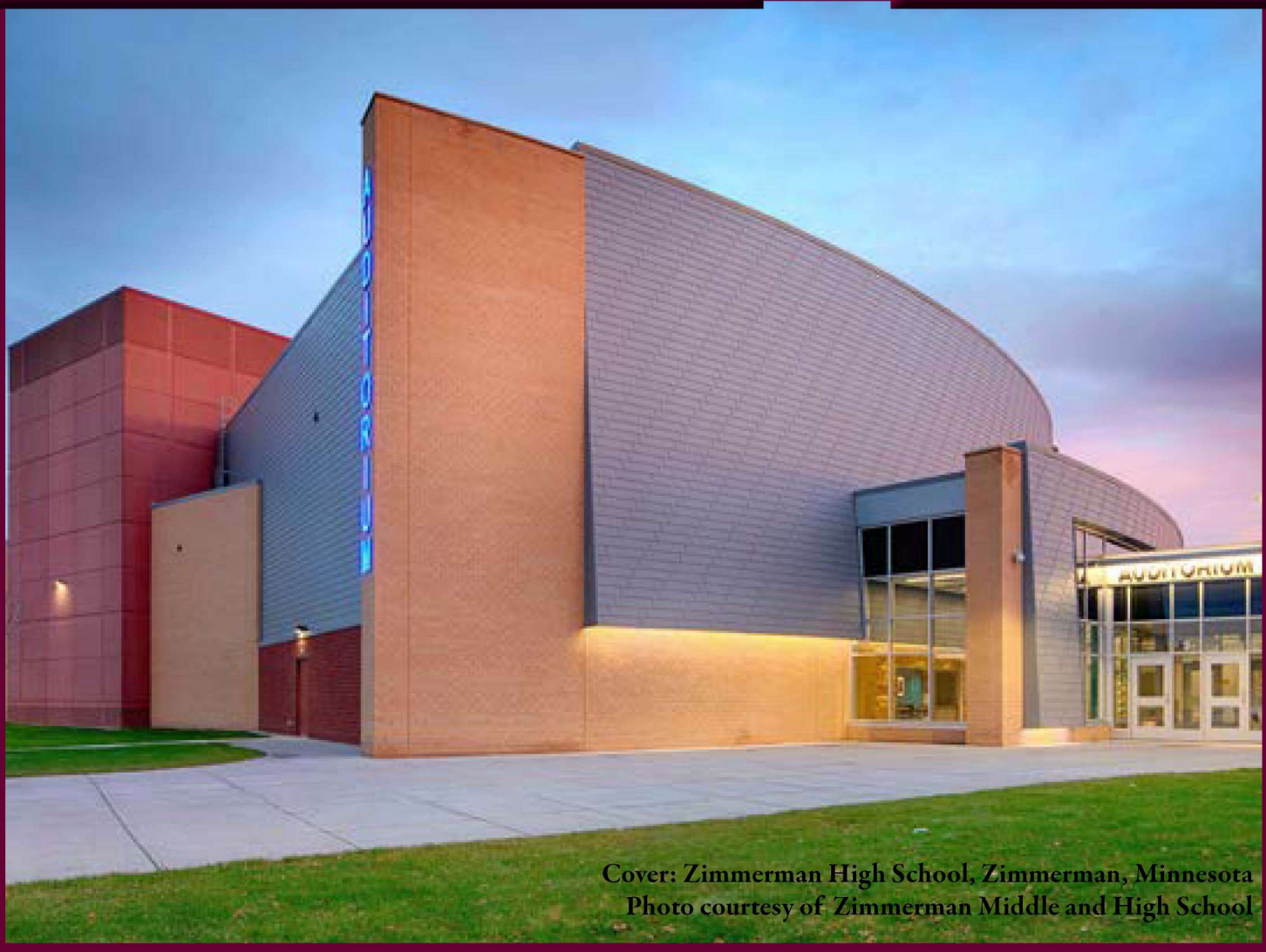
2023

Annual Comprehensive Financial Report

TRA

A Pension Trust Fund of the State of Minnesota



Cover: Zimmerman High School, Zimmerman, Minnesota
Photo courtesy of Zimmerman Middle and High School

For fiscal year ended June 30, 2023

TRA | TEACHERS RETIREMENT ASSOCIATION of MINNESOTA

A Pension Trust Fund of the
State of Minnesota

Annual Comprehensive Financial Report

Teachers Retirement Association

60 Empire Drive
Suite 400
Saint Paul, MN
55103-4000

651.296.2409

800.657.3669

www.MinnesotaTRA.org

J. Michael Stoffel
Executive Director

For fiscal year ended June 30, 2023

Report prepared by the TRA accounting and executive staff

Cover: Zimmerman High School, Zimmerman, Minnesota
Photo courtesy of Zimmerman Middle and High School

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Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

Minnesota Teachers Retirement Association

For its Annual Comprehensive
Financial Report
For the Fiscal Year Ended

June 30, 2022

Christopher P. Morrill

Executive Director/CEO



Government Finance Officers Association

Award for Outstanding Achievement in Popular Annual Financial Reporting

Presented to

Minnesota Teachers Retirement Association

For its Annual Financial Report
For the Fiscal Year Ended

June 30, 2022

Christopher P. Morrill

Executive Director/CEO

Public Pension Coordinating Council

Recognition Award for Administration
2023

Presented to

Minnesota Teachers Retirement Association

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

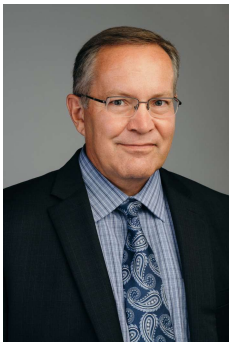
Presented by the Public Pension Coordinating Council, a confederation of

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

Alan H. Winkle
Program Administrator

TEACHERS RETIREMENT ASSOCIATION
651.296.2409 800.657.3669 fax 651.297.5999
info@MinnesotaTRA.org

Letter of Transmittal



J. Michael Stoffel
Executive Director

December 21, 2023

Members of the Board of Trustees

Teachers Retirement Association
60 Empire Drive, Suite 400
Saint Paul, MN 55103-4000

Dear Trustee:

We are pleased to present this Annual Comprehensive Financial Report (ACFR) of the Teachers Retirement Association (TRA) for the fiscal year ended June 30, 2023, our 92nd year of service.

The Office of the Legislative Auditor has issued an unmodified (clean) opinion on TRA's financial statements for the year ended June 30, 2023. The independent auditor's report is located at the front of the financial section of this report. Management believes that the accompanying statements, schedules, and tables are fairly presented. We are solely responsible for the content of the report, including its financial statements, which should be useful in understanding information about TRA and comparing our operating results with those of other teacher retirement systems.

TRA management has implemented a system of internal controls to monitor and safeguard assets, ensure transactions are carried out in accordance with Minnesota statutes, and promote efficient operations. Internal controls are designed to provide reasonable, but not absolute assurance regarding the safeguarding of assets against loss. The concept of reasonable assurance recognizes that a cost-benefit analysis requires estimates and judgments by management. All internal control evaluations occur within this framework.

Readers are encouraged to refer to the Management Discussion and Analysis on pages 19-23 for an overview of additions to and deductions from the TRA pension fund and additional financial reporting detail for the fiscal year.

TRA Profile

As of June 30, 2023, TRA had 606 reporting units, 84,983 active members and a total of 70,344 retirees, survivors, beneficiaries, and disabilitants who were receiving monthly benefits.

Although the TRA Board of Trustees has a broad scope of authority in the operations and management of TRA, the pension fund is also governed by federal laws and state statutes. For financial reporting purposes, TRA is considered a pension trust fund of the State of Minnesota, and TRA financial results are incorporated into the ACFR of the State of Minnesota.

TRA follows the provisions of statements promulgated by the Governmental Accounting Standards Board (GASB). TRA's ACFR also complies with Minnesota Statutes, Section 356.20. Transactions are reported on the accrual basis of accounting.

Contributions from employers and members are recognized as revenue when earned. Expenses are recorded when corresponding liabilities are incurred, regardless of when payment is made.

We contract for actuarial services with the firm Cavanaugh Macdonald Consulting of Bellevue, Nebraska to prepare two annual actuarial valuation reports. One report is performed in accordance with the accounting and financial reporting requirements of GASB Statement 67. The second report is performed using the actuarial assumptions and methods contained in Minnesota Statutes Section 356.215; it provides results that assist board members and state policymakers in funding determinations. These statutes specify key funding policy elements including amortization period, actuarial cost method, asset smoothing method and investment earnings assumption. The Minnesota Office of the Attorney General provides legal counsel to the Board of Trustees. Most financial transactions, including disbursements from the pension fund, are processed through the centralized controls of the Statewide Integrated Financial Tools (SWIFT) system, under the statutory authority of Minnesota Management and Budget (MMB) and the Department of Administration.

All TRA assets are invested under the authority and direction of the State Board of Investment (SBI). A listing of the pooled investments in the TRA fund can be found on page 72. The SBI has developed strategic asset allocation and other investment policies based on the long-term investment horizon profile of our members and benefit recipients. The SBI, with advice from its Investment Advisory Council (IAC), continually reviews policies and asset allocation to ensure sufficient assets are available to finance benefits determined under statute. The TRA executive director represents TRA on the seventeen-member IAC.

Economic Conditions and Outlook (from Minnesota Management and Budget)

The near-term economic outlook for Minnesota has improved since Minnesota Management and Budget's Budget and Economic Forecast was prepared in February 2023. At that time, Minnesota’s macroeconomic advisor, S&P Global Market Intelligence (SPGMI), expected a mild two-quarter recession, which the U.S. economy has managed to avoid. Since then, Minnesota’s employment and wage income have continued to grow, the unemployment rate has remained below the U.S. rate, and jobs have surpassed the pre-pandemic level.

In this forecast, the strengthened near-term economic outlook raises our expectation for growth in Minnesota’s employment and wages in 2023 and 2024 compared to our prior forecast. Beyond 2024, we now forecast slower growth in employment and wages than we expected in February.

In April 2022, Minnesota’s unemployment rate reached a historic low of 2.3%, 1.3 percentage points below the U.S. unemployment rate of 3.6%. The gap between the U.S. unemployment rate and the Minnesota unemployment rate has narrowed. In October, Minnesota’s unemployment rate was 3.2%, the 21st lowest among U.S. states and 0.7 percentage points below the U.S. rate of 3.9%.

In September, Minnesota’s payroll employment surpassed its pre-pandemic level. During March and April 2020, Minnesota lost 416,000 jobs, approximately 14% of February 2020 payroll employment. Minnesota's payroll employment increased by 7,000 jobs in October, pushing the total number of seasonally adjusted jobs in the state to a historic milestone of over 3 million for the first time. The state’s employers have added an average of 4,200 jobs per month in January through October, 30% below the rate of 6,000 jobs added per month over the same period last year. However, this employment growth is stronger than we anticipated in February, when we expected employment growth to grow by about 1,600 jobs per month in 2023.

Following the 2.3% growth in fiscal year 2023, we expect Minnesota payroll employment growth to decelerate to 1.4% for the current fiscal year. We expect employment growth to be nearly flat at 0.1% in fiscal year 2025 and to average 0.2%, or 6,000 jobs per year, in fiscal years 2026 and 2027. This subdued trajectory for Minnesota’s employment growth can be attributed to an aging workforce with an increasing number of individuals transitioning into retirement.

Data from the Bureau of Economic Analysis (BEA) reveals that wage and salary income in Minnesota expanded 5.3% in fiscal year 2023. Looking ahead, we anticipate robust wage growth to persist at a rate of 5% in fiscal year 2024 and 5.8% in fiscal year 2025. We expect wage growth to decelerate to an average of 5% per year for fiscal years 2026 and 2027.

Surging borrowing costs, rising sales prices, and limited inventory are keeping potential homebuyers on the sidelines. The 30-year fixed mortgage interest rate, the most popular home loan in the United States, recently approached 8% for the first time since 2000. These high rates have discouraged buyers of both new and existing homes and have "locked in" owners of existing homes, who could lose lower rates on their current mortgages if they sell in such a high-rate environment. Sales of existing Minnesota homes are down 18.4% January through October, and new listings in Minnesota are down 12.8% over the same time period.

As total home inventory remains constrained, Minnesota home prices continue to rise. The median sales prices for both Minneapolis-Saint Paul metro-area homes and homes in greater Minnesota have continued to increase despite rising interest rates, declines in new listings, and declines in pending and closed sales. The combination of higher interest rates and rising home prices is challenging affordability. SPGMI's study found that Minnesota ranks 20th among U.S. states for affordability.

States in the Midwest tend to be among more affordable states, but recently affordability in even historically affordable regions is reaching historic lows. In this forecast, SPGMI does not expect improvements in affordability in the near-term. SPGMI expects the 30-Year fixed mortgage rate to peak at 7.64% in the fourth quarter of 2023, followed by a deceleration to less than 5% in 2027.

Legislation

The landmark pension reform bill that was passed in 2018 continues to have lasting impact on operations. The changes and reforms passed in 2018 were important in getting the TRA pension fund on a sustainable path towards 100% funded status. Several of the provisions had delayed effective dates and phased effective dates, so TRA will be implementing some provisions of the 2018 legislation over the next several years. These include:

- cost of living adjustment (COLA) remained at 1% for one more year (1/1/2023), and then will increase by 0.1% per year for five years until it reaches 1.5% on January 1, 2028 where it will remain thereafter
- eligibility for first COLA changes to normal retirement age beginning July 1, 2024, unless retiring under rule of 90 or using the age 62 with 30 years of service provision
- augmentation in early retirement benefits is phased out over five years beginning July 1, 2019 unless retiring under rule of 90 or using the age 62 with 30 years of service provision
- employer contribution rate will increase by 0.20% on July 1, 2023
- employee contribution rate will increase by 0.25% beginning July 1, 2023.

During the 2023 legislative session, the Minnesota Legislature passed three bills that directly impact TRA - the Pension and Retirement Omnibus Policy Bill (HF2950/SF3016), the Pension Omnibus Budget Bill (HF3100/SF3162), and the Tax Finance and Policy Bill (HF1938/SF1811). The Policy Bill makes small, administrative adjustments to TRA's statutes.

The Budget Bill reduced TRA's investment return assumption from 7.50% to 7.00% effective June 30, 2023. This change also lowers the interest rate used to calculate certain payments, such as refund repayments, service credit purchases etc., from 7.50% to 7.00%. The Budget Bill also appropriated $176,166,838 to TRA as follows:

- $28,735,816 to pay for a 1.4% one-time, lump-sum payment for eligible benefit recipients with Coordinated benefits, in addition to the 1.1% post-retirement adjustment that will be paid on January 1, 2024.
- $2,384,222 to pay for a 2.9% one-time, lump-sum payment for eligible benefit recipients with Basic benefits, in addition to the 1.1% post-retirement adjustment that will be paid on January 1, 2024.
- $145,046,800 to pay down TRA's unfunded liability.

Under the Tax Finance and Policy Bill, effective July 1, 2025:

- The normal retirement age (NRA) for active and eligible deferred Tier II members will be reduced from 66 to 65.
- The employer contribution rate will increase by 0.75% for a total rate of 9.5%.
- The employee contribution rate will increase by 0.25% for a total rate of 8.0%.
- The amortization date will change to June 30, 2053.
- The pension adjustment rate for school districts and the base budgets for Minnesota State, Perpich Center for Arts Education, and Minnesota Academies will increase to reflect the 0.75% employer contribution rate increase.

Investment Results

During fiscal year 2023 the SBI followed its strategic asset allocation framework for the combined retirement funds. The plan combines domestic and international equities into the public equity category with a target of 50%. The policy includes a target allocation of 25% in private markets that includes private equity, private credit, real estate, and resources. If the private markets are invested at less than the 25% target, the difference is invested in public equity using a strategy comprised of physical securities in combination with an overlay program fully collateralized by cash. Fixed income, a laddered bond and cash portfolio, and treasuries have a total target allocation of 25%. Readers should refer to a more complete description of the changes beginning on page 29.

Within this investment environment TRA retirement assets under SBI investment management (see page 65) produced an investment return of 8.9% for the fiscal year ended June 30, 2023, net of fees. The 8.9% return over performed the composite benchmark by 0.3% for the fiscal year. Over the latest 5, 10, 20, and 30-year periods, the TRA investment portfolio has experienced an annualized investment return of 8.2%, 8.8%, 8.5% and 8.4% respectively. For all time periods one year and longer, the performance of the portfolio exceeded the performance of the composite benchmark and exceeded the assumed rate of return of 7.0%.

The public equity category returned 17.4% for the fiscal year ended June 30, 2023. The domestic portion of public equity returned 19.1% and the international portion returned 14%. The private markets produced a return of 1.8% for fiscal year 2023. The fixed income portion of the combined funds produced a return of 0.1% for the fiscal year.

Since the benefit obligations are not all immediately payable, SBI can maintain a long-term strategy. This approach, along with a well-diversified investment portfolio, helps weather periods of short-term volatility in the investment markets.

Statutory Funding Status

The investment return of 8.9% for fiscal year 2023 was greater than the statutory assumed rate of return of 7.0%, which was a change from 7.5% in the 2023 legislation. Investment returns were strong during the fiscal year as markets reacted to a high inflation economy. The actuarial value of TRA assets increased as of June 30, 2023 compared to the previous year-end by $978 million. For actuarial purposes, investment gains and losses over or under the assumed return are recognized over a five-year period. On June 30, 2023, the actuarial value of TRA assets was $26.9 billion, an increase from $25.9 billion on

June 30, 2022. The five-year smoothing of investment gains and losses produces a deferred investment loss of $152 million as of June 30, 2023. This deferred loss will be recognized over the next four fiscal years.

Another key measure to assess TRA funding health is the adequacy of employee and employer contributions including direct aid. The 2023 legislature passed a bill lowering the investment return assumption and the normal retirement age for Tier II members. Taking that into consideration, the current valuation results show a Contribution Deficiency of 2.53% of pay.This deficiency means that, if all current assumptions are exactly met in the future, the UAAL will not be fully amortized at the scheduled date of June 30, 2048. TRA's Unfunded Actuarial Accrued Liability – the difference between the Actuarial Accrued Liability and the Actuarial Value of Assets increased from $5.7 billion on June 30, 2022, to $8.1 billion on June 30, 2023. Included in the 2023 bill, is an increase in contribution rates effective July 1, 2025. Employee contribution rates will be 8.00% and employer rates will be 9.50%. If these future contribution rates, along with the $145 million contribution from the State of Minnesota (noted above), the extended amortization date of June 30, 2053, and the actuarial assumption changes noted below are all taken into account, there would be a contribution rate sufficiency of .55% of covered member payroll.

TRA's funding ratio declined through the changes that occurred as referenced above in the Legislative section on page 6. At June 30, 2023, the funding ratio stood at 76.9%, a decrease from 82% on June 30, 2022. However, as mentioned earlier, there are additional improvements scheduled or expected in the future that will affect the System's funding outlook.

In 2023, TRA's actuarial consultant, Cavanaugh Macdonald completed a regularly scheduled four-year experience study for the period of July 1, 2018 through June 30, 2022. An experience study determines whether the actuarial assumptions currently in use have adequately projected the actual emerging experience of the TRA plan. The following are the recommendation results of the experience study.

- Economic assumptions:
    - It was recommended and adopted (set in statute) that the investment return assumption be reduced from 7.50% to 7.00% effective with the July 1, 2023 valuation.
- Demographic assumptions:
    - Mortality - it is recommended to update the mortality tables for active employees, retirees, disabled retirees, and contingent beneficiaries to recently published tables derived from public plan data known as the Pub2010 family of tables.
    - Retirement - increase some of the Tier II early retirement rates and change some of the unreduced retirement rates for both tiers to better align with actual experience.
    - Optional form election - changes to the probability that new female retirees elect either the Straight Life Annuity or 100% Joint & Survivor Annuity were refined to reflect the actual experience.
    - Termination of employment - reductions in the rates of termination of employment in the first ten years of employment and some very slight increases for 16 to 25 to better match the observed experience.
    - Disability - decreased disability rates over age 45 by 15% to reflect the continued lower than expected observations.

Major Initiatives

In January 2019, the TRA Board approved a strategic plan over a flexible three to five-year range. The plan was developed with input from TRA stakeholder groups, TRA staff, and TRA Board members. There are four goals outlined in the plan:

- Engagement and education: TRA will provide information to empower members, employers, legislators and taxpayers to be aware and engaged about TRA's governance structure as well as the value of a defined-benefit plan. Member educational materials should be clear, accurate, accessible and presented in innovative ways for all life stages.
- Fund integrity balanced with equity in plan provisions: TRA will abide by their fiduciary duty to ensure the financial stability of the plan while working toward fairness in benefit structure and contribution rates. TRA will continually monitor the plan's financial health. When needed, TRA will recommend adjustments to stabilize the fund while upholding the board's guiding principles of shared commitment, intergenerational equity, long-term financial sustainability and maintaining the recruitment/retention value of a TRA pension.
- Engaged, empowered, high performing workforce: TRA will demonstrate dedication, stability and inclusivity. Leadership and staff will respect all perspectives and experiences. Succession planning and operational workforce planning will support the transfer of knowledge from outgoing employees and the recruitment and retention of new and existing employees.
- Risk-intelligent organization: TRA will be a risk-intelligent organization with a robust, proactive and comprehensive risk-management program. TRA will continue to monitor and respond to known and emerging risks.

Strategies and action plans have been outlined to accomplish each of the four goals. Executive management continues to apprise the TRA Board of Trustees about progress made towards achieving the various goals. The strategic plan will continue to guide our planning efforts as we enter 2024.

Awards and Recognition

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to the Teachers Retirement Association for its Annual Comprehensive Financial Report for the fiscal year ended June 30, 2022. This was the 25th consecutive year that the Association has achieved this prestigious award. To be awarded a Certificate of Achievement, a governmental unit must publish an easily readable and efficiently organized annual comprehensive financial report. This report must satisfy both generally accepted accounting principles and applicable legal requirements. A Certificate of Achievement is valid for a period of only one year. We believe that our current annual comprehensive financial report continues to meet the Certificate of Achievement Program requirements, and we are submitting it to the GFOA to determine its eligibility for another certificate.

In addition, GFOA awarded TRA with the Award for Outstanding Achievement in the Popular Annual Financial Reporting (PAFR) for the fiscal year ended June 30, 2022. This was the first year we produced and published a PAFR and are pleased to have received this award.

TRA was also awarded the Public Pension Coordinating Council's Recognition Award for Administration in 2023. This award recognizes TRA's meeting of professional standards in plan administration in categories such as benefits, actuarial valuations, audit, investments, and communications to members.

The preparation of this report is possible only through the combined efforts of our employees, employer units and professional consultants. It is intended to provide a complete and reliable portrayal of the financial status of the pension fund as a basis for making management decisions and determining responsible stewardship over the assets held in trust for the members of the Association. We have notified members, employer unit officials and other interested persons about the availability of the report on the TRA website. A summary that highlights key aspects of the report will be provided to all members in the TRIB, TRA's periodic newsletter.

Lastly, our sincere appreciation is extended to all who assisted in and contributed toward the completion of this publication.

Respectfully submitted,



J. Michael Stoffel
Executive Director



Maria Steele
Chief Financial Officer

Board of Trustees

As of June 30, 2023

President



Martha Lee (Marti) Zins
Retiree Representative
Minnetonka, MN

Vice President



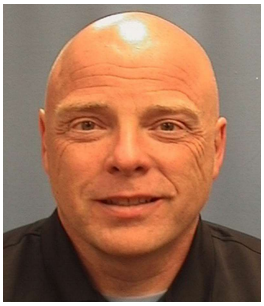
Luke V. Olson
Elected Member
South St. Paul, MN



Joel Stencel
Minnesota School Boards
Association Representative



Julie Reno
Elected Member
Moorhead School District



Kevin Lindstrom
Elected Member
Anoka Technical College



Wendy Drugge Wuensch
Elected Member
Burnsville, MN



Willie Jett
Commissioner of Minnesota
Department of Education



Jim Schowalter
Commissioner of Minnesota
Management & Budget

Administrative Staff



J. Michael Stoffel
Executive Director



Tim Maurer
Deputy Executive
Director



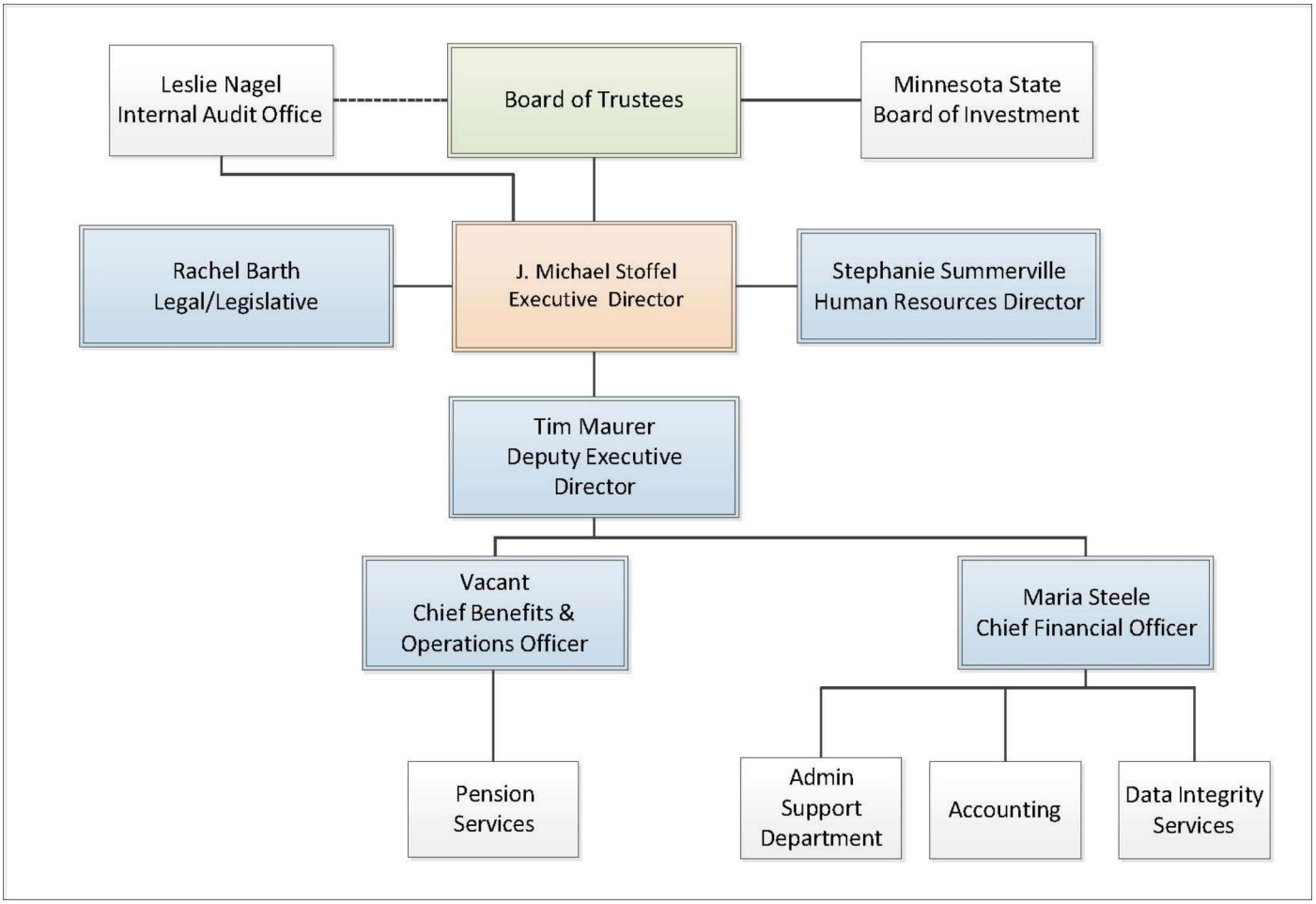
Rachel Barth
Legal and Legislative
Director



Maria Steele
Chief Financial Officer

Administrative Organization

As of June 30, 2023



Consulting Services

Actuary

Cavanaugh Macdonald Consulting, LLC
Bellevue, Nebraska

Auditor

Office of the Legislative Auditor
Saint Paul, Minnesota
CliftonLarsonAllen LLP
Chicago, Illinois

Investment

Minnesota State Board of Investment
Saint Paul, Minnesota
(Schedule of Investment Managers and Fees is found on pages 69-71)

Legal Counsel

Office of the Attorney General
Saint Paul, Minnesota
Ice Miller
Indianapolis, Indiana

Medical Advisor

ExamWorks
Minneapolis, Minnesota

Our Mission Statement

TRA provides retirement, disability and survivor benefits to Minnesota's public educators assisting them in achieving future income security.

TRA strives to provide benefits that attract and retain competent teachers who serve communities throughout the state, building a stronger education system.

TRA is committed to safeguarding the financial integrity of the fund and takes pride in providing exceptional, innovative services.

Our Vision

To be an outstanding retirement system pursuing benefits and services that **exceed members' expectations**.

Goals

Engagement and Education - TRA will provide information to **empower** members, employers, legislators and taxpayers to be **aware and engaged** about TRA's governance structure as well as the **value** of defined-benefit plan. Member educational materials should be **clear, accurate, accessible** and presented in **innovative** ways for all life stages.

Fund Integrity Balanced with Equity in Plan Provisions - TRA will abide by its **fiduciary duty** to ensure the financial stability of the plan while working toward **fairness** in benefit structure and contribution rates. TRA will continually **monitor** the plan's financial health. When needed, TRA will recommend adjustments to **stabilize** the fund while upholding the Board's **guiding principles** of shared commitment, Intergenerational equity, long-term financial sustainability and maintaining the recruitment/retention value of a TRA pension.

Engaged, Empowered, High-Performing Workforce - TRA will demonstrate **dedication, stability and inclusivity**. Leadership and staff will **respect** all perspectives and experiences. Succession planning and operational workforce planning will **support** the transfer of knowledge from outgoing employees and the recruitment and retention of new and existing employees

Risk-Intelligent Organization - TRA will be a risk-intelligent organization with a **robust, proactive and comprehensive** risk-management program. TRA will continue to monitor and respond to known and emerging risks.

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FINANCIAL



Auditor's Report

OLA | OFFICE OF THE LEGISLATIVE AUDITOR

Judy Randall, Legislative Auditor
State of Minnesota

Independent Auditor's Report

Members of the Board of Directors
Teachers Retirement Association of Minnesota

J. Michael Stoffel, Executive Director
Teachers Retirement Association of Minnesota

Report on the Audit of the Financial Statements

Opinion

We have audited the accompanying financial statements of the Teachers Retirement Association of Minnesota (TRA), which included the Statement of Fiduciary Net Position as of June 30, 2023, the related Statement of Changes in Fiduciary Net Position, and Notes to the Financial Statements, as listed in the Financial Section of the Table of Contents.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Teachers Retirement Association of Minnesota as of June 30, 2023, and the changes in financial position for the fiscal year then ended in conformity with accounting principles generally accepted in the United States of America.

Basis for Opinion

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

Responsibilities of Management for the Financial Statements

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

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

Room 140 Centennial Building, 658 Cedar Street, St. Paul, MN 55155-1603 • Phone: 651-296-4708 • Fax: 651-296-4712
E-mail: legislative.auditor@state.mn.us • Website: www.auditor.leg.state.mn.us • Minnesota Relay: 1-800-627-3529 or 711

Auditor's Responsibilities for the Audit of the Financial Statements

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

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

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

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

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that Management's Discussion and Analysis and the other required supplementary information, as listed in the Financial Section of the Table of Contents, be presented to supplement the basic financial statements. Such information is the responsibility of management and, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, 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 Management's Discussion and Analysis and the other required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Supplementary Information

Our audit was conducted for the purpose of forming an opinion on the basic financial statements as a whole. The supporting schedules in the Financial Section, as listed in the Table of Contents, are presented for purposes of additional analysis and are not a required part of the basic financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. The information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the information is fairly stated in all material respects in relation to the basic financial statements as a whole.

Other Information

Management is responsible for the other information included in the annual report. The other information comprises the Introductory, Investment, Actuarial, and Statistical Sections, as listed in the Table of Contents, but does not include the basic financial statements and our auditor's report thereon. Our opinion on the basic financial statements do not cover the other information, and we do not express an opinion or any form of assurance thereon.

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

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we will issue a report on our consideration of the Teacher's Retirement Association of Minnesota's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, grant agreements, and other matters. The purpose of that report is to describe the scope and results of our testing of internal control over financial reporting and compliance and not to provide an opinion on the internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* and should be considered in assessing the results of our audit.



Lori Leysen, CPA
Deputy Legislative Auditor



Jordan Bjonfald, CPA
Audit Director

December 21, 2023
Saint Paul, Minnesota

Management Discussion and Analysis

June 30, 2023

This discussion and analysis of the Teachers Retirement Association (TRA) of Minnesota provides an overview of TRA financial activities for the fiscal year ended June 30, 2023. We encourage you to consider the information presented here in conjunction with the transmittal letter beginning on page 4 and the additional information presented in the financial statements and required supplementary information.

Financial Highlights

Financial highlights of fiscal year 2023 include:

- The Net Position Restricted for Pension Benefits increased in value by $1.2 billion during fiscal year 2023 for a total of $26.8 billion. Plan contributions and investment gain totaled a net gain of $3.2 billion during the fiscal year. Plan benefits and other expenses totaled $2 billion during the fiscal year.
- Investment returns for the 2023 fiscal year were 8.9% using the time-weighted value method, resulting in net investment gain of $2.2 billion.
- Contributions paid by employees, employers, and non-employers during fiscal year 2023 totaled $986.8 million, an increase of $39.5 million from the fiscal year 2022 total of $947.3 million.
- Pension benefits paid to retirees and beneficiaries during fiscal year 2023 was $2 billion. The fiscal year 2022 total was $2 billion, an increase of $37.2 million during the year.
- Refunds of member contributions plus interest during fiscal year 2023 were $17.5 million, an increase of $1 million from the fiscal year 2022 total of $16.5 million.
- Administrative expenses of the fund during fiscal year 2023 were $16.5 million. The fiscal year 2022 total was $15.7 million, representing an increase of $868,000 for the fiscal year.

Actuarial Highlights

The Association's funding objective is to meet long-term benefit obligations through the accumulation of contributions and investment income. This funding is structured so that the burden of paying retirement costs is shared equitably by present and future generations of members and taxpayers.

By state law, TRA and its actuarial consultant are required to prepare an actuarial funding valuation to assist decision-makers in assessing the funding strength and position of the TRA fund. The results of this actuarial valuation report will be used to describe key funding measures such as the funding ratio, the Unfunded Actuarial Accrued Liability and the adequacy of contribution rates.

As of June 30, 2023, the accrued liability funding ratio for TRA, using actuarial value of assets, was 76.9%, a decrease from the funding ratio of 82% as of June 30, 2022. TRA's Unfunded Actuarial Accrued Liability on June 30, 2022, was $5.7 billion. The June 30, 2023, Unfunded Actuarial Accrued Liability was $8.1 billion, an increase of $2.4 billion from the previous year. Key actuarial funding measures are presented on page 82.

TRA's actuary has also prepared a separate actuarial valuation report under the requirements of GASB Statement 67 for presentations and disclosures within the financial section of this report. The GASB 67 valuation is the foundation of a report TRA will issue in the first half of 2024 to assist employer units in their GASB 68 financial reporting presentations and disclosures later in 2024. The fiscal year 2023 results indicate a Net Pension Liability of $8.3 billion, an increase of $248.8 million from the $8 billion on July 1, 2022.

Overview of the Financial Statements

This discussion and analysis is intended to serve as an introduction to the financial report of TRA. The financial report consists of:

- the basic financial statements, comprised of the Statement of Fiduciary Net Position and the Statement of Changes in Fiduciary Net Position;
- the notes to the basic financial statements;
- required supplementary information; and
- other supplementary information.

The Statement of Fiduciary Net Position (page 24) presents information on the assets and liabilities of TRA, with the difference between the two reported as net position. The net position of the Association reflects the resources available to pay benefits to members when due. Over time, increases and decreases in net position measure whether the Association's financial position is improving or deteriorating. It can be thought of as a snapshot of the financial position of TRA at that specific point in time.

The Statement of Changes in Fiduciary Net Position (page 25) presents information detailing the changes in net position that occurred during the current fiscal year. All changes in net position are reported on an accrual basis. This means that the revenue or expense is recognized as soon as the underlying event giving rise to the change occurs, regardless of when the actual cash is received or paid. Thus, revenues and expenses are reported in this statement for some items that will not result in cash flows until future fiscal periods.

The notes to the financial statements (pages 26-46) provide additional information that is essential for a full understanding of the data provided in the financial statements.

The report also contains required supplementary information in addition to the basic financial statements. The required supplementary information (pages 48-54) will form a ten-year historical trend. The Schedule of Changes in the Employers' Net Pension Liability includes a reconciliation of the fiscal year 2023 net pension liability for GASB 67 reporting purposes.

The Schedule of Employer and Non-Employer Contributions presents information about the annual actuarially required contributions and contributions actually received in relation to this requirement, covered payroll, and contributions as a percentage of covered payroll.

The Schedule of Investment Returns (page 32), using the money-weighted method, is presented and will form a ten-year historical trend.

Two other supporting schedules are also presented. The Schedule of Administrative Expenses (page 56) presents the overall cost of administering the Association. The Schedule of Professional Consultant Fees (page 57) provides further details about investment and other consulting expenses.

Financial Analysis of the TRA Fund

Plan Assets

Total plan assets of the TRA fund as of June 30, 2023, were $28.2 billion and were mostly comprised of cash, investments, and contributions. Total plan assets increased $1.2 billion from the June 30, 2022 total of $26.9 billion. The primary reason for the increase was the investment appreciation in fair value of TRA assets by the end of fiscal year 2023.

Plan Liabilities

Total liabilities as of June 30, 2023, were $1.4 billion, an increase of $64.3 million from the June 30, 2022 liability amount of $1.3 billion. The primary reason for the increase in value of liabilities was the securities lending program. In both years, the total liability amounts were mostly comprised of obligations under security lending arrangements, accounts payable, and long-term bonds payable for the building co-owned by the TRA.

Net Position

Association assets exceeded liabilities on June 30, 2023, by $26.8 billion. The amount has increased from the June 30, 2022, amount of $25.6 billion by $1.2 billion. TRA relies heavily on investment earnings to help pay benefits and expenses over the long term since annual employee and employer contributions are less than one-half of the amount needed to fund cash outflows.

As a result, the fair value of assets of the TRA fund will generally decline during periods of weak investment performance, but rise during periods of strong performance.

Revenues — Additions to Fiduciary Net Position

Total additions to the TRA Fund during fiscal year 2023 were $3.2 billion, an increase of $4 billion from a net negative $760 million in fiscal year 2022. The increase is due to exceptionally stronger investment earnings in fiscal year 2023 compared to the prior fiscal year.

Total employee and employer contributions for fiscal year 2023 increased $39.5 million from the previous fiscal year for a combined fiscal year total of $986.8 million. The increase is attributable to higher covered salaries earned by active members for fiscal year 2023 and an increase to the employer contribution rate on July 1, 2022. Contributions during fiscal year 2023 were prescribed in statute at 7.5% employee and 8.55% employer for Coordinated Plan members of TRA.

A net investment gain of $2.2 billion was recorded for fiscal year 2023. This amount increased by $3.9 billion from the net investment loss of $1.7 billion in fiscal year 2022.

Fiduciary Net Position

June 30, 2023 and June 30, 2022

(Dollars in Thousands)

	2023	2022	Change
Cash and Investments	$28,113,968	$26,888,619	$1,225,349
Receivables	28,353	28,710	(357)
Capital Assets	9,382	11,885	(2,503)
Total Assets	$28,151,703	$26,929,214	$1,222,489
Current Liabilities	$1,395,831	$1,330,858	$64,973
Long Term Liabilities	1,369	2,012	(643)
Total Liabilities	$1,397,200	$1,332,870	$64,330
Fiduciary Net Position	$26,754,503	$25,596,344	$1,158,159

Changes in Fiduciary Net Position

For the Fiscal Year Ended June 30, 2023 and June 30, 2022

(Dollars in Thousands)

Additions	2023	2022	Change
Employee Contributions	$442,448	$428,993	$ 13,455
Employer Contributions	544,351	518,269	26,082
Net Investment Income/(Loss)	2,213,897	(1,710,746)	3,924,643
Other	1,966	3,531	(1,565)
Total Additions	$3,202,662	($759,953)	$ 3,962,615
Deductions			
Monthly Benefits	$2,010,438	$1,973,265	$ 37,173
Refunds of Contributions	17,531	16,529	1,002
Administrative Expenses	16,534	15,666	868
Total Deductions	$2,044,503	$2,005,460	$ 39,043
Change in Fiduciary Net Position	$1,158,159	($2,765,413)	$ 3,923,572
Ending Net Position	$26,754,503	$25,596,344	$ 1,158,159

Expenses — Deductions from Fiduciary Net Position

The primary expenses of TRA include the payment of pension benefits to members and beneficiaries, refunds of contributions to former members, and the cost of administering the Fund. Total benefits paid in fiscal year 2023 were $2 billion. Retirement benefit expenses increased by $37.2 million due to an increase in the number of recipients and a 1% benefit increase paid to eligible recipients on January 1, 2023.

Member refunds increased from $16.5 million to $17.5 million for fiscal year 2023. Administrative expenses increased by $868,000 during the fiscal year from $15.7 million in fiscal year 2022 to 16.5 million in fiscal year 2023. Overall, fund deductions increased $39 million for fiscal year 2023.

Actuarial Funding Valuations Highlights

The financial health of a public pension plan is not exclusively assessed by analyzing the basic financial statements. To assist funding analysis, TRA's actuary prepared an actuarial valuation in accordance with Minnesota Statute, section 356.215. These financial statements should also be reviewed in conjunction with the Actuarial section of this ACFR.

The actuarial value of assets, which smooths the effect of market fluctuations, increased from $25.9 billion on June 30, 2022 to $26.9 billion as of June 30, 2023. The actuarial value of assets smooths investment gains and losses over a five-year period to minimize the volatility associated with any one year. On a market value basis, TRA assets were $26.8 billion on June 30, 2023. As a result, the net deferred investment loss (actuarial value of assets minus the market value) of $334 million in last year's valuation has decreased to $152 million. Absent favorable investment experience, the deferred asset losses are expected to flow through the smoothing method over the next four years, lowering the funded ratio and increasing the Required Contribution Rate.

TRA's Actuarial Accrued Liability on June 30, 2023, increased to $35 billion from the June 30, 2022, amount of $31.6 billion, an increase of 10.7%. A complete reconciliation can be seen on pages 92-93.

TRA's Unfunded Actuarial Accrued Liability increased from $5.7 billion on June 30, 2022 to $8.1 billion on June 30, 2023. This represents an increase of $2.4 billion. By statute, the unfunded liability must be fully amortized by June 30, 2048.

TRA's funding objective is to meet long-term benefit obligations through the accumulation of contributions and investment income. As of June 30, 2023, the Actuarial Accrued Liability funding ratio for TRA was 76.9%, a weakening from the comparable funding ratio of 82% as of June 30, 2022.

TRA's statutory contribution rate of 17.24% of member covered payroll is currently lower than the required contribution rate calculated by TRA's actuarial consultant. The required contribution rate to fund normal pension costs, amortizing the Unfunded Actuarial Accrued Liability, plus TRA administrative costs was calculated as 19.77%. The resulting contribution deficiency is 2.53% of covered payroll, or callabout ($154.4) million projected in fiscal year 2024. The 2018 legislature approved future employee and employer contribution rate increases which were fully phased in on July 1, 2023.

During the 2023 legislative session, the Minnesota Legislation passed the Tax Finance and Policy Bill that will take effect on July 1, 2025. The changes include:

- The normal retirement age for active and eligible deferred Tier II members will be reduced from 66 to 65.
- The employer contribution rate will increase by 0.75% for a total rate of 9.5%.
- The employee contribution rate will increase by 0.25% for a total rate of 8.0%.
- The amortization date will change to June 30, 2053.
- The pension adjustment rate for school districts and the base budgets for Minnesota State, Perpich Center for Arts Education, and Minnesota Academies will increase to reflect the 0.75% employer contribution rate increase.

GASB 67-68 actuarial valuation results

The TRA Board of Trustees authorized a separate actuarial valuation report designed to comply with the provisions of GASB Statement 67. The Required Supplementary Information, beginning on page 48,

details the results of this valuation report. The focus of this valuation is primarily for financial statement presentations rather than funding analysis. Under the set of assumptions used in this valuation, TRA had a net pension liability of $8.3 billion on June 30, 2023 and a contribution deficiency of $85.2 million for fiscal year 2023. The GASB 67 investment return for fiscal year 2023, using the money-weighted method, was 8.9%.

The Net Pension Liability of $8.3 billion on June 30, 2023 is an increase of 3.1% from the $8 billion calculated at June 30, 2022. The increase is primarily attributable to recent legislation that will prepare for future benefit changes as of July 1, 2025.

Under GASB 67 parameters, the actuary must calculate the date on which June 30, 2023 assets would be depleted, absent future cash flows and asset accumulations that would occur related to future members of TRA. The actuary has determined that using the GASB 67 methodology in fiscal year 2023, TRA assets are not expected to be depleted in the future.

TRA will allocate the results of the GASB 67 accounting valuation to each employer unit. We plan to provide employer units with this information in the second quarter of calendar year 2024 to facilitate their compliance with the financial reporting requirements of GASB Statement 68 for their fiscal year 2024 financial reporting cycle.

The complete GASB 67 accounting valuation report is available at:

https://minnesotatra.org/financial/annual-reports/

Summary

Due to the long-term nature of defined benefit plans, one must review the financial performance of TRA over a period of years and not at any one point in time. The funding ratio of the TRA fund decreased from 82% to 76.9% for fiscal year 2023. However, the 2023 legislature passed a package that includes changes to the actuarial assumption, benefit provisions, and contribution rates as well as additional State appropriations payable in fiscal year 2024. Appropriated State funds in the amount of $145 million are designated to pay down the Unfunded Actuarial Accrued Liability. Employer and employee contribution rates increased July 1, 2023 as provided in the 2018 omnibus pension bill. As a result of the 2023 legislation passed, contribution rates will increase for both employers and employees again on July 1, 2025 and the normal retirement age for Tier II members will be reduced from 66 to 65. TRA's amortization date will then move to June 30, 2053.

The long-term financial health of TRA, like all retirement funds, is heavily dependent on two key items: (1) future investment returns and (2) contributions. A contribution deficiency of 2.53% of member payroll exists based on the assumptions used for the 2023 valuation. There are improvements scheduled or expected in the future that will affect TRA's funding outlook. To provide some insight into the impact of these future changes, if the employee and employer contribution rate increases, the additional State funding, and actuarial assumption changes had all been reflected in this actuarial valuation the contribution deficiency of 2.53% would change to a sufficiency of 0.55%.

The contribution deficiency means that, if all assumptions are exactly met in the future, the Unfunded Actuarial Accrued Liability (UAAL) will not be fully amortized before June 30, 2048, the statutory deadline. However, any change to actuarial assumptions and actual experience in the future will affect the full funding date.

TRA's Executive Management Team will continually study actuarial reports and funding projections to closely monitor the adequacy of contributions. The team will seek Board and legislative action to remedy long-term structural deficiencies.

Teachers Retirement Fund
Statement of Fiduciary Net Position

June 30, 2023

(Dollars in Thousands)

Assets	
Cash and Short-Term Investments	
Cash	$19,077
Building Account Cash	240
Short-Term Investments	877,681
Total Cash and Short-Term Investments	$896,998
Accounts Receivable	$28,353
Investments (at Fair Value)	
Treasuries Pool	$2,486,669
Bond Pool	1,384,461
Alternative Investments Pool	6,704,693
U.S. Stock Index Pool	7,015,295
U.S. Stock Actively Managed Pool	1,889,616
Broad International Stock Pool	4,229,732
Global Equity	313,868
Return Seeking Fixed Income	1,323,128
Short Duration Laddered Bonds	484,750
Total Investments	$25,832,212
Securities Lending Collateral	$1,384,758
Building	
Land	$171
Building & Equipment Net of Depreciation	4,644
Total Building	$4,815
Capital Assets Net of Depreciation	$4,567
Total Assets	$28,151,703
Liabilities	
Current	
Accounts Payable	$9,087
Accrued Compensated Absences	105
Accrued Expenses - Building	5
Bonds Payable	664
Bond Interest Payable	2
Securities Lending Collateral	1,384,758
Unearned Revenue	1,210
Total Current Liabilities	$1,395,831
Long Term	
Accrued Compensated Absences	$977
Bonds Payable	392
Total Long Term Liabilities	$1,369
Total Liabilities	$1,397,200
Net Position Restricted For Pensions	$26,754,503

The accompanying notes are an integral part of this statement.

Teachers Retirement Fund
Statement of Changes in Fiduciary Net Position

For the Fiscal Year Ended June 30, 2023
(Dollars in Thousands)

Additions	
Contributions	
Employee	$442,448
Employer	508,764
Direct Aid (State/City/District)	35,587
Earnings Limitation Savings Account (ELSA)	407
Total Contributions	$987,206
Investment Income	
Net Appreciation in Fair Value of Investments	$2,235,116
Investment Expense	(27,338)
Total Net Investment Gain	$2,207,778
Securities Lending Activities:	
Securities Lending Income	$52,314
Securities Lending Expenses:	
Borrower rebates	($44,852)
Management Fees	(1,343)
Total Securities Lending Expenses	($46,195)
Net Income from Securities Lending	$6,119
Total Net Investment Gain	$2,213,897
Other Income	$1,559
Total Additions	$3,202,662
Deductions	
Retirement Benefits Paid	$2,010,031
Earnings Limitation Savings Account	407
Refunds of Contributions to Members	17,531
Administrative Expenses	16,534
Total Deductions	$2,044,503
Net Increase	$1,158,159
Net Position Restricted for Pensions	
Beginning of Year	$25,596,344
End of Year	$26,754,503

The accompanying notes are an integral part of this statement.

Notes to the Financial Statements

For the Fiscal Year Ended June 30, 2023

1. Description of TRA

A. Organization

The Teachers Retirement Association (TRA) is an administrator of a multiple employer, cost-sharing retirement fund. TRA administers a Basic Plan (without Social Security coverage) and a Coordinated Plan (coordinated with Social Security coverage) in accordance with Minnesota Statutes, Chapters 354 and 356. Assets of the fund may be used to pay benefits to both Basic and Coordinated members without legal restriction.

B. Participating Members and Employers

Teachers employed in Minnesota's public elementary and secondary schools, charter schools, and certain educational institutions maintained by the state (except those teachers employed by the St. Paul School District and certain educators employed by Minnesota State) are required to be TRA members.

State university, community college, and technical college teachers first employed by Minnesota State may elect TRA coverage within one year of eligible employment. Alternatively, these teachers may elect coverage through the Defined Contribution Retirement Plan (DCR) administered by Minnesota State. A teacher employed by Minnesota State and electing coverage by DCR is not a member of TRA except for purposes of Social Security coverage.

A schedule of employer units and membership is presented in *Figure 1, Employer Units and Membership*.

Figure 1. Employer Units and Membership

Employer Units	
Independent school districts	372
Colleges and universities	34
State agencies	4
Charter schools	192
Professional organizations	4
Total Employer Units	606
Membership	
Retirees, disabilitants and beneficiaries receiving benefits	70,344
Terminated members with deferred vested benefits	19,418
Other terminated, non-vested members entitled to a refund of contributions	40,089
Subtotal	129,851
Current employees	
Vested	68,497
Non-vested	16,486
Subtotal	84,983
Total Membership	214,834

C. Benefit Provisions

TRA provides retirement benefits, as well as disability benefits to members and benefits to survivors upon the death of eligible members. All benefits vest after three years of eligible service credit. The defined retirement benefits are based on a member's highest average salary for any consecutive 60 months of formula service, age and years of formula service credit at termination of service. TRA members belong to either the Basic or Coordinated Plan.

Two methods are used to compute benefits for TRA's Coordinated and Basic Plan members. Members first employed **before July 1, 1989**, receive the greater of the Tier I or Tier II benefits as described:

Tier I	Step Rate Formula	Percentage
Basic	1st ten years of service	2.2% per year
	All years after	2.7% per year
Coordinated	1st ten years if service years are prior to July 1, 2006	1.2% per year
	1st ten years if service years are July 1, 2006 or after	1.4% per year
	All other years of service if service years are prior to July 1, 2006	1.7% per year
	All other years of service if service years are July 1, 2006 or after	1.9% per year

With these provisions:

a. Normal retirement age is 65 with less than 30 years of allowable service and 62 with 30 or more years of allowable service credit.

b. 3% per year early retirement reduction for all years under normal retirement age.

c. Unreduced benefits for early retirement under a Rule-of-90 (age plus allowable service credits equals 90 or more).

Or

For years of service prior to July 1, 2006, a level formula of 1.7% per year for Coordinated plan members and 2.7% per year for Basic Plan members. For years of service July 1, 2006 and after, a level formula of 1.9% per year for Coordinated members and 2.7% for Basic members applies. An early retirement reduction is applied to members retiring prior to age 65. Members who reach age 62 with 30 years of service have a lower (more favorable to the member) reduction rate applied.

Tier II Benefits

Members first employed **after June 30, 1989**, receive only the Tier II benefit calculation with a normal retirement age that is their retirement age for full Social Security retirement benefits, but not to exceed age 66.

An early retirement reduction is applied to members retiring before age 66. Members who reach age 62 with 30 years of service have a lower (more favorable to the member) early retirement reduction rate applied.

Other

Former Minneapolis Teachers Retirement Fund Association (MTRFA) members with Basic Program eligibility retain the plan provisions of the Basic Program as defined in the MTRFA Articles of Incorporation and Bylaws as they existed at the merger on June 30, 2006. Five former MTRFA active and inactive members retain Basic Program coverage.

Former members of the Duluth Teachers Retirement Fund Association (DTRFA) retain the plan provisions as defined in the DTRFA Articles of Incorporation and Bylaws as they existed at the merger on June 30, 2015.

The benefit provisions stated in the preceding paragraphs of this section are current provisions and apply to active plan participants. Vested, terminated members who are entitled to benefits, but are not yet receiving them, are bound by the provisions in effect at the time they last terminated their public service. Pension benefits are funded from member and employer contributions and income from investment of fund assets.

D. Reporting Entity

TRA functions as a statutory entity created by the Minnesota Laws of 1931, Chapter 406. The Association maintains rights to sue or be sued in its own name and to hold property in its own name. For financial reporting purposes, TRA is considered a pension trust fund of the State of Minnesota and is included in the State's Annual Comprehensive Financial Report (ACFR) with its fiduciary funds.

The State of Minnesota acts as a fiduciary and trustee of TRA's funds. The eight member Board of Trustees is defined by Minnesota Statute, section 354.06, and consists of four active member representatives, one retired member representative, and three statutory officials. The Board has significant independence in the operations and management of the TRA, though the State Legislature actually determines the contribution rates for members and employers and sets benefits

provisions. The Board of Trustees is responsible for TRA's administration, but the State Board of Investment (SBI) is responsible for investing plan assets.

2. Summary of Significant Accounting Policies

A. Basis of Presentation and Basis of Accounting

The basis of presentation in preparing the TRA accompanying financial statements is performed in accordance with generally accepted accounting principles (GAAP). TRA adhered to accounting and financial reporting standards established by the Governmental Accounting Standards Board (GASB). GASB is the independent, not-for-profit, standards-setting organization and the official source of GAAP for state and local governmental entities in the United States of America. TRA's financial reporting is performed in accordance with the GASB requirements through Statement No. 95, and including GASB Statement No. 98.

The basis of accounting indicates the timing of transactions or events for recognition in the financial statements. TRA's financial statements are prepared using the accrual basis of accounting. Employee contributions, employer contributions, and related receivables are recognized as revenues when due, pursuant to statutory requirements. Annuity benefits, refunds and expenses are recognized when due and payable in accordance with Minnesota Statute. Administrative and other expenses, and the associated liabilities, are recognized when the liability is incurred.

TRA implemented no changes in accounting principles during fiscal year 2023.

B. Cash, Cash Equivalents and Accounts Receivable

TRA's defined benefit retirement funds, cash and cash equivalents include cash on deposit in the state's treasury, commingled with other state funds, and short-term investments. Cash on deposit consists of year-end receipts not yet processed as of the investment cutoff on June 30, 2023. Short-term investments, which SBI staff manages, include U.S. Treasury issues, repurchase agreements, banker's acceptances, commercial paper, money market, and certificates of deposit.

Amounts classified as accounts receivable consist primarily of employee and employer contributions, calculated as a percentage of each employee's salary. They are direct statutory payments from employers received after the fiscal year end on salaries earned prior to June 30, 2023. Under Minnesota Statutes, section 354.52, subdivision 4, TRA employers must remit contributions within 14 days after the member is paid. A Schedule of Accounts Receivable as of June 30, 2023, is presented in Figure 2, Schedule of Accounts Receivable.

Figure 2. Schedule of Accounts Receivable

(Dollars in Thousands)

Description	Amount
Member contributions	$10,026
Employer contributions	11,509
State Board of Investment	244
Interest on Investments	3,190
Interagency Receivable	9
Other	3,375
Total Receivables	$28,353

C. Investment Policies

SBI is established by Article XI of the Minnesota Constitution to invest all state funds. Its membership is composed of the Minnesota Governor (who is designated as chair of the Board), State Auditor, Secretary of State, and Attorney General. The legislature has also established a 17 member Investment Advisory Council (IAC) to advise the SBI and its staff on investment related matters. TRA's Executive Director is a permanent member of the IAC.

The state's public retirement fund assets are commingled in various pooled investment accounts, commonly referred to as the Combined Fund, as established in Minnesota Statutes Chapter 11A. Each participating retirement fund owns an undivided participation in the Combined Funds' pooled investment accounts.

The SBI investment policy may be amended by a majority vote of the Board. The policy outlines the investment philosophy and guidelines within which the Combined Fund's investments will be managed.

SBI Investment Beliefs

The SBI adopted a set of ten Investment Beliefs for managing the assets of the Combined Funds (those funds utilized to support the defined benefit plans of the State's employees). The primary purpose of these Beliefs is to guide the SBI toward sound investing principles related to investing on behalf of the Combined Funds. In this respect, the Beliefs help provide context for SBI's actions, reflect SBI's investment values, and acknowledge SBI's role in supporting the State's broader retirement systems. When relevant, the SBI also uses these Beliefs as a guide when investing the assets of the other investment programs that it manages, as deemed appropriate. The ten SBI Investment Beliefs are:

1. The SBI is a long-term investor whose primary mission is to maintain the viability of the retirement systems it supports.
2. The SBI's strategic allocation policy is the primary determinant of the asset portfolio's long-term investment return and asset portfolio's risk.
3. While the SBI can sacrifice some short-term liquidity to pursue a greater long-term return, the investment portfolio's net cash flows and ability to pay benefits on a year-by-year basis are key risk considerations.
4. Diversification improves the risk-adjusted return profile of the SBI investment portfolio.
5. There are long-term benefits to SBI managing investment costs.
6. The equity risk premium is significantly positive over a long-term investment horizon although it can vary over time.
7. Private market investments have an illiquidity premium that the SBI can capture.
8. It is extremely challenging for a large institutional investor to add significant value over market-representative benchmarks, particularly in the highly competitive public global equity markets.
9. The SBI benefits significantly when roles and levels of authority are clearly defined and followed.
10. Utilizing engagement initiatives to address economic, social, and governance-related issues can lead to positive portfolio and governance outcomes.

Description of Significant Investment Policy Changes During the Year

During the year the SBI Board approved, pursuant to the IAC endorsement and Staff's recommendation:

1. The establishment of an approved range of 20%-32% around the Private Markets target allocation of 25% of the Combined Funds market value.
2. SBI Staff's authority to modify internal guidelines, in this case, to increase the Market Value + Unfunded Commitments from 45% to 50% of the Combined Funds' assets.

To match the long-term nature of the pension obligations, the SBI maintains a strategic asset allocation for the Combined Funds that includes allocations to public equity, domestic bonds, private markets and cash equivalents. The asset allocation is as follows as of June 30, 2023:

Figure 3. Asset Allocation Targets
June 30, 2023

Public Equity		50%
-Domestic Equity	33.5%	
-International Equity	16.5%	
Fixed Income		25%
-Core Bonds and Return Seeking Bonds	10%	
-Treasuries	10%	
-Cash & Laddered Bonds	5%	
Private Markets		25%

Excluding Private Markets, if an actual allocation deviates 10% or more from the target allocation, assets are rebalanced to achieve long-term allocation targets. For example, the target allocation for Fixed Income is 25% of the fund. A 10% deviation would equal 2.5%. The SBI recognizes that in some market situations the

allocation to Private Markets may exceed 25% but by statute may not exceed 35%.

Valuation of Investments

Investments in the Combined Funds are reported on a trade date basis and at fair value. Fair value is the proportionate share of the combined market value of the investment portfolio of the SBI investment pool in which the funds participate. All securities within the pools are valued at fair value except for U.S. government short-term securities and commercial paper, which are valued at fair value less accrued interest. Accrued interest is recognized as short-term income. The SBI values long-term fixed income securities by using various valuation systems which provide prices for both actively traded and privately placed bonds. For equity securities, the SBI uses various valuation services. Fair value is the last reported sales price for securities traded on national or international exchanges. If a security is not actively traded, then the fair value is based on the analysis of financial statements, analysis of future cash flows and independent appraisals.

Assumptions made in valuing securities are as follows:

- Values of actively traded securities determined by recognized exchanges are objectively negotiated purchase prices between willing buyers and sellers, and are not subject to either undue influence or market manipulation. Securities traded on a national or international exchange are valued using the last reported trade price.
- Values of securities not actively traded are determined by objective appraisals by qualified professional analysts whose results would not vary materially from those of other similarly qualified professionals. The fair value of investments is based upon valuations provided by a recognized pricing service. Short-term investments are reported at cost, which approximates fair value. The fair value of real estate investments is based on independent yearly appraisals. Investments that do not have an established market are reported at estimated fair value.

The term "market value" is used when describing asset valuation methods for actuarial purposes, and is used consistently throughout the Actuarial Section and in other places in the ACFR when referring to funded status. "Market value" is equivalent to "Fair value."

Investment Income

Investment income is recognized as it is earned. Accrued investment income of the pooled investment accounts is included in participation in the accounts. Gains and losses on sales or exchanges are recognized on the transaction date.

Investment Expenses

For financial reporting purposes, the cost of security transactions is included in the transaction price. Investment expenses include administrative expenses of the SBI to manage the state's comprehensive investment portfolio and investment management fees paid to the external money managers and the state's master custodian for pension fund assets. These expenses are allocated proportionately to the funds participating in the pooled investment accounts. Details of these expenses are presented in the Schedule of Investment Management Fees (pages 69-71) found within the unaudited Investment Section of this ACFR. TRA’s portion of the management fees totaled $27.3 million (page 57). A more detailed schedule of fees and commissions the SBI paid to brokerage firms, along with the number of shares traded, total commissions, commissions per share for the pooled investment accounts, and other investment information may be obtained from:

Minnesota State Board of Investment
Retirement Systems of Minnesota Building
60 Empire Drive, Suite 355
Saint Paul, Minnesota 55103

Asset Allocation

To match the long-term nature of pension obligations, the SBI maintains a strategic asset allocation for the Combined Funds that includes allocations to public equity (both domestic and international), fixed income, and private markets. The asset allocation at June 30, 2023 is shown in *Figure 4.*

Excluding Private Markets, if an actual allocation deviates 10% or more from the target allocation, assets are rebalanced to achieve long-term allocation targets. For example, the target allocation for Fixed Income is 25% of the fund. A 10% deviation would equal 2.5%). The SBI recognizes that in some market situations the allocation to Private Markets may exceed 25% but by Statute may not exceed 35%.

The long-term expected return on investment is based on the asset allocation study completed by the SBI in 2016. The SBI has historically undertaken an asset allocation study roughly every five years. An asset allocation study will be conducted during 2023-2024.

The SBI's long-term expected rate of return on pension plan investments was determined using a building-block method. Best estimates for expected future real rates of return (expected returns, net of inflation) were developed for each asset class using both long-term historical returns and long-term capital market expectations from a number of investment management and consulting organizations. The asset class estimates and the target allocations were then combined to produce a geometric, long-term expected real rate of return for the portfolio. Inflation expectations were applied to derive the nominal rate of return for the portfolio.

Figure 4. Target Asset Allocation and Long Term Expected Real Rate of Return

Asset Class	Target Allocation	Long-term Expected Real Rate of Return (Geometric Mean)
Domestic Equity (1)	33.5%	5.1%
International Equity (2)	16.5%	5.3%
Private Markets (3)	25%	0.75%
Fixed Income (4)	25%	5.9%
Total	100.00%	

(1) Domestic Equity includes US Stock Actively Managed and the US Stock Index Fund.

(2) International Equity includes Broad International Stock Fund.

(3) Private Markets includes the Alternative Investment Pool. If a 25% allocation to Private Markets cannot be achieved, the uncommitted allocation is invested in Public Equities.

(4) The Target Allocation combines Fixed Income investment options (10% in Core Bonds, 10% in Treasuries, and 5% in Cash & Laddered Bonds).

The pooled accounts have not been rated for credit quality. *Figure 5*, *TRA Investment Portfolio*, provides a summary of the cost and fair values of the investments as of June 30, 2023, as reported on the Statement of Fiduciary Net Position.

Figure 5. TRA Investment Portfolio

(Dollars in Thousands)

TRA Investment Portfolio: June 30, 2023		
TRA Fund	Cost	Fair
Pooled Accounts		
Treasuries Pool	$3,011,488	$2,486,669
Bond Pool	1,560,766	1,384,461
Alternative Investments	5,961,018	6,704,693
US Stock Index Pool	5,400,011	7,015,295
US Stock Actively Managed	2,346,415	1,889,616
Broad International Stock Pool	3,947,369	4,229,732
Global Equity	331,081	313,868
Return Seeking Fixed Income	1,439,031	1,323,128
Short Duration Laddered Bonds	475,819	484,750
Total	$24,472,998	$25,832,212
Short Term Cash Equivalents		
Money Market	$811,230	$814,341
CD Repo Pool	63,083	63,340
Total	$874,313	$877,681
Total Invested	$25,347,311	$26,709,893

Included in the short-term investment category is a program managed by the SBI in which it purchases certificates of deposits (CD) in Minnesota financial institutions. The SBI receives a market rate of return on these investments. The CD investments are insured by the Federal Deposit Insurance Corporation.

Net investment income is summarized on the Statement of Changes in Fiduciary Net Position. The summarized amounts show net investment gain of $2.2 billion for fiscal year 2023.

Annual money-weighted return on plan investments

For the year ended June 30, 2023, the annual money-weighted rate of return on the assets of the combined retirement fund, net of investment expense, was 8.9% (*Figure 6, 10-Year Schedule of Investment Returns using the Money-Weighted Method*). The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

Explanation of money-weighted return

The money-weighted rate of return is a method of calculating period-by-period returns on pension plan investments that adjusts for the changing amounts actually invested. For purposes of GASB Statement 67, the money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.

Figure 6. 10-Year Schedule of Investment Returns using the Money-Weighted Method

Year	Investment Return
FY 2023	8.9%
FY 2022	(6.2%)
FY 2021	30.3%
FY 2020	4.2%
FY 2019	7.3%
FY 2018	10.5%
FY 2017	15.2%
FY 2016	(0.1%)
FY 2015	4.5%
FY 2014	18.7%

D. Capital Assets

Capital assets are capitalized at the time of acquisition at cost. Assets with a cost in excess of $30,000 and internally generated software development costs in excess of $1,000,000 are capitalized.

Depreciation and amortization are computed on a straight-line method over the useful life of the related assets. The estimated useful lives by major category are: computer equipment (3 years), general office equipment (5 years), modular office furniture (10 years) and internally generated software (10 years).

Capital assets are presented on the June 30, 2023, Statement of Fiduciary Net Position. The year-end balance plus changes during the year are shown in *Figure 7, Schedule of Capital Assets*.

E. Accrued Compensated Absences

Employees of TRA accrue vacation leave, sick leave, and compensatory leave at various rates within limits specified in collective bargaining agreements. Accumulated amounts for compensated absences are accrued when incurred. Such leave is liquidated in cash primarily at the time of termination of employment. The total liability at June 30, 2023, is $1,082,000. Of this, $105,000 is considered a short-term liability and $977,000 is shown as a long-term liability on the Statement of Fiduciary Net Position. The total increased by $87,000 during fiscal year 2023.

Figure 7. Schedule of Capital Assets

(Dollars in Thousands)

Description	Balance 7/1/2022	Additions	Deletions	Balance 6/30/2023
Furniture and equipment	$3,486	$—	$—	$3,486
Reserve for depreciation	(3,235)	(225)	—	(3,460)
Internally developed software	20,116	—	—	20,116
Reserve for amortization	(13,563)	(2,012)	—	(15,575)
Net Capital Assets	$6,804	($2,237)	$—	$4,567

3. Deposits and Investment Risk Disclosures

A. Fair Value Reporting

GASB Statement No. 72, Fair Value Measurement and Application, sets forth the framework for measuring the fair value of investments based on a hierarchy of valuation inputs. The hierarchy has three Levels:

Level 1: Market valuation approach using quoted prices (unadjusted) in active markets for identical assets or liabilities that the reporting entity can access at the measurement date.

Level 2: Market valuation approach using inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly or indirectly. Inputs for Level 2 include:

- Quoted prices for similar assets or liabilities in active markets;
- Quoted prices for identical or similar assets or liabilities in inactive markets;
- Inputs other than quoted prices that are observable for the asset or liability;
- Inputs derived principally from or corroborated by observable market data by correlation or other means.

Level 3: Unobservable inputs for the asset or liability. Unobservable inputs reflect the SBI's assumptions about the inputs that market participants would use in pricing an asset or liability. Assets classified as a Level 3 typically use the cost approach, income approach, or consensus pricing for a valuation technique.

Net Asset Value (NAV): Investments that do not have a readily determinable fair value are measured using the NAV per share (or its equivalent) as a practical expedient, and are not classified in the fair value hierarchy.

Cash and cash equivalents (investments with less than 12 months to maturity) are not leveled per GASB 72. All non-cash investments, including derivative investments that are not hedging derivatives, are required to be measured at fair value on a recurring basis. The SBI maintains investment pools that participants can invest in; participants own a proportionate share of the investment pools. The fair value of the investment pools is priced daily by the SBI custodian, when a daily price is available, by using independent pricing sources.

In *Figure 8, Fair Value of TRA Investments*, Level 3 investments primarily consist of assets where the asset is distressed, or there is not an active market. The fair values of the assets measured at NAV have been determined using the March 31, 2023 values adjusted for cash flows. The investments measured at NAV are typically not eligible for redemption. Distributions are received as underlying investments when the funds are liquidated, which occur over the life of the investment.

The typical liquidation period for alternative investments ranges from 3 to 12 years. The majority of the distribution is received during the liquidation period, however it is not uncommon for a minimal amount of the fund to remain open while awaiting final close. As of June 30, 2023, the alternative investments are not expected to be sold at an amount different from the NAV value of the SBI's ownership interest in partner's capital.

The SBI has 193 Private Equity investments representing 73.2% of the NAV value (Investments Measured at Net Asset Value). There are 45 out of 193 Private Equity funds that are over the twelve-year liquidation period and represent 6% of the Private Equity NAV value.

The SBI has 35 Real Estate investments representing 9.3% of the NAV value (Investments Measured at Net Asset Value). There are 8 out of 35 Real Estate funds that are over the twelve-year liquidation period and represent 1.2% of the Real Estate NAV value.

The SBI has 32 Real Assets investments representing 9.8% of the NAV value (Investments Measured at Net Asset Value). There are 12 out of 32 Real Assets funds that are over the twelve-year liquidation period and represent 13.2% of the Real Assets NAV value.

The SBI has 42 Private Credit investments representing 7.7% of the NAV value (Investments Measured at Net Asset Value). There are 13 out of 42 Private Credit funds that are over the twelve-year liquidation period and represent 7.1% of the Private Credit NAV value

TRA has a total of $3.6 billion in unfunded commitments to the investments valued at NAV. Unfunded commitments is money that has been committed to an investment but not yet transferred to the General Partner (Investor).

Explanations of investment types follow *Figure 8, Fair Value of TRA Investments*.

Figure 8. Fair Value of TRA Investments

As of June 30, 2023

(Dollars in Thousands)

Investments	Fair Value	Level 1	Level 2	Level 3
Equity				
Common Stock	$12,576,350	$12,575,562	$751	$37
Real Estate Investment Trust	273,021	273,021	—	—
Other Equity	458,067	240,025	1,196	216,846
Equity Total	$13,307,438	$13,088,608	$1,947	$216,883
Fixed Income				
Asset-Backed Securities	$257,250	$—	$199,112	$ 58,138
Mortgage-Backed Securities	844,638	—	843,920	718
Corporate Bonds	1,330,789	—	1,330,789	—
Government Issues	2,935,109	—	2,934,656	453
Fixed Income Total	$5,367,786	$—	$5,308,477	$59,309
Investment Derivatives				
Warrants	11	11	—	—
Futures	50	50	—	—
Derivative Total	$61	$61	$—	$—
Total Investments by Fair Value	$18,675,285	$13,088,669	$5,310,424	$276,192

Investments Measured at the Net Asset Value (NAV)

	NAV	Unfunded Commitments	Number of Investments	Percent of the NAV
Private Equity	$4,909,993	$2,494,894	193	73.2%
Real Estate	623,774	536,572	35	9.3%
Real Assets	654,230	182,900	32	9.8%
Private Credit	518,177	407,365	42	7.7%
NAV total	$6,706,174	$3,621,731	302	100%

Note: *Cash, cash equivalents, and derivative futures (hedge type instruments) are not leveled under GASB Statement 72, are not included in this exhibit. Any variance between recorded account balances and the fair value of investments as reported in the exhibit are accounts payable and accounts receivable items on June 30, 2023, and not leveled under GASB Statement No. 72.*

Investment types used in Figure 8:

Equity

Common Stock: Securities representing equity ownership in a corporation, providing voting rights, and entitling the holder to a share of the company's success through dividends and/or capital appreciation.

Real Estate Investment Trust (REIT): An investment pool established by a group of investors for the purpose of investing in real estate or mortgages. REITs are generally exempt from federal taxes, provided that 95% of earned income is distributed and that the various investors are not treated differently.

Other Equity: Includes Preferred Stock, Depository Receipts, Limited Partnership Units, Common Stock Units, Mutual Funds, and Non-Security Asset Stock.

Fixed Income

Asset Backed Securities: Bonds or notes backed by financial assets, including auto loans and credit card receivables.

Mortgage Backed Securities: An asset-backed security that is secured by a mortgage or collection of mortgages. The mortgages are sold to a government agency or investment bank that will package the loans together into a security that can be purchased by investors.

Corporate Bonds: Debt obligations issued by corporations as an alternative to offering equity ownership by issuing stock. Like most municipal bonds and Treasuries, most corporate bonds pay semi-annual interest and promise to return their principal when they mature. Maturities range from 1 to 30 years.

Government Issue: Securities or bonds issued by any of the fifty states, the territories and their subdivisions, counties, cities, towns, villages and school districts, agencies (such as authorities and special districts created by the states), and certain federally sponsored agencies such as local housing authorities.

Investment Derivatives

Warrants: The right to purchase one or more shares of stock. Warrants are usually attached to other issues purchased by an investor. They are often detachable and can be exercised over a long period (five to ten years). A warrant, because it has a value of its own, can be traded.

Options – Futures: A contract that gives the holder the right to buy from or sell to the writer a specified amount of securities at a specified price, good for a specified period of time. An American option can be exercised at any time prior to its expiration. A European option can be exercised only on its expiration date.

Investments Measured at the Net Asset Value (NAV)

Private Equity: The private equity investment strategy is to establish and maintain a broadly diversified private equity portfolio composed of investments that provide diversification by industry type, stage of corporate development and location.

Real Estate: The real estate investment strategy calls for the establishment and maintenance of a broadly diversified real estate portfolio composed of investments that provide overall diversification by property type and location. The main components of this portfolio consist of investments in closed-end commingled funds. The remaining portion of the portfolio may include investments in less diversified, more focused (specialty) commingled funds and REITs.

Real Assets: The strategy for real assets investments is to establish and maintain a portfolio of real assets investment vehicles that provide an inflation hedge and additional diversification. Real Assets investments will include oil and gas investments and energy service industry investments that are diversified by geographic area as well as by type.

Private Credit: The strategy for private credit investments is to target funds that typically provide a current return and may have an equity component. Structures such as subordinated debt investments and mezzanine investments are typical yield-oriented investments.

B. Investment Risk

SBI is responsible for the investing of TRA assets under the authority of Minnesota Statutes, section 11A.24. The following disclosures apply to TRA investments.

C. Custodial Credit Risk

Custodial credit risk for cash deposits and investments is the risk that, in the event of a bank or custodian failure, TRA will not be able to recover the value of its investments or collateral securities. Cash consists of year-end receipts not processed as of the investment cutoff deadline on June 30th. TRA cash funds are held in the state treasury, commingled with other state funds. Minnesota Statute, section 9.031 requires that deposits be secured by depository insurance or a combination of depository insurance and collateral securities held in the state's name by an agent of the state. Such insurance and collateral shall be in amounts sufficient to ensure that deposits do not exceed 90% of the sum of the insured amount and the fair value of the collateral. Throughout fiscal year 2023, the combined depository insurance and collateral was sufficient to meet legal requirements and secure all TRA deposits, eliminating exposure to custodial credit risk.

D. Credit Risk

Credit risk is the risk that an issuer or counterparty to an investment will be unable to fulfill its obligations. SBI has policies designed to minimize credit risk. They may invest funds in governmental obligations provided the issue is backed by the full faith and credit of the issuer or the issue is rated among the top four quality rating categories by a nationally recognized rating agency. They may invest funds in corporate obligations provided the issue is rated among the top four quality categories by a nationally recognized rating agency. They may also invest in unrated corporate obligations or in corporate obligations that are not rated among the top four quality categories provided that:

- The aggregate value of these obligations may not exceed 5% of the fund for which the state board is investing;
- Participation is limited to 50% of a single offering; and
- Participation is limited to 25% of an issuer's obligations.

SBI may also invest in bankers acceptances, deposit notes of U.S. banks, certificates of deposit, mortgage securities, and asset backed securities rated in the top four quality categories by a nationally recognized rating agency. Commercial paper must be rated in the top two categories.

As of June 30, 2023, TRA's proportionate share of the SBI's exposure to credit risk, based on the lower Standard and Poor's or Moody's Quality ratings for debt securities and short-term investments, is shown in Figure 9. For clarity of reporting, Moody's ratings are displayed in this figure using the comparable Standard and Poor's rating. If only one rating exists, that rating is used.

Figure 9. Credit Risk Exposure

(Dollars in Thousands)

Quality Rating	Fair Value
AAA	$182,929
AA	4,009,627
A	117,535
BBB	661,596
BB	339,546
B	295,444
CCC	135,821
CC	20,857
C	764
D	3,620
Unrated	1,131,633
Total	$6,899,372

E. Concentration of Credit Risk

Concentration of credit risk is the risk of loss that may be attributed to the magnitude of an investment in a single issuer. SBI determines concentration of credit risk based on security identification number.

TRA does not have exposure to a single issuer that equals or exceeds 5%; therefore, there is no material concentration of credit risk.

F. Interest Rate Risk

Interest rate risk is the potential for investment losses that result from a change in interest rates. SBI controls interest rate risk through guidelines developed for each portfolio. TRA's share of the debt securities are held in external investment pools and have the weighted average maturities as shown in *Figure 10, Interest Rate Risk*.

Figure 10. Interest Rate Risk

Security Type	Weighted Average Maturity (in Years)
Municipal	14.23
U.S. Treasury	14.06
Collateralized Mortgage Obligation	9.68
Yankee	8.84
Corporate Debt	8.13
Mortgage Pass-Through	7.78
Foreign Country Bonds	7.61
Asset Backed	5.46
Bank Loan	4.57
Agency	3.99

G. Foreign Currency Risk

Foreign currency risk is the risk that changes in exchange rates between the U.S. dollar and foreign currencies could adversely affect the fair value of an investment. Most foreign currency risk resides within the SBI's international equity investment holdings. In order to reduce foreign currency risk, the SBI has developed and implemented a number of policies. Government obligations, including guaranteed or insured issues of the International Bank for Reconstruction and Development, the Inter-American Development Bank, the Asian Development Bank, and the African Development Bank, must pay interest and principal in U.S. dollars. The principal and interest of obligations of corporations, including those corporations incorporated or organized under the laws of the Dominion of Canada or any province thereof, must also be paid in U.S. dollars. The SBI uses a foreign currency overlay manager to implement an active hedging program for its international developed markets passive equity portfolio. In addition, the SBI active managers also have discretion to use forward currency contracts within their portfolios to hedge foreign currency risk as they deem appropriate. TRA's share of investments as of June 30, 2023, was distributed among the currencies as shown in *Figure 11, Schedule of Foreign Currency Risk*.

Figure 11. Schedule of Foreign Currency Risk

(Dollars in Thousands)

Currency	Cash	Fixed Income	Equity	Total
Australian Dollar	$419	$—	$188,241	$188,660
Brazilian Real	329	9,562	63,800	73,691
Canadian Dollar	3,064	5,568	308,912	317,544
Chilean Peso	92	1,137	1,653	2,882
Colombian Peso	(93)	2,145	321	2,373
Czech Koruna	26	3,365	468	3,859
Danish Krone	149	—	98,861	99,010
Dominican Peso	—	232	—	232
Egyptian Pound	53	—	255	308
Euro Currency	371	47,831	1,529,645	1,577,847
Hong Kong Dollar	282	—	250,737	251,019
Hungarian Forint	42	963	4,194	5,199
Indonesian Rupiah	180	5,612	24,249	30,041
Japanese Yen	3,467	—	620,023	623,490
Kuwaiti Dinar	7	—	2,521	2,528
Malaysian Ringgit	25	4,149	4,139	8,313
Mexican Peso	841	11,579	25,958	38,378
New Israeli Sheqel	31	—	10,332	10,363
New Taiwan Dollar	19	—	128,631	128,650
New Zealand Dollar	26	—	4,298	4,324
Norwegian Krone	39	—	21,898	21,937
Philippine Peso	6	—	4,049	4,055
Polish Zloty	17	2,985	6,557	9,559
Pound Sterling	1,472	12,394	426,437	440,303
Qatari Rial	—	—	2,825	2,825
Romanian LEU	49	2,314	637	3,000
Russian Ruble	205	—	—	205
Saudi Riyal	—	—	6,022	6,022
Singapore Dollar	109	—	42,939	43,048
SOL	5	2,156	—	2,161
South African Rand	120	5,096	25,614	30,830
South Korean Won	95	1,001	127,873	128,969
Swedish Krona	39	—	88,302	88,341
Swiss Franc	1,259	—	275,125	276,384
Thailand Baht	9	4,772	15,222	20,003
Turkish Lira	—	—	2,915	2,915
UAE Dirham	—	—	8,364	8,364
Uruguayan Peso	—	836	—	836
Yuan Renminbi	(412)	1,924	44,695	46,207
Total	**$12,342**	**$125,621**	**$4,366,712**	**$4,504,675**

H. Derivative Financial Instruments

Governmental Accounting Standards

Board (GASB) Statement 53 Disclosures

On behalf of TRA, SBI invests in various types of derivative financial instruments. Derivatives are financial instruments, the value of which are derived, in whole or in part, from the value of any one or more underlying securities or assets, or index of securities or assets.

Minnesota Statutes, section 11A.24, provides that any agreement for put and call options and futures contracts may only be entered into with a fully offsetting amount of cash or securities. This applies to foreign currency forward contracts used to offset the currency risk of a security. All other derivatives are exchange-traded. The purpose of the SBI's derivative activity is to equitize cash in the portfolio, to adjust the duration of the portfolio, or to offset current futures positions.

Explanations of each derivative instrument type are presented below. The fair value balances and notional amounts (or face value) at June 30, 2023, classified by derivative instrument type (e.g., futures, options, currency forwards, and stock warrants and rights), and the changes in fair value for fiscal year 2023 are shown in *Figure 12, Schedule of Derivative Financial Instruments*.

- **Futures** are contract commitments to purchase (asset) or sell (liability) at a future date. The net change in the values of futures contracts is settled on a regular basis and gains and losses are included in investment income.
- **Options** are contracts that give buyers or sellers the right to buy (calls) or sell (puts) a security at a predetermined price on a future date. Gains and losses result from variances in the fair value of the security that is the subject of the contract that occur prior to or on the contract specified date. The gains and losses are included in investment income.
- **Currency Forward Contracts** are used to manage portfolio foreign currency risk. The provisions of the contract vary based on what is negotiated between the two parties.
- **Stock Warrants and Rights**, similar to options, are the right to purchase shares of a stock at a certain price by a certain date. They usually have a longer term before expiration, e.g., five years or more. When exercised, new shares are issued by the company. Rights are the same but are issued to current stock owners to enable them to retain their relative ownership share. Gains and losses from the sale or exercise of stock warrants and rights are included in investment income.
- **Swaps:** A derivative contract through which two parties exchange the cash flows or liabilities from two different financial instruments. Most swaps involve cash flows based on a notional principal amount such as a loan, bond, or currency. Usually, the principal does not change hands. Each cash flow comprises one leg of the swap. One cash flow is generally fixed, while the other is variable and based on a benchmark interest rate, floating currency exchange rate or index price. The most common kind of swap is an interest rate swap, but currency swaps and credit default swaps on a reference security or basket of securities are also common.

SBI is exposed to credit risk through 22 counterparties in foreign currency forward contracts that are used to offset the currency risk of a security. TRA's proportionate share of the maximum loss that SBI would have recognized as of June 30, 2023, if all counterparties failed to perform as contracted is $190.1 million. These counter parties have S&P ratings of BBB+ or better. There is no collateral held or any liabilities included in netting arrangements with those counterparties that would have reduced SBI's exposure to credit risk.

Figure 12. Schedule of Derivative Financial Instruments

(*Dollars in Thousands*)

Derivative Investment Type	Changes in Fair Value During Fiscal Year 2023	Fair Value at June 30, 2023	Notional Amount
Futures			
Index Futures – Long	$15,728	$—	$578
Index Futures – Short	($2,267)	$—	($18)
Fixed Income Futures – Long	($60,640)	$—	$662,786
Fixed Income Futures – Short	$52,030	$—	($415,653)
Options			
Futures Options – Bought	($2,315)	$216	$570
Futures Options – Written	$2,215	($165)	($1,324)
Equity Options – Bought	$3	$—	$—
Equity Options – Written	$36	$—	$—
Fixed Income Options – Written	$47	($12)	($1,096)
Currency Forwards			
Foreign Currency Forwards	$9,021	($15,105)	$9,314,777
Stock Warrants and Rights			
Stock Warrants	$7	$11	$34
Stock Rights	$871	$—	$2
Swaps			
Credit Default – Bought	($250)	($112)	$4,046
Credit Default – Written	$2,135	$989	$49,865
Pay Fixed Interest Rate	$2,367	$1,985	$25,505
Receive Fixed Interest Rate	($1,209)	($641)	$30,401
Total Return Swaps Equity	$39	$4	($2,363)

I. Securities Lending

Governmental Accounting Standards Board (GASB) Statement 28 Disclosures

TRA does not own specific securities, but instead owns shares in pooled funds invested by SBI. The SBI is authorized to use securities lending transactions in accordance with Minnesota Statutes, section 356A.06, subdivision 7, and has, pursuant to a Custodial Trust Agreement, authorized State Street Bank and Trust Company, Boston, Massachusetts, to act as SBI's agent in lending SBI'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 SBI, certain securities of SBI held by State Street as custodian and received cash or other collateral including securities issued or guaranteed by the United States government. State Street does not have the ability to pledge or sell collateral securities delivered absent a borrow default. Borrowers were required to deliver collateral for each loan equal to at least 100% of the market value of the loaned securities.

Pursuant to the Securities Lending Authorization Agreement, State Street had an obligation to indemnify SBI 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 of notice of default of the borrower.

During the fiscal year, SBI 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 June 30, 2023, such investment pool had an average duration of 3.10 days and an average weighted maturity of 77.82 days. Because the loans were terminable at will, their duration did not generally match the duration of the investments made with cash collateral. On June 30, 2023, the SBI had no credit risk exposure to borrowers. The TRA portion of the market value of the collateral held and the market value of securities on loan from SBI as of June 30, 2023, were $1.7 billion and $1.7 billion respectively. *See Figure 13 for the detail of the securities on loan.* Cash collateral totaling $1,384,757,836 is reported on the Statement of Fiduciary Net Position as an asset. Liabilities resulting from these securities lending transactions are also reported on the Statement of Fiduciary Net Position.

Figure 13. Securities Lending

(Dollars in Thousands)

Investment Type	Amount as of June 30, 2023
Domestic Equity	$1,422,978
International Equity	51,275
Domestic Corporate Bonds	38,203
U.S. Government Bonds	169,453
International Corporate Bonds	—
Total	$1,681,909

4. Other Notes

A. Administrative Expenses and Budget

The annual budget of TRA operations is developed by TRA management and approved by the Board of Trustees. The budget is also sent to the Department of Minnesota Management & Budget for policy analysis and is included in the Governor's Biennial Budget presentation to the legislature. The legislature adopts appropriation and expenditure amounts resulting in an approved budget for the Association.

TRA administrative costs are not financed by any specific type of contribution or other income of the Fund. Administrative costs are budgeted in the annual determination of the actuarial required contribution rate (page 94, line B3).

B. Earnings Limitation Savings Account (ELSA)

Teachers under their Social Security normal retirement age who resume teaching service for a TRA-covered employer after retirement are subject to a $46,000 annual earnings limitation.

If a retired member earns more than the limitation, the annuity payable during the following calendar year will be offset one dollar for each two dollars earned in excess of the limitation.

The pension offset amounts are redirected to a separate individual savings account, called the Earnings Limitation Savings Account (ELSA), and later distributed to the retiree. Effective January 1, 2011, ELSA accounts no longer accrue interest. A member may apply for a lump-sum payment or rollover of their ELSA account balance, as long as it has been at least one year after the last deferred amount was redirected to the ELSA account.

As of June 30, 2023, TRA had 180 retirees with an ELSA account established. The total of all ELSA account balances was $2.4 million. The dollar amount of pension benefits withheld due to excess earnings during fiscal year 2023 was $407,000. ELSA assets are invested in the TRA Fund until distribution. TRA distributed ELSA refunds to 136 members during fiscal year 2023. They totaled $2.2 million and are included as a deduction in the Statement of Changes in Fiduciary Net Position as a component of Refund of Contributions to Members.

C. Participating Pension Plan

All 90 employees of the Teachers Retirement Association are covered by the multiple employer cost sharing defined benefit plan administered by TRA. All TRA employees participate in the Coordinated Plan and are eligible for the plan provisions described in Note 1, C.

Minnesota Statutes section 354.42 sets the rates for the employee and employer contributions. These statutes are established and amended by the state legislature. During fiscal year 2023, Coordinated members were required to contribute 7.5% of their annual covered salary. Employers contributed 8.55% of their annual

covered salary for Coordinated members. The total covered payroll salaries for all TRA employees during fiscal year 2023 was approximately $7.6 million or 0.13% of total membership-covered salaries. The total covered payroll salaries for the entire membership of TRA for fiscal year 2023 was approximately $5.7 billion. TRA paid 100% of its required employer contributions listed in *Figure 14*.

Figure 14. Schedule of TRA Employer Pension Contributions for TRA Employees

(Dollars in Thousands)

2023	2022	2021
$687	$548	$571

D. Ownership of Office Building

The 1999 Legislature enacted law permitting TRA, the Public Employees Retirement Association (PERA), and the Minnesota State Retirement System (MSRS) to purchase land and construct a 140,000 square foot office building to house the administrative offices of these three state entities. Ownership of the facility is prorated based on the amount of square footage each retirement fund occupies in the building. The building is located on 4.3 acres of land at 60 Empire Drive in Saint Paul. TRA has occupied the 4th Floor of the building since September 2001. TRA's ownership interest is 36%.

In June 2000, the State of Minnesota, under the authority of the Commissioner of Minnesota Management and Budget, issued 30-year revenue bonds totaling $29 million to pay for the construction of the facility. Each owner (retirement fund) is responsible for principal and interest payments based on its ownership percentage.

In August, 2012, the bonds were refunded with the proceeds of a new, lower-interest rate bond issue. The 2013 series $21,880,000 Retirement System Revenue Refunding bonds are secured by the value of the total assets of the retirement systems, excluding any fund related to or dedicated to defined contribution plans administered by the retirement systems. The goal of the 2012 refunding bonds was not only to attempt to approximate the debt service payments that had existed under the 2000 revenue bonds, but to also shorten the repayment period by five years.

Through the issuance of the refunding bonds, which received a AAA rating from both Standard & Poor's and Fitch, the bond term was reduced by five years and the present value of the savings to the retirement systems was $9.6 million. The bonds mature on June 1, 2025. TRA's share of the present value savings of the 2012 bond issuance was approximately $3.5 million.

At fiscal year-end, TRA's share of the bonds payable is $1.1 million, which includes bond principal of $1 million and bond premium of $32,417. Interest expected to be paid over the remaining term of the bonds is $22,951. TRA's share of the long-term bond repayment schedule including interest is summarized in *Figure 15*, *Schedule of Building Debt Service Payments*.

TRA is depreciating its share of the facility over 40 years. The depreciation schedule, shown in *Figure 16, Schedule of Office Building and Equipment,* summarizes the asset valuation of the office building, building equipment and deferred bond charges.

Figure 15. Schedule of Building Debt Service Payments

(Dollars in Thousands)

(TRA Share @ 36%) Effective: July 1, 2015				
Fiscal Year	Principal	Interest	Premium	Total
2024	$664	$17	$24	$705
2025	$360	$6	$8	$374
Totals	$1024	$23	$32	$1079

Figure 16. Schedule of Office Building and Equipment

(Dollars in Thousands)

(TRA Share @ 36%)				
Description	Balance 7/1/2022	Additions	Deletions	Balance 6/30/2023
Land	$171	$—	$—	$171
Building	$10,637	$—	$—	$10,637
Reserve for Building Depreciation	(5,727)	(266)	—	(5,993)
Net Building	$4,910	($266)	$—	$4,644
Building Equipment	$108	$—	$—	$108
Reserve for Depreciation	(108)	—	—	(108)
Net Building Equipment	$—	$—	$—	$—

5. Contributions Required and Made

Contributions totaling $986.8 million ($442.4 million employee and $544.4 million employer and employer direct aid) were received in accordance with the statutory contribution rates and amounts. On page 94, Line C, statutory contributions are projected as deficient to meet the actuarially determined required contributions. The deficiency is 2.53% of covered payroll. This translates into a contribution deficiency of about $154.4 million projected for fiscal year 2023.

The TRA actuary performs an annual actuarial funding valuation in accordance with Minnesota Statute and the Minnesota Legislative Commission on Pensions and Retirement's (LCPR) Standards for Actuarial Work. The report is meant to assist the legislature in determining the funding progress made towards paying off TRA's unfunded liabilities.

Minnesota Statutes, Chapter 354 sets the rates (page 94, Line A4) for employee and employer contributions.

TRA also uses the level percentage of payroll method to amortize the fund's unfunded liability over a closed period ending June 30, 2048.

6. Net Pension Liability

TRA's actuarial consultant performs another actuarial valuation to comply with the requirements of GASB Statement 67.

The components of the net pension liability of the TRA plan as of June 30, 2023, are as follows for participating employers and non-employers:

Net Pension Liability	*(Dollars in Thousands)*
Total Pension Liability (TPL)	$35,010,727
Fiduciary Net Position (FNP)	$26,754,504
Net Pension Liability (NPL)	$8,256,223
Fiduciary net position as a percentage of the total pension liability	76.42%

Key Methods and Assumptions Used in Valuation of Total Pension Liability	
Actuarial Information	
Price inflation	2.50%
Salary increases, including price inflation	2.85% to 8.85% before July 1, 2028 and 3.25% to 9.25%, after June 30, 2028
Wage growth rate	2.85% before July 1, 2028, and 3.25%, after June 30, 2028
Payroll growth rate	3%
Long-term rate of return, net of investment expense, including price inflation	7%
Municipal bond index rate	
Prior measurement date	3.37%
Measurement date	3.66%
Year FNP is projected to be depleted	N/A
Single equivalent interest rate (SEIR), net of investment expense, including price inflation	
Prior measurement date	7%
Measurement date	7%
Cost of living adjustment	1.0% for January 2019 through January, 2023, then increasing by 0.1% each year up to 1.5% annually.
Mortality Assumptions	
Pre-retirement mortality rates were based on the RP-2014 white collar employee table, male rates set back 5 years and female rates set back 7 years. Generational projection uses the MP-2015 scale.	
Post-retirement mortality rates were based on the RP-2014 white collar annuitant table, male rates set back 3 years and female rates set back 3 years, with further adjustments of the rates. Generational projection uses the MP-2015 scale.	
Post-disability mortality rates were based on the RP-2014 disabled retiree mortality table, without adjustment.	

Discount Rate - Single Equivalent Interest Rate (SEIR) – volatility of SEIR

The discount rate used to measure the TPL as of the Measurement Date was 7%. The projection of cash flows used to determine the discount rate was performed in accordance with GASB 67. On that basis, the FNP was not projected to be depleted and, as a result, the Municipal Bond Index Rate was not used in the determination of the SEIR. The SEIR at the prior measurement date was 7%.

Projected Cash Flows

The projection of cash flows used to determine the discount rate assumed that plan contributions from members and employers will be made at the current contribution rates as set out in state statute and supplemental aid will be received as currently provided in statute.

- Employee contribution rates: 11.25% for Basic members and 7.75% for Coordinated members. Effective July 1, 2025 employee contribution rates will increase to 11.50% for Basic members and 8% for Coordinated members.
- Employer contribution rates: 12.75% for Basic members and 8.75% for Coordinated members. In addition, a supplemental amount equal to 3.64% of Salary for Special School District #1 (Minneapolis Schools) members until the Fund is fully funded. Effective July 1, 2025 employer contribution rates will increase to 13.50% for Basic members and 9.5% for Coordinated members.
- HF3100 Pension Budget Omnibus Bill signed into law May 19, 2023, appropriated funds to TRA in the amount of $176,166,838. $28,735,816 is appropriated for a 1.4% one-time lump-sum payment for eligible benefit recipients with Coordinated benefits to be paid on January 1,

2024. 2,384,222 is for a 2.9% one-time lump-sum payment for eligible benefit recipients with Basic benefits to be paid on January 1, 2024. $145,046,800 is to reduce TRA's unfunded liability.

- Supplemental aid: $35,587,410 every year until the amortization date of June 30, 2048 or full actuarial funding is achieved.
- Administrative expenses in the prior year were projected forward with price inflation as an estimate for administrative expenses in current and future years. The portion of expenses in future years allocated to the current members was based on the proportionate share of covered payroll in each year for the remainder of the existing members to the total covered payroll for all members.

Based on those assumptions, the System's FNP was projected to be available to make all projected future benefit payments of current System members. Therefore, the long-term expected rate of return on System investments of 7% was applied to all periods of projected benefit payments to determine the TPL.

The FNP projections are based on TRA's financial status on the Measurement Date, the indicated set of methods and assumptions, and the requirements of GASB 67. As such, the FNP projections are not reflective of the cash flows and asset accumulations that would occur on an ongoing basis reflecting the impact of future members. Therefore, the results of this test do not necessarily indicate whether or not the TRA Fund will actually run out of money, the financial condition of the TRA Fund, or TRA's ability to make benefit payments in future years.

Long-Term Rate of Return

The long-term expected rate of return on pension plan investments is reviewed regularly as part of the experience study. Generally, several factors are considered in evaluating the long-term rate of return assumption including long-term historical data, estimates inherent in current market data, and an analysis in which best-estimate ranges of expected future real rates of return (expected returns, net of investment expense and inflation) were developed using assumptions for each major asset class, as well as estimates of variability and correlations, provided by the System's investment consultant (the State Board of Investment).

These ranges were 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 then adding expected inflation. The assumption is intended to be a long-term assumption (30 to 50 years) and is not expected to change absent a significant change in the asset allocation, a change in the inflation assumption, or a fundamental change in the market that alters expected returns in future years.

Municipal Bond Rate

A municipal bond rate was not used in determining the discount rate. If it were required, the rate would be 3.66% on the Measurement Date.

Periods of Projected Benefit Payments

Projected future benefit payments for all current plan members were projected through 2122.

Assumed Asset Allocation

The target asset allocation and best estimates of geometric real rates of return for each major asset class, as provided by SBI, are summarized in *Figure 4, Target Asset Allocation and Long Term Expected Real Rate of Return,* which can be found on page 31.

Sensitivity Rate Analysis

GASB 67 requires disclosures of the sensitivity of the NPL to changes in the discount rate. The range is plus 1% and minus 1% of the current discount rate determined as summarized in *Figure 17, Sensitivity Rate Analysis.*

Figure 17. Sensitivity Rate Analysis.

(Dollars in Thousands)

Sensitivity of Net Pension Liability (NPL) to Changes in the Discount Rate			
	1% Decrease (6%)	Current Discount Rate (7%)	1% Increase (8%)
NPL	$13,168,069	$8,256,223	$4,235,279

The complete 2023 *Actuarial Valuation Accounting Report* is available at: https://minnesotatra.org/financial/annual-reports/

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Required Supplementary Information (continued on next page)

Schedule of Changes in the Employers' Net Pension Liability

For the Ten Fiscal Years Ended June 30

(Dollars in Thousands)

	2023	2022	2021
Total Pension Liability			
Service cost	$627,177	$596,232	$513,165
Interest	2,282,503	2,223,274	2,188,186
Benefit term changes	615,463	—	—
Differences between expected and actual experience *	(90,669)	33,875	(65,710)
Assumptions changes **	—	—	1,919,160
Benefit payments, including member refunds	(2,027,562)	(1,987,622)	(1,949,875)
Net change in Total Pension Liability	$1,406,912	$865,759	$2,604,926
Total Pension Liability – beginning* **	$33,603,815	$32,738,056	$30,133,130
Total Pension Liability – ending (a)	$35,010,727	$33,603,815	$32,738,056
Employer contributions	508,764	482,679	448,829
Non-employer contributions-Direct Aid (State/City/District)	35,587	35,590	37,840
Employee contributions	442,448	428,993	410,162
Net investment income	2,213,897	(1,710,746)	6,684,106
Benefit payments, including member refunds	(2,027,562)	(1,987,622)	(1,949,875)
Administrative expenses	(16,534)	(15,666)	(16,022)
Other	1,559	1,359	1,721
Net Change in Plan Fiduciary Net Position	$1,158,159	($2,765,413)	$5,616,761
Plan Fiduciary Net Position – beginning	$25,596,344	$28,361,757	$22,744,996
Plan Fiduciary Net Position - ending (b)	$26,754,503	$25,596,344	$28,361,757
Net Pension Liability - ending (a)-(b)	$8,256,224	$8,007,471	$4,376,299
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	76.42%	76.17%	86.63%
Covered Payroll	$5,735,250	$5,573,701	$5,326,108
Employers' Net Pension Liability as a percentage of covered payroll	143.96%	143.67%	82.17%

* *For 2017 and prior, includes impact of date change for expected increase in COLA to 2.50%.*

** *2018 assumption changes are due to the change in the SEIR.*

*** *2015 beginning of period TPL and FNP do not match the 2014 end-of-period amounts due to the DTRFA merger.*

Required Supplementary Information (concluded)

Schedule of Changes in the Employers' Net Pension Liability

For the Ten Fiscal Years Ended June 30

(Dollars in Thousands)

2020	2019	2018	2017	2016	2015	2014
$489,790	$476,708	$1,056,681	$1,267,304	$438,938	$399,228	$367,621
2,123,261	2,079,081	2,064,148	1,975,771	2,062,775	2,019,707	1,895,469
—	—	(3,681,114)	—	—	—	—
177,794	(70,899)	(17,461)	(167,572)	(798)	7,113	475,265
6,673	—	(10,167,248)	(3,355,602)	15,871,845	576,075	—
(1,914,465)	(1,877,836)	(1,831,887)	(1,776,814)	(1,728,023)	(1,669,607)	(1,592,686)
$883,053	$607,054	($12,576,881)	($2,056,913)	$16,644,737	$1,332,516	$1,145,669
$29,250,077	$28,643,023	$41,219,904	$43,276,817	$26,632,080	$25,299,564	$23,755,943
$30,133,130	$29,250,077	$28,643,023	$41,219,904	$43,276,817	$26,632,080	$24,901,612
$425,223	$403,300	$378,728	$367,791	$354,961	$340,208	$299,300
35,587	35,587	35,587	35,587	35,587	41,587	21,001
396,679	386,669	374,550	361,175	347,256	334,826	294,632
939,748	1,579,099	2,160,111	2,855,218	(23,672)	887,280	3,257,693
(1,914,465)	(1,877,836)	(1,831,887)	(1,776,814)	(1,728,023)	(1,669,607)	(1,592,686)
(15,392)	(15,156)	(15,673)	(11,702)	(11,338)	(11,509)	(9,430)
1,560	2,306	2,581	2,404	3,569	3,550	3,855
($131,060)	$513,969	$1,103,997	$1,833,659	($1,021,660)	($73,665)	$2,274,365
$22,876,056	$22,362,087	$21,258,090	$19,424,431	$20,446,091	$20,519,756	$18,019,319
$22,744,996	$22,876,056	$22,362,087	$21,258,090	$19,424,431	$20,446,091	$20,293,684
$7,388,134	$6,374,021	$6,280,936	$19,961,814	$23,852,386	$6,185,989	$4,607,928
75.48%	78.21%	78.07%	51.57%	44.88%	76.77%	81.50%
$5,166,241	$5,000,930	$4,832,917	$4,688,875	$4,515,699	$4,306,426	$4,056,482
143.01%	127.46%	129.96%	425.73%	528.21%	143.65%	113.59%

Required Supplementary Information

Schedule of Employer and Non-Employer Contributions

For the Ten Fiscal Years Ended June 30

(Dollars in Thousands)	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Actuarially determined employer contribution*	$459,133	$481,192	$529,896	$490,881	$472,491	$516,157	$516,582	$459,699	$495,235	$492,731
Actual non-employer contributions	$35,587	$35,590	$37,840	$35,587	$35,587	$35,587	$35,587	$35,587	$41,587	$21,001
Actual employer contributions	$508,764	$482,679	$448,829	$425,223	$403,300	$378,728	$367,791	$354,961	$340,208	$299,300
Total contributions	$544,351	$518,269	$486,669	$460,810	$438,887	$414,315	$403,378	$390,548	$381,795	$320,301
Annual contribution deficiency (excess)	($85,218)	($37,077)	$43,227	$30,071	$33,604	$101,842	$113,204	$69,151	$113,440	$172,430
Covered payroll	$5,735,250	$5,573,701	$5,326,108	$5,166,241	$5,000,930	$4,832,917	$4,688,875	$4,515,699	$4,306,426	$4,056,482
Actual contributions as a percent of covered employee payroll	9.49%	9.30%	9.14%	8.92%	8.78%	8.57%	8.60%	8.65%	8.87%	7.90%

** The 2015 actuarially determined employer contribution includes the required amount for both DTRFA ($11,039) and TRA ($484,196).*

Schedule of Investment Returns

Annual money-weighted rates of return net of investment expense.		
Teachers Retirement Association Plan	FY 2023	8.87%
Teachers Retirement Association Plan	FY 2022	(6.17)%
Teachers Retirement Association Plan	FY 2021	30.26%
Teachers Retirement Association Plan	FY 2020	4.22%
Teachers Retirement Association Plan	FY 2019	7.27%
Teachers Retirement Association Plan	FY 2018	10.49%
Teachers Retirement Association Plan	FY 2017	15.18%
Teachers Retirement Association Plan	FY 2016	(0.12)%
Teachers Retirement Association Plan	FY 2015	4.48%
Teachers Retirement Association Plan	FY 2014	18.70%

Notes to Required Supplementary Information for the Fiscal Year Ended June 30, 2023

Changes of Benefit and Funding Terms

The following changes were made by the Minnesota Legislature and reflected in the valuation performed as of July 1:

2023	The 2023 Tax Finance and Policy Bill contained a number of changes: • Effective July 1, 2025, the normal retirement age for Tier II members will decrease from 66 to 65. • The employer contributions rate will increase from 8.75% to 9.5% on July 1, 2025. • The employee contribution rate will increase from 7.75% to 8% on July 1, 2025.
2022	Suspension of Earnings Limitations for Retired Teachers Who Return to Work: • Temporary suspension of earnings limitations over $46,000 for retirees returning to Pre-K-12 positions earned during fiscal years 2022, 2023, and 2024. No amounts will be withheld from reemployed retiree benefits for Pre-K-12 positions and deposited into an ELSA for calendar years 2023, 2024, and 2025. This does not apply to retirees returning to Minnesota State positions.
2021	None
2020	None
2019	None
2018	The 2018 Omnibus Pension Bill contained a number of changes: • The COLA was reduced from 2% each January 1 to 1%, effective January 1, 2019. • Beginning January 1, 2024, the COLA will increase 0.1% each year until reaching the ultimate rate of 1.5% in January 1, 2028. • Beginning July 1, 2024, eligibility for the first COLA changes to normal retirement age (age 65 to 66, depending on date of birth). However, members who retire under Rule of 90 and members who are at least age 62 with 30 years of service credit are exempt. • The COLA trigger provision, which would have increased the COLA to 2.5% if the funded ratio was at least 90% for two consecutive years, was eliminated. • Augmentation in the early retirement reduction factors is phased out over a five-year period beginning July 1, 2019 and ending June 30, 2024 (this reduces early retirement benefits). Members who retire and are at least age 62 with 30 years of service are exempt. • Augmentation on deferred benefits will be reduced to 0% beginning July 1, 2019. Interest payable on refunds to members was reduced from 4% to 3%, effective July 1, 2018. Interest due on payments and purchases from members, employers is reduced from 8.5% to 7.5%, effective July 1, 2018. • The employer contribution rate is increased each July 1 over the next 6 years, (7.71% in 2018, 7.92% in 2019, 8.13% in 2020, 8.34% in 2021, 8.55% in 2022, and 8.75% in 2023). In addition, the employee contribution rate will increase from 7.50% to 7.75% on July 1, 2023. The state provides funding for the higher employer contribution rate through an adjustment in the school aid formula.
2017	None
2016	None
2015	The Duluth Teachers Retirement Fund Association was merged into TRA on June 30, 2015. This resulted in an additional state-provided contribution stream of $14.377 million until TRA becomes fully funded.

2014	The increase in the post-retirement benefit adjustment (COLA) from 2% to 2.5% will be made once the fund is 90% funded for two consecutive years, rather than just one year.

Changes in Actuarial Assumption

7/1/2023 Valuation	• The investment return assumption was changed from 7.5% to 7%. This does not affect the GASB valuation which was already using the 7% assumption.
7/1/2021 Valuation	For GASB valuation only: • The investment return assumption was changed from 7.5% to 7%.
7/1/2020 Valuation	• Assumed termination rates were changed to more closely reflect actual experience. • The Pre-retirement mortality assumption was changed to the RP-2014 white collar employee table, male rates set back 5 years and female rates set back 7 years. • Generational projection uses the MP-2015 scale. Assumed form of annuity election proportions were changed to more closely reflect actual experience for female retirees.
7/1/2018 Valuation	• The investment return assumption was changed from 8.5% to 7.5%. • The price inflation assumption was lowered from 3% to 2.5%. • The payroll growth assumption was lowered from 3.5% to 3%. • The wage inflation assumption (above price inflation) was reduced from 0.75% to 0.35% for the next 10 years, and 0.75% thereafter. • The total salary increase assumption was adjusted by the wage inflation change. • The amortization date for the funding of the Unfunded Actuarial Accrued Liability (UAAL) was reset to June 30, 2048 (30 years). • A mechanism in the law that provided the TRA Board with some authority to set contribution rates was eliminated. Note: Most of these changes were made previously for GASB purposes in the 2017 GASB valuation.

7/1/2017 Valuation	• The Cost of Living Adjustment was assumed to increase from 2% annually to 2.5% annually on July 1, 2045. • Adjustments were made to the combined service annuity loads. The active load was reduced from 1.4% to 0%, the vested inactive load increased from 4% to 7% and the non-vested inactive load increased from 4% to 9%. <u>For GASB valuation</u>: ◦ The investment return assumption was changed from 8% to 7.5%. ◦ The COLA was not assumed to increase to 2.5%, but remain at 2% for all future years. ◦ The price inflation assumption was lowered from 2.75% to 2.5%. ◦ The payroll growth assumption was lowered from 3.5% to 3%. ◦ The general wage growth assumption was lowered from 3.5% to 2.85% for 10 years followed by 3.25%, thereafter. ◦ The salary increase assumption was adjusted to reflect the changes in the general wage growth assumption.
7/1/2016 Valuation	• The Cost of Living Adjustment was not assumed to increase for funding or GASB calculation (it remained at 2% for all future years). • The price inflation assumption was lowered from 3% to 2.75%. • The general wage growth and payroll growth assumptions were lowered from 3.75% to 3.5%. • Minor changes as some durations for the merit scale of the salary increase assumption. • The Pre-retirement mortality assumption was changed to the RP-2014 white collar employee table, male rates set back 6 years and female rates set back 5 years. Generational projection uses the MP-2015 scale. • The post-retirement mortality assumption was changed to the RP-2014 white collar annuitant table, male rates set back 3 years and female rates set back 3 years, with further adjustments of the rates. Generational projection uses the MP-2015 scale. • The post-disability mortality assumption was changed to the RP-2014 disabled retiree mortality table, without adjustment. • Separate retirement assumptions for members hired before or after July 1, 1989, were created to better reflect each group's behavior in light of different requirement for retirement eligibility. • Assumed termination rates were changed to be based solely on years of service in order to better fit the observed experience. • A minor adjustment and simplification of the assumption regarding the election of optional form of annuity payment at retirement were made.

7/1/2015 Valuation	• The cost-of-living (COLA) adjustment was assumed to increase from 2% annually to 2.5% annually on July 1, 2037. For GASB valuation: ◦ The COLA was not assumed to increase to 2.5% but remain at 2% for all future years. ◦ The investment return assumption was changed from 8.25% to 8%.
7/1/2014 Valuation	• The Cost-of-Living Adjustment was assumed to increase from 2% annually to 2.5% annually once the legally specified criteria was met. This was estimated to occur July 1, 2031. For GASB valuation: ◦ The Cost-of-Living Adjustment was assumed to increase from 2% annually to 2.5% annually on July 1, 2034.

Method and Assumptions Used in Calculations of Actuarially Determined Contributions

TRA is funded with contributions from members and their employers. The actuarially determined contributions in the *Schedule of Employer and Non-Employer Contributions* on page 50 are calculated as of the beginning of the fiscal year in which contributions were reported.

The following methods and assumptions were used to calculate the actuarially determined employer contributions reported for the most recent Measurement Date, June 30, 2023 (based on the July 1, 2022 valuation).

Actuarial cost method	Entry Age Normal
Amortization method	Level percentage of payroll, closed
Remaining amortization period	26 years by June 30, 2048
Asset valuation method	5-year moving average
Inflation	2.5%
Wage growth rate	2.85% before July 1, 2028 and 3.25% after June 30, 2028
Salary increase, including inflation	2.85% to 8.85% before July 1, 2028 and 3.25% to 9.25% after June 30, 2028
Long-term rate of return, net of investment expense including price inflation	7.5%
Cost of living adjustment	1% for January 2019 through January 2023, then increasing by 0.1% each year up to 1.5% annually

Please see the information presented earlier for detailed information on the benefit changes and assumption changes that may have impacted the Actuarially Determined Contributions shown in the *Schedule of Employer and Non-Employer Contributions* on page 50.

Teachers Retirement Association of Minnesota
A Pension Trust Fund of the State of Minnesota

Supporting Schedules to Financial Section

Teachers Retirement Fund
Schedule of Administrative Expenses

For the Fiscal Year Ended June 30, 2023

(Dollars in Thousands)

Personnel Services	
Salaries	$7,614
Employer contributions to Teachers Retirement Association	687
Employer contributions to Social Security	493
Insurance contributions	1,511
Employee training	85
Workers' compensation	37
Subtotal	$10,427
Communication	
Duplicating and printing expenses	$62
Postage	297
Telephone	139
Subtotal	$498
Office Building Maintenance	
Lease of office and storage space	$129
Building operating expenses	590
Rental of office machines/furnishings	43
Repairs and maintenance	234
Building depreciation	266
Bond interest expense	27
Subtotal	$1,289
Professional Services	
Actuarial services	$227
Audit fees	233
Legal fees	23
Management consultant services	156
Medical services	0
Subtotal	$639
Other Operating Expenses	
Computer and system services	$1,101
Depreciation of office equipment	225
Dues and subscriptions	2
Insurance expense	9
Miscellaneous administrative expenses	39
Amortization	2,012
State indirect costs	16
Office supplies	200
Travel - director and staff	52
Travel - trustees	25
Subtotal	$3,681
Total Administrative Expenses	$16,534

Teachers Retirement Fund
Schedule of Professional Consultant Fees

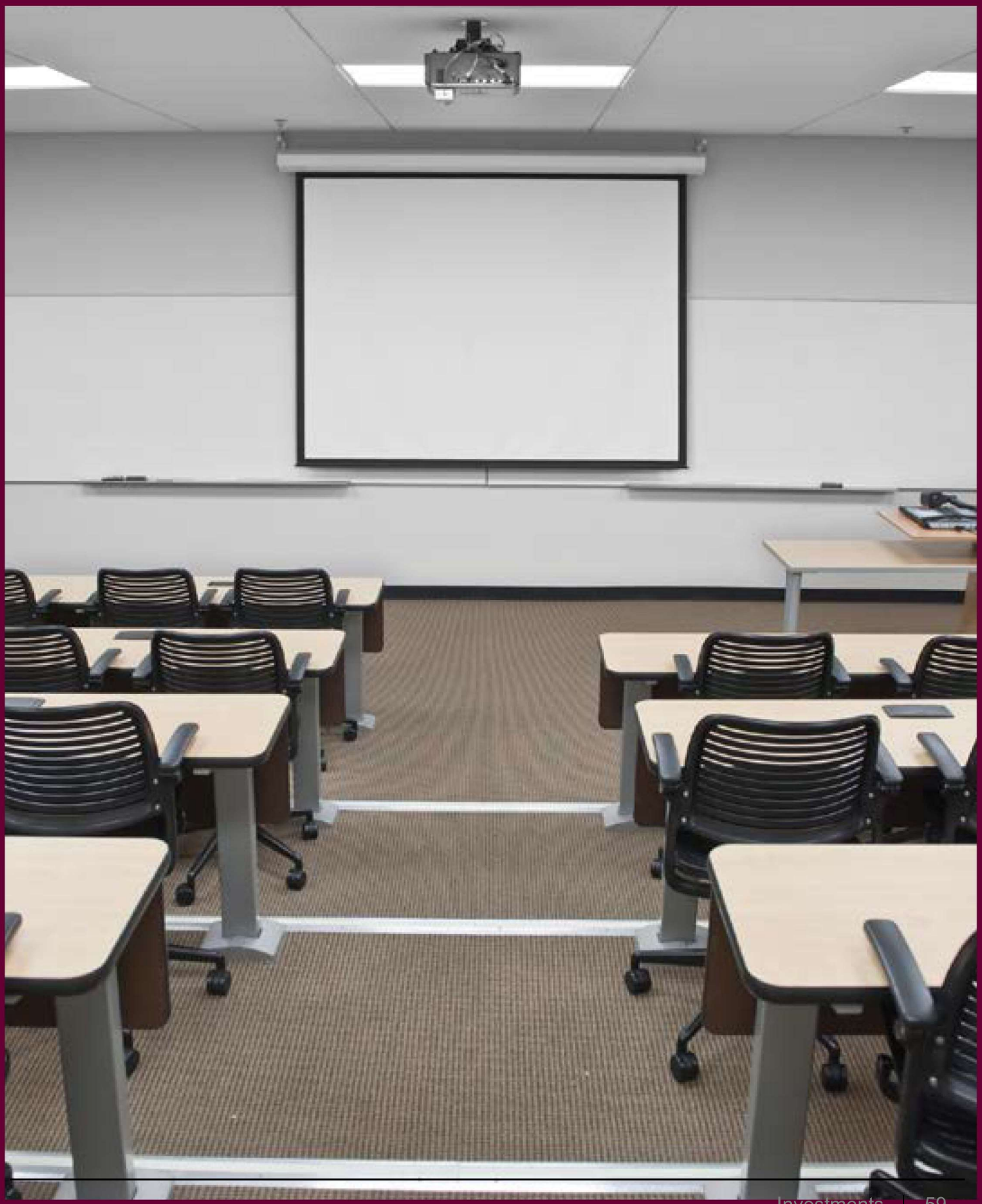
For the Fiscal Year Ended June 30, 2023

(Dollars in Thousands)

Investment Pool Managers	
State Board of Investment	$2,237
Aon Hewitt Investment Consulting, Inc.	188
Pension Consulting	155
Broadridge (QED)	111
Albourne	458
Domestic active equity pool managers	4,495
Global equity pool managers	1,174
Domestic bond pool managers	1,431
Semi-passive equity pool managers	913
Passive equity pool managers	325
Treasury protection pool managers	1,072
Return seeking fixed income pool managers	3,651
International equity pool managers	10,919
Ladder Portfolio pool managers	189
Uninvested private markets pool managers	20
Total	$27,338
Actuarial	
Cavanaugh Macdonald Consulting	$227
Total	$227
Audit	
Legislative auditor	$164
Clifton Larson Allen LLP	69
Total	$233
Computer Support Services	
Fulcrum Consulting	$50
Total	$50
Legal	
Attorney General	$23
Total	$23
Management Consulting	
Election-America	$61
Pension Benefit Information LLC	45
Minnesota Management and Budget	29
Ice Miller LLP	17
Bluum of Minnesota LLC	2
Rajan Law	2
Total	$156
Total Consultant Fees	$28,027

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INVESTMENT



State Board of Investment Letter

Board Members:
Governor Tim Walz, Chair
State Auditor Julie Blaha
Secretary of State Steve Simon
Attorney General Keith Ellison

Executive Director & Chief Investment Officer:
Jill E. Schurtz

Minnesota State Board of Investment
60 Empire Drive, Suite 355
St. Paul, MN 55103
Phone: (651) 296-3328
Fax: (651) 296-9572
Email: minn.sbi@state.mn.us
Website: https://mn.gov/sbi/
An Equal Opportunity Employer

INVESTMENT AUTHORITY

The Minnesota State Board of Investment (SBI) invests the assets of the Minnesota Teachers Retirement Association (TRA), the Minnesota Public Employees Retirement Association, and the Minnesota State Retirement System in accordance with Minnesota Statutes, Chapters 11A and 356A. The SBI includes Minnesota's Governor, Auditor, Secretary of State and Attorney General. The Legislature has established a 17-member Investment Advisory Council (IAC) to advise the SBI and its staff on investment related matters. TRA's executive director is a member of the IAC.

INVESTMENT POLICY

Minnesota law requires the SBI to operate within standard investment practices of the prudent person rule. The SBI is required to "exercise that degree of judgment and care, under circumstances then prevailing, which persons of prudence, discretion, and intelligence exercise in the management of their own affairs, not for speculation, but for investment, considering the probable safety of their capital as well as the probable income to be derived therefrom." (See *Minnesota Statutes*, sections 11A.09 and 356A.04.) The SBI is authorized to own government obligations, corporate obligations, various short-term obligations, equity, real estate, and resource investments, whether publicly or privately traded, subject to specific constraints. (See *Minnesota Statutes*, section 11A.24.) The SBI must manage the pension fund assets for the exclusive benefit of the plan participants and beneficiaries. (See *Minnesota Statutes*, section 356A.05.)

INVESTMENT OBJECTIVES AND PERFORMANCE

TRA's pension contributions from employees and employers are invested in the Combined Funds. The Combined Funds include the assets of the defined benefit plans administered by TRA, the Minnesota State Retirement System, and the Public Employees Retirement Association. TRA does not own any underlying assets, but instead owns a participation in the pooled Combined Funds. Because these assets normally accumulate for thirty to forty years, SBI's objective is to take advantage of the long investment time horizon offered by equities and alternative assets to meet its actuarial return target and ensure that sufficient funds are available to finance promised benefits at the time of retirement. In 2023, the Minnesota legislature lowered the actuarial return assumption to 7% annually for the three statewide retirement systems invested in the Combined Funds.

The long term objectives of the Combined Funds are:

- Provide returns that are 3-5 percentage points greater than inflation over the latest 20-year period; and
- Outperform a composite market index weighted in a manner that reflects the actual asset mix of the Combined Funds over the latest 10-year period.

Consistent with these objectives, the SBI maintains a long-term strategic asset allocation policy target for the Combined Funds as follows:

- Public Equity 50%
- Total Fixed Income 25%
- Private Markets 25%

Based on values as of June 30, 2023, the Combined Funds' 20-year annualized return was 8.5%, which exceeded inflation as measured by CPI by 6.0 percentage points. Over the last 10-year period, the Combined Funds returned 8.8%, outperforming the composite index by 0.2%. Investment returns ranked in the 15th and 25th percentile over the past 5 and 10-year time periods respectively, and in the top 5th percentile over the past 20 years, compared to other public plans with over $20 billion in assets in the Trust Universe Comparison Service.

INVESTMENT PRESENTATION

Investment returns were prepared using time-weighted rate of return methodology based upon fair market value, net of investment expenses.

Respectfully submitted,

Jill E. Schurtz
Executive Director and Chief Investment Officer
Minnesota State Board of Investment
December 13, 2023

Investment Summary

Prepared by TRA management with data obtained from the State Board of Investment's Fiscal Year 2023 Quarterly Investment Reports

The assets of the Minnesota Teachers Retirement Association (TRA) are invested under the direction and authority of the State Board of Investment (SBI). The investment portfolio of TRA had a market value of approximately $26.7 billion as of June 30, 2023.

The four-member SBI Board consists of Governor Tim Walz (Chair), Attorney General Keith Ellison, Secretary of State Steve Simon, and State Auditor Julie Blaha.

The Legislature has established a 17-member Investment Advisory Council (IAC) to advise the SBI and its staff on investment-related matters.

- The mission statement of the Investment Advisory Council is: The IAC fulfills its statutory duty to the SBI by providing advice and independent due diligence review of the investment policy and implementation recommendations that guide the SBI's investment of assets.
- SBI appoints ten members from the public experienced in finance and investment. These members traditionally have come from the Minneapolis and Saint Paul investment community.
- The Commissioner of Minnesota Management and Budget (MMB) and the executive directors of TRA, the Minnesota State Retirement System and the Public Employees Retirement Association are permanent members of the Council.
- Two active employee representatives and one retiree representative are appointed to the Council by the Governor.
- All proposed investment policies are reviewed by the full Council before they are presented to SBI for action.

Investment Advisory Council (December 2023)

Public Members:

Gary Martin, Chair
Chief Investment Officer
Macalester College

Kim Faust, Vice Chair
Vice President and Treasurer
Fairview Health Services

Susanna Gibbons
Managing Director
Carlson Funds Enterprise
Carlson School of Management

Amy Jensen
Chief Investment Officer
Lansing Group, LLC

Dan McConnell
President
Minnesota State Building and Construction Trade Council

Nancy Orr
Chief Investment Officer
Vice President-Investments
Charles Stewart Mott Foundation

Carol Peterfeso
Managing Director of Investments
Bush Foundation

Dennis Santos
Senior Vice President & Chief Investment Officer
Okabena Investment Services

Sunil Swami
Chief Investment Officer
Alerus

Shawn Wischmeier
Chief Investment Officer
Margaret A. Cargill Philanthropies

Employee & Retirement Representatives:

Denise Anderson
Governor's Appointee
Active Public Employee Representative

Ify Onyiah
Governor's Appointee
Active Public Employee Representative

Peggy Ingison
Governor's Appointee
Retiree Member Representative

Permanent Members:

Erin Campbell
Commissioner
Minnesota Management & Budget

Erin Leonard
Executive Director
Minnesota State Retirement System

Doug Anderson
Executive Director
Public Employee Retirement Association

Jay Stoffel
Executive Director
Teachers Retirement Association

Consultants

Aon Hewitt Investment Consulting, Inc., of Chicago is general consultant to the SBI. Meketa Investment Group, LLC. of Portland, Oregon serves as a special project consultant. Albourne Partners of Norwalk, CT is the consultant for private markets. Investment performance methodology is reported in compliance with the mandatory requirements of the Chartered Financial Analyst (CFA) Institute. All investments made by SBI are governed by the prudent person rule and other standards codified in Minnesota Statutes, Chapters 11A and 356A.

Combined Retirement Funds

Investment Objectives

All TRA assets are accounted for within the Combined Funds managed by SBI. The Combined Funds consist not only of the TRA assets, but also the assets of the Public Employees Retirement Association (PERA) and the Minnesota State Retirement System (MSRS). The SBI has one primary responsibility with respect to its management of the Combined Funds: to ensure that sufficient funds are available to finance pension benefits at the time of retirement. All assets in the Combined Funds, including TRA, are managed externally by outside money management firms retained by contract.

The Combined Funds include the pension contributions of most Minnesota public employees, including TRA members, during their working years. Employee and employer contribution rates are specified in state law as a percentage of an employee's salary. The rates are set so that contributions plus expected investment earnings cover the projected cost of promised pension benefits. In order to meet these projected pension costs, the Combined Funds need to generate annual investment returns of at least 7%, as specified in Minnesota statute.

While an active member is working, employee and employer contributions are placed into the TRA Fund. The prefunding of future pension benefits provides the SBI with a long investment time horizon to take advantage of long run return opportunities offered by equities and other investments, in order to meet its actuarial return target.

SBI measures the performance of the Combined Funds relative to a composite of market indices that is weighted in a manner that reflects their long-term asset allocation policy. The Combined Funds are expected to match or exceed the composite index over a ten-year period. The Combined Funds are also expected to generate returns 3 to 5 percentage points greater than inflation over the latest 20-year period. Investment returns are prepared using a time-weighted rate of return methodology, based upon market value, net of investment expenses. Performance is measured net of all fees to ensure that SBI's focus is on the Combined Funds' true net return.

Asset Allocation

The allocation of assets among equities, fixed income (bonds) and alternative investments can have a dramatic impact on investment results. In fact, asset allocation decisions overwhelm the impact of individual security selection within a total portfolio. Consequently, SBI focuses considerable attention on the selection of an appropriate long-term asset allocation policy for the Combined Funds.

Investment Beliefs and Policies

The SBI formally adopted a set of ten Investment Beliefs for managing the assets of the Combined Funds. Additionally, the SBI approved changes to the asset allocation policy and revised the Strategic Allocation Category Framework. The investment policy changes were recommended by SBI staff, investment consultants, and the IAC.

The policy changes are described in more detail in the Notes to the Financial Statements beginning on page 29.

Total Return Vehicles

The SBI invests the majority of the Combined Funds' assets in Public Equity (domestic, international, and global). Such an allocation is consistent with the investment time horizon of the Combined Funds and the advantageous long-term risk return characteristics of common equities. Including international equities in the asset mix allows the SBI to diversify holdings across world markets and offers the opportunity to enhance returns and reduce the volatility of the total portfolio. The rationale underlying the inclusion of Private Equity is similar. The Board recognizes that this sizable policy

allocation to public and private equities likely will produce more volatile portfolio returns than a more conservative policy focused on fixed income securities. It is understood that this policy may result in quarters or even years of relative underperformance. Nevertheless, the long-run return benefits of this policy have in the past and are expected in the future to compensate for the additional volatility.

Diversification Vehicles

The Board includes other asset classes in the Combined Funds to provide some protection against highly inflationary or deflationary environments and for portfolio diversification to reduce extreme return volatility.

The allocation to Fixed Income is to act as a hedge against a deflationary economic environment. In the event of substantial deflation, high quality fixed income assets are expected to protect principal and generate significant capital gains. Fixed income, like real estate and real assets, under normal financial conditions, helps to diversify the Combined Funds, thereby moderating return volatility.

The Treasury portfolio also provides strong downside protection during a period of equity volatility. Real Estate and Real Assets investments provide an inflation hedge that other financial assets cannot offer. Under normal financial conditions, such as low to moderate inflation, the returns on these assets are not highly correlated with common stocks. As a result, inclusion of these assets in the Combined Funds serves to dampen return volatility.

Private Credit investments provide the opportunity for higher long-term returns than those typically available from bonds, yet still generate sufficient current income. Typically, these investments (e.g., subordinated debt, mezzanine debt, or resource income investments such as producing properties) are structured more like fixed income securities with the opportunity to participate in the appreciation of the underlying assets. While these investments may have an equity component, they display a return pattern more like a bond. Therefore, they will help reduce the volatility of the total portfolio, but should also generate higher returns relative to more traditional bond investments.

Rate of Return Results

The Combined Funds produced a total rate of return of 8.9% for fiscal year 2023. Over the last five years, the Combined Funds generated an annualized return of 8.2%.

As stated earlier, the Combined Funds are expected to exceed the return of a composite of market indices over a ten-year period. Performance relative to this standard measured two effects:

- The ability of the investment managers selected by SBI, in aggregate, to add value to the returns available from the broad capital markets.
- The impact of SBI's rebalancing activity. (SBI rebalances the total fund when market movements take the stock or bond segments measurably above or below their long-term asset allocation targets. The policy imposes a low risk, buy low sell high discipline among asset classes on a total fund basis.)

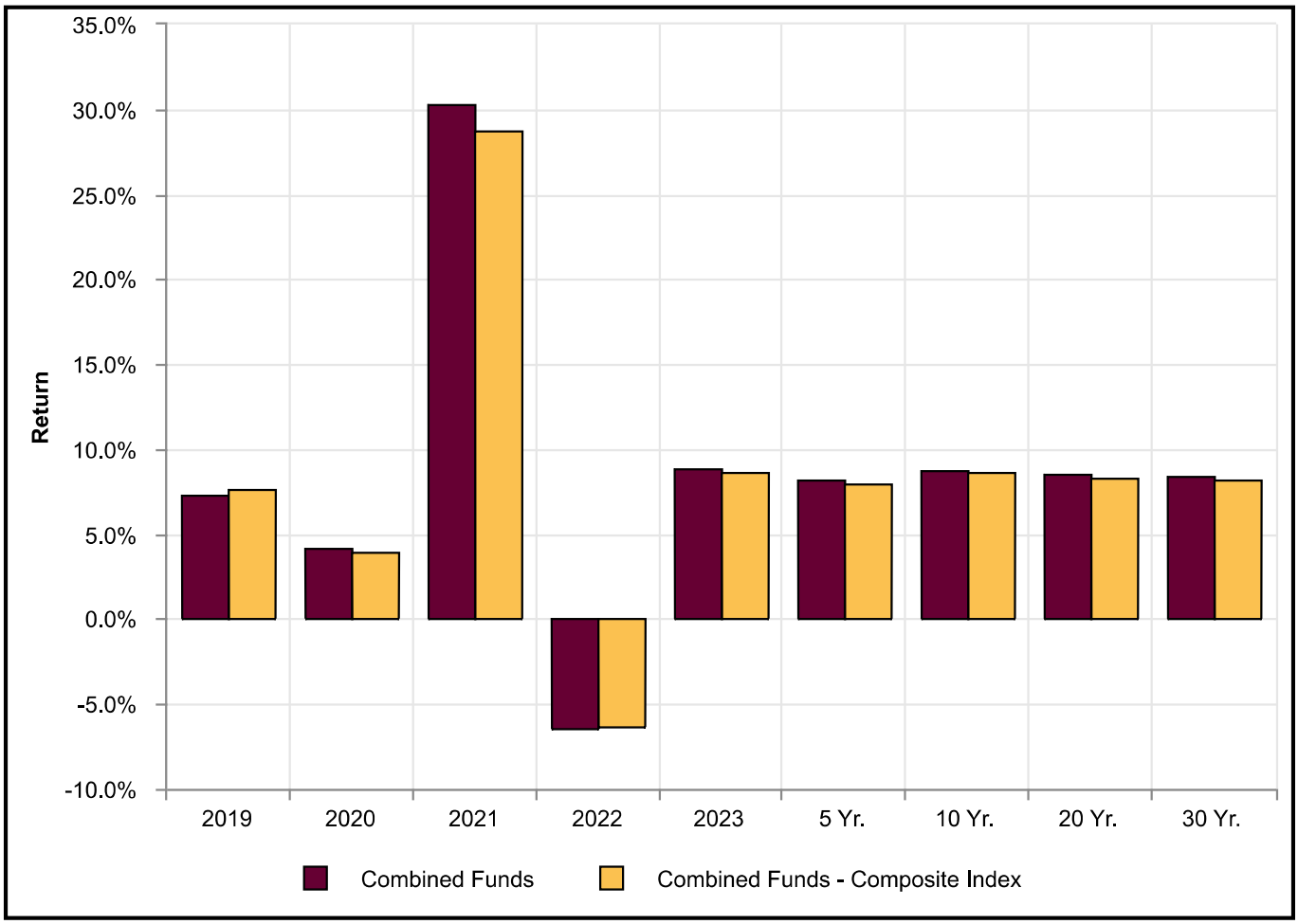
Combined Funds Performance vs. Composite Index

The investment return for the Combined Funds for the fiscal year ended June 30, 2023 was 8.9%. For a majority of time periods shown on the following page the Combined Fund returns exceeded the composite index investment performance.

Combined Funds

Investment Performance

Combined Funds Performance vs. Composite Index (Past Five Fiscal Years and Longer-Term)
Fiscal Year Ended June 30, 2023



	2019	2020	2021	2022	2023	5 Yr.	10 Yr.	20 Yr.	30 Yr.
Combined Funds	7.3%	4.2%	30.3%	(6.4)%	8.9%	8.2%	8.8%	8.5%	8.4%
Composite Index	7.6%	4.0%	28.8%	(6.3)%	8.7%	8.0%	8.6%	8.3%	8.2%
Excess	(0.3)%	0.2%	1.5%	(0.1)%	0.2%	0.2%	0.2%	0.2%	0.2%

Performance (Net of Fees): *The Combined Funds' performance is evaluated relative to a composite of public market index and private market investment returns. The composite performance is calculated by multiplying the beginning of month Composite weights and the monthly returns of the asset class benchmarks.*

Combined Funds

Performance of Asset Pools (Net of Fees)

June 30, 2023

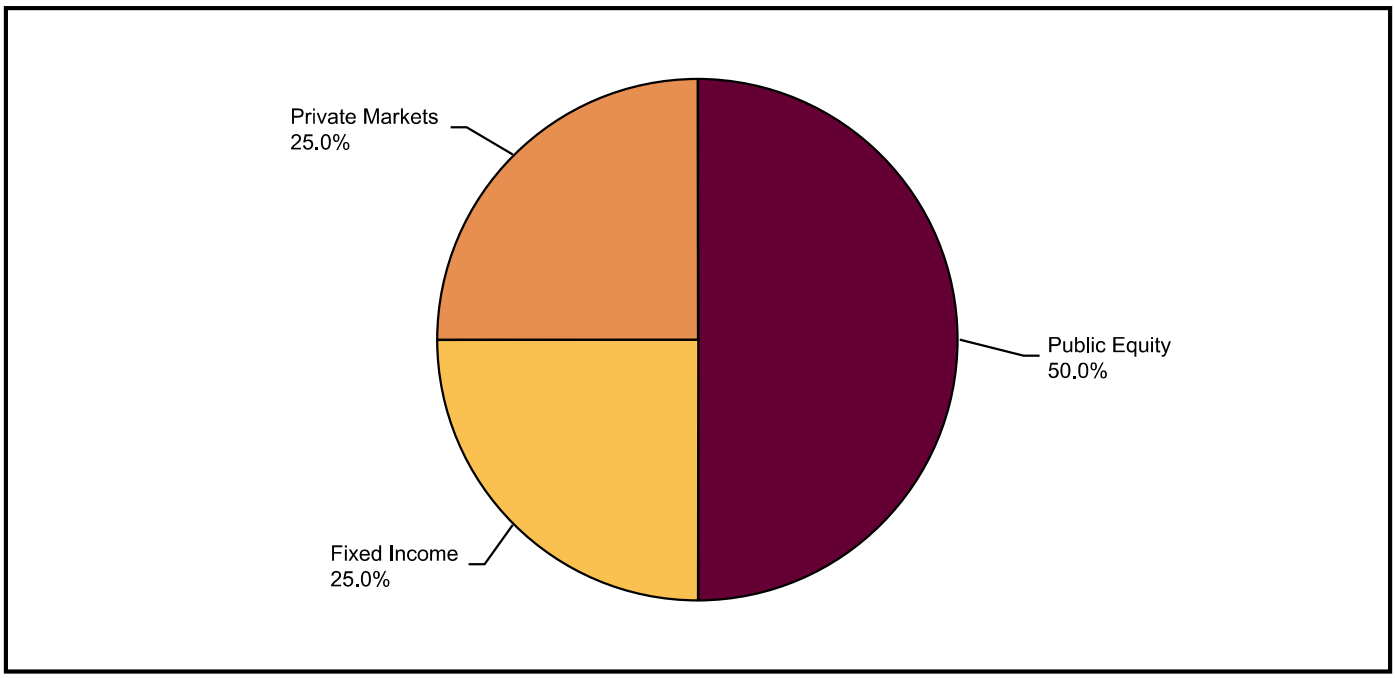
Rates of Return (Annualized)

	1 Year %	3 Year %	5 Year %	10 Year %	20 Year %	30 Year %
Public Equity	17.4%	12.2%	9.0%	10.2%	9.1%	8.8%
Public Equity Benchmark	17.0%	11.8%	8.8%			
Excess	0.3%	0.4%	0.2%			
Domestic Equity	19.1%	14.1%	11.3%	12.3%	10.0%	9.6%
Domestic Equity Benchmark	19.0%	14.0%	11.3%	12.3%	10.0%	9.8%
Excess	0.1%	0.1%	0.0%	0.0%	(0.1)%	(0.1)%
International Equity	14.0%	8.8%	4.5%	5.4%	7.1%	6.0%
International Equity Benchmark	12.7%	7.2%	3.5%	4.7%	6.7%	5.3%
Excess	1.3%	1.6%	1.0%	0.7%	0.5%	0.8%
Global Equity	17.1%					
MSCI AC World Index (net)	16.5%					
Excess	0.6%					
Total Fixed Income	0.1%	(4.0)%	1.7%	2.3%	3.6%	4.9%
Total Fixed Income Benchmark	(1.3)%	(4.6)%	1.3%	1.8%	3.2%	4.5%
Excess	1.4%	0.6%	0.4%	0.5%	0.4%	0.4%
Core/Core Plus	0.3%	(3.3)%	1.3%	2.0%	3.5%	4.8%
Core Bonds Benchmark	(0.9)%	(4.0)%	0.8%	1.5%	3.0%	4.4%
Excess	1.2%	0.6%	0.6%	0.5%	0.5%	0.4%
Return Seeking Fixed Income	5.1%					
Bloomberg U.S. Aggregate	(0.9)%					
Excess	6.0%					
Treasury Protection	(4.4)%	(8.1)%	0.0%			
Bloomberg Treasury 5+ Year	(4.3)%	(8.2)%	0.0%			
Excess	(0.1)%	0.1%	0.0%			
Laddered Bond + Cash	3.8%	1.2%	1.5%	1.0%	1.6%	3.1%
ICE BofA US 3-Month Treasury Bill	3.6%	1.3%	1.6%	1.0%	1.4%	2.4%
Excess	0.2%	(0.1)%	(0.1)%	0.1%	0.2%	0.7%
Total Private Markets	1.8%	20.5%	13.5%	12.7%	14.0%	13.4%
Private Equity	1.5%	22.8%	17.0%	16.3%	16.2%	15.6%
Private Credit	9.1%	16.1%	11.7%	13.1%	12.9%	
Resources	2.8%	17.1%	3.9%	2.4%	13.0%	12.8%
Real Estate	(3.3)%	16.7%	12.4%	12.7%	9.7%	9.6%

All investment performance methodology is reported in compliance with the mandatory requirements of the Chartered Financial Analyst (CFA) Institute. Investment returns are prepared using a time-weighted rate of return methodology, based on fair value, net of investment expense.

Combined Funds
Portfolio Distribution: Strategic Asset Policy Target Allocation*

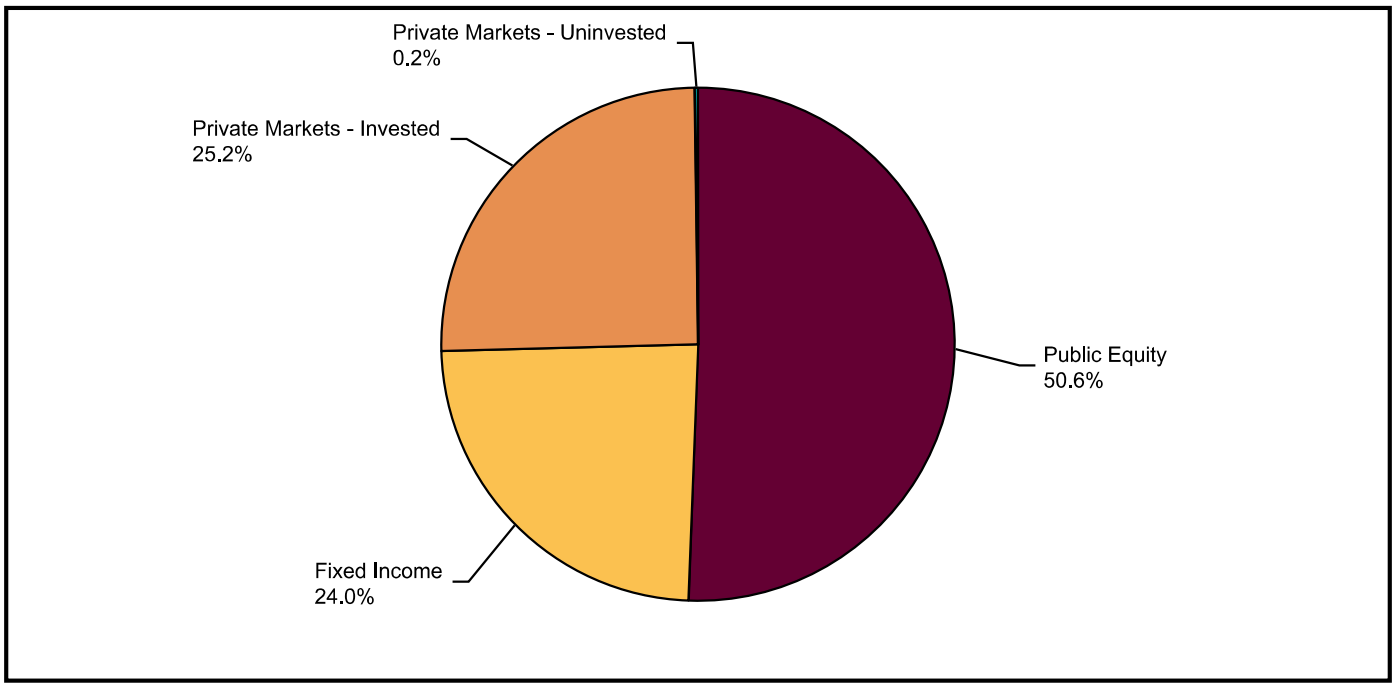
As of June 30, 2023



*See note on page 31-32.

Combined Funds
Portfolio Distribution: Actual Asset Mix

As of June 30, 2023



The market value of the TRA Fund investment portfolio is approximately $26.7 billion.

Teachers Retirement Fund
List of Largest Assets Held

June 30, 2023

Composite Holdings of Top Ten Equities

By Fair Value

Security	Fair Value (*Dollars in Millions*)	% of Portfolio
Apple Inc.	$568.2	2.13%
Microsoft Corp.	$525.5	1.97%
MSBI SIF	$518.9	1.94%
Blackrock Long Term Private CA	$484.4	1.81%
Amazon.Com Inc.	$246.9	0.92%
NVIDIA Corp.	$226.6	0.85%
Tesla Inc.	$147.7	0.55%
Alphabet Inc., Class A	$147.0	0.55%
Meta Platforms inc., Class A	$132.6	0.50%
Alphabet, Inc., Class C	$121.4	0.45%

Composite Holdings of Top Ten Bond Holdings

By Fair Value

Security	% Coupon	Fair Value (*Dollars in Millions*)	% of Portfolio
US Treasury N/B	4.13%	$95,532.0	0.36%
US Treasury N/B	5.39%	$73,697.9	0.28%
US Treasury N/B	0.13%	$67,096.8	0.25%
US Treasury N/B	3.13%	$61,092.6	0.23%
US Treasury N/B	3.13%	$60,489.4	0.23%
US Treasury N/B	2.38%	$58,345.8	0.22%
US Treasury N/B	2.88%	$48,983.8	0.18%
US Treasury N/B	2.75%	$48,945.2	0.18%
US Treasury N/B	2.38%	$48,813.5	0.18%
US Treasury N/B	0.13%	$48,537.2	0.18%

TRA's assets are commingled in various pooled investment accounts administered by the SBI. TRA does not own specific values of the underlying assets. The percentages and fair-value shown are those attributable to the TRA Fund based on TRA's participation in the SBI's Combined Funds. Information on investment activity, a listing of specific investments owned by the pooled accounts and a schedule of fees and commissions can be obtained from SBI.

Teachers Retirement Fund
Schedule of Investment Management Fees (continued on next page)

For the Fiscal Year Ended June 30, 2023

(Dollars in Thousands)

Domestic Active Equity Pool Managers	
Zevenbergen Capital	$251
Winslow Capital	161
Barrow, Hanley	223
LSV Asset	204
Sands Capital	315
Peregrine Capital	462
Goldman Equity	445
Hotchkis and Wiley	527
Martingale	239
Wellington Management Company, LLP	388
Arrowmark Asset Management, LLC	366
Hood River Capital Management, LLC	509
Rice Hall James & Associates, LLC	404
Total Domestic Activity Equity Pool Managers	$4,494
Semi Passive Equity Pool Managers	
Blackrock	$441
JP Morgan	472
Total Semi Passive Equity Pool Managers	$913
Passive Domestic Equity Pool Managers	
Blackrock	$5
Total Passive Domestic Equity Pool Managers	$5
Large Cap Passive Domestic Equity Pool Managers	
Blackrock Passive	$319
Total Passive Domestic Equity Pool Managers	$319
Small Cap Passive Domestic Equity Pool Managers	
Blackrock Passive	$2
Total Passive Domestic Equity Pool Managers	$2
Domestic Bonds Pool Managers	
Blackrock Financial Management	$189
Dodge & Cox	321
Goldman	288
Neuberger	289
Western Asset Management	344
Total Domestic Bonds Pool Managers	$1,431
Page Subtotal	$7,164

Teachers Retirement Fund
Schedule of Investment Management Fees (continued on next page)

For the Fiscal Year Ended June 30, 2023

(Dollars in Thousands)

Subtotal from Previous Page	$7,164
Return Seeking Fixed Income Pool Managers	
Columbia	$410
PIMCO	609
Blackrock	623
Ashmore Emerging Market	417
KKR High Yield	264
OakTree High Yield	321
PGIM FI Mac	329
Payden & Rygel Mav	315
TCW	354
Ashmore	9
Total Return Seeking Fixed Income Pool Managers	$ 3,651
International Equity Pool Managers	
Acadian Asset	$493
State Street Emerging	145
AQR Capital Mgmt.	261
Fidelity Investments	382
JP Morgan Fleming	375
Earnest Partners, LLC	398
Macquaries/Delaware Investments	550
Martin Curries, Inc.	593
Marathon Asset	370
McKinley Capital Management	175
Morgan Stanley Dean	823
Neuberger Berman Investment	726
Pzena Investment Management	794
Rock Creek	1,330
Columbia Management	375
State Street	205
Record Currency	2,464
Earnst Partners, LLC	453
Ashmore	8
Total International Equity Pool Managers	$10,920
Page Subtotal	$21,735

Teachers Retirement Fund
Schedule of Investment Management Fees (concluded)

For the Fiscal Year Ended June 30, 2023

(Dollars in Thousands)

Subtotal from Previous Page	$21,735
Global Equity Pool Managers	
Martin Curries, Inc.	$297
Ariel	560
Baillie Gifford	317
Total Global Equity Pool Managers	$ 1,174
Treasury Protection Pool Managers	
Blackrock	$351
Goldman Sachs	379
Neuberger Berman	342
Total Treasury Protection Pool Managers	$1,072
Laddered Portfolio Pool Managers	
Goldman	$95
Neuberger	94
Total Laddered Equity Pool Managers	$189
Uninvested Private Pool Managers	
Nisa Cash Overlay	$17
Blackrock	3
Total Uninvested Private Pool Managers	$20
Total Investment Management Fees	$24,190

Note: *The investment portfolio of TRA had a market value of approximately $26.7 billion as of June 30, 2023.*

Teachers Retirement Fund
Summary of Investments

(Dollars in Thousands)

As of June 30, 2023

	Cost Value	Fair Value	% of Investments at Fair Value
Fixed Income Investments			
Treasuries Pool	$3,011,488	$2,486,669	9.31%
Bond Pool	1,560,766	1,384,461	5.18%
Return Seeking Fixed Income	1,439,031	1,323,128	4.96%
Total Fixed Income Investments	$6,011,285	$5,194,258	19.45%
Private Markets			
Alternative Investment Pool	$5,961,018	$6,704,693	25.10%
Total Private Markets	$5,961,018	$6,704,693	25.10%
Equity Investments			
US Stock Index Pool	$5,400,011	$7,015,295	26.26%
US Stock Actively Managed Pool	2,346,415	1,889,616	7.07%
Broad International Stock Pool	3,947,369	4,229,732	15.84%
Global Equity Pool	331,081	313,868	1.18%
Total Equity Investments	$12,024,876	$13,448,511	50.35%
Short Term Cash Investments			
Money Market	$811,230	$814,341	3.05%
CD Repo Pool	63,083	63,340	0.24%
Short Duration Laddered Bonds	475,819	484,750	1.81%
Total Short Term Investments	$1,350,132	$1,362,431	5.10%
Total Investments	$25,347,311	$26,709,893	100%

General Information Regarding Investment of Funds

TRA's investments are made by SBI and external managers as prescribed by law, and are made only in such securities as are duly authorized legal investments in accordance with Minnesota Statutes, section 11A.24. State Street Bank and Trust of Boston acts as custodian of securities for the Combined Funds. Principal Bank of Minneapolis, Minnesota, is the current custodian of short term investments of SBI. Examination and verification of securities held by the custodians is performed periodically by the Minnesota Office of the Legislative Auditor. Investment returns are prepared using a time-weighted rate of return methodology, based upon fair values, net of investment expenses.

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November 28, 2023

Board of Trustees
Teachers Retirement Association of Minnesota
60 Empire Drive, Suite 400
St. Paul, MN 55103

Dear Board Members:

At your request, we have prepared an actuarial funding valuation of the Teachers Retirement Association of Minnesota (TRA or System) as of July 1, 2023 for the plan year ending June 30, 2024. Such valuations, which analyze the funding progress of the System, are required to be performed annually under state law. To the best of our knowledge and belief, the funding valuation was performed in accordance with the requirements of Minnesota Statutes, Section 356.215, and the requirements of the Standards for Actuarial Work established by the State of Minnesota Legislative Commission on Pensions and Retirement (LCPR).

Since the prior valuation, there have been several changes, some of which impacted the current valuation results including:

- Omnibus Pension Finance bill, HF 3100, which included reducing the investment return assumption to 7.0%.
- Tax Finance & Policy bill, HF 1938, which lowered the normal retirement age from 66 to 65 for Tier II members, increased the employer and employee contribution rates by 0.75% and 0.25% respectively, and extended the amortization period to 2053 (all effective July 1, 2025).
- Completion of the quadrennial experience study. There were no recommended economic assumption changes other than lowering the investment return assumption to 7.0%. The demographic assumption changes are expected to be reflected in the 2024 valuation after the LCPR approves them.
- Scheduled increases in the employee and employer contribution rates, as provided in the 2018 omnibus pension bill.

These changes had an impact on the benefit structure and contribution rates as well as the actuarial assumptions used in the valuation. One of the most significant legislative changes was reducing the investment return assumption from 7.5% to 7.0%, effective with the July 1, 2023 valuation. Note that although the reduction in the normal retirement age from 66 to 65 is effective July 1, 2025, the provision is reflected in the results of the 2023 valuation.

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As described in the funding valuation report, the results of the valuation indicate that the System is 76.85% funded and the current statutory contribution rates are deficient by 2.53% of payroll to meet the target of full funding by 2048. The contribution deficiency is determined using the actuarial value of assets, which is greater than the market value of assets. If the net deferred investment loss is recognized, i.e., the fair value of assets is used, the contribution deficiency increases to 2.68% of payroll. However, if the additional $145 million of State contributions is received in FY 2024, the employee and employer contribution rates increase as scheduled, the amortization date is extended to 2053, and the demographic assumption changes are reflected, a contribution rate sufficiency of 0.55% is expected, based on the actuarial value of assets. The funding report was prepared exclusively for TRA and the LCPR to determine the actuarial required contribution rate using the statutory investment return assumption of 7.00%.

In preparing the valuation, we relied, without audit, on information (some oral and some in writing) supplied by TRA staff. This information includes, but is not limited to, statutory provisions, member data and financial information. We found this information to be reasonable and comparable to the information used in last year's valuation. However, we did not audit the data. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete, our results may be different, and our calculations may need to be revised.

The actuarial required contribution rates are developed using the Entry Age Normal (EAN) cost method. An asset smoothing method, defined in statute, is used for actuarial valuation purposes. Gains and losses are reflected in the unfunded actuarial accrued liability and are amortized as a level percentage of payroll over a closed period set in state statute. Actuarial assumptions, including the investment return assumption, mortality tables and others identified in the valuation report are prescribed by Minnesota Statutes Section 356.215, the Legislative Commission on Pensions and Retirement (LCPR), and the Board of Trustees. Collectively, these parties are responsible for selecting the plan's funding policy, actuarial valuation methods, asset valuation method, and actuarial assumptions. If all assumptions are met and the scheduled increases in the employer and employee contribution rates are implemented, the current funding policy is expected to result in the Plan reaching full funding by the target date of 2053. Actual experience that varies from that assumed may impact the Plan's ability to meet its funding goals, so long-term funding should be monitored on a regular basis. The policies, methods and assumptions used in this valuation are those that have been prescribed and are described in Appendix C of the valuation report.

In order to prepare the results in the July 1, 2023 actuarial valuation report, we have utilized actuarial models that were developed to measure liabilities and develop actuarial costs. These models include tools that we have produced and tested, along with commercially available valuation software that we have reviewed to confirm the appropriateness and accuracy of the output. In utilizing these models, we develop and use input parameters and assumptions about future contingent events along with recognized actuarial approaches to develop the needed results. Future actuarial results may differ significantly from the current results presented in the valuation report due to factors such as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Since the potential impact of such factors is outside the scope of a standard actuarial valuation, an analysis of the range of potential results is not presented herein.

The actuary prepared the following supporting schedules in the Actuarial Section of the Annual Comprehensive Financial Report:

- Reconciliation of Member Data
- Actuarial Asset Value
- Actuarial Valuation Balance Sheet
- Determination of Unfunded Actuarial Accrued Liability and Supplemental Contribution Rate
- Changes in the Unfunded Actuarial Accrued Liability
- Determination of Contribution Sufficiency /(Deficiency) – Total
- Solvency Test
- Schedule of Funding Progress
- Schedule of Active Member Valuation Data

We also provided the following schedules in the Financial Section of the Annual Comprehensive Financial Report:

- Total Pension Liability
- Schedule of Changes in the Employers' Net Pension Liability
- Schedule of the Employers' Net Pension Liability
- Sensitivity Analysis on the Net Pension Liability

In addition, we provided the *Schedule of Contributions from Employers and Non-employer Contributing Entities* found in the Required Supplementary Information. The schedules are presented prospectively, and in time, trend analysis will become evident. Actuarial computations presented in the July 1, 2023 actuarial funding valuation report are for purposes of determining the sufficiency of the current statutory contributions to meet the funding goals of the System. The calculations have been made on a basis consistent with our understanding of the System's funding requirements and goals, and on a basis consistent with our understanding of the plan provisions described in Appendix B of the valuation report. Determinations for purposes other than meeting these requirements may be significantly different from the results shown in the July 1, 2023 actuarial funding valuation report. Accordingly, additional determinations may be needed for other purposes.

We also prepared actuarial computations as of June 30, 2023 for purposes of fulfilling financial accounting requirements for the System under Governmental Accounting Standards Board (GASB) Statement No. 67. The results are presented in a separate report dated November 21, 2023. For GASB 67 purposes, TRA is a cost-sharing multiple employer plan. The actuarial assumptions used in the funding valuation report were also used for GASB 67 reporting. In addition, the entry age normal actuarial cost method, which is required to be used under GASB 67, is also used in the statutory funding valuation report. The actuarial assumptions and methods used in both the funding and the GASB 67 accounting valuation reports meet the parameters set by Actuarial Standard of Practice (ASOPs), as issued by the Actuarial Standards Board, and generally accepted accounting principles (GAAP) applicable in the United State of America as promulgated by the Governmental Accounting Standards Board.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this information is complete and accurate, and that the valuation was prepared in accordance with principles of practice which are consistent with the Actuarial Standards of Practice promulgated by the Actuarial

Standards Board and the applicable Guides to Professional Conduct, amplifying Opinions, and supporting recommendation of the American Academy of Actuaries. In addition, the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the retirement System. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein. Also, we meet the requirements of "approved actuary" under Minnesota Statutes, Section 356.215, Subdivision 1, Paragraph (c).

Respectfully submitted,

Patrice A. Beckham, FSA, EA, FCA, MAAA
Consulting Actuary

Brent Banister PhD, FSA, EA, FCA, MAAA
Chief Actuary

Ben Mobley, ASA, FCA, MAAA
Consulting Actuary

Summary of Actuarial Assumptions and Methods

Summary of Actuarial Assumptions

The following assumptions were used in valuing the liabilities and benefits under the plan. All assumptions are prescribed by Statutes, the LCPR, or the Board of Trustees. The assumptions prescribed are based on the full experience study dated June 28, 2019, other than the investment return assumption which was reduced from 7.5% to 7% by the 2023 Legislature. The proposed demographic assumption changes recommended in the 2023 experience study, presented to the board this summer, are awaiting the LCPR's approval.

The Allowance for Combined Service Annuity was based on the recommendation of Deloitte Consulting LLP, the actuary for the Legislative Commission on Pensions and Retirement (LCPR). We are unable to judge the reasonableness of this assumption without performing a substantial amount of additional work beyond the scope of this assignment, so we have relied on Deloitte's findings.

Investment return	7% compounded annually. (Enacted into Minnesota Statute, May 24, 2023)
Future post-retirement adjustments	1% for January, 2019 through January, 2023, then increasing by 0.1% each year up to 1.5% annually.
Salary increases	Reported salary for prior fiscal year, with new hires annualized, is increased according to the salary increase table shown in the rate table for current fiscal year and annually for each future year. See table of sample rates.
Payroll growth	3% per year
Future service	Members are assumed to earn future service at a full-time rate.
Mortality: Pre-retirement	RP 2014 white collar employee table, male rates set back 5 years and female rates set back 7 years. Generational projection uses the MP-2015 scale.
Post-retirement	RP 2014 white collar annuitant table, male rates set back 3 years and female rates set back 3 years, with further adjustments of the rates to fit actual TRA experience. Generational projection uses the MP-2015 scale.
Post-disability	RP 2014 disabled retiree mortality, without adjustment or generational improvement.
Disability	Age-related rates based on experience; see table of sample rates.
Withdrawal	Rates vary by service based on actual plan experience, as shown in the rate table.
Expenses	Prior year administrative expenses expressed as percentage of prior year payroll.
Retirement age	Graded rates beginning at age 55 as shown in rate table. Members who have attained the highest assumed retirement age will retire in one year.
Percentage married	85% of male members and 65% of female members are assumed to be married. Members are assumed to have no children.
Age difference	Females two years younger than males.
Allowance for Combined Service Annuity	Liabilities for vested former members are increased by 7% and liabilities for non-vested former members are increased by 9% to account for the effect of some participants being eligible for a Combined Service Annuity.

Refund of contributions	All employees withdrawing after becoming eligible for a deferred benefit are assumed to take the larger of their contributions accumulated with interest or the value of their deferred benefit.
Interest on member contributions	Members and former members who are eligible for the money purchase annuity are assumed to receive interest credits equal to the pre-retirement interest rate. All other members and former members receive the interest crediting rate as specified in statutes.
Commencement of deferred benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at unreduced retirement age.
Form of Payment	Married members are assumed to elect subsidized joint and survivor form of annuity as follows: Males: 10% elect 50% J&S option 10% elect 75% J&S option 60% elect 100% J&S option 20% elect Straight Life option Females: 13.5% elect 50% J&S option 6.5% elect 75% J&S option 38% elect 100% J&S option 42% elect Straight Life option Members eligible for deferred annuities (including current terminated deferred members) and future disability benefits are assumed to elect a life annuity.
Missing data for members	Membership data was supplied by TRA as of the valuation date. This information has not been audited by CMC. We have reviewed the information for internal consistency and we have no reason to doubt its substantial accuracy. In the small number of cases where submitted data was missing or incomplete and could not be recovered, the following assumptions were applied if needed: Data for active members: Salary, service, and date of birth: Based on current active demographics Gender: Female Data for terminated members: Average salary: $45,500 Date of termination: Derived from date of birth, original entry age, and service Data for in-pay members: Beneficiary date of birth: Wife two years younger than husband Gender: Based on first name Form of payment: Life annuity for retirees and beneficiaries, 100% J&S option for disabled retirees.
Changes in actuarial assumptions since the previous valuation	None

Summary of Actuarial Assumptions *(continued)*

	Pre-retirement Mortality* Rate (%)		Disability Rate (%)	
Age	Male	Female	Male	Female
20	0.022	0.013	—	—
25	0.029	0.013	—	—
30	0.034	0.014	—	—
35	0.032	0.017	0.01	0.01
40	0.037	0.022	0.03	0.03
45	0.044	0.029	0.05	0.05
50	0.068	0.045	0.10	0.10
55	0.118	0.076	0.16	0.16
60	0.196	0.121	0.25	0.25
65	0.329	0.177	—	—

**Rates shown are for 2014, the base year of the tables.*

Annuitant Mortality Rates (%)

	Retirement*		Disability	
Age	Male	Female	Male	Female
55	0.267	0.196	2.337	1.448
60	0.353	0.267	2.660	1.700
65	0.486	0.430	3.169	2.086
70	0.945	0.706	4.035	2.820
75	2.015	1.352	5.429	4.105
80	4.126	2.682	7.662	6.104
85	7.358	5.456	11.330	9.042
90	13.560	9.947	17.301	13.265
95	24.351	18.062	24.717	19.588
100	38.292	29.731	32.672	27.819

**Rates shown are for 2014, the base year of the tables.*

Termination Rates

Service	Male	Female
Less than 1	32%	29%
1	14%	12%
2	10%	10%
3	7.5%	8%
4	5.75%	6.5%
5	5%	5.25%
6	4.6%	4%
7	4.1%	3.5%
8	2.8%	3%
9	2.3%	2.5%
10	2%	2.1%
15	1.1%	1.1%
20	0.6%	0.6%
25 or more	0.5%	0.5%

Summary of Actuarial Assumptions *(concluded)*

Retirement Rates for Coordinated Members (%)

Coordinated Tier II members age 62 or older with 30 or more years of service have 10% added to their early retirement rates

Age	Tier 1 Early	Tier 1 Unreduced	Tier 2 Early	Tier 2 Unreduced
55	5	35	5	
56	10	35	5	
57	10	35	5	
58	10	35	5	
59	14	35	5	
60	17	35	6	
61	20	35	6	
62	25	35	10	
63	25	35	6	
64	25	35	15	
65		40		40
66		35		35
67		30		30
68		30		25
69		30		25
70		35		35
71 and over		100		100

**Note: These retirement rates reflect the change in the Tier 2 normal retirement age effective July 1, 2025. The assumed retirement rates for members who retire before July 1, 2025 can be found in the June 30, 2022 actuarial valuation report.*

Salary Scale

Service (Yrs)	Select Salary Increase Before July 1, 2028	Ultimate Salary Increase After June 30, 2028
1	8.85%	9.25%
5	6.35%	6.75%
10	5.6%	6%
15	4.35%	4.75%
20	3.45%	3.85%
25	2.95%	3.35%
26 or more	2.85%	3.25%

Valuation Report Highlights
Summary of Key Valuation Results

	Actuarial Valuation as of 7/1/2023	7/1/2022
Participant Data		
Active members		
Number	84,983	84,308
Projected annual earnings for fiscal year (*000s*)	$6,108,286	$5,944,310
Average projected annual earnings for fiscal year 2024	$71,877	$70,507
Average age	43.5	43.2
Average service	12.3	12.3
Service retirements	63,219	62,976
Survivors	6,696	6,488
Disability retirements	429	427
Deferred retirements	19,418	17,812
Non-vested terminated members	40,089	38,903
Total	**214,834**	**210,914**
Liabilities and Funding Ratios (d*ollars in thousands*)		
Accrued Benefit Funding Ratio		
Current assets (AVA)	$26,903,914	$25,925,803
Current benefit obligations	32,394,327	29,859,472
Funding ratio	83.05%	86.83%
Accrued Liability Funding Ratio		
Current assets (AVA)	$26,903,914	$25,925,803
Market Value of Assets (MVA)	26,752,069	25,592,152
Actuarial Accrued Liability (AAL)	35,008,293	31,615,897
Unfunded Actuarial Accrued Liability (UAAL)	8,104,379	5,690,094
Funding ratio (AVA)	76.85%	82.00%
Funding ratio (MVA)	76.42%	80.95%
Projected Benefit Funding Ratio		
Current and expected future assets	$40,309,275	$38,507,266
Current and expected future benefit obligations	42,753,840	37,496,417
Funding ratio (AVA)	94.28%	102.70%
Contributions (% of payroll)		
Normal Cost Rate	11.10%	9.23%
UAAL Amortization Payment	8.38%	6.21%
Expenses	0.29%	0.28%
Total Required Contribution (Chapter 356)	19.77%	15.72%
Statutory Contribution (Chapter 354)	17.24%	16.82%
Contribution (Deficiency)/Sufficiency	(2.53%)	1.10%

Actuary's Selected Commentary

July 1, 2023 Valuation

The Minnesota Teachers Retirement Association (TRA or System) provides retirement, disability, and death benefits to Minnesota public school teachers, administrators, and certain college faculty. This report presents the results of the July 1, 2023 actuarial funding valuation of the System. The primary purposes of performing the actuarial funding valuation are to:

- disclose asset and liability measures as of the valuation date;
- determine the Required Contribution Rate as set forth in Chapter 356 of the Minnesota statutes;
- determine the sufficiency of the Statutory Contribution Rate as set forth in Chapter 354 of the Minnesota statutes;
- determine the actuarial experience of the System since the last valuation date;
- assess and disclose the key risks associated with funding the System: and
- analyze and report on trends in System contributions, assets, and liabilities over the past several years.

There have been several changes since the last valuation that impacted the results of the July 1, 2023 actuarial valuation. These include changes to the actuarial assumption, benefit provisions, and contribution rates as well as additional State appropriations. The Omnibus Pension Finance Bill, appropriated $176,166,838 to TRA, payable on October 1, 2023:

- $28,735,816 for the difference between the statutory 1.1% compounded COLA payable on January 1, 2024 and a one-time 2.5% lump-sum COLA for Coordinated plan members;
- $2,384,222 for the difference between the statutory 1.1% compounded COLA payable on January 1, 2024 and a one-time 4% lump-sum COLA for basic plan members; and
- $145,046,800 to pay down the Unfunded Actuarial Accrued Liability.
- The bill also reduced the investment return assumption from 7.5% to 7%.

Because both the liability for the additional lump sum COLAs and the offsetting State appropriations will occur in FY2024, they did not impact the current valuation results. In addition, due to the date the additional contribution of $145 million was received, it was not included in the System's assets as of July 1, 2023 and therefor did not impact the current valuation results. The reduction in the investment return assumption to 7% is reflected in this valuation and it increased both the Actuarial Accrued Liability and actuarial contribution rate.

The tax finance and policy bill included the following changes to TRA's benefit structure and financing:

- Normal retirement age for active Tier II members is reduced from 66 to 65;
- Employer contribution rate increases by .75% Employee contribution rate increases by .25%
- TRA's amortization date moves to June 30, 2053

All changes under the tax finance and policy bill are effective July 1, 2025 and, therefore, do not impact benefits or contributions until that date. However, the impact of lowering the Tier II normal retirement age on July 1, 2025 is reflected in the current valuation results.

In addition, both the employer and member contribution rates increased July 1, 2023 as provided in the 2018 Omnibus Pension Bill. The TRA employer contribution rate increased by .2% (to 8.75%) and the member contribution rate increased by .25% (to 7.75%).

The regularly scheduled quadrennial experience study was completed in August 2023. Based on the findings of that study, several changes to the set of actuarial assumptions were recommended, including lowering the investment return assumption from 7.5% to 7%. Since the change to the investment return assumption requires legislative action, which was included in the Omnibus Pension Finance Bill, it is incorporated in the July 1, 2023 actuarial valuation. However, the other proposed assumption changes are awaiting approval by the Legislative Commission on Pensions and Retirement (LCPR). Therefore, those assumption changes are not reflected in the current actuarial valuation. The changes

are expected to lower the actuarial accrued liability and total actuarial contribution rate, primarily due to the proposed mortality assumption.

Minnesota Statutes, section 356.215 prescribes the method for amortizing the System's UAAL. In accordance with subdivision 11, paragraph (c), of that section, if there is an increase in the System's UAAL due to a change in the actuarial assumption, plan provisions, or actuarial cost method, a new amortization period is determined. This new amortization period is determined by blending the amount needed to amortize the prior UAAL as a level percent of pay over the prior amortization period and the amount needed to amortize the increase in the UAAL as a level percent of pay over 30 years. The resulting blended amortization period is the rounded to the nearest integer. The actuarial analysis shows that the blended amortization period rounds to 25 years. Therefore, the UAAL amortization date is unchanged and remain June 30, 2048 in the July 1, 2023 valuation.

The following table shows a summary of the cost impact due to the changes since the prior valuation.

(Dollars in Thousands)	Before Changes	After Changes	Difference
Actuarial Accrued Liability (AAL)	$32,338,768	$35,008,293	$2,669,525
Actuarial Value of Assets (AVA)	26,903,914	26,903,914	—
Unfunded AAL (UAAL)	$5,434,854	$8,104,379	$2,669,525
Funded Ratio	83.2 %	76.9 %	(6.3)%
Normal Cost Rate	9.28 %	11.10 %	1.82 %
UAAL Amortization Payment	5.90 %	8.38 %	2.48 %
Expense	0.29 %	0.29 %	— %
Total Required Contribution	15.47 %	19.77 %	4.30 %
Statutory Contribution	17.24 %	17.24 %	— %
Contribution (Deficiency)/ Sufficiency	1.77 %	(2.53)%	(4.30)%

The most significant cost impact in the table above is due to lowering the investment return assumption from 7.5% to 7%. This single change increased the Unfunded Actuarial Accrued Liability by $2.1 billion and increased the actuarial contribution rate by 3.11%. The benefit changes increased the Unfunded Actuarial Accrued Liability by $615 million and the actuarial contribution rate by 1.19%

As the table above shows the current valuation result show a contribution deficiency of 2.53% of pay. However, as mentioned earlier, there are additional improvements scheduled or expected in the future that will affect the System's funding outlook. To provide some insight into the impact of these future changes, the following illustrates the expected impact of each on the System's contribution sufficiency.

	Contribution Sufficiency/ (Deficiency)	Impact
July 1, 2023 Valuation (Current)	(2.53)%	
- Increased Contribution Rates	(1.53)%	1.00 %
- Additional $145M Contribution	(1.38)%	0.15 %
- Extend Amortization Date	(0.57)%	0.81 %
- Demographic Assumption Changes	0.55 %	1.12 %

In addition to all the changes, the actuarial valuation captures the actual experience that has occurred in the last fiscal year. The valuation results provide a "Snapshot" view of the System's financial condition on July 1, 2023 reflect net favorable experience for the past plan year as demonstrated by an UAAL that was lower than expected. The UAAL on July 1, 2023 is $8.1 billion as compared to an expected UAAL of $8.4 billion. The favorable experience of $244 million was the combined result of an experience gains of $112 million on the actuarial value of assets and $132 million on the System liabilities. The rate of return on the market value of assets for fiscal year 2023 was 8.9% as reported by the State Board of Investment. However, due to the application of the asset smoothing method, the rate of return on the actuarial value of assets was 8%, resulting in the experience gain on assets.

The primary factor affecting the liability gain was salary gains from actual salary increase that were lower than expected by the assumption

A summary of the key valuations results from the July 1, 2023 actuarial valuation, compared to the July 1, 2022 valuation, is shown in the following table.

	Actuarial Valuation as of July 1, 2023	July 1, 2022
Total Required Contribution Rate (Chapter 356)	19.77%	15.72%
Employer Contributions	8.91%	8.73%
Employee Contributions	7.75%	7.50%
Direct Aids (Chapters 354 and 423A)	0.58%	0.59%
Sufficiency/(Deficiency)	(2.53%)	1.10%
Unfunded Actuarial Accrued Liability *(dollars in millions)*	$8,104	$5,690
Funded Ratio (Actuarial Assets)	76.85%	82%

The prior valuation showed that there was a contribution sufficiency of 1.10% of pay. Due to lowering the assumed investment return from 7.5% to 7% and lowering the normal retirement age for Tier II members the contribution deficiency of 2.53% of pay in the current valuation. There are changes expected to occur in the next two years that will change the current contribution deficiency to a contribution sufficiency, if all assumptions are met.

Experience for the Last Plan Year

Numerous factors contributed to the change in the System's assets, liabilities and Required Contribution Rate (actuarial contribution rate) between July 1, 2022, and July 1, 2023. The components are examined in the following discussion.

Assets

As of June 30, 2023, TRA had net assets of $26.8 billion, as measured on a market value basis. This represents a $1.2 billion increase from the prior year.

The market value of assets is not used directly in the calculation of the Unfunded Actuarial Accrued Liability Funded Ratio and the Required Contribution Rate.

An asset valuation method, which smooths the effect of market fluctuations, is used to determine the value of assets used in the valuation, called the “actuarial value of assets.”

In this year’s valuation, the actuarial value of assets as of June 30, 2023 was $26.9 billion, an increase of $978 million from the prior valuation. The components of change in the asset values are shown in the following table:

(Dollars in Millions)	Actuarial Value	Market Value
Net Assets, June 30, 2022	**$25,926**	**$25,592**
Employer & Member Contributions	$987	$987
Benefit Payments and Administrative Expenses	($2,044)	($2,044)
Investment Income	$2,035	$2,217
Net Assets, June 30, 2023	**$26,904**	**$26,752**
Rate of Return	**8.0%**	**8.9%**

The Minnesota State Board of Investment (SBI) reported a rate of return of 8.9% on the market value of assets for fiscal year 2023. Due to the application of the asset smoothing method, including the scheduled recognition of the deferred investment experience from prior years, the rate of return on the actuarial value of assets was 8%. Because this rate of return was higher than the assumed rate of return of 7.5%, an actuarial gain of $112 million occurred.

Please see page 90 of this report for more detailed information on the market and actuarial value of assets.

Liabilities

The Actuarial Accrued Liability is the portion of the present value that will not be paid by future normal costs. The difference between this liability and the actuarial value of assets at the same date is called the Unfunded Actuarial Accrued Liability (UAAL). In general, the UAAL is reduced if the contributions to the System exceed the normal cost for the year plus interest on the prior year’s UAAL. However, actuarial experience also impacts the UAAL from one year to the next.

The Unfunded Actuarial Accrued Liability is shown as of July 1, 2023, in the following table:

(Dollars in Millions)	Actuarial Value	Market Value
Actuarial Accrued Liability	$35,008	$35,008
Value of Assets	$26,904	$26,752
Unfunded Actuarial Accrued Liability	$8,104	$8,256
Funded Ratio	76.85%	76.42%

See pages 92-93 of the report for the detailed development of the Unfunded Actuarial Accrued Liability.

Changes in the UAAL occur for various reasons. The net increase in the UAAL from July 1, 2022, to July 1, 2023, was $2.4 billion. The components of this net change are shown in the table below:

(Dollars in Millions)	
Unfunded Actuarial Accrued Liability, July 1, 2022	**$5,690**
Expected change from amortization method	44
Actual contributions vs Required Rate	(68)
Investment experience on actuarial assets	(112)
Liability experience	(132)
Assumption Changes	2,054
Benefit provision changes	615
Other experience	13
Subtotal	2,414
Unfunded Actuarial Accrued Liability, July 1, 2023	**$8,104**

As shown above, various types of experience impacted the UAAL from July 1, 2022 to July 1, 2023, but the most significant was lowering the assumed investment return rate from 7.5% to 7%. The UAAL is financed as a level percentage of payroll so the dollar amount of the UAAL payments increase each year in the future with assumed payroll increases of 3%. As a result of the payment schedule, contributions in the early part of the amortization period are less than the interest on the UAAL and the dollar amount of the UAAL increases. This is illustrated by the expected increase of $44 million shown in the table above.

To the extent the Statutory Contribution Rate is ~~less~~ more than the Required Contribution Rate, which was the case during the prior year, the UAAL is paid off more rapidly than expected based on the System's amortization schedule. During fiscal year 2023, the contribution sufficiency decreased the UAAL by $68 million.

Actuarial gains (losses), which result from actual experience that is more (less) favorable than anticipated based on the actuarial assumptions, are reflected in the UAAL. These are measured as the difference between the expected Unfunded Actuarial Accrued Liability and the actual Unfunded Actuarial Accrued Liability, taking into account any changes due to actuarial assumptions and methods or benefit provision changes. Overall, the System experienced a net actuarial gain of $244 million which may be explained by considering the separate experience of assets and liabilities. As noted earlier, there was a $112 million gain on the actuarial value of assets and a $132 million gain on liabilities. The liability gain was primarily the result of salary gains from increases that were lower than expected based on the assumption.

An evaluation of the Unfunded Actuarial Accrued Liability on a pure dollar basis may not provide a complete analysis since only the difference between the assets and liabilities (which are both very large numbers) is reflected. Another way to evaluate the Unfunded Actuarial Accrued Liability and the progress made in its funding is to track the funded ratio, the ratio of the actuarial value of assets to the Actuarial Accrued Liability. The funded status information is shown in the following table.

(Dollars in Millions)

Date	Funded Ratio	Unfunded Actuarial Accrued Liability
7/1/19	76.8%	$6,779
7/1/20	76.1%	$7,192
7/1/21	80.2%	$6,087
7/1/22	82%	$5,690
7/1/23	76.9%	$8,104

Note that if the funded status were calculated using the market value of assets, the results could differ. The funded ratios and Unfunded Actuarial Accrued Liability measures, as shown, are not indicative of whether or not the System could settle all current benefit obligations with existing assets. Furthermore, these results do not, on their own, indicate whether or not future funding of the System will be required, nor the amount.

Contribution Rate

Under the Entry Age Normal cost method, the actuarial contribution rate consists of three components:

- a "normal cost" for the portion of projected liabilities allocated by the actuarial cost method to service of members during the year following the valuation date,
- an "Unfunded Actuarial Accrued Liability contribution" for the excess of the portion of

projected liabilities allocated to service to date over the actuarial value of assets (Unfunded Actuarial Accrued Liability); and

- an amount to cover estimated administrative expenses for the plan year.

See page 94 of the report for the detailed development of these contribution rates summarized in the table below. These calculations are based on the actuarial value of assets.

As noted earlier, once the additional $145 million of State contributions is received in FY2024, the employee and employer contribution rates increase, the amortization date is extended to 2053, and the demographic assumption changes re reflected, the contribution rate would increase from deficiency of 2.53% of pay to a sufficiency 0.55% of pay.

Contribution Rates	July 1, 2023	July 1, 2022
Normal Cost Rate	11.10%	9.23%
UAAL Contribution Rate	8.38%	6.21%
Expenses	0.29%	0.28%
Total Required Contribution Rate	19.77%	15.72%
Statutory Contribution Rate	17.24%	16.82%
Contribution (Deficiency)/ Sufficiency	(2.53%)	1.10%
Contribution (Deficiency)/ Sufficiency Reflecting Future Scheduled Contributions Increases	0.55%	1.55%

The impact of the various factors discussed earlier on the Required Contribution Rate are shown in the table located on page 95.

When a system is funded with fixed contribution rates (statutory contribution rate), it is expected that the fixed contribution rate may be either above or below the actuarial contribution rate (required contribution rate for TRA), as determined in the actuarial valuation each year. When the statutory contribution rate is consistently lower than the required contribution rate for a long period, it can significantly impact the funding progress of the System and result in an increasing UAAL and declining funded ratio. For TRA, the statutory contribution rate was significantly below the required contribution rate from 2008 to 2017. Over that time, the funded status of the System declined from 92% to 76%. Actual investment experience over that time period also had a significant impact on the decline in the System's funding.

There was a contribution sufficiency during fiscal years 2022 and 2023. However, due to lowering the investment return assumption and the normal retirement age for Tier II members, the current valuation results show a contribution deficiency of 2.53% of pay. This deficiency means that, if all current assumptions are exactly met in the future, the UAAL will not be fully amortized at the scheduled date of June 30, 2048.

The UAAL will continue to be significantly impacted from year to year by factors other than statutory contribution levels, such as actual versus expected experience, assumption changes, financial changes and changes to the amortization period. The contribution deficiency and projected full funding date in future valuations will continue to be monitored to ensure the current funding policy will meet the System's goals.

The actuarial contribution rate (Required Contribution Rate) is determined based on the snapshot of the System taken on the valuation date, July 1, 2023. The actuarial contribution rate in future years will change each year as the deferred actuarial investment experience is recognized and other experience (both investment and demographic) impacts the System. The most volatile component of the actuarial contribution rate is typically the actual investment return, although the asset smoothing method mitigates the immediate impact of significantly different returns than assumed.

Summary

The two most impactful events since the prior valuation were lowering the investment return assumption and reducing the normal retirement age for Tier II members. Their combined impact was an increase in the UAAL of $2.7 billion, as well as an increase in the required contribution rate of 4.3% of pay. Another factor that had a significant impact on the July 1, 2023 valuation was the investment return on the market value of assets of 8.9% for fiscal year 2023. As a result, the net deferred investment loss of $334 million in last year valuation has decrease to $152 million. Absent favorable investment experience, the deferred asset losses are expected to flow through the smoothing method over the next four years,

lowering the funded ratio and increasing the required contribution rate.

Due to the application of the asset smoothing method, the return on the actuarial value of assets was 8%. Since this return was higher than the assumed rate of return of 7.5% for the fiscal year ending 2023, there was an actuarial gain on the actuarial value of assets. Coupled with demographic experience for the year, the total actuarial gain was $244 million.

As mention earlier, the System's utilize and asset smoothing method in the valuation process. While this is a common procedure for public retirement systems, it is important to identify the potential impact of the deferred investment experience. The asset smoothing method impacts only the timing of when the actual market experience is recognized in the valuation process. The net deferred investment loss of $152 million represents about 0.6% of the market value of assets.

The key valuation results from the July 1, 2023 actuarial valuation are shown below, using both actuarial and market value of assets.

	Actuarial Value	Market Value
Statutory Rate	17.24%	17.24%
Required Contribution		
Normal Cost	11.10%	11.10%
UAAL Contribution	8.38%	8.53%
Expenses	0.29%	0.29%
Total Required Contribution	19.77%	19.92%
Sufficiency	(2.53%)	(2.68%)
UAAL (*dollars in millions*)	$8,104	$8,256
Funded Ratio	76.85%	76.42%

Note: Does not reflect future schedules increases in employer and employee rates.

The long-term financial health of this System, like all retirement systems, is heavily dependent on two key items: (1) future investment returns and (2) contributions to the System. Changes were made by the 2023 Legislature reduced the assumed investment return from 7.5% to 7%, granted some improved benefits, and provided for a one-time state aid contribution in fiscal year FY2024 followed by increased member and employer contribution rates. These changes, along with proposed demographic assumptions expected to be implements in the 2024 valuation, are expected to result in sufficient long-term funding of the System. Or course, actual experience over time will unfold differently from assumed, so additional adjustments may be necessary in the future. It is especially important to note that it is the actual investment returns, not the assumed investment return, that will ultimately determine the cost of providing the promised benefits.

The complete Actuarial Valuation Funding Report is available on the TRA website at

https://minnesotatra.org/financial/annual-reports/

Reconciliation of Member Data*

Fiscal Year Ended June 30, 2023

			Benefit Recipients****			
	Active** Members	Former*** Members	Service Retirements	Disability Retirements	Survivors	Total
Members on 6/30/2022	84,308	56,715	62,976	427	6,488	210,914
New hires	6,137	—	—	—	—	6,137
Transfer from active to inactive	(5,726)	5,726	—	—	—	—
Transfer from inactive to active	1,675	(1,675)	—	—	—	—
Return from zero balance	441	5	—	—	—	446
Return from disability	—	—	—	—	—	—
Refunded	(345)	(750)	—	—	—	(1,095)
Refunded (non-repayable)	(12)	(11)	—	—	—	(23)
Retirements	(1,484)	(484)	1,953	(39)	—	(54)
Benefits began	—	—	—	51	646	697
Benefits ended	—	—	—	—	(40)	(40)
Deaths	(26)	(56)	(1,716)	(10)	(399)	(2,207)
Adjustments	15	37	6	—	1	59
Net changes	675	2,792	243	2	208	3,920
Members on 6/30/2023	84,983	59,507	63,219	429	6,696	214,834

* Recipients counts include all pensions in force, including double counting of multiple benefit types. Service retirements include supplemental, and variable optional joint annuitants.

** Active members include 1 Basic and 84,982 Coordinated members

*** Former members include 4 Basic and 59,503 Coordinated members

**** Benefit recipients include 2,415 Basic members and 67,929 Coordinated members.

Former Member Statistics	Vested	Non-Vested	Total
Number	19,418	40,089	59,507
Average Age	48.5	48	48.2
Average Service (years)	8	0.8	3.1
Average annual benefits, with augmentation to Normal Retirement Date and Combined Service Annuity load	$8,910	N/A	N/A
Average refund value, with Combined Service Annuity load	$41,028	$2,900	$15,342

Actuarial Value of Assets

Fiscal Year Ended June 30, 2023

(Dollars in Thousands)

1.	**Market value of assets available for benefits**			**$26,752,069**
2.	Determination of average balance			
	a. Assets available at July 1, 2022*			$25,596,344
	b. Assets available at June 30, 2023*			26,754,503
	c. Net investment income for fiscal year ending June 30, 2023			2,213,897
	d. Average balance *[a. + b. -c.]/2*			$25,068,475
3.	Expected return *[7.5% * 2.d.]*			1,880,136
4.	Actual return			2,213,897
5.	Current year unrecognized asset return			333,761
6.	Unrecognized asset returns			
		Original Amount	**% Not Recognized**	
	a. Year ended June 30, 2023	$333,761	80%	$267,009
	b. Year ended June 30, 2022	($3,798,328)	60%	(2,278,997)
	c. Year ended June 30, 2021	$5,018,257	40%	2,007,303
	d. Year ended June 30, 2020	($735,801)	20%	(147,160)
	e. Total return not yet recognized			($151,845)
7.	**Actuarial value at June 30, 2023** ***(1. - 6.e.)***			**$26,903,914**

**Before recognition of ELSA accounts payable.*

Actuarial Valuation Balance Sheet

Fiscal Year Ended June 30, 2023

The actuarial balance sheet is based on the fundamental equation that, at any given time, the present value of benefits to be paid in the future must be equal to the assets on hand plus the present value of future contributions to be received. The total rate of contribution is determined as that amount which will make the total present and potential assets balance with the total present value of projected benefits.

(Dollars in Thousands)

A.	Actuarial Value of Assets			$26,903,914
B.	Expected Future Assets			
	1. Present value of expected future statutory supplemental contributions*			$5,659,814
	2. Present value of expected future normal cost contributions			7,745,547
	3. Total Expected Future Assets (1. + 2.)			$13,405,361
C.	Total Current and Expected Future Assets**			$40,309,275
D.	Current Benefit Obligations	Non-Vested Benefits	Vested Benefits	Total
	1. Benefit recipients			
	a. Service retirements	$—	$19,151,412	$19,151,412
	b. Disability	—	146,815	$146,815
	c. Survivors	—	1,371,912	$1,371,912
	2. Deferred retirements with applicable future augmentation	—	984,466	$984,466
	3. Former members without vested rights***	116,253	—	$116,253
	4. Active members	92,038	10,531,431	$10,623,469
	5. Total Current Benefit Obligations	$208,291	$32,186,036	$32,394,327
E.	Expected Future Benefit Obligations			10,359,513
F.	Total Current and Expected Future Benefit Obligations			42,753,840
G.	Unfunded Current Benefit Obligations (D.5 - A)			5,490,413
H.	Unfunded Current and Future Benefit Obligations (F. - C.)			2,444,565

* *Under LCPR guidelines, this amount does not include supplemental payments, which could occur after the expiration of the remaining 25 year amortization period.*

** *Does not reflect deferred investment experience in the asset smoothing method. Total expected future assets on a market value basis is $40,157,430.*

*** *Former members with insufficient service to vest who have not collected a refund of member contributions as of the valuation date.*

Determination of Unfunded Actuarial Accrued Liability (UAAL) and Supplemental Contribution Rate

As of July 1, 2023

(Dollars in Thousands)	Actuarial Present Value of Projected Benefits	Actuarial Present Value of Future Normal Costs	Actuarial Accrued Liability
1. Active Members			
a. Retirement Annuities	$19,827,999	($6,656,189)	$13,171,810
b. Disability Benefits	448,915	(196,605)	$252,310
c. Survivor Benefits	145,675	(55,752)	$89,923
d. Deferred Retirements	543,326	(636,234)	($92,908)
e. Refunds	17,067	(200,767)	($183,700)
f. Total	$20,982,982	($7,745,547)	$13,237,435
2. Deferred Retirements with Applicable Future Augmentation	984,466	—	984,466
3. Former Members Without Vested Rights	116,253	—	116,253
4. Benefit Recipients	20,670,139	—	20,670,139
5. Total Actuarial Accrued Liability	$42,753,840	($7,745,547)	$35,008,293
6. Actuarial Value of Assets (page 90, line 7)			$26,903,914
7. Unfunded Actuarial Accrued Liability			$8,104,379

Determination of Supplemental Contribution Rate*

1. Present value of future payrolls through the amortization date of June 30, 2048	$96,748,965
2. Supplemental contribution rate (A.3./B.1.)	8.38%

* *On a market value of assets basis, the Unfunded Actuarial Accrued Liability is $8,256,224 and the supplemental contribution rate is 8.53% of payroll.*

Changes in Unfunded Actuarial Accrued Liability (UAAL)

Fiscal Year Ended June 30, 2023

(Dollars in Thousands)		Amount
A.	Unfunded Actuarial Accrued Liability at beginning of year	$5,690,094
B.	Changes due to interest requirements and current rate of funding*	
1.	Normal cost and actual administrative expenses	$565,203
2.	Contributions	(987,206)
3.	Interest on A., B.1 and B.2. at 7.5%	411,218
4	Total (B.1. + B.2. + B.3.)	($10,785)
C.	Expected Unfunded Actuarial Accrued Liability at end of year (A. + B.4.)	$5,679,309
D.	Increase (decrease) due to actuarial losses (gains) because of experience deviations from expected	
1.	Salary increases	($171,153)
2.	Investment return (actuarial assets)	(112,340)
3.	Mortality of active members	(339)
4.	Mortality of benefit recipients	(42,139)
5.	Retirement from active service	75,229
6.	Other items	6,287
7.	Total	($244,455)
E.	Unfunded Actuarial Accrued Liability at end of year before plan amendments and changes in actuarial assumptions (C. + D.7.)	$5,434,854
F.	Change in Unfunded Actuarial Accrued Liability due to change in plan amendments	$615,463
G.	Change in Unfunded Actuarial Accrued Liability due to change in assumptions	$2,054,062
H.	Unfunded Actuarial Accrued Liability at end of year (E. + F. + G.)	$8,104,379

* *The amortization of the Unfunded Actuarial Accrued Liability (UAAL) using the current amortization method results in initial payments less than the "interest only" payment on the UAAL. Payments less than the interest only amount will result in the UAAL increasing in the absence of actuarial gains.*

Determination of Contribution Sufficiency/(Deficiency) - Total

July 1, 2023

The actuarial required contribution (ARC) is the sum of the normal cost, a supplemental contribution to amortize the UAAL, and an allowance for expenses.

(Dollars in Thousands)	Percent of Payroll	Dollar Amount
A. Statutory Contributions - Chapter 354		
1. Employee contributions	7.75%	$473,396
2. Employer contributions*	8.91%	544,257
3. Supplemental contributions**		
a. 1993 Legislation	0.08%	5,000
b. 1996 Legislation	0.05%	3,256
c. 1997 Legislation	0.21%	12,954
d. 2014 Legislation	0.24%	14,377
4. Total	17.24%	$1,053,240
B. Required Contributions - Chapter 356		
1. Normal cost		
a. Retirement benefits	9.59%	$585,793
b. Disability benefits	0.27%	16,493
c. Survivor benefits	0.08%	4,887
d. Deferred retirement benefits	0.87%	53,142
e. Refunds	0.29%	17,714
f. Total	11.10%	$678,029
2. Supplemental contribution for the amortization of the Unfunded Actuarial Accrued Liability by June 30, 2048	8.38%	511,874
3. Allowance for expenses	0.29%	$17,714
4. Total actuarial contribution for fiscal year ending June 30, 2023***	19.77%	$1,207,617
C. Contribution Sufficiency / (Deficiency) (A.4. - B.4.)***	(2.53%)	($154,377)

Note: Projected annual payroll for fiscal year beginning on the valuation date: $6,108,286

* *Employer contribution rate is blended to reflect rates of 16.39% of pay for Basic members, 8.75% for pay for Coordinated members not employed by Special School District #1 (Minneapolis Schools), and 12.39% of pay for Coordinated members who are employed by Special School District #1.*

** *Includes contributions from Special School District #1 and the City of Minneapolis, matching state contributions.*

*** *On a market value of assets basis, the total required contribution is 19.92% of payroll and the contribution sufficiency is 2.68% of payroll.*

Schedule of Funded Liabilities by Type

(Dollars in Thousands)

Valuation as of July 1	Aggregate Accrued Liabilities (1) Member Contributions	(2) Retires and Beneficiaries	(3) Members (Employer Financed Portion)	Valuation Assets	Portion of Actuarial Accrued Liabilities Covered by Reported Assets (1)	(2)	(3)
2014	$2,510,604	$15,798,610	$6,219,292	$18,181,932	100%	99.2%	—%
2015	$2,637,237	$16,500,275	$6,424,643	$19,696,893	100%	100.0%	8.7%
2016	$3,033,160	$17,187,332	$6,495,724	$20,194,279	100%	100%	—%
2017	$3,246,851	$17,634,270	$6,546,581	$21,062,789	100%	100%	2.8%
2018	$3,442,582	$18,424,228	$6,776,213	$22,022,842	100%	100%	2.3%
2019	$3,653,579	$18,755,398	$6,837,197	$22,466,848	100%	100%	0.3%
2020	$3,879,281	$19,039,591	$7,210,308	$22,936,908	100%	100%	0.3%
2021	$4,114,425	$19,372,413	$7,328,129	$24,728,337	100%	100%	16.9%
2022	$4,337,381	$19,689,686	$7,588,883	$25,925,803	100%	100%	25%
2023	$4,606,884	$20,670,139	$9,731,270	$26,903,914	100%	100%	17%

Schedule of Active Member Valuation Data

Year Ended June 30	Active Members	Annual Covered Payroll *(Dollars in Thousands)*	% Increase in Covered Payroll	Average Annual Member Salary
2014	77,243	$4,056,482	3.5%	$52,516
2015	79,406	$4,306,426	6.2%	$54,233
2016	80,530	$4,515,699	4.9%	$56,075
2017	81,811	$4,688,875	3.8%	$57,314
2018	82,495	$4,832,917	3.1%	$58,584
2019	82,965	$5,000,930	3.5%	$60,278
2020	83,149	$5,166,241	3.3%	$62,132
2021	81,821	$5,326,108	3%	$65,095
2022	84,308	$5,573,701	4.4%	$66,111
2023	84,983	$5,735,250	2.8%	$67,487

Schedule of Retirees and Beneficiaries Added To and Removed From Retirement Rolls

Through June 1, 2023 – End of Budget Year for Benefit Payments**

	Added To Rolls		Removed From Rolls		June 1 Payment			
Fiscal Year	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances	Average Annual Allowances	Percent Change from Prior Year
2014								
Retirement	2,657	$72,823,770	1,082	$33,357,350	53,405	$1,438,989,431	$26,944	0.2 %
Disability	71	$1,371,630	76	$1,731,701	566	$10,884,969	$19,231	(0.6)%
Beneficiaries	428	$11,562,063	217	$4,779,599	4,736	$123,918,462	$26,165	1.9 %
2015*								
Retirement	3,901	$139,486,500	1,219	$113,360,695	56,087	$1,507,085,583	$26,871	(0.3)%
Disability	91	$4,201,093	74	$5,046,531	583	$11,561,844	$19,832	3.0 %
Beneficiaries	623	$25,490,532	269	$17,055,001	5,090	$134,071,302	$26,340	0.7 %
2016								
Retirement	2,700	$74,501,674	1,253	$40,121,659	57,534	$1,559,304,348	$27,102	0.9 %
Disability	56	$1,333,271	101	$1,987,290	538	$11,126,018	$20,680	4.1 %
Beneficiaries	569	$13,400,450	282	$6,445,318	5,377	$142,825,257	$26,562	0.8 %
2017								
Retirement	2,362	$67,444,049	1,264	$38,365,148	58,632	$1,608,549,654	$27,436	1.2 %
Disability	73	$1,774,135	75	$1,683,296	536	$11,352,435	$21,180	2.4 %
Beneficiaries	512	$13,397,711	327	$8,017,689	5,562	$150,944,018	$27,124	2.1 %
2018								
Retirement	2,453	$71,176,463	1,352	$42,530,337	59,703	$1,655,206,770	$27,725	1.0 %
Disability	50	$1,169,477	71	$1,752,096	515	$10,959,775	$21,181	— %
Beneficiaries	524	$12,771,988	318	$9,805,060	5,768	$156,474,569	$27,114	— %
2019								
Retirement	2,534	$74,848,967	1,486	$48,787,356	60,751	$1,684,545,764	$27,729	— %
Disability	46	$1,064,007	61	$1,387,416	500	$10,730,297	$21,461	1.3 %
Beneficiaries	597	$16,566,582	333	$9,425,264	6,032	$164,750,333	$27,308	0.7 %
2020								
Retirement	2,431	$75,403,042	1,527	$48,401,177	61,654	$1,716,225,832	$27,836	0.4 %
Disability	45	$1,071,593	67	$1,693,134	478	$10,199,737	$21,338	(0.6)%
Beneficiaries	600	$15,484,216	375	$11,073,721	6,258	$170,485,292	$27,243	(0.2)%
2021								
Retirement	2,170	$70,253,196	1,720	$53,949,384	62,104	$1,738,042,982	$27,986	0.5 %
Disability	50	$1,338,348	66	$1,619,669	462	$10,011,756	$21,670	1.5 %
Beneficiaries	671	$18,918,195	384	$11,429,930	6,545	$179,410,505	$27,412	0.6 %
2022								
Retirement	2,424	$79,292,850	1,691	$52,985,417	62,837	$1,769,820,491	$28,165	0.6 %
Disability	34	$1,057,394	61	$1,547,973	435	$9,603,295	$22,077	1.8 %
Beneficiaries	685	$16,961,565	406	$13,222,404	6,824	$184,546,470	$27,044	(1.4)%
2023								
Retirement	2,285	$77,312,068	1,739	$54,928,509	63,383	$1,798,182,435	$28,370	0.7 %
Disability	50	$1,426,283	46	$998,381	439	$10,114,850	$23,041	4.2 %
Beneficiaries	658	$17,509,404	447	$13,920,956	7,035	$189,681,876	$26,963	(0.3)%

* *2015 data reflects higher additions and removals associated with the conversion of former DTRFA benefit recipient rolls into TRA benefit payment systems.*

** *Timing differences exist between the data used for statistical information and that used for actuarial valuation purposes.*

Schedule of Funding Progress (Unaudited)

(Dollars in Thousands)

Actuarial Valuation Date	Actuarial Value of Assets (A)	Actuarial Accrued Liability (AAL) (B)	Unfunded AAL (UAAL) (B–A)	Funded Ratio (A / B)	Actual Covered Payroll (Previous FY) (C)	UAAL as Percentage of Covered Payroll (B–A) / (C)
07/01/14	$18,181,932	$24,528,506	$6,346,574	74.13%	$4,056,482	156.46%
07/01/15	$19,696,893	$25,562,155	$5,865,262	77.05%	$4,306,426	136.20%
07/01/16	$20,194,279	$26,716,216	$6,521,937	75.59%	$4,515,699	144.43%
07/01/17	$21,062,789	$27,427,702	$6,364,913	76.79%	$4,688,875	135.74%
07/01/18	$22,022,842	$28,643,023	$6,620,181	76.89%	$4,832,917	136.98%
07/01/19	$22,466,848	$29,246,174	$6,779,326	76.82%	$5,000,930	135.56%
07/01/20	$22,936,908	$30,129,180	$7,192,272	76.13%	$5,166,241	139.22%
07/01/21	$24,728,337	$30,814,967	$6,086,630	80.25%	$5,326,108	114.28%
07/01/22	$25,925,803	$31,615,897	$5,690,094	82%	$5,573,701	102.09%
07/01/23	$26,903,914	$35,008,293	$8,104,379	76.85%	$5,735,250	141.31%

Schedule of Contributions From the Employer and Other Contributing Entities (Unaudited)

(Dollars in Thousands)

Year End June 30	Actuarially* Required Contribution Rate (a)	Actual Covered Payroll (b)	Actual Member Contributions (c)	ARC Annual Required Contributions [(a) x (b)] - (c)	Actual Employer Contribution	Percentage Contributed
2014	19.41%	$4,056,482	$294,632	$492,731	$320,301	65.01%
2015	19.15%	$4,261,626	$331,905	$484,196	$358,367	74.01%
2016	17.86%	$4,515,699	$347,256	$459,699	$390,548	84.96%
2017	18.72%	$4,688,875	$361,175	$516,582	$403,378	78.09%
2018	18.43%	$4,832,917	$374,550	$516,157	$414,315	80.27%
2019	17.18%	$5,000,930	$386,669	$472,491	$438,887	92.89%
2020	17.18%	$5,166,241	$396,679	$490,881	$460,810	93.87%
2021	17.65%	$5,326,108	$410,162	$529,896	$486,669	91.84%
2022	16.33%	$5,573,701	$428,993	$481,192	$518,269	107.71%
2023	15.72%	$5,735,250	$442,448	$459,133	$544,351	118.56%

**Actuarially Required Contributions calculated according to parameters of GASB 25.*

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STATISTICAL



Statistical Summary

TRA complies with GASB Statement No. 44, Economic Condition Reporting: The Statistical Section, issued in May 2004. The pronouncement establishes and modifies requirements related to the supplementary information presented in this section of the report. This section of the report provides detailed information about TRA as a context for understanding what the information in the financial statement note disclosures and required supplementary information indicates about the Association's overall financial condition.

The schedules and graphs beginning on page 101 show trend information about the growth of TRA assets over the past 10 years. These schedules, and others, provide detailed information about the trends of key sources of additions and deductions to plan assets.

The Contribution Rate chart on page 101 provides historical information on the total member and employer contribution rates.

The schedule of Pension Assets Compared to Pension Liabilities, found on pages 102-103, show the funding progress of the plan for the past 10 years on accumulating assets to cover pension liabilities which will ultimately be due at retirement.

The schedules on pages 104-110 include detailed information regarding the number and type of benefit recipients, and information as to the benefit amount.

The chart on page 110 provides a profile of TRA active members on June 30, 2023, by age and service credit totals.

The chart on page 111 contains information on the total number of members by type.

The schedules on pages 112 detail the largest TRA employer units by covered employees and by types of employer.

All data is derived from TRA internal sources and the actuarial consultant.

The projected benefit payments (page 116) for the next 25 years have been supplied by TRA's actuarial advisor, Cavanaugh Macdonald Consulting.

10-Year History of Fiduciary Net Position

(Dollars in Thousands)

For fiscal year ending June 30	Fiduciary Net Position	% Change From Prior Year
2014	$20,293,685	12.6%
2015	$20,446,091	0.8%
2016	$19,424,431	(5.0%)
2017	$21,258,090	9.4%
2018	$22,362,087	5.2%
2019	$22,876,056	2.3%
2020	$22,744,996	(0.6%)
2021	$28,361,757	24.7%
2022	$25,596,344	(9.8%)
2023	$26,754,503	4.5%

10-Year History of Contribution Rates

For fiscal year ending June 30	Basic Program Employee Contribution Rate	Basic Program Employer Contribution Rate *	Basic Program Total Contribution Rate	Coordinated Employee Contribution Rate	Coordinated Employer Contribution Rate *	Coordinated Total Contribution Rate
2014	10.5%	11%	21.5%	7%	7%	14%
2015	11%	11.5%	22.5%	7.5%	7.5%	15%
2016	11%	11.5%	22.5%	7.5%	7.5%	15%
2017	11%	11.5%	22.5%	7.5%	7.5%	15%
2018	11%	11.5%	22.5%	7.5%	7.5%	15%
2019	11%	11.71%	22.71%	7.5%	7.71%	15.21%
2020	11%	11.92%	22.92%	7.5%	7.92%	15.42%
2021	11%	12.13%	23.13%	7.5%	8.13%	15.63%
2022	11%	12.34%	23.34%	7.5%	8.34%	15.84%
2023	11%	12.55%	23.55%	7.5%	8.55%	16.05%

**In addition to the rates above, an employer contribution to the fund by Special School District No. 1, Minneapolis, is an amount equal to 3.64% of the salary of each teacher who is a Coordinated member or who is a basic member.*

10-Year History of Changes in Fiduciary Net Position (continued on next page)

(Dollars in Thousands)

Fiscal Year ended June 30	2014	2015*	2016	2017
Additions				
Member Contributions	$294,632	$334,826	$347,256	$361,175
Employer Contributions	299,300	340,208	354,961	367,791
Direct Aid (State/City/District)	21,001	41,587	35,587	35,587
Net Income (Loss) From Investing Activity	3,257,693	887,280	(23,672)	2,855,217
Other Income, Net	5,502	4,897	5,530	4,399
Total Additions to Fiduciary Net Position	$3,878,128	$1,608,798	$719,662	$3,624,169
Deductions				
Pension Benefits	$1,581,766	$1,659,069	$1,718,694	$1,767,568
Refunds	12,566	11,885	11,290	11,240
Administrative Expenses	9,430	11,509	11,338	11,702
Total Deductions from Fiduciary Net Position	$1,603,762	$1,682,463	$1,741,322	$1,790,510
Net Increase (Decrease)	$2,274,366	($73,665)	($1,021,660)	$1,833,659
Net Position Held in Trust, Beginning of Year	$18,019,319	$20,519,756	$20,446,091	$19,424,431
Net Position Held in Trust, End of Year	$20,293,685	$20,446,091	$19,424,431	$21,258,090

**Net position held in trust, beginning of year" were restated to reflect $226,071,060 of assets assumed as a result of merger with DTRFA.*

10-Year History of Pension Assets vs. Pension Liabilities (continued on next page)

(Dollars in Thousands)

Fiscal Year ended June 30	2014	2015	2016	2017
Actuarial Accrued Liability (AAL)	$24,528,506	$25,562,155	$26,716,216	$27,427,702
Actuarial Value of Assets (AVA)	$18,181,932	$19,696,893	$20,194,279	$21,062,789
Unfunded Actuarial Accrued Liability (UAAL)	$6,346,574	$5,865,262	$6,521,937	$6,364,913
Funded Ratio	74.13%	77.05%	75.59%	76.79%

10-Year History of Changes in Fiduciary Net Position
(concluded)

(Dollars in Thousands)

2018	2019	2020	2021	2022	2023
$374,550	$386,669	$396,679	$410,162	$428,993	$442,448
378,728	403,300	425,223	448,829	482,679	508,764
35,587	35,587	35,587	37,840	35,590	35,587
2,160,111	1,579,099	939,749	6,684,106	(1,710,746)	2,213,897
4,518	4,237	3,402	3,702	3,531	1,966
$2,953,494	$2,408,892	$1,800,640	$7,584,639	($759,953)	$3,202,662
$1,820,751	$1,865,693	$1,902,492	$1,937,441	$1,973,265	$2,010,438
13,073	14,074	13,815	14,415	16,529	17,531
15,673	15,156	15,393	16,022	15,666	16,534
$1,849,497	$1,894,923	$1,931,700	$1,967,878	$2,005,460	$2,044,503
$1,103,997	$513,969	($131,060)	$5,616,761	($2,765,413)	$1,158,159
$21,258,090	$22,362,087	$22,876,056	$22,744,996	$28,361,757	$25,596,344
$22,362,087	$22,876,056	$22,744,996	$28,361,757	$25,596,344	$26,754,503

10-Year History of Pension Assets vs. Pension Liabilities (concluded)

(Dollars in Thousands)

2018	2019	2020	2021	2022	2023
$28,643,023	$29,246,174	$30,129,180	$30,814,967	$31,615,897	$35,008,293
$22,022,842	$22,466,848	$22,936,908	$24,728,337	$25,925,803	$26,903,914
$6,620,181	$6,779,326	$7,192,272	$6,086,630	$5,690,094	$8,104,379
76.89%	76.82%	76.13%	80.35%	82.00%	76.85%

10-Year History of Benefits and Refunds by Type (continued on next page)

Fiscal year ended June 30

(Dollars in Thousands)

	2014	2015	2016	2017
Pension Benefits				
Annuities	$1,551,120	$1,626,703	$1,687,085	$1,741,265
Disabilities	11,681	12,063	11,967	11,985
Survivor Benefits	17,318	18,956	17,681	12,323
Total Pension Benefits	$1,580,119	$1,657,722	$1,716,733	$1,765,573
Annuities Redirected to Earnings Limitation Savings Account (ELSA)	$1,647	$1,347	$1,961	$1,995
Member Refunds				
Regular	$9,152	$8,696	$8,284	$7,847
Death	1,609	1,361	1,184	1,589
ELSA Refunds	1,580	1,659	1,621	1,632
Employer Refunds	225	169	201	172
Total Refunds	$12,566	$11,885	$11,290	$11,240
Total Benefits and Refunds	$1,594,332	$1,670,954	$1,729,984	$1,778,808

10-Year History of Benefit Recipients by Category

Fiscal year ended June 30

Year	Annuitants	Disabilitants	Survivors	Total
2014	53,774	563	4,472	58,809
2015	56,589	571	4,826	61,986
2016	57,892	521	5,092	63,505
2017	58,991	517	5,268	64,776
2018	60,128	500	5,476	66,104
2019	61,079	486	5,723	67,288
2020	61,748	469	5,937	68,154
2021	62,369	442	6,222	69,033
2022	62,985	424	6,482	69,891
2023	63,219	429	6,696	70,344

10-Year History of TRA Benefits and Refunds by Type
(concluded)

Fiscal year ended June 30

(Dollars in Thousands)

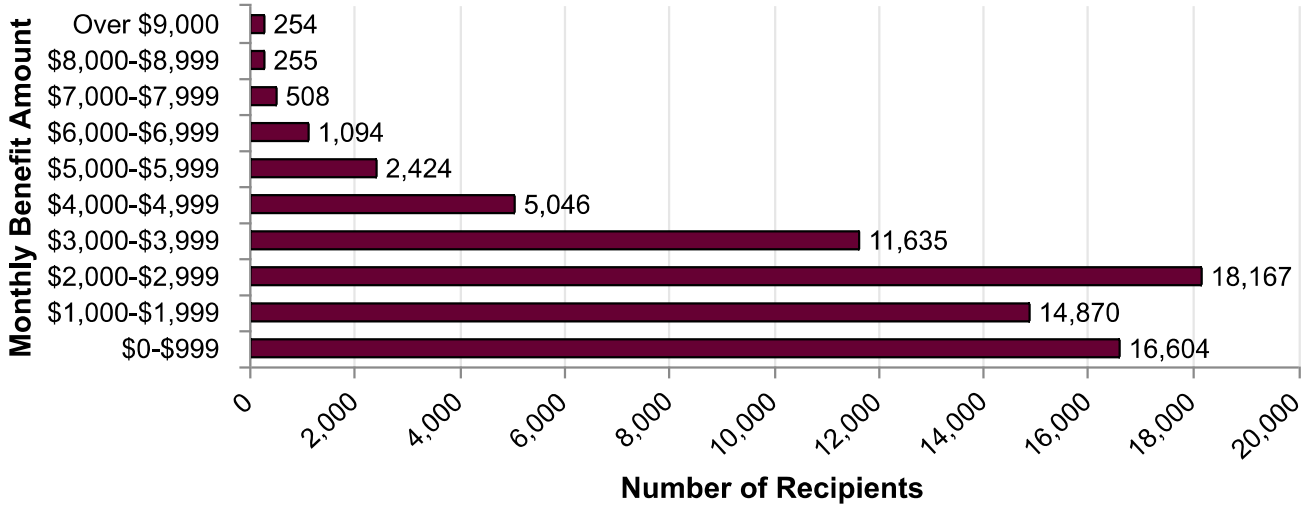
2018	2019	2020	2021	2022	2023
$1,789,400	$1,834,547	$1,871,712	$1,906,057	$1,941,354	$1,980,199
11,559	11,296	10,767	10,630	10,010	10,688
17,855	17,919	18,172	18,773	19,729	19,144
$1,818,814	$1,863,762	$1,900,650	$1,935,460	$1,971,093	$2,010,031
$1,937	$1,931	$1,842	$1,981	$2,172	$407
$8,799	$9,839	$10,179	$11,087	$11,103	$13,848
2,050	1,328	1,854	1,230	2,137	1,376
2,020	2,508	1,786	1,974	1,915	2,157
204	399	(4)	125	1,374	150
$13,073	$14,074	$13,815	$14,416	$16,529	$17,531
$1,833,824	$1,879,767	$1,916,307	$1,951,857	$1,989,794	$2,027,969

Schedule of Benefit Amounts Paid

For Month of June 30, 2023 — Payment Made June 1, 2023

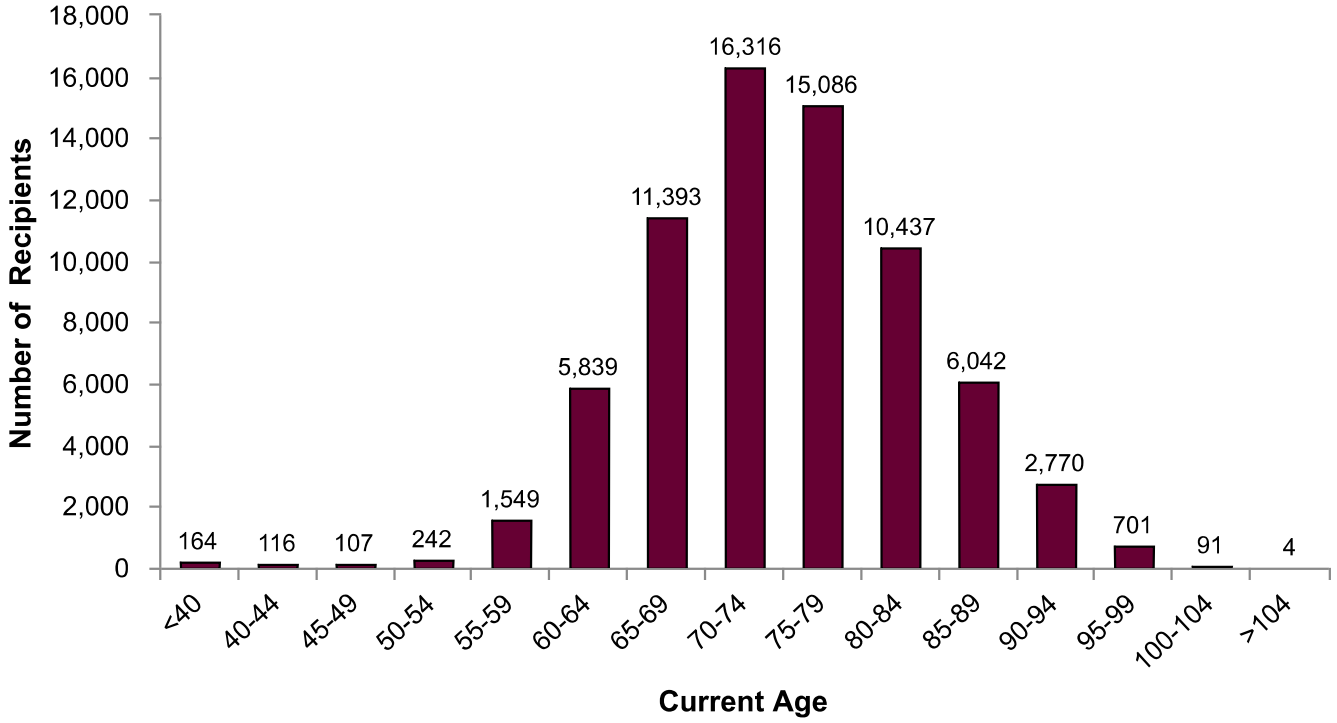
Monthly Benefit Amount			Number of Recipients	Cumulative Total	Percent	Cumulative Percent
$0	–	$499	9,794	9,794	13.82%	13.82%
$500	–	$999	6,810	16,604	9.61%	23.43%
$1,000	–	$1,499	6,824	23,428	9.63%	33.06%
$1,500	–	$1,999	8,046	31,474	11.36%	44.42%
$2,000	–	$2,499	9,321	40,795	13.15%	57.57%
$2,500	–	$2,999	8,846	49,641	12.48%	70.06%
$3,000	–	$3,499	6,948	56,589	9.81%	79.86%
$3,500	–	$3,999	4,687	61,276	6.61%	86.48%
$4,000	–	$4,499	3,088	64,364	4.36%	90.84%
$4,500	–	$4,999	1,958	66,322	2.76%	93.60%
$5,000	–	$5,499	1,432	67,754	2.02%	95.62%
$5,500	–	$5,999	992	68,746	1.40%	97.02%
$6,000	–	$6,499	658	69,404	0.93%	97.95%
$6,500	–	$6,999	436	69,840	0.62%	98.56%
$7,000	–	$7,499	291	70,131	0.41%	98.98%
$7,500	–	$7,999	217	70,348	0.31%	99.28%
$8,000	–	$8,499	147	70,495	0.21%	99.49%
$8,500	–	$8,999	108	70,603	0.15%	99.64%
$9,000	–	$9,499	75	70,678	0.11%	99.75%
$9,500	–	$9,999	62	70,740	0.09%	99.83%
$10,000	–	$10,499	34	70,774	0.05%	99.88%
$10,500	–	$10,999	26	70,800	0.04%	99.92%
$11,000	–	$11,499	17	70,817	0.02%	99.94%
$11,500	–	$11,999	8	70,825	0.01%	99.95%
$12,000	–	$12,499	7	70,832	0.01%	99.96%
$12,500	–	and over	25	70,857	0.04%	100.00%

The median monthly TRA benefit amount is $2,774.



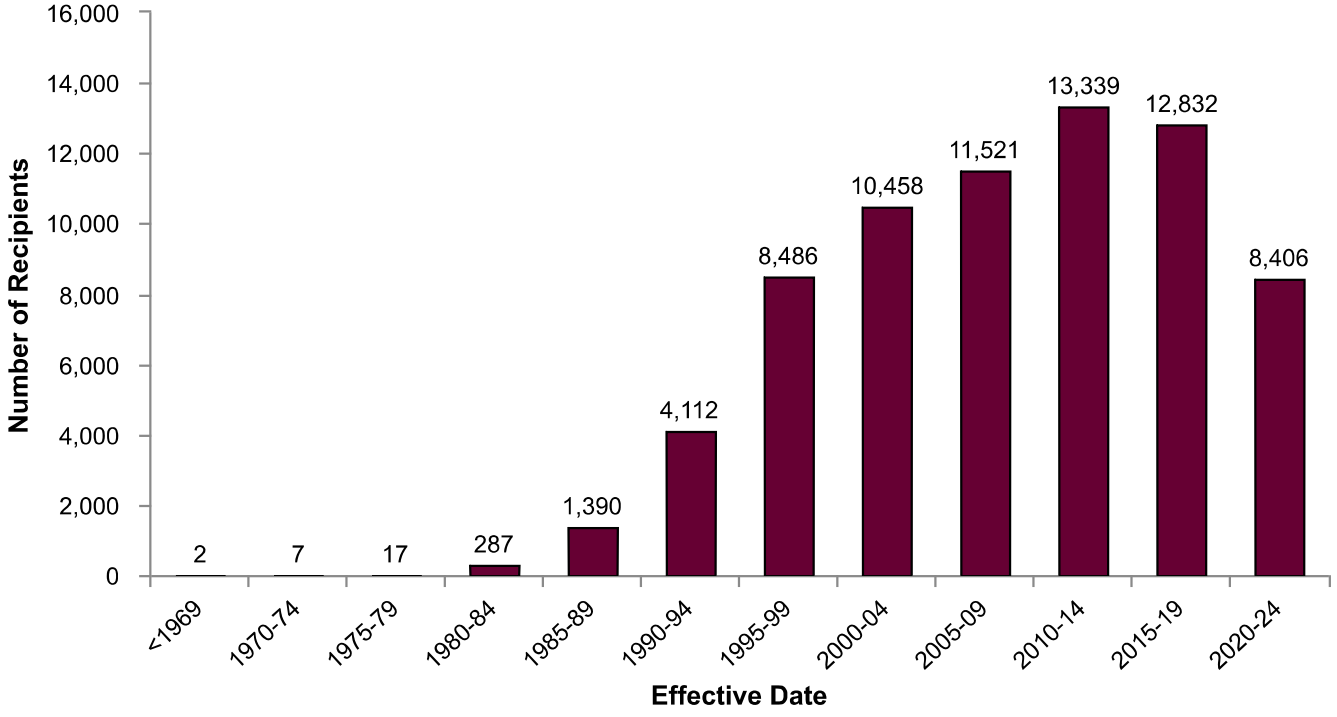
Schedule of Benefit Recipients by Current Age

For Month of June 2023 – Payment Made June 1, 2023 Total Recipients: 70,857



Benefit Recipients by Effective Date of Retirement

For Month of June 2023 – Payment Made June 1, 2023 Total Recipients: 70,857



Schedule of New Retirees and Initial Benefit Paid

For the Ten Fiscal Years Ending June 30

Fiscal Year	Years of Formula Service <10	10-15	16-20	21-25	26-30	31-35	>35	Total
2014								
Avg. Monthly Benefit	$362	$991	$1,468	$2,127	$2,798	$3,578	$4,111	$2,287
Final Average Salary	$26,345	$46,119	$56,872	$67,321	$69,205	$73,092	$76,236	$58,990
Number of Retirees	496	224	264	300	329	589	349	2,551
2015								
Avg. Monthly Benefit	$361	$935	$1,493	$2,099	$2,748	$3,583	$4,162	$2,276
Final Average Salary	$26,624	$45,288	$58,477	$65,827	$70,081	$73,802	$76,641	$59,482
Number of Retirees	503	247	287	322	378	533	375	2,645
2016								
Avg. Monthly Benefit	$390	$980	$1,561	$2,147	$2,834	$3,699	$4,312	$2,357
Final Average Salary	$29,988	$46,588	$57,103	$66,988	$71,615	$76,136	$78,332	$61,320
Number of Retirees	478	234	276	368	358	501	365	2,580
2017								
Avg. Monthly Benefit	$344	$1,016	$1,583	$2,171	$3,028	$3,804	$4,459	$2,455
Final Average Salary	$38,355	$48,505	$61,936	$70,094	$75,721	$78,127	$81,997	$65,530
Number of Retirees	463	182	264	293	363	519	321	2,405
2018								
Avg. Monthly Benefit	$360	$1,006	$1,603	$2,227	$2,882	$3,963	$4,470	$2,548
Final Average Salary	$43,494	$50,267	$63,619	$70,647	$75,591	$80,068	$81,024	$67,818
Number of Retirees	435	191	250	296	373	604	311	2,460
2019								
Avg. Monthly Benefit	$348	$999	$1,654	$2,254	$2,950	$4,017	$4,556	$2,499
Final Average Salary	$41,313	$52,352	$63,666	$70,909	$76,494	$81,586	$83,897	$67,563
Number of Retirees	476	196	273	291	317	632	252	2,437
2020								
Avg. Monthly Benefit	$356	$1,019	$1,634	$2,326	$3,212	$4,195	$4,780	$2,657
Final Average Salary	$43,319	$51,073	$63,519	$72,573	$79,517	$83,464	$85,054	$69,488
Number of Retirees	450	166	199	280	320	609	231	2,255
2021								
Avg. Monthly Benefit	$371	$1,163	$1,679	$2,384	$3,214	$4,188	$4,944	$2,760
Final Average Salary	$46,291	$59,163	$67,699	$75,110	$81,047	$83,624	$87,000	$72,580
Number of Retirees	405	167	227	298	327	584	279	2,287
2022								
Avg. Monthly Benefit	$378	$1,070	$1,764	$2,429	$3,181	$4,329	$5,086	$2,781
Final Average Salary	$45,560	$57,077	$69,890	$76,207	$80,087	$86,600	$90,349	$73,209
Number of Retirees	419	189	235	253	304	608	258	2,266
2023								
Avg. Monthly Benefit	$386	$1,089	$1,690	$2,428	$3,342	$4,453	$5,195	$2,774
Final Average Salary	$46,873	$57,215	$67,453	$78,304	$84,899	$90,340	$93,072	$74,718
Number of Retirees	392	155	202	256	231	488	229	1,953

Schedule of Benefit Recipients by Type

For Month of June 2023 — Payment Made June 1, 2023

Monthly Benefit Amount			Number of Recipients	Type of Retirement		
				Retirement	Disability	Beneficiary
$0	–	$1,000	16,615	14,789	103	1,723
$1,001	–	$2,000	14,890	12,887	140	1,863
$2,001	–	$3,000	18,160	16,343	126	1,691
$3,001	–	$4,000	11,627	10,686	55	886
$4,001	–	$5,000	5,059	4,648	12	399
$5,001	–	$6,000	2,401	2,176	2	223
$6,001	–	$7,000	1,092	981	1	110
$7,001	–	$8,000	505	434	0	71
$8,001	–	$9,000	256	225	0	31
$9,001	–	$10,000	135	112	0	23
$10,001	–	$11,000	60	54	0	6
$11,001	–	$12,000	25	21	0	4
$12,001	–	$13,000	14	13	0	1
$13,001	–	$14,000	8	8	0	0
$14,001	–	$15,000	4	2	0	2
$15,001	–	$16,000	1	1	0	0
$16,001	–	and over	5	3	0	2
		Totals:	70,857	63,383	439	7,035

Membership Data

June 30, 2023
Distribution of Active Members*
Average Earnings in Dollars

Years of Service as of June 30, 2023**

Age	<3**	3-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 +	Total
<25	2,825	78									2,903
Avg. Earnings	35,931	51,593									36,352
25-29	3,757	2,976	2,145								8,878
Avg. Earnings	39,945	51,596	57,570								48,109
30-34	2,095	1,371	5,472	1,491							10,429
Avg. Earnings	40,393	52,989	61,711	70,955							57,603
35-39	1,807	942	3,173	4,350	1,171						11,443
Avg. Earnings	36,765	57,266	64,501	74,574	83,296						65,278
40-44	1,793	782	2,314	2,482	4,507	1,189					13,067
Avg. Earnings	35,740	56,464	66,920	74,718	85,338	91,895					72,122
45-49	1,268	586	1,581	1,449	2,073	4,108	995				12,060
Avg. Earnings	33,920	54,715	65,211	75,552	83,003	91,362	95,012				77,078
50-54	984	423	1,158	1,175	1,330	2,193	3,692	782			11,737
Avg. Earnings	31,608	53,493	64,840	74,359	80,656	87,688	93,085	96,561			79,657
55-59	727	288	726	730	901	1,146	1,817	2,093	155		8,583
Avg. Earnings	30,315	50,602	62,317	73,227	78,674	84,784	89,618	93,659	96,256		78,893
60-64	554	174	416	399	513	666	681	558	278	30	4,269
Avg. Earnings	22,521	41,647	56,346	67,337	76,318	82,833	87,409	91,000	92,723	87,749	70,991
65-69	370	70	146	107	114	100	83	61	33	28	1,112
Avg. Earnings	14,124	31,109	48,653	70,380	78,274	86,003	91,190	91,576	96,071	90,266	52,530
70 +	306	38	53	21	12	19	8	8	9	28	502
Avg. Earnings	8,665	21,037	34,658	41,602	69,147	78,500	75,564	89,198	96,351	98,913	26,768
Total	16,486	7,728	17,184	12,204	10,621	9,421	7,276	3,502	475	86	84,983
Avg. Earnings	35,377	52,770	62,645	73,846	82,976	89,088	91,911	93,837	94,177	92,204	67,535

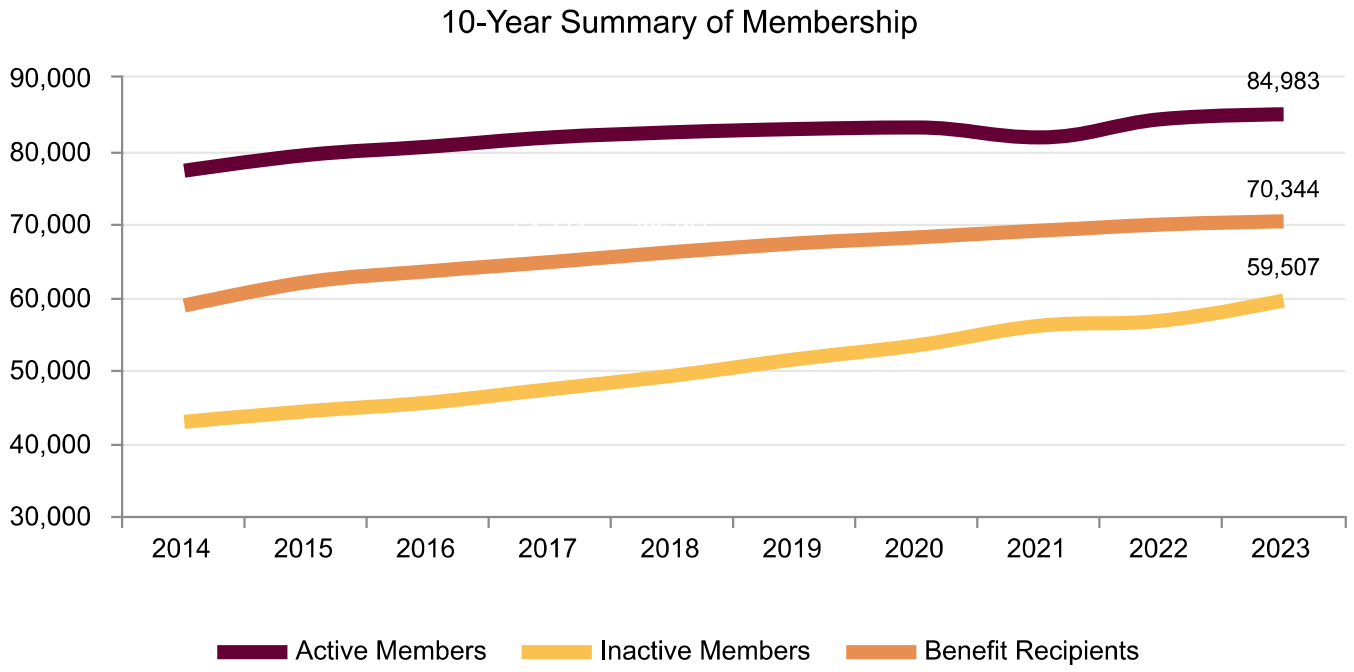
* *Active members include 1 Basic and 84,982 Coordinated members.*
** *This exhibit does not reflect service earned in Combined Service Annuity benefits. It should not be relied upon as an indicator of non-vested status.*

In each cell, the top number is the count of active members for the age/service combination and the bottom number is the amount of average annual earnings. Earnings shown in this exhibit are actual salaries earned during the fiscal year ending June 30, 2023.

10-Year Summary of Membership

For fiscal year ended June 30

	Active Members	Inactive Members	Benefit Recipients
2014	77,243	42,891	58,809
2015	79,406	44,340	61,986
2016	80,530	45,530	63,503
2017	81,811	47,374	64,774
2018	82,495	49,211	66,104
2019	82,965	51,436	67,285
2020	83,149	53,380	68,154
2021	81,821	56,017	69,033
2022	84,308	56,715	69,891
2023	84,983	59,507	70,344



Principal Participating Employers

Fiscal year ended June 30, 2023 and June 30, 2014

Employer Unit Name	2023 Covered Employees	2023 Rank	2023 Percentage of Active Membership	2014 Covered Employees	2014 Rank	2014 Percentage of Active Membership
Minneapolis - Special School District #1	3,850	1	4.55%	3,810	1	4.93%
Anoka-Hennepin - ISD #11	3,777	2	4.47%	3,108	2	4.02%
Minnesota State	2,667	3	3.15%	2,662	3	3.45%
Rosemount - Apple Valley - Eagan - ISD #196	2,577	4	3.05%	2,470	4	3.20%
Osseo - ISD #279	1,906	5	2.25%	1,712	5	2.22%
Rochester - ISD #535	1,872	6	2.21%	1,528	7	1.98%
South Washington County - ISD #833	1,530	7	1.81%	1,651	6	2.14%
Bloomington - ISD #271	1,103	8	1.30%	1,073	9	1.39%
Minnetonka - ISD #276	1,082	9	1.28%	1,090	8	1.41%
Robbinsdale _ ISD #281	1,074	10	1.27%			
Mounds View - ISD #621				1,005	10	1.30%
All Other	63,132		74.66%	57,134		73.96%
Total	84,570		100%	77,243		100%

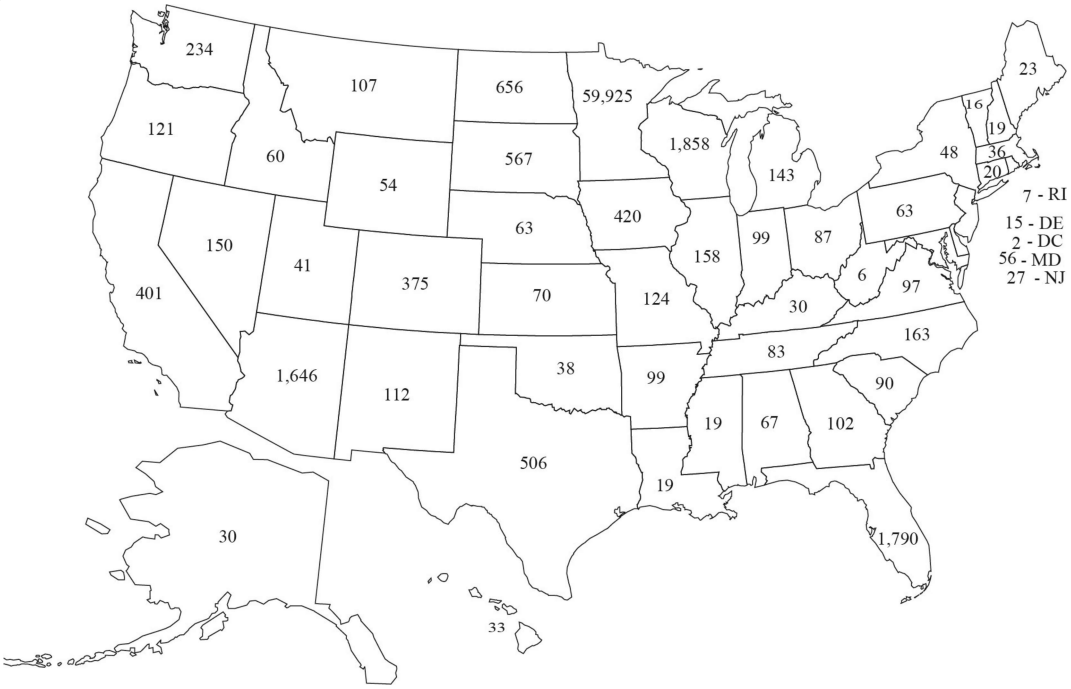
Number of Employer Units

As of fiscal year ended June 30

Year	Independent School Districts	Joint Power Units	Minnesota State	Charter Schools	State Agencies	Others	Total
2014	341	37	39	163	5	5	590
2015	373	0	39	167	5	5	589
2016	373	0	39	174	4	5	595
2017	373	0	39	173	4	4	593
2018	374	0	39	169	4	4	590
2019	376	0	39	182	4	4	605
2020	375	0	39	182	4	4	604
2021	373	0	39	189	4	4	609
2022	372	0	34	192	4	4	606
2023	372	0	34	192	4	4	606

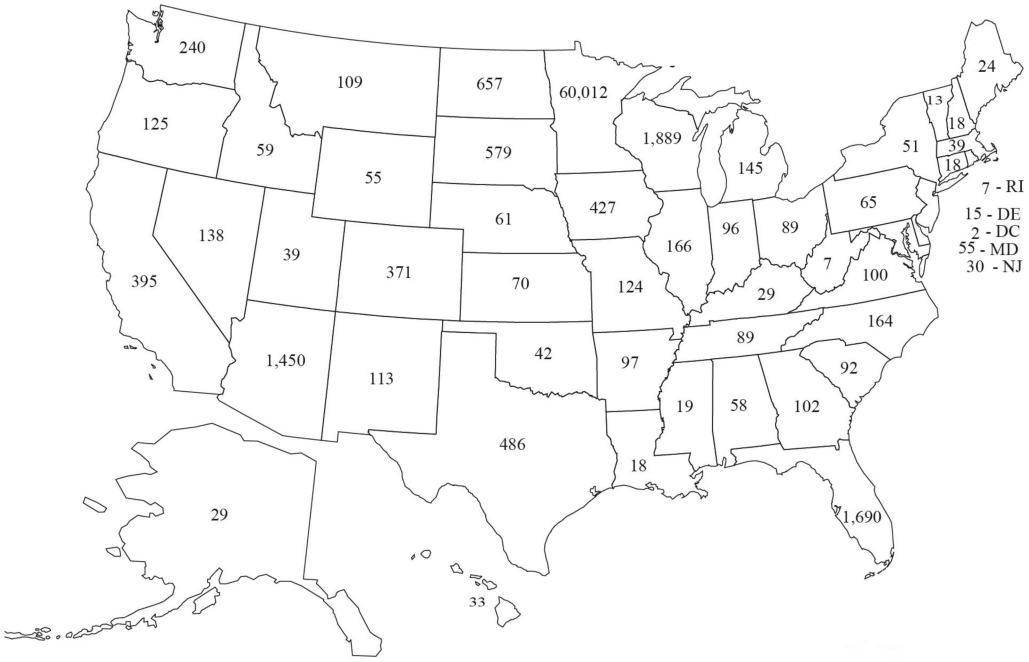
Distribution of Benefits
Mailing Address of Benefit Recipient

February 1, 2023



Total Recipients: 71,031
Note: 56 recipients reside outside the United States
Minnesota recipients: 84.36%

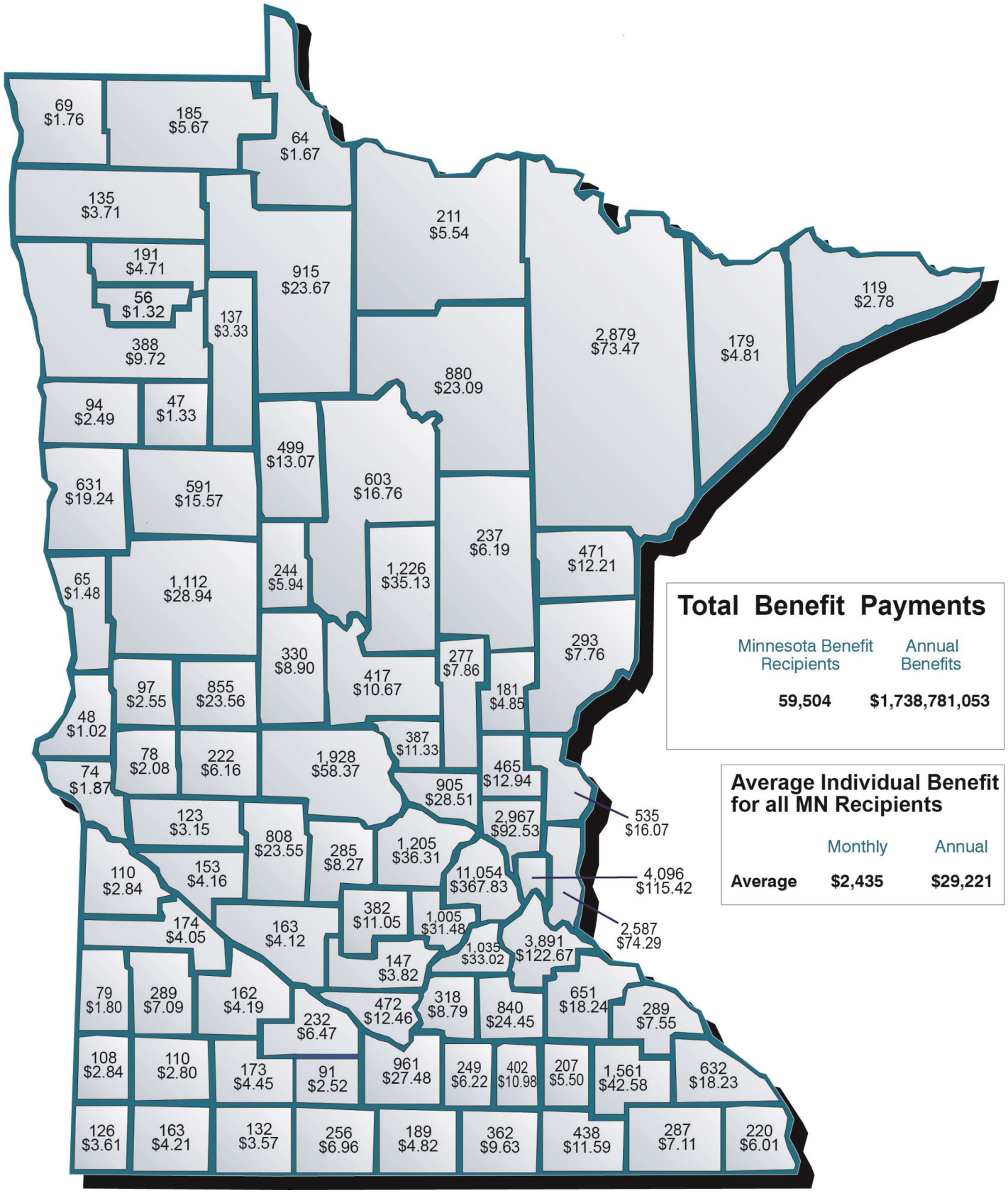
June 1, 2023



Total Recipients: 70,857
Note: 56 recipients reside outside the United States
Minnesota recipients: 84.69%

Annual Benefit Recipients by County on June 30, 2023

(Dollars in Millions)



Annual Benefits and Recipients by County

As of June 30, 2023

County	Members	Annual Benefit
Aitkin	237	$6,189,684
Anoka	2,967	$92,527,325
Becker	591	$15,568,682
Beltrami	915	$23,666,465
Benton	387	$11,332,699
Big Stone	74	$1,866,059
Blue Earth	961	$27,476,448
Brown	232	$6,473,257
Carlton	471	$12,209,806
Carver	1,005	$31,482,790
Cass	603	$16,755,512
Chippewa	153	$4,158,311
Chisago	535	$16,067,536
Clay	631	$19,236,605
Clearwater	137	$3,326,592
Cook	119	$2,784,570
Cottonwood	173	$4,445,048
Crow Wing	1,226	$35,133,760
Dakota	3,891	$122,667,644
Dodge	207	$5,496,638
Douglas	855	$23,563,046
Faribault	189	$4,824,761
Fillmore	287	$7,105,678
Freeborn	362	$9,631,495
Goodhue	651	$18,244,661
Grant	97	$2,545,094
Hennepin	11,054	$367,833,734
Houston	220	$6,010,174
Hubbard	499	$13,073,225
Isanti	465	$12,935,638
Itasca	880	$23,093,950
Jackson	132	$3,568,164
Kanabec	181	$4,852,754
Kandiyohi	808	$23,547,644
Kittson	69	$1,757,724
Koochiching	211	$5,544,940
Lac Qui Parle	110	$2,842,413
Lake	179	$4,810,478
Lake Of The Woods	64	$1,672,257
Le Sueur	318	$8,789,347
Lincoln	79	$1,796,025
Lyon	289	$7,090,133
Mahnomen	47	$1,326,097
Marshall	135	$3,712,727
Martin	256	$6,961,533
McLeod	382	$11,048,753
Meeker	285	$8,266,213
Mille Lacs	277	$7,864,097
Morrison	417	$10,666,292
Mower	438	$11,592,504
Murray	110	$2,800,572
Nicollet	472	$12,456,116
Nobles	163	$4,206,069
Norman	94	$2,488,866
Olmsted	1,561	$42,577,616
Otter Tail	1,112	$28,935,997
Pennington	191	$4,712,282
Pine	293	$7,760,139
Pipestone	108	$2,844,804
Polk	388	$9,716,204
Pope	222	$6,160,550
Ramsey	4,096	$115,421,082
Red Lake	56	$1,315,216
Redwood	162	$4,187,277
Renville	163	$4,121,316
Rice	840	$24,451,485
Rock	126	$3,613,972
Roseau	185	$5,668,923
Saint Louis	2,879	$73,471,134
Scott	1,035	$33,024,590
Sherburne	905	$28,514,155
Sibley	147	$3,820,174
Stearns	1,928	$58,370,291
Steele	402	$10,976,993
Stevens	78	$2,076,620
Swift	123	$3,148,368
Todd	330	$8,898,817
Traverse	48	$1,022,338
Wabasha	289	$7,554,310
Wadena	244	$5,936,851
Waseca	249	$6,218,458
Washington	2,587	$74,288,703
Watonwan	91	$2,515,295
Wilkin	65	$1,475,127
Winona	632	$18,233,154
Wright	1,205	$36,308,889
Yellow Medicine	174	$4,051,317
Grand Total	59,504	$1,738,781,053

Projected Benefit Payments

Fiscal Year Ended June 30, 2023

The table below shows estimated benefits expected to be paid over the next 25 years, based on the assumptions used in the valuation. The Active column shows benefits expected to be paid to members currently active on July 1,2023. The Retirees column shows benefits expected to be paid to all other members. This includes those who, as of July 1,2023, are receiving benefit payments or who terminated employment and are entitled to a deferred benefit.

(Dollars in Thousands)

Year Ending June 30,	Active	Retirees	Total
2024	$70,217	$2,000,675	$2,070,892
2025	117,773	1,968,944	2,086,717
2026	160,265	1,938,341	2,098,606
2027	204,910	1,907,499	2,112,409
2028	253,564	1,878,083	2,131,647
2029	307,898	1,850,355	2,158,253
2030	370,379	1,820,587	2,190,966
2031	442,913	1,790,288	2,233,201
2032	526,545	1,757,673	2,284,218
2033	622,138	1,724,414	2,346,552
2034	728,628	1,689,541	2,418,169
2035	844,762	1,653,177	2,497,939
2036	970,627	1,614,253	2,584,880
2037	1,106,076	1,572,223	2,678,299
2038	1,248,587	1,526,133	2,774,720
2039	1,398,048	1,476,664	2,874,712
2040	1,556,050	1,424,832	2,980,882
2041	1,723,020	1,370,294	3,093,314
2042	1,897,899	1,312,898	3,210,797
2043	2,080,333	1,253,379	3,333,712
2044	2,268,674	1,192,622	3,461,296
2045	2,463,908	1,130,275	3,594,183
2046	2,665,423	1,066,310	3,731,733
2047	2,870,205	1,001,984	3,872,189
2048	3,076,337	937,656	4,013,993

Note: *Numbers may not add due to rounding.*

Cash flows are the expected future non-discounted payments to current members. These numbers exclude refund payouts to current non-vested inactive and assume future retirees and future terminated members make benefit elections according to valuation assumptions.

Teachers Retirement Association of Minnesota
A Pension Trust Fund of the State of Minnesota

Plan Statement

TRA Plan Statement

June 30, 2023

Purpose

The Minnesota Teachers Retirement Association (TRA) was established on July 1, 1931, by the state legislature. Its purpose is to improve educational service and better compensate teachers in order to make the occupation of teaching in Minnesota more attractive to qualified persons by providing a retirement benefit schedule that rewards faithful and continued service.

Administration

TRA is managed by eight trustees - three are statutorily appointed and five are elected. The statutory trustees are the Commissioner of Education, the Commissioner of the Minnesota Department of Management and Budget (MMB) and a representative of the Minnesota School Boards Association. Four of the five elected trustees are active members and one is a retiree. Administrative management of the fund is vested in an Executive Director who is appointed by the Board of Trustees. The Board also contracts with an actuary and uses legal counsel provided by the office of the Attorney General.

Membership

All teachers employed in public elementary and secondary schools, joint powers, charter schools and all other educational institutions maintained by the State of Minnesota (except those teachers employed by the St. Paul school district or certain faculty of Minnesota State) are required to be members of TRA.

Teachers employed by Minnesota State may elect TRA coverage within one year of their eligible employment. Newly-tenured Minnesota State members also have a one-year period to elect TRA coverage. If electing TRA, the individual must pay for the past service covered by TRA, and the cost of past service is based on full actuarial cost. No Minnesota State teacher is a member except for purposes of Social Security coverage if that teacher has coverage by the Defined Contribution Retirement Plan administered by the Minnesota State Board.

Retirement Service Credit

Service credit earned for benefit determination is based on a teacher's earned salary relative to an annual base salary established for an employer unit. Minnesota statute defines the base salary for each employer as the lowest salary paid to a full-time Bachelor of Arts (BA) base contract in the previous fiscal year. For example, a school district's annual base salary is determined to be $40,000. A teacher with an earned salary of $30,000 for that year will earn 0.75 year of service credit.

Service credit for Minnesota State members is based on a full-time equivalence method.

No more than one year of service credit may be earned by any member during a fiscal year, and no more than 0.111 per year may be earned during any one month.

Financing

Benefits are financed by employee contributions, employer contributions, investment earnings and turnover gains. Turn-over gains are employer contributions retained by the fund when members take refunds of their employee contributions.

Vesting

In a pension plan, vesting means a member has earned sufficient service credit to be eligible for a monthly benefit.

TRA members who have performed covered service after May 15, 1989, are vested after three years of teaching service. TRA members who last worked prior to May 16, 1989, require five years or, in some cases, ten years of service credit earned in order to be eligible for a monthly annuity benefit.

Employee Contributions

TRA members pay a percentage of their gross annual salary as determined by their membership plan. Basic Plan members (without Social Security coverage) contribute 11.00% of their annual salary, while Coordinated Plan members (coordinated with Social Security coverage) contribute 7.5% of their annual salary.

Employer Contributions

Local school districts and other TRA-covered employer units provide contributions of 12.55% of total salary for members in the Basic Plan and 8.55% of total salary for members in the Coordinated Plan. For Coordinated Plan members, the employer unit also makes the required matching contribution to the Social Security Administration. Beginning July 1, 2023, the employer contribution rate increased by 0.20% for both plans.

Minneapolis Special School District #1 pays an employer additional contribution of 3.64% of annual salary for TRA members employed by that school district.

TRA also receives approximately $35.6 million annually in state and local direct aid. The aid payments are designed to offset unfunded liabilities assumed with the 2006 merger of the Minneapolis Teachers Retirement Fund Association (MTRFA) and the 2015 merger of the Duluth Teachers Retirement Fund Association (DTRFA).

Retirement Benefit

The retirement benefit is determined by a formula based on the member's average salary earned on the highest five successive years of formula service credit, an accumulated percentage factor based on the total years of service credit, and the member's age at retirement. The retirement benefits for members who were first hired before July 1, 1989, are different from the retirement benefits for members who were first hired after June 30, 1989.

Coordinated Members First Hired *Before* July 1, 1989

For members first hired before July 1, 1989, the retirement benefits (with average salary defined as the average of the highest five successive annual salaries) are the greater of:

The sum of:

- 1.20% of average salary for the first 10 years of allowable service;
- 1.70% of average salary for each subsequent year prior to July 1, 2006; and
- 1.90% of average salary for each year of allowable service July 1, 2006 and after.
- No actuarial reduction if age plus years of service totals 90. Otherwise, reduction of 0.25% for each month the member is under age 65 (or age 62 if 30 years of allowable service) at the time of retirement.

or

The sum of:

- 1.70% of average salary for each year of allowable service prior to July 1, 2006; and
- 1.90% of average salary for each year of allowable service beginning July 1, 2006.
- Actuarial reduction (averaging 4% to 5.5% per year) applies if the member is under full Social Security benefit retirement age, but not to exceed age 65.

or

- For certain eligible members first hired prior to July 1, 1969, money purchase annuity equal to the actuarial equivalent of 220% of the member's accumulated deductions plus interest thereon.

Benefit reductions for retiring prior to meeting normal retirement definitions apply. Members who reach age 62 with 30 years of service are eligible for a more favorable set of reduction factors than members who do not reach age 62 and 30 years of service. An extract of the reduction table is presented below:

Age 62	10.40%
Age 63	6.64%
Age 64	3.18%
Age 65	—%

Members who do not reach age 62 with 30 years of service credit are eligible for a different group of factors. When fully implemented on July 1, 2024, the following reduction factors will be applied to an eligible person of the normal retirement age of 65:

Age 55	58%	Age 61	28%
Age 56	54%	Age 62	21%
Age 57	50%	Age 63	14%
Age 58	46%	Age 64	7%
Age 59	42%	Age 65	—%
Age 60	35%		

Coordinated Members First Hired *After* June 30, 1989

For members first hired after June 30, 1989, the retirement benefits (with average salary defined as the average of the highest five successive annual salaries) is the sum of:

- 1.70% of average salary for each year of allowable service prior to July 1, 2006; and
- 1.90% of average salary for each year of allowable service beginning July 1, 2006.

Benefit reductions for retiring prior to meeting normal retirement definitions apply. The actuarial reduction is based on a statutory definition rather that actuarial equivalence factors. The 2018 Legislature modified the reduction rates over a 60-month period beginning July 1, 2019. The following tables are extracts from the set of reduction factors applied.

Reduction factors for members of the normal retirement age of 66 first hired from July 1, 1989 through June 30, 2006 and who reach age 62 with 30 years of service credit:

Age 62	14.46%
Age 63	10.40%
Age 64	6.64%
Age 65	3.18%
Age 66	—%

When fully implemented on July 1, 2024, the following reduction factors will be applied to an eligible person with the normal retirement age of 66 first hired from July 1, 1989 through June 30, 2006 and who do not reach age 62 with 30 years of service credit:

Age 55	65%	Age 61	35%
Age 56	61%	Age 62	28%
Age 57	57%	Age 63	21%
Age 58	53%	Age 64	14%
Age 59	49%	Age 65	7%
Age 60	42%	Age 66	—%

Reduction factors for members of the normal retirement age of 66 first hired on or after July 1, 2006 and who reach age 62 with 30 years of service credit:

Age 62	16.11%
Age 63	11.70%
Age 64	7.55%
Age 65	3.65%
Age 66	—%

When fully implemented on July 1, 2024, the following reduction factors will be applied to an eligible person with the normal retirement age of 66 first hired after June 30, 2006 and who do not reach age 62 with 30 years of service credit:

Age 55	65%	Age 61	35%
Age 56	61%	Age 62	28%
Age 57	57%	Age 63	21%
Age 58	53%	Age 64	14%
Age 59	49%	Age 65	7%
Age 60	42%	Age 66	—%

Effective July 1, 2025, the normal retirement age will decrease to age 65 and these rates will adjust.

Basic Members (Former MTRFA)

TRA has 1 active and 4 inactive Basic members from the former Minneapolis Teachers Retirement Fund Association (MTRFA) who were transferred to TRA effective June 30, 2006. Under the merger legislation, this group of former MTRFA members retains eligibility for the benefit provisions as provided by the MTRFA Articles of Incorporation and by-laws as they existed on June 30, 2006.

The retirement benefits for these members (with average salary defined as the average of the highest five successive annual salaries) are:

- 2.50% of average salary for each year of teaching service.
- No actuarial reduction applies if the retiring member is age 60 or any age with 30 years of teaching service.

If the member is age 55 with less than 30 years of teaching service, the retirement benefit is the greater of:

a. 2.25% of average salary for each year of teaching service with reduction of 0.25% for each month the member is under the age first eligible for a normal retirement benefit.

or

b. 2.50% of average salary for each year of teaching service assuming augmentation to the age first eligible for a normal retirement benefit at 3.00% per year, and actuarial reduction for each month the member is under the age first eligible for a normal retirement benefit.

An alternative benefit is available to members who are at least age 50 and have seven years of teaching service. The benefit is based on the accumulation of the 6.50% "city deposits" to the retirement fund. Other benefits are also provided under this alternative benefit, depending on the member's age and teaching service.

Basic Members (Non-MTRFA)

As of June 30, 2023, TRA had 2 inactive members who retain eligibility for the Basic Plan and who do not have eligibility for the provisions for former MTRFA Basic members. The retirement benefits (with average salary defined as the average of the highest five successive annual salaries) are the greater of:

a. 2.2% of average salary for each of the first ten years of allowable service and 2.7% of average salary for each subsequent year with reduction of 0.25% for each month the member is under age 65 at time of retirement, or under age 62 if 30 years of allowable service. No reduction if age plus years of allowable service totals 90.

b. 2.7% of average salary for each year of allowable service assuming augmentation to age 65 at 3% per year, and actuarial reduction for each month the member is under age 65.

or

c. For eligible members, a money purchase annuity equal to the actuarial equivalent of 220% of the member's accumulated deductions plus interest thereon

All members in this group have reached normal retirement age and are no longer subject to early retirement penalties.

Deferred Retirement

Members with three or more years of allowable service (ten or more years of allowable service if termination of teaching service occurs before July 1, 1987, and five or more years of allowable service if termination of teaching service occurs after June 30, 1987, but before May 16, 1989) who terminate teaching service in schools covered by the association may have their retirement benefit deferred until they attain age 55 or older.

Members who defer their benefits will receive a deferral increase as follows:

Members hired prior to July 1, 2006	Prior to July 1, 2012: 3% annually through December 31 of the year in which the member would have reached 55 and 5% annually thereafter each year the benefit is deferred After July 1, 2012 until June 30, 2019: 2% After June 30, 2019; 0%
Members hired on or after July 1, 2006	Prior to July 1, 2012: 2.5% After July 1, 2012 to June 30, 2019: 2% After June 30, 2019: 0%

The deferral period must be at least three months. If on a leave of absence, the member is not eligible for the deferral increase on a deferred annuity for any portion of time on leave.

Annuity Plan Options

Six different annuity plan options are available to TRA members that provide monthly benefit payments for as long as the annuitant lives. The No Refund Plan provides the highest possible monthly benefit, but terminates upon the member's death. A member may choose to provide survivor benefits to a designated beneficiary(ies) by selecting one of the five plans that have survivorship features.

A married member must choose one of the three survivorship plans (plans 4 through 6) listed below at retirement, unless the member's spouse waives the right to this type of annuity.

1. No Refund, For Life of Member
2. Guaranteed Refund of Contributions
3. 15-Years Guaranteed
4. 100% Survivorship with Bounceback
5. 75% Survivorship with Bounceback
6. 50% Survivorship with Bounceback

Annual Post-Retirement Increases

Once retired, each January, if specified by law, a post-retirement increase may be made to a member's monthly benefit.

Under 2018 legislation and first applicable on January 1, 2019, the annual post-retirement increase is 1% for a five-year period. Beginning January 1, 2024, the adjustment will rise to 1.1% and on January 1, 2025, the adjustment will be 1.2%. The adjustment will be 1.3% on January 1, 2026 and 1.4% on January 1, 2027. Beginning January 1, 2028 and years following, the annual adjustment will be 1.5%.

On January 1,

- a benefit recipient who has been receiving an annuity or benefit for at least 12 full months as of June 30 of the calendar year before the adjustment will receive the full post-retirement increase in statute for that January 1.
- a benefit recipient who has been receiving an annuity or benefit for at least one full month, but less than 12 months as of June 30 of the calendar year before the adjustment will receive a prorated post-retirement increase.

Combined Service Annuity

Any vested member having combined service credit with any two or more Minnesota public retirement funds that participates in the combined service annuity program, may elect to receive a combined service annuity upon compliance with eligibility requirements for retirement.

Refunds

Upon termination of teaching service and application, TRA will issue a refund of a member's accumulated contributions plus interest compounded annually. Contributions made prior to June 30, 2011 accrue an annual interest rate of 6%. Contributions from July 1, 2011 to June 30, 2018 accrue interest at an annual rate of 4%. Beginning July 1, 2018, contributions will accrue interest at a rate of 3% annually.

A refund will be issued only if the member has officially resigned from employment and the official refund application form is submitted no sooner than 30 days after termination of teaching service.

Repayment of Refunds

Members who return to teaching service after previously withdrawing their contributions may repay these contributions upon completing two years of allowable service. The repayment must include interest of 8.5%, compounded annually from the date of the refund(s) through June 30, 2018. The interest rate for the repayment accrues at 7.5% from July 1, 2018 through June 30, 2023 and then 7% from July 1, 2023 until date of the repayment.

Disability Benefits

An active member who becomes disabled after at least three years of allowable service is eligible to apply for a total and permanent disability benefit provided at least two of the required three years of allowable service are performed after last becoming a member. State statute defines total and permanent disability as the inability to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment that can be expected to be of a long, continued and indefinite duration. An indefinite duration is a period of at least one year.

Survivor Benefits of Members Prior to Retirement

Certain benefits are available to the survivor(s) of members who die before officially retiring with TRA. Beneficiary designation options vary for single members and married members.

Single Members

Non-Vested

- A lump-sum death benefit equal to a member's accumulated deductions plus interest to the date of death is payable to either the designated beneficiary or estate, whichever is applicable. Interest is compounded annually at 4%. Contributions made by the employer are not included in this benefit. A member may designate any person(s), trust, or organization(s) as a beneficiary.

Vested

- For a member without a surviving spouse at the time of death, survivor benefits will automatically be paid for a period certain to all dependent children under the age of 20, unless the member has chosen the lifetime monthly benefit option explained in the next paragraph. These payments are made from the date of death to the date each dependent child attains age 20 if the child is under age 15 on the date of death. If the dependent child is 15 years or older on the date of death, payments will be made for five years. Payments for children under the age of 18 would be made to a custodial parent or court-appointed guardian. A dependent child is a biological or adopted child who is under 20 years of age and who is dependent on the member for more than one-half of his or her financial support.
- A member may designate payment of lifetime monthly benefits for either former spouse(s), or dependent and non-dependent, biological or adopted child(ren), instead of the above described surviving dependent child(ren) benefits being paid.
- For a member without a former spouse or dependent child(ren) at the time of death, either the designated beneficiary or estate, whichever is applicable, is entitled to a lump-sum death benefit equal to accumulated deductions plus interest to the date of death. Interest on account balances is compounded annually at 4%. Contributions made by the employer are not included in this benefit. A member may designate any person(s), trust, or organization(s) as a beneficiary.

Married Members

A surviving spouse has precedence over any designated beneficiary.

Non-Vested

- A member's spouse is entitled to a lump-sum death benefit equal to the accumulated deductions plus interest to the date of death. Interest on account balances is compounded annually at 4%. Contributions made by the employer are not included in this benefit.

Vested

- A member's surviving spouse may elect to receive a lifetime annuity in lieu of a lump-sum benefit. The lifetime annuity is payable on a monthly basis for the lifetime of the spouse. Payments terminate upon the death of the spouse with no benefits remaining for other beneficiaries.
- Instead of a lifetime annuity, a member's spouse may elect to receive actuarially equivalent payments for a term certain annuity of 5, 10, 15 or 20 years. The amount of the annuity is based upon a formula, the member's age at the time of death and the age of the spouse when benefits begin to accrue, although monthly benefit payments cannot exceed 75% of the member's average High-5 monthly salary.
- A member and their spouse may jointly make a specification to waive the spouse’s benefits so that designated beneficiary(ies) will receive a lifetime survivor annuity benefit. The designated beneficiary may be either the member’s former spouse(s) or the member’s biological or adopted child(ren). Under a joint specification, a designated beneficiary cannot elect a term certain annuity of 5, 10, 15 or 20 years. If a joint specification is not on file, the annuity is payable only to the surviving spouse.

Non-Vested or Vested

- A member and their spouse may jointly make a specification to waive the spouse’s benefits so that any person, trust or organization will receive a lump-sum death benefit equal to the accumulated deductions plus interest to the date of death.

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