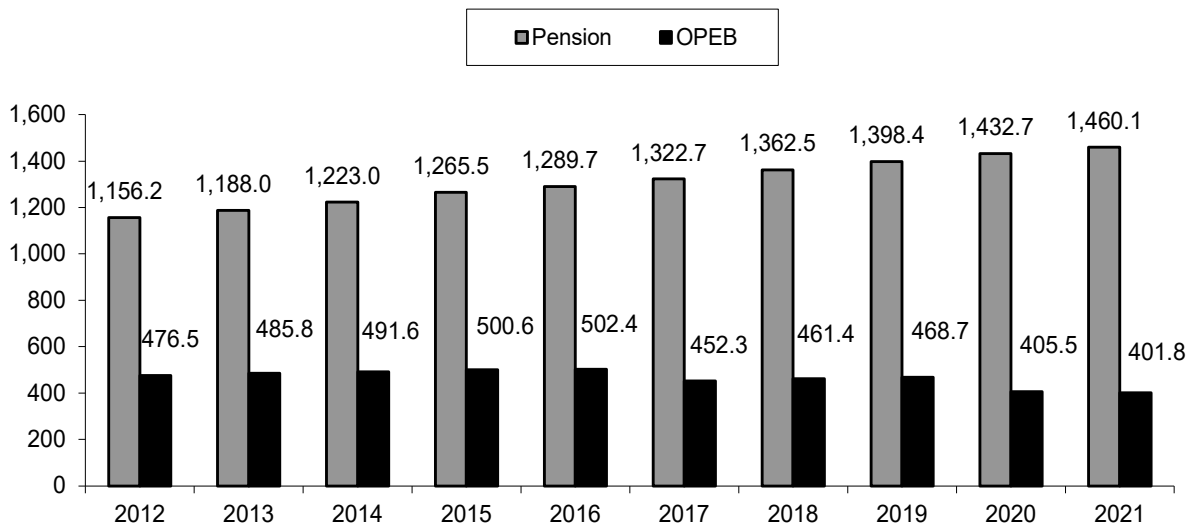
SCHEDULE OF OPEB BENEFITS AND REFUNDS BY TYPE

Last Ten Years

Fiscal Year Ended Sept. 30	Health Benefits	Dental Benefits	Vision Benefits	Personal Health Care	Health Reimbursement Account	OPEB Refunds	Total
2012	\$ 433,878,978	\$ 37,327,504	\$ 3,961,792	\$ 1,340,225	\$ -	\$ 16,904	\$ 476,525,403
2013	440,197,204	37,726,459	3,377,956	4,433,182	10,126	14,735	485,759,661
2014	446,022,465	38,154,766	3,466,375	3,907,862	17,902	22,624	491,591,993
2015	453,617,812	38,919,834	3,163,993	4,893,957	33,959	17,401	500,646,957
2016	455,156,486	39,769,337	3,191,534	4,151,445	48,211	39,054	502,356,067
2017	408,393,708	36,329,749	4,338,876	3,198,031	39,600	27,039	452,327,004
2018	419,259,759	35,925,100	2,558,035	3,560,830	72,026	14,937	461,390,687
2019	425,870,326	36,411,328	3,359,234	3,000,680	29,820	13,129	468,684,517
2020	370,209,498	29,311,424	2,993,433	2,946,210	52,246	28,302	405,541,113
2021	360,544,345	34,664,666	3,719,065	2,728,904	63,059	39,548	401,759,586

TOTAL BENEFIT DEDUCTIONS

Year Ended September 30
(in millions)



STATISTICAL SECTION

SCHEDULES OF RETIRED MEMBERS BY TYPE OF BENEFIT

SCHEDULE OF RETIRED MEMBERS BY TYPE OF PENSION BENEFITS

September 30, 2020

Monthly Pension Benefit Amt	Number of Retirees	Selected Option*							
		Reg.	Opt. A	Opt. B	Opt. C	Opt. E	Opt. E1	Opt. E2	Opt. E3
\$ 1 - 400	1,904	817	556	342	56	83	28	20	2
401 - 800	6,676	2,918	1,924	1,067	199	300	89	161	18
801 - 1,200	7,851	2,846	2,001	1,305	245	810	215	375	54
1,201 - 1,600	8,145	3,309	2,299	1,032	349	658	166	267	65
1,601 - 2,000	8,699	3,638	2,732	1,293	506	302	116	87	25
2,001 - 2,400	8,437	3,563	2,597	1,361	594	140	96	58	28
2,401 - 2,800	6,851	2,956	2,006	1,150	497	118	52	53	19
2,801 - 3,200	4,674	2,018	1,343	771	356	102	38	30	16
3,201 - 3,600	2,976	1,264	831	518	250	59	16	28	10
3,601 - 4,000	1,763	783	461	307	149	30	14	10	9
over 4,000	2,657	1,191	661	505	247	30	12	7	4
Totals	60,633	25,303	17,411	9,651	3,448	2,632	842	1,096	250

* Selected Option

Reg. – Straight life allowance	Opt. E1 – Social Security equated w/100% survivor option
Opt. A – 100% survivor option	Opt. E2 – Social Security equated w/50% survivor option
Opt. B – 50% survivor option	Opt. E3 – Social Security equated w/75% survivor option
Opt. C – 75% survivor option	
Opt. E – Social Security equated	

Source: Gabriel Roeder Smith & Co.

SCHEDULE OF RETIRED MEMBERS BY TYPE OF OTHER POSTEMPLOYMENT BENEFITS*

September 30, 2020

Monthly Pension Benefit Amt	Retirees	Health	Dental	Vision
\$ 1 - 400	1,904	833	887	878
401 - 800	6,676	4,099	4,335	4,307
801 - 1,200	7,851	6,088	6,271	6,232
1,201 - 1,600	8,145	7,020	7,165	7,142
1,601 - 2,000	8,699	7,816	7,958	7,939
2,001 - 2,400	8,437	7,700	7,861	7,840
2,401 - 2,800	6,851	6,276	6,380	6,361
2,801 - 3,200	4,674	4,252	4,338	4,325
3,201 - 3,600	2,976	2,733	2,792	2,793
3,601 - 4,000	1,763	1,618	1,655	1,650
Over 4,000	2,657	2,421	2,466	2,459
Totals	60,633	50,856	52,108	51,926

* Number counts only include members participating in the SERS defined benefit pension plan only

Source: Gabriel Roeder Smith & Co.

STATISTICAL SECTION

SCHEDULE OF RETIRED MEMBERS BY TYPE OF RETIREMENT

SCHEDULE OF RETIRED MEMBERS BY TYPE OF RETIREMENT

September 30, 2020

Monthly Pension Benefit Amt	Number of Retirees	Type of Retirement*							
		1	2	3	4	5	6	7	8
\$ 1 - 400	1,904	1,416	220	13	156	6	55	8	30
401 - 800	6,676	4,252	866	71	898	14	292	33	250
801 - 1,200	7,851	4,700	1,164	22	1,010	2	364	159	430
1,201 - 1,600	8,145	5,013	825	23	989	3	353	559	380
1,601 - 2,000	8,699	5,780	792	18	544	2	241	1,146	176
2,001 - 2,400	8,437	6,143	573	9	193	0	135	1,314	70
2,401 - 2,800	6,851	5,171	308	1	50	0	75	1,218	28
2,801 - 3,200	4,674	3,518	159	2	13	0	25	950	7
3,201 - 3,600	2,976	2,280	71	0	10	0	19	594	2
3,601 - 4,000	1,763	1,389	35	0	2	0	4	332	1
over 4,000	2,657	2,302	53	0	2	0	10	288	2
Totals	60,633	41,964	5,066	159	3,867	27	1,573	6,601	1,376

* Type of Retirement

1 - Normal retirement for age & service

2 - Survivor payment - normal or early retirement

3 - Duty disability retirement (incl. survivors)

4 - Non-duty disability retirement (incl. survivors)

5 - Survivor payment - duty death in service

6 - Survivor payment - non-duty death in service

7 - Retirees with supplemental benefits for early retirement incentive factors

8 - Retirees with reduced benefits for early retirement reduction factors

Source: Gabriel Roeder Smith & Co.

STATISTICAL SECTION

SCHEDULE OF OTHER POSTEMPLOYMENT BENEFITS

For Year Ended September 30, 2021

(in thousands)

Claims

Health Insurance	\$	296,581
Vision Insurance		3,608
Dental Insurance		34,018

Estimated Claims Liability

Health Insurance	63,964
Vision Insurance	111
Dental Insurance	647

Personnel Services:

Staff Salaries	220
Staff Retirement and Social Security	123
Staff Other Fringe Benefits	44

Professional Services:

Accounting	80
Actuarial	42
Audit	43
Attorney General	24
Consulting	2
Medical	39

Building and Equipment:

Building Rentals	38
Equipment Purchase, Maintenance, and Rentals	2

Miscellaneous:

Travel and Board Meetings	-
Office Supplies	1
Postage, Telephone, and Other	80
Printing	7
Technological Support	439

Retiree Insurance Providers:

Health Fees	9,148
Dental Fees	1,859
Vision Fees	70

Other Expenses

Refunds	40
Personal Health Care	2,729
Health Reimbursement Account	63

Uncollectible Accounts	33,881
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Grand Total	\$	447,902
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STATISTICAL SECTION

SCHEDULES OF AVERAGE BENEFIT PAYMENTS

SCHEDULE OF AVERAGE BENEFIT PAYMENTS – PENSION*

Payment Periods	Last Ten Years							Total
	Credited Service (Years) as of September 30							
	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30+	
Period 10/1/10 to 9/30/11								
Average Monthly Benefit	\$ 987	\$ 1,005	\$ 670	\$ 993	\$ 1,373	\$ 1,850	\$ 2,440	\$ 1,668
Average Final Average Salary	31,075	39,981	35,412	39,132	43,695	47,053	54,109	45,804
Number of Active Retirants	1,298	1,386	7,139	7,656	8,199	11,216	18,754	55,648
Period 10/1/11 to 9/30/12								
Average Monthly Benefit	\$ 1,048	\$ 1,079	\$ 692	\$ 1,027	\$ 1,407	\$ 1,881	\$ 2,464	\$ 1,693
Average Final Average Salary	31,733	41,222	36,014	40,175	44,698	48,067	54,671	46,556
Number of Active Retirants	1,539	1,592	7,155	7,655	8,279	11,311	18,757	56,288
Period 10/1/12 to 9/30/13								
Average Monthly Benefit	\$ 1,055	\$ 1,126	\$ 707	\$ 1,051	\$ 1,434	\$ 1,902	\$ 2,489	\$ 1,723
Average Final Average Salary	31,296	41,294	36,418	41,064	45,578	48,834	53,324	47,333
Number of Active Retirants	1,102	1,795	7,192	7,710	8,388	11,554	19,113	56,854
Period 10/1/13 to 9/30/14								
Average Monthly Benefit	\$ 386	\$ 487	\$ 669	\$ 1,037	\$ 1,433	\$ 1,908	\$ 2,505	\$ 1,753
Average Final Average Salary	26,402	40,117	35,776	41,152	45,886	49,336	55,821	48,120
Number of Active Retirants	112	462	7,423	7,949	8,814	12,361	20,494	57,615
Period 10/1/14 to 9/30/15								
Average Monthly Benefit	\$ 383	\$ 456	\$ 681	\$ 1,058	\$ 1,455	\$ 1,938	\$ 2,541	\$ 1,789
Average Final Average Salary	26,312	40,611	36,081	41,764	46,623	50,309	56,758	48,985
Number of Active Retirants	103	467	7,434	7,903	8,851	12,679	21,016	58,453
Period 10/1/15 to 9/30/16								
Average Monthly Benefit	\$ 372	\$ 489	\$ 694	\$ 1,077	\$ 1,479	\$ 1,959	\$ 2,572	\$ 1,822
Average Final Average Salary	25,879	41,265	36,401	42,229	47,363	51,031	57,582	49,759
Number of Active Retirants	96	456	7,416	7,816	8,814	12,854	21,586	59,038
Period 10/1/16 to 9/30/17								
Average Monthly Benefit	\$ 356	\$ 491	\$ 705	\$ 1,092	\$ 1,503	\$ 1,985	\$ 2,610	\$ 1,859
Average Final Average Salary	27,282	41,193	36,628	42,565	48,094	51,844	58,576	50,596
Number of Active Retirants	89	457	7,406	7,719	8,779	12,984	22,250	59,684
Period 10/1/17 to 9/30/18								
Average Monthly Benefit	\$ 366	\$ 487	\$ 718	\$ 1,109	\$ 1,527	\$ 2,016	\$ 2,647	\$ 1,897
Average Final Average Salary	26,527	41,272	36,934	42,889	48,836	52,622	59,464	51,392
Number of Active Retirants	86	462	7,359	7,558	8,717	13,067	22,761	60,010
Period 10/1/18 to 9/30/19								
Average Monthly Benefit	\$ 361	\$ 494	\$ 725	\$ 1,128	\$ 1,550	\$ 2,043	\$ 2,688	\$ 1,933
Average Final Average Salary	27,097	41,656	37,134	43,226	49,501	53,319	60,423	52,166
Number of Active Retirants	78	456	7,383	7,451	8,706	13,118	23,309	60,501
Period 10/1/19 to 9/30/20								
Average Monthly Benefit	\$ 366	\$ 494	\$ 733	\$ 1,146	\$ 1,575	\$ 2,070	\$ 2,728	\$ 1,971
Average Final Average Salary	27,121	41,892	37,362	43,577	49,910	54,034	61,392	52,939
Number of Active Retirants	78	454	7,307	7,297	8,593	13,149	23,755	60,633

* Number counts only include members participating in the SERS defined benefit pension plan.

Average monthly benefits shown are pension benefits.

Source: Gabriel Roeder Smith & Co.

STATISTICAL SECTION

SCHEDULES OF AVERAGE BENEFIT PAYMENTS

SCHEDULE OF AVERAGE BENEFIT PAYMENTS – HEALTH*

Payment Periods	Last Ten Years Credited Service (Years) as of September 30							Total
	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30+	
Period 10/1/10 to 9/30/11								
Average Monthly Benefit	\$ 1,060	\$ 995	\$ 707	\$ 1,017	\$ 1,402	\$ 1,875	\$ 2,484	\$ 1,721
Average Final Average Salary	32,687	39,054	36,121	39,281	43,823	46,829	53,921	46,043
Number of Active Retirants	1,057	1,358	5,678	6,542	7,454	10,241	16,843	49,171
Period 10/1/11 to 9/30/12								
Average Monthly Benefit	\$ 1,120	\$ 1,075	\$ 731	\$ 1,055	\$ 1,439	\$ 1,910	\$ 2,512	\$ 1,751
Average Final Average Salary	33,240	40,547	36,734	40,426	44,805	47,850	54,591	46,845
Number of Active Retirants	1,257	1,526	5,612	6,520	7,503	10,286	16,816	49,520
Period 10/1/12 to 9/30/13								
Average Monthly Benefit	\$ 1,157	\$ 1,128	\$ 751	\$ 1,083	\$ 1,467	\$ 1,934	\$ 2,538	\$ 1,787
Average Final Average Salary	34,086	40,640	37,226	41,330	45,600	48,606	55,128	47,648
Number of Active Retirants	861	1,694	5,525	6,481	7,544	10,467	17,053	49,625
Period 10/1/13 to 9/30/14								
Average Monthly Benefit	\$ 353	\$ 538	\$ 707	\$ 1,072	\$ 1,472	\$ 1,946	\$ 2,563	\$ 1,824
Average Final Average Salary	28,776	37,647	36,473	41,481	46,100	49,180	55,718	48,477
Number of Active Retirants	75	509	5,599	6,643	7,863	11,128	18,169	49,986
Period 10/1/14 to 9/30/15								
Average Monthly Benefit	\$ 356	\$ 543	\$ 722	\$ 1,097	\$ 1,497	\$ 1,980	\$ 2,600	\$ 1,864
Average Final Average Salary	29,236	37,933	36,778	42,156	46,822	50,187	56,622	49,372
Number of Active Retirants	69	498	5,527	6,574	7,582	11,372	18,606	50,498
Period 10/1/15 to 9/30/16								
Average Monthly Benefit	\$ 342	\$ 552	\$ 738	\$ 1,119	\$ 1,522	\$ 2,005	\$ 2,636	\$ 1,905
Average Final Average Salary	28,929	38,799	37,113	47,671	47,557	50,920	57,484	50,208
Number of Active Retirants	62	476	5,427	6,430	7,780	11,495	19,062	50,732
Period 10/1/16 to 9/30/17								
Average Monthly Benefit	\$ 344	\$ 561	\$ 752	\$ 1,139	\$ 1,548	\$ 2,035	\$ 2,677	\$ 1,949
Average Final Average Salary	29,457	38,961	37,368	43,045	48,313	51,723	58,464	51,089
Number of Active Retirants	55	468	5,321	6,273	7,700	11,540	19,578	50,935
Period 10/1/17 to 9/30/18								
Average Monthly Benefit	\$ 380	\$ 566	\$ 766	\$ 1,159	\$ 1,574	\$ 2,067	\$ 2,718	\$ 1,991
Average Final Average Salary	29,571	39,384	37,655	43,431	49,046	52,447	59,381	51,920
Number of Active Retirants	50	459	5,233	6,100	7,617	11,564	19,985	51,008
Period 10/1/18 to 9/30/19								
Average Monthly Benefit	\$ 382	\$ 576	\$ 779	\$ 1,179	\$ 1,599	\$ 2,098	\$ 2,762	\$ 2,036
Average Final Average Salary	31,714	40,259	37,933	43,749	49,655	53,232	60,362	52,785
Number of Active Retirants	41	445	5,130	5,951	7,565	11,574	20,441	51,147
Period 10/1/19 to 9/30/20								
Average Monthly Benefit	\$ 391	\$ 580	\$ 789	\$ 1,200	\$ 1,626	\$ 2,129	\$ 2,807	\$ 2,083
Average Final Average Salary	32,243	40,730	38,194	44,182	50,146	53,965	61,355	53,658
Number of Active Retirants	41	428	4,949	5,742	7,407	11,525	20,764	50,856

* Average monthly benefits shown are pension benefits.

Source: Gabriel Roeder Smith & Co.

STATISTICAL SECTION

SCHEDULES OF AVERAGE BENEFIT PAYMENTS

SCHEDULE OF AVERAGE BENEFIT PAYMENTS – DENTAL *

Payment Periods	Last Ten Years							Total
	Credited Service (Years) as of September 30							
	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30+	
Period 10/1/10 to 9/30/11								
Average Monthly Benefit	\$ 1,060	\$ 985	\$ 706	\$ 1,020	\$ 1,404	\$ 1,879	\$ 2,488	\$ 1,724
Average Final Average Salary	32,815	39,018	36,186	39,483	43,935	46,955	54,041	46,163
Number of Active Retirants	1,058	1,380	5,761	6,587	7,487	10,300	17,014	49,585
Period 10/1/11 to 9/30/12								
Average Monthly Benefit	\$ 1,116	\$ 1,061	\$ 730	\$ 1,056	\$ 1,440	\$ 1,912	\$ 2,515	\$ 1,752
Average Final Average Salary	33,242	40,446	36,738	40,577	44,914	47,929	54,697	46,926
Number of Active Retirants	1,265	1,552	5,722	6,574	7,533	10,360	17,004	50,010
Period 10/1/12 to 9/30/13								
Average Monthly Benefit	\$ 1,148	\$ 1,113	\$ 749	\$ 1,083	\$ 1,469	\$ 1,936	\$ 2,542	\$ 1,786
Average Final Average Salary	33,972	40,611	37,229	41,452	45,774	48,676	55,250	47,723
Number of Active Retirants	873	1,727	5,657	6,580	7,602	10,555	17,282	50,276
Period 10/1/13 to 9/30/14								
Average Monthly Benefit	\$ 348	\$ 532	\$ 705	\$ 1,072	\$ 1,473	\$ 1,947	\$ 2,567	\$ 1,823
Average Final Average Salary	28,959	37,747	36,488	41,585	46,202	49,257	55,836	48,546
Number of Active Retirants	81	538	5,749	6,748	7,936	11,237	18,424	50,713
Period 10/1/14 to 9/30/15								
Average Monthly Benefit	\$ 350	\$ 536	\$ 720	\$ 1,096	\$ 1,497	\$ 1,981	\$ 2,604	\$ 1,863
Average Final Average Salary	29,008	34,048	36,778	42,238	46,913	50,248	56,729	49,424
Number of Active Retirants	74	528	5,683	6,690	7,929	11,486	18,879	51,269
Period 10/1/15 to 9/30/16								
Average Monthly Benefit	\$ 337	\$ 543	\$ 735	\$ 1,119	\$ 1,522	\$ 2,006	\$ 2,639	\$ 1,903
Average Final Average Salary	28,700	38,807	37,072	42,758	47,647	50,992	57,571	50,243
Number of Active Retirants	67	503	5,605	6,548	7,864	11,628	19,344	51,559
Period 10/1/16 to 9/30/17								
Average Monthly Benefit	\$ 335	\$ 550	\$ 749	\$ 1,137	\$ 1,548	\$ 2,035	\$ 2,680	\$ 1,945
Average Final Average Salary	29,087	39,004	37,346	43,099	48,379	51,763	58,540	51,102
Number of Active Retirants	58	498	5,514	6,403	7,793	11,685	19,886	51,837
Period 10/1/17 to 9/30/18								
Average Monthly Benefit	\$ 369	\$ 558	\$ 762	\$ 1,156	\$ 1,573	\$ 2,069	\$ 2,719	\$ 1,988
Average Final Average Salary	29,159	39,540	37,600	43,459	49,090	52,527	59,437	51,929
Number of Active Retirants	53	489	5,419	6,238	7,713	11,731	20,332	51,975
Period 10/1/18 to 9/30/19								
Average Monthly Benefit	\$ 371	\$ 566	\$ 775	\$ 1,176	\$ 1,599	\$ 2,099	\$ 2,763	\$ 2,032
Average Final Average Salary	31,254	40,179	37,865	43,762	49,714	53,283	60,414	52,780
Number of Active Retirants	43	475	5,320	6,095	7,663	11,745	20,806	52,147
Period 10/1/19 to 9/30/20								
Average Monthly Benefit	\$ 380	\$ 568	\$ 785	\$ 1,195	\$ 1,625	\$ 2,128	\$ 2,807	\$ 2,075
Average Final Average Salary	31,298	40,456	38,107	44,132	50,155	53,983	61,390	53,593
Number of Active Retirants	43	460	5,208	5,932	7,553	11,730	21,182	52,108

* Average monthly benefits shown are pension benefits.

Source: Gabriel Roeder Smith & Co.

STATISTICAL SECTION

SCHEDULES OF AVERAGE BENEFIT PAYMENTS

SCHEDULE OF AVERAGE BENEFIT PAYMENTS – VISION*

Payment Periods	Last Ten Years							Total
	Credited Service (Years) as of September 30							
	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30+	
Period 10/1/10 to 9/30/11								
Average Monthly Benefit	\$ 1,060	\$ 986	\$ 706	\$ 1,019	\$ 1,404	\$ 1,878	\$ 2,487	\$ 1,723
Average Final Average Salary	32,787	39,015	36,150	39,380	43,901	46,904	54,014	46,119
Number of Active Retirants	1,059	1,379	5,745	6,600	7,485	10,312	16,995	49,575
Period 10/1/11 to 9/30/12								
Average Monthly Benefit	\$ 1,119	\$ 1,064	\$ 731	\$ 1,055	\$ 1,439	\$ 1,910	\$ 2,514	\$ 1,751
Average Final Average Salary	33,334	40,464	36,727	40,487	44,846	47,885	54,663	46,886
Number of Active Retirants	1,262	1,549	5,695	6,583	7,528	10,363	16,979	49,959
Period 10/1/12 to 9/30/13								
Average Monthly Benefit	\$1,148	\$1,116	\$749	\$1,082	\$1,468	\$1,934	\$2,541	\$1,786
Average Final Average Salary	33,953	40,564	37,214	41,381	45,661	48,628	55,216	47,682
Number of Active Retirants	872	1,724	5,633	6,577	7,590	10,557	17,255	50,208
Period 10/1/13 to 9/30/14								
Average Monthly Benefit	\$342	\$526	\$705	\$1,071	\$1,473	\$1,946	\$2,566	\$1,823
Average Final Average Salary	28,635	37,368	36,480	41,507	46,145	49,221	55,796	48,503
Number of Active Retirants	78	537	5,719	6,742	7,914	11,228	18,384	50,602
Period 10/1/14 to 9/30/15								
Average Monthly Benefit	\$ 344	\$ 531	\$ 720	\$ 1,095	\$ 1,497	\$ 1,980	\$ 2,603	\$ 1,863
Average Final Average Salary	29,065	37,721	36,785	42,191	46,869	50,207	56,690	49,392
Number of Active Retirants	72	529	5,647	6,678	7,905	11,476	18,838	51,145
Period 10/1/15 to 9/30/16								
Average Monthly Benefit	\$ 335	\$ 538	\$ 735	\$ 1,117	\$ 1,522	\$ 2,006	\$ 2,639	\$ 1,903
Average Final Average Salary	28,458	38,466	37,086	42,702	47,608	50,963	57,537	50,216
Number of Active Retirants	66	505	5,562	6,535	7,843	11,610	19,300	51,421
Period 10/1/16 to 9/30/17								
Average Monthly Benefit	\$ 327	\$ 546	\$ 749	\$ 1,137	\$ 1,548	\$ 2,035	\$ 2,680	\$ 1,946
Average Final Average Salary	28,751	38,743	37,345	43,062	48,350	51,756	58,516	51,088
Number of Active Retirants	59	498	5,466	6,385	7,771	11,660	19,835	51,674
Period 10/1/17 to 9/30/18								
Average Monthly Benefit	\$ 360	\$ 554	\$ 763	\$ 1,156	\$ 1,573	\$ 2,069	\$ 2,719	\$ 1,989
Average Final Average Salary	28,791	39,242	37,594	43,426	49,061	52,520	59,415	51,917
Number of Active Retirants	54	488	5,373	6,213	7,689	11,701	20,278	51,976
Period 10/1/18 to 9/30/19								
Average Monthly Benefit	\$ 359	\$ 563	\$ 775	\$ 1,176	\$ 1,599	\$ 2,099	\$ 2,763	\$ 2,033
Average Final Average Salary	30,755	39,904	37,876	43,732	49,712	53,269	60,395	52,773
Number of Active Retirants	44	472	5,278	6,071	7,639	11,708	20,750	51,962
Period 10/1/19 to 9/30/20								
Average Monthly Benefit	\$ 361	\$ 565	\$ 786	\$ 1,196	\$ 1,626	\$ 2,129	\$ 2,807	\$ 2,077
Average Final Average Salary	30,936	40,166	38,125	44,116	50,160	53,971	61,372	53,592
Number of Active Retirants	45	457	5,167	5,904	7,527	11,694	21,132	51,926

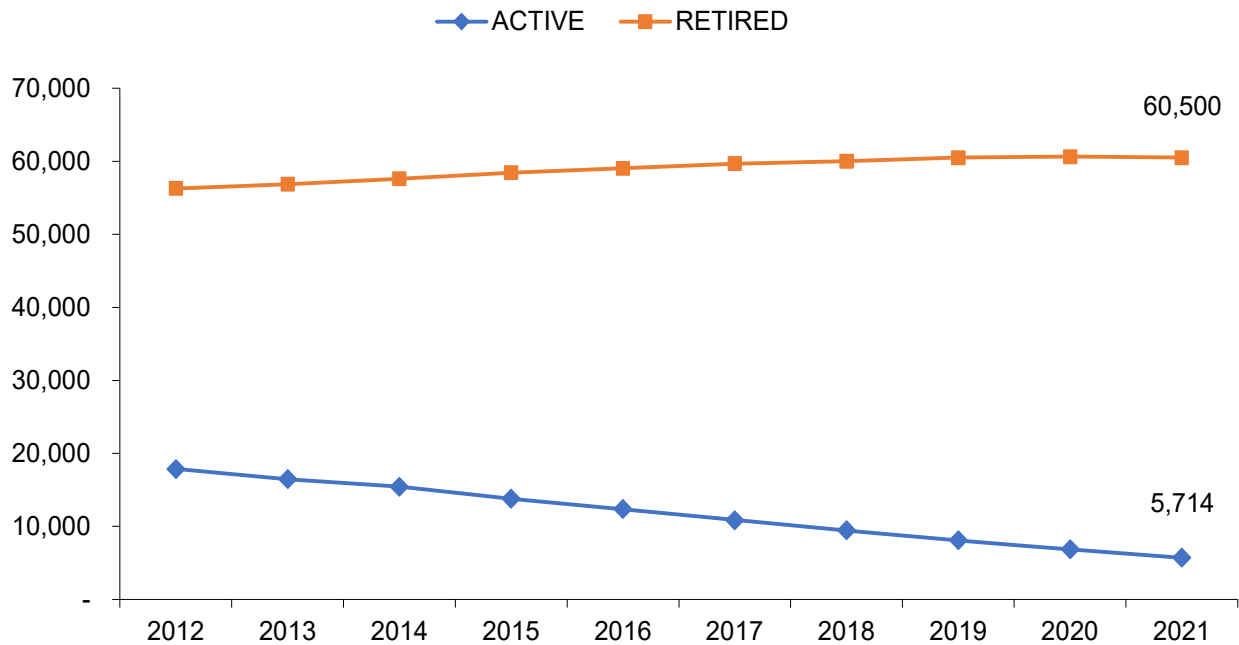
*Average monthly benefits shown are pension benefits.

Source: Gabriel Roeder Smith & Co.

STATISTICAL SECTION

TEN YEAR HISTORY OF MEMBERSHIP

Fiscal Year Ended September 30



Source: Gabriel Roeder Smith & Co.

ACKNOWLEDGMENTS

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The *Michigan State Employees' Retirement System Annual Comprehensive Financial Report* is prepared by Financial Services, Fiscal Management Division. Staff of the division for the fiscal year 2020 report included:

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This report may be viewed online at: www.michigan.gov/ors