

A Pension Trust Fund of the State of Minnesota

2020

For the fiscal year ended
June 30, 2020

Comprehensive Annual Financial Report



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

Comprehensive Annual Financial Report

For the fiscal year ended June 30, 2020

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J. Michael Stoffel
Executive Director

Report Prepared by the TRA accounting and executive staff

Cover: American goldfinch on coneflower. Photo by stanley45 for iStock

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**Minnesota Teachers
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For its Comprehensive Annual
Financial Report
For the Fiscal Year Ended

June 30, 2019

Christopher P. Morrill

Executive Director/CEO



Public Pension Coordinating Council

***Public Pension Standards Award
For Funding and Administration
2020***

Presented to

Minnesota Teachers Retirement Association

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

Presented by the Public Pension Coordinating Council, a confederation of

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

A handwritten signature in cursive script that reads "Alan H. Winkle".

Alan H. Winkle
Program Administrator



Letter of Transmittal

December 28, 2020

Members of the Board of Trustees

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



J. Michael Stoffel
Executive Director

Dear Trustee:

We are pleased to present this Comprehensive Annual Financial Report (CAFR) of the Teachers Retirement Association (TRA) for the fiscal year ended June 30, 2020, our 89th year of service.

The independent Office of the Legislative Auditor has issued an unmodified (clean) opinion on TRA's financial statements for the year ended June 30, 2020. 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 17-21 for an overview of additions to and deductions from the TRA Fund and additional financial reporting detail for the fiscal year.

TRA Profile

As of June 30, 2020, TRA had 604 reporting units, 83,149 active members and a total of 68,154 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 CAFR of the State of Minnesota.

TRA follows the provisions of statements promulgated by the Governmental Accounting Standards Board (GASB). TRA's CAFR 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 in accordance with actuarial assumptions and methods contained in Minnesota Statutes Sec. 356.215; it also 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 the Department of Minnesota Management and Budget (MMB) and the Department of Administration.

Economic Condition

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 71. 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 executive directors of the three statewide retirement systems serve on the seventeen-member IAC and represent their members in advising the SBI on investment-related matters.

Economic Conditions and Outlook (from Minnesota Management and Budget)

During the most recent, 128-month U.S. economic expansion—from July 2009 to February of 2020—Minnesota experienced steady employment growth, adding 336,700 jobs (according to seasonally adjusted data from Current Employment Statistics (CES)). In the spring of this year, a stay-at-home order and other COVID-19 mitigation efforts were put in place, and many businesses temporarily closed. As a result, in March and April Minnesota lost 387,800 jobs, approximately 13 percent of February employment. Since then, just over half of the jobs lost in the spring have been recovered. As of October, Minnesota has 184,200 fewer jobs than in February.

Total employment in Minnesota dropped 2.9 percent in fiscal year 2020, and we now forecast it to decrease 4.0 percent in fiscal year 2021, resulting in a cumulative 6.8 percent decrease across the biennium. Employment is then expected to grow 3.3 percent in fiscal year 2022, before decelerating to 1.6 percent growth in fiscal year 2023.

Of the 184,200 net employment decline in Minnesota since February, the largest gaps are in the industries most affected by social distancing and containment measures, particularly services that require a high level of face-to-face, personal interaction. Through October, there were 71,500 fewer leisure and hospitality jobs in Minnesota than there were in February resulting in a 25.5 percent drop in employment in that sector. All other sectors experienced a 4.2 percent cumulative drop in employment, indicating that leisure and hospitality in Minnesota was affected approximately 6 times as much as the rest of the economy put together.

Unemployment in this economic downturn has disproportionately impacted lower-wage workers. Since March 16th, 57 percent of Minnesota initial Unemployment Insurance (UI) benefit claimants were in occupations with median wages in the bottom two wage quintiles. In addition, U.S. data show that this year the duration of unemployment has been longer for lower-wage workers than for those at higher wages. Consequently, unemployment since March has led to a smaller reduction in total wage and salary income than if the incidence and duration of unemployment had been more evenly distributed across wage levels. Total wage and salary income grew 1.2 percent in fiscal year 2020, and in this forecast it is expected to grow 1.2 percent in fiscal year 2021, followed by growth of 4.9 percent on average each fiscal year from 2022 to 2025.

Prior to the current economic downturn, Minnesota had low unemployment and a high demand for labor, but job losses have changed that picture. According to the Department of Employment and Economic Development's (DEED's) job vacancy report, which covers the second quarter of 2020, there are 111,753 job vacancies in the state, a decline of 23.7 percent from the same period last year. For the first time since the fourth quarter of 2016, the number of unemployed job-seekers exceeded the number of open positions. In the second quarter of 2020 there were 2.5 unemployed persons for each vacancy statewide, or 25 people for each ten job openings. For comparison, at the peak of the 2007-2009 recession, there were nearly seven unemployed persons for each job opening. The statewide job vacancy rate is 4.0 percent, or 4.0 job openings per 100 jobs. This the lowest posted since the second quarter of 2016, when there was a job vacancy rate of 3.6 percent.

Legislation

TRA did not propose any new significant legislation in the 2020 session. The 2020 Omnibus Pension Bill contained only minor administrative changes for TRA. TRA is also not planning anything significant for the 2021 session.

The landmark pension reform bill that was passed in 2018 continues to have lasting impact on operations. Several of the provisions had delayed effective dates and phased effective dates, so TRA will be implementing pieces of the 2018 legislation over the next several years. These include:

- cost of living adjustment (COLA) will remain at 1% for three more years, and then increase by 0.1% per year for five years until it reaches 1.5% 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 rates are increasing by 0.21% per year over the next three fiscal years
- employee contribution rate will increase by 0.25% beginning July 1, 2023.

These changes and all the reforms passed in 2018 were important in getting the TRA pension fund on a sustainable path toward the 100 percent funded status.

Investment Results

During fiscal year 2020 and early 2021 the SBI continued implementation of its strategic asset allocation framework for the combined retirement funds. The plan combines domestic and international equities into the public equity category. The new policy also includes a future target allocation of up to 25 percent into private markets that includes private equity, private credit, real estate, and resources. If the private markets are invested at less than the 25 percent 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 and treasuries have target allocation of 10 percent each. Readers should refer to a more complete description of the changes beginning on page 26.

Within this investment environment, TRA retirement assets under SBI investment management (see page 67), produced an investment return of 4.2 percent for the fiscal year ended June 30, 2020, net of fees and using the time-weighted performance method. This was below the assumed rate of 7.5 percent for fiscal year 2020 as specified in Minnesota Statute. The 4.2 percent return outperformed the composite benchmark by 0.2 percent for the fiscal year. Over the latest 5, 10, 20, and 30-year periods, the Combined Funds have experienced an annualized investment return of 7.3 percent, 9.7 percent, 6.3 percent and 8.6 percent respectively. For all three time periods, the performance of the Combined Funds met or exceeded the performance of the composite benchmark.

The public equity category returned 2.7 percent for the fiscal year ended June 30, 2020. The domestic portion of public equity returned 6.2 percent and the international portion returned -4.2 percent. The private markets produced a return of -2.6 percent for fiscal year 2020. The fixed income portion of the combined funds produced a return of 13.0 percent for the fiscal year.

Since the benefit payments 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

Investment returns of 4.2 percent for fiscal year 2020 were lower than the assumed actuarial rate of 7.5 percent. Investment markets were very volatile beginning in February 2020 with the COVID-19 pandemic. Although actual returns were lower than the assumed rate, the actuarial value of TRA assets increased as of June 30, 2020, compared to the previous year-end. For actuarial purposes, investment gains and losses are recognized over a five-year period. On June 30, 2020, the actuarial value of TRA assets was \$22.9 billion, an increase from \$22.5 billion on June 30, 2019. The five-year smoothing of investment gains and losses produced a deferred investment loss of \$196 million as of June 30, 2020. The deferred loss will be recognized over the next four fiscal years.

In March 2020, the Legislative Commission on Pensions and Retirement (LCPR) approved three recommendations to TRA's actuarial assumptions. The recommendations came from TRA's actuarial consultant, Cavanaugh MacDonald's four-year experience study report, dated June 2019. An experience study determines whether the actuarial assumptions currently in use adequately reflect the actual emerging experience of the TRA plan. The report recommended minor changes to three demographic assumptions used in the actuarial liability projection of the TRA plan. The impact on required contributions was an increase of 0.03 percent of member pay.

TRA's unfunded actuarial accrued liability – the amount for which the actuarial value of assets are not available to pay benefits earned to date – increased from \$6.78 billion on June 30, 2019, to \$7.19 billion on June 30, 2020.

Another key measure to assess TRA funding health is the adequacy of employee and employer contributions. As of July 1, 2020, the TRA contribution rate deficiency was 1.19 percent of active member covered payroll. Under this estimate, TRA will receive about \$65.5 million less in contributions during fiscal year 2021 than is needed to meet the full funding target date of June 30, 2048. However, the 2018 legislature increased both employee and employer contribution rates in future years that are not recognized in the current valuation. Rates will increase gradually so that on July 1, 2023, the employee contribution will rise from the current 7.50 percent to 7.75 percent. Employer contribution rates will steadily rise from 8.13 percent to 8.75 percent by July 1, 2023. If these future contribution rates had been reflected into the current valuation report, the contribution rate deficiency would be 0.32 percent of covered member payroll, or approximately \$17 million, a more manageable deficiency.

TRA's funding ratio was nearly constant through these many changes. At June 30, 2020, the funding ratio stood at 76.1 percent, a decline from 76.8 percent on June 30, 2019. Long-term, the funded ratio is expected to slope upward but using current assumptions, is not projected to reach 100 percent by the year 2048, the year specified in state statutes.

In the Executive Summary of Cavanaugh Macdonald's actuarial funding valuation report, they acknowledge that the COVID-19 pandemic occurred during the scope of this report. Investment markets experienced steep declines in February and March 2020, only to rebound in subsequent months. Minnesota educators, TRA's members, experienced tremendous upheaval with how and where they perform their services. TRA's actuary believes it is too early to determine the impact of the pandemic and it would be premature to modify actuarial economic or demographic assumptions until the situation can be assessed in more in-depth. TRA executive management and the Board of Trustees will continue the work with our actuarial and investment consultants to assess the potential impact of the pandemic on TRA's current and long-term funding progress.

Major Initiatives

In January 2019, the TRA Board approved a new 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.

During the year, one major change requiring immediate attention was to transfer member educational services to an online virtual environment beginning in March 2020. Feedback from members has been overwhelmingly positive. Another major change was the immediate implementation of the Governors emergency declaration in March 2020 requiring all state agency employees to work from home. TRA was well prepared for this as a large segment of the staff was already authorized and equipped to work from home and the continuity plan had anticipated an event such as this. This change to a very unusual work environment has had no effect on the operational functions of TRA, We will continued for some time with remote work and virtual staff and Board meetings. The strategic plan will continue to guide our planning efforts as we enter 2021 with the pandemic still raging but the prospect of a vaccine on the horizon.

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 Comprehensive Annual Financial Report for the fiscal year ended June 30, 2019. This was the 22th 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 comprehensive annual 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 comprehensive annual 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.

TRA was also awarded the Public Pension Coordinating Council's Recognition Award for Administration and Funding in 2020. This award recognizes TRA's meeting of professional standards in plan administration in categories such as benefits, actuarial valuations, financial reporting and communications to members. The funding award is given to retirement systems that meet funding and contribution adequacy measures.

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



John Wicklund
Chief Financial Officer

Board of Trustees

As of December 9, 2020

President



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Retiree Representative
Minnetonka, MN

Vice President



Mary B. Supple
Elected Member
Richfield, MN



Will Baumann
Elected Member
New London, MN



Luke V. Olson
Elected Member
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Osseo, MN



Joel Stencel
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Association Representative



Mary Cathryn Ricker
Commissioner of Education



Jim Schwalter
Commissioner of Minnesota
Management & Budget

Administrative Staff



J. Michael Stoffel
Executive Director



Rachel Barth
Legal and Legislative Director



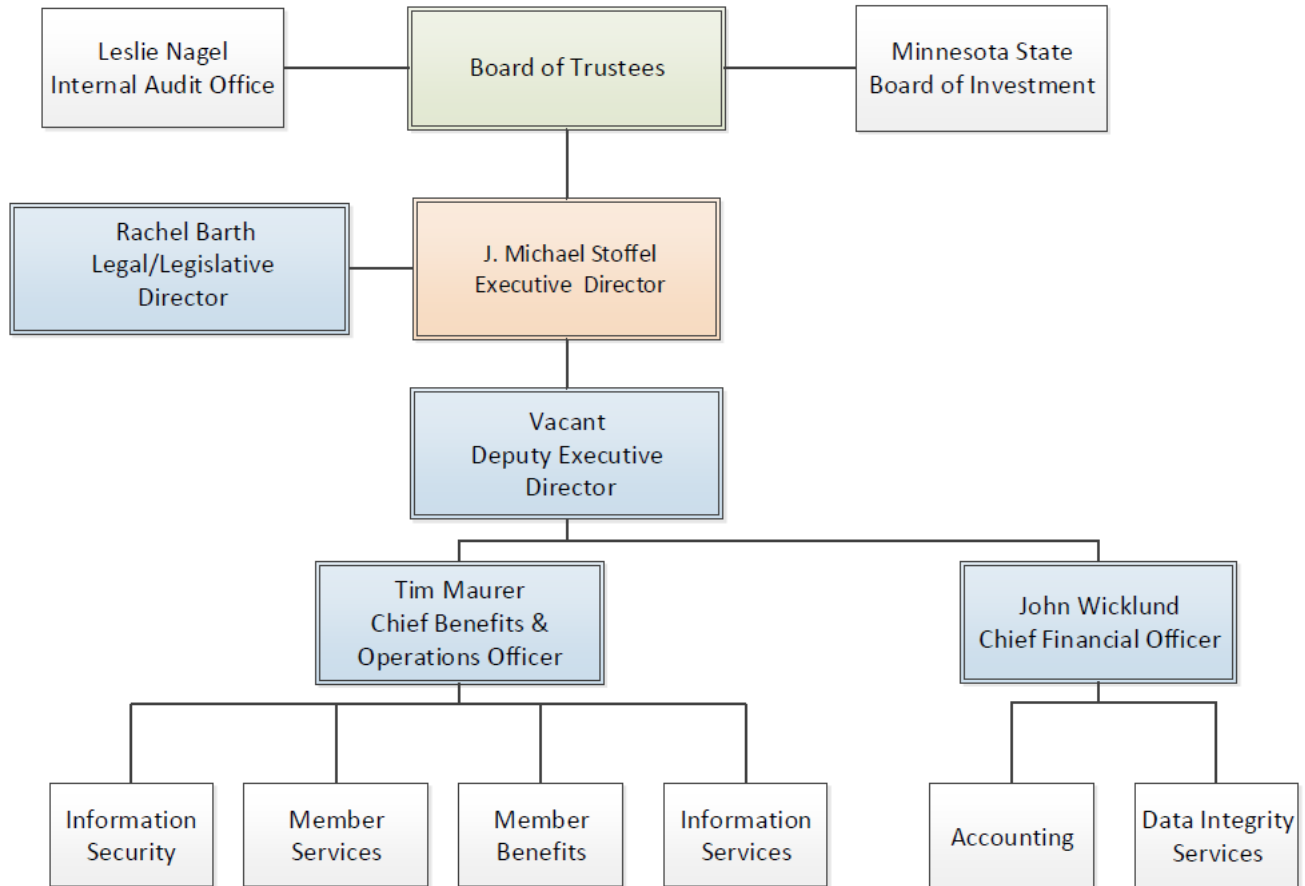
John Wicklund
Chief Financial Officer



Tim Maurer
Chief Benefits & Operations
Officer

Administrative Organization

As of December 9, 2020



Consulting Services

Actuary

Cavanaugh Macdonald Consulting, LLC
Bellevue, Nebraska

Auditor

Office of the Legislative Auditor
Saint Paul, Minnesota

Investment

Minnesota State Board of Investment
Saint Paul, Minnesota

(Schedule of Investment Management Fees is found on pages 69-70)

Legal Counsel

Office of the Attorney General
Saint Paul, Minnesota

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

Members and Stakeholders - Be responsive to the needs of TRA members and stakeholders by providing them with innovative, timely and relevant services and education, and adequate benefits that are properly funded.

Organizational Effectiveness - Be a proactive, flexible efficient organization by measuring performance and continuously improving work processes.

Staff Development - Make TRA an “employer of choice” for both existing and potential staff by providing a supportive and challenging environment that encourages teamwork and creativity, fosters professional growth and development, and values employee input.

Finance and Resources - Safeguard the financial integrity of the fund by ensuring adequate funding, legal compliance and responsibly managing fiscal resources.

Technology - Maintain the internal capacity to utilize cutting-edge technologies that continuously improve work processes and enhance service delivery and communication with our members and stakeholders.

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

Financial



Auditor's Report



OFFICE OF THE LEGISLATIVE AUDITOR
STATE OF MINNESOTA • James Nobles, Legislative Auditor

Independent Auditor's Report

Members of the Board of Trustees
Teachers Retirement Association of Minnesota

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

Report on the Financial Statements

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, 2020, 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.

Management's Responsibility for the Financial Statements

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

Auditor's Responsibility

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

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal controls relevant to TRA's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of TRA's internal controls. Accordingly, we express no such opinion.

An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Room 140 Centennial Building, 658 Cedar Street, St. Paul, Minnesota 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 7-1-1

Opinion

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, 2020, 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.

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, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, which considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to 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.

Other Information Included with the Financial Statements

Our audit was conducted for the purpose of forming an opinion on the financial statements that collectively comprise TRA's basic financial statements. The supporting schedules in the Financial Section and the Introductory, Investment, Actuarial, and Statistical Sections, 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.

The supporting schedules, as listed in the Financial Section of the Table of Contents, are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. The supporting schedules have been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the supporting schedules are fairly stated, in all material respects, in relation to the basic financial statements as a whole.

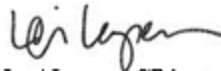
The Introductory, Investment, Actuarial, and Statistical Sections have not been subjected to the auditing procedures applied in the audit of the basic financial statements and, accordingly, we do not express an opinion or provide any assurance on them.

Other Reporting Required by Government Auditing Standards

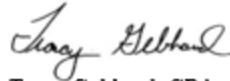
In accordance with *Government Auditing Standards*, we will also issue a report on our consideration of the Teachers Retirement Association of Minnesota's internal controls over financial reporting and on our

Members of the TRA Board of Trustees
Mr. J. Michael Stoffel, TRA Executive Director
Page 3

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 controls over financial reporting and compliance and not to provide an opinion on the internal controls 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



Tracy Gebhard, CPA
Audit Director

December 23, 2020
Saint Paul, Minnesota

Management Discussion and Analysis

June 30, 2020

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, 2020. We encourage you to consider the information presented here in conjunction with the transmittal letter beginning on page 3 and the additional information presented in the financial statements and required supplementary information.

Financial Highlights

Financial highlights of fiscal year 2020 include:

- The Net Position Restricted for Pension Benefits decreased in value by \$131.1 million during fiscal year 2020 for a total of \$22.7 billion. Plan contributions and investment income totaled \$1.8 billion during the fiscal year. Plan benefits and other expenses totaled \$1.9 billion during the fiscal year.
- Investment returns for the 2020 fiscal year were 4.2 percent using the time-weighted value method, resulting in net investment income of \$939.7 million.
- Contributions paid by employees, employers, and non-employers during fiscal year 2020 totaled \$857.5 million, an increase of \$31.9 million from the fiscal year 2019 total of \$825.6 million.
- Pension benefits paid to retirees and beneficiaries during fiscal year 2020 was \$1.9 billion. The fiscal year 2019 total was \$1.9 billion, an increase of \$36.8 million during the year.
- Refunds of member contributions plus interest during fiscal year 2020 were \$13.8 million, a decrease of \$259.0 thousand from the fiscal year 2019 total of \$14.1 million.
- Administrative expenses of the fund during fiscal year 2020 were \$15.4 million. The fiscal year 2019 total was \$15.2 million, representing an increase of \$236.9 thousand 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, 2020, the accrued liability funding ratio for TRA, using actuarial value of assets, was 76.1 percent, a slight decrease from the comparable funding ratio of 76.8 percent as of June 30, 2019. TRA's unfunded actuarial accrued liability on June 30, 2019, was \$6.8 billion. The June 30, 2020, unfunded actuarial accrued liability was \$7.2 billion, an increase of \$413 million from the previous year. Key actuarial funding measures are presented on page 81.

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 report is the foundation of a report TRA will issue in the first half of 2021 to assist employer units in their GASB 68 financial reporting presentations and disclosures later in 2021. The fiscal year 2020 results indicate a Net Pension Liability of \$7.4 billion, an increase of \$1.0 billion from the \$6.4 billion on July 1, 2019.

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 22) 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 23) 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 24-45) 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 46-53) will be built prospectively and in time, will form a ten-year historical trend. The Schedule of Changes in the Employers' Net Pension Liability includes a reconciliation of the fiscal year 2020 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 using the money-weighted method is presented. It will be developed prospectively over the next 10 years.

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 Expenses (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, 2020, were \$24.3 billion and were mostly comprised of cash, investments and contributions due from employers. Total plan assets decreased \$233.7 million from the June 30, 2019 total of \$24.6 billion. The primary reason for the decrease in the fair value of TRA assets was due to weaker investment performance.

Plan Liabilities

Total liabilities as of June 30, 2020, were \$1.6 billion, a decrease of \$102.6 million for the June 30, 2019 liability amount of \$1.7 billion. The primary reason for the decrease in value of liabilities were decreased liabilities in the securities lending program. In both years, the 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, 2020, by \$22.7 billion. The amount has decreased from the June 30, 2019, amount of \$22.9 billion by \$131.1 million. 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 2020 were \$1.8 billion, a decrease of \$608.3 million from \$2.4 billion in fiscal year 2019. The decrease is due to weaker investment earnings in fiscal year 2020 than in the prior fiscal year.

Total employee and employer contributions for fiscal year 2020 increased \$31.9 million from the previous fiscal year for a combined fiscal year total of about

\$857.5 million. The increase is attributable to higher covered salaries earned by active members for fiscal year 2020 and an increase in employer contribution rate on July 1, 2019. Contributions during fiscal year 2020 were prescribed in statute at 7.50 percent employee and 7.92 percent employer for Coordinated Plan members of TRA.

A net investment gain of \$939.7 million was recorded for fiscal year 2020. This amount decreased by \$639.3 million from the fiscal year 2019 gain amount of \$1.6 billion.

Fiduciary Net Position June 30, 2020 and June 30, 2019

Dollars in Thousands

	<u>2020</u>	<u>2019</u>	<u>Change</u>
Cash and Investments	\$ 24,308,206	\$ 24,540,371	\$ (232,165)
Receivables	22,821	22,324	497
Other	17,118	19,142	(2,024)
Total Assets	\$ 24,348,145	\$ 24,581,837	\$ (233,692)
Total Liabilities	1,603,149	1,705,781	(102,632)
Fiduciary Net Position	\$ 22,744,996	\$ 22,876,056	\$ (131,060)

Changes in Fiduciary Net Position For the Fiscal Year Ended June 30, 2020 and June 30, 2019

Dollars in Thousands

	<u>2020</u>	<u>2019</u>	<u>Change</u>
Additions			
Employee Contributions	\$ 396,679	\$ 386,669	\$ 10,010
Employer Contributions	460,810	438,887	21,923
Net Investment Income/(Loss)	939,749	1,579,099	(639,350)
Other	3,402	4,237	(835)
Total Additions	\$ 1,800,640	\$ 2,408,892	\$ (608,252)
Deductions			
Monthly Benefits	\$ 1,902,492	\$ 1,865,693	\$ 36,799
Refunds of Contributions	13,815	14,074	(259)
Administrative Expenses	15,393	15,156	237
Total Deductions	\$ 1,931,700	\$ 1,894,923	\$ 36,777
Change in Fiduciary Net Position	\$ (131,060)	\$ 513,969	\$ (645,029)

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 fiscal year 2020 benefits were \$1.9 billion. Retirement benefit expenses increased by \$36.8 million due to an increase in the number of recipients and a 1.0 percent benefit increase paid to eligible recipients on January 1, 2020.

Member refunds decreased from \$14.1 million to \$13.8 million for fiscal year 2020. Administrative expenses increased by \$236.9 thousand during the fiscal year from \$15.2 million in fiscal year 2019 to \$15.4 million in fiscal year 2020. Overall, fund deductions increased \$36.8 million for fiscal year 2020.

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 CAFR.

The actuarial value of assets increased from \$22.5 billion on June 30, 2019 to \$22.9 billion as of June 30, 2020. 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 fair value basis, TRA assets were \$22.7 billion on June 30, 2020. The difference between the actuarial value and the fair value of assets is \$196 million and represents deferred losses that will be recognized in future years.

TRA's actuarial accrued liability on June 30, 2020, increased to \$30.1 billion from the June 30, 2019, amount of \$29.2 billion, an increase of 3.0 percent. A complete reconciliation can be seen on pages 93-94.

TRA's unfunded actuarial accrued liability increased from \$6.8 billion on June 30, 2019 to \$7.2 billion on June 30, 2020. This represents an increase of \$413 million. By statute, the unfunded liability must be recovered in full 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, 2020, the actuarial accrued liability funding ratio for TRA was 76.1 percent, a slight weakening from the comparable funding ratio of 76.8 percent as of June 30, 2019.

TRA's statutory contribution rate of 16.46 percent of member covered payroll is currently trailing the required contribution rate calculated by TRA's actuarial consultant. The required contribution rate to fund normal pension costs, amortizing the unfunded actuarial liability, plus TRA administrative costs was calculated as 17.7 percent. The resulting contribution deficiency is 1.19 percent of covered payroll, or about \$65.5 million projected in fiscal year 2021. The 2018 legislature approved future employee and employer contribution rate increases which will be fully phased in by July 1, 2023. On July 1, 2023, the TRA employee contribution rate will be 7.75 percent of pay; the employer contribution rate will be 8.75 percent of member pay. If those rates had been in force for fiscal year 2020, the July 1, 2020, contribution deficiency of 1.19 percent would have been improved but a contribution deficiency of 0.32 percent would have remained.

The landmark 2018 Omnibus Pension Bill contained significant changes that impacted TRA's funded status and long-term funding outlook including changes to the financing of TRA, changes to benefit provisions, and a decrease in the investment return assumption from 8.5% to 7.5% (set in statute). The change in the investment return assumption resulted in a more realistic (and higher) measurement of the liabilities. The benefit reductions in the 2018 legislation nearly offset the increase in liabilities due to the change in the investment return assumption. However, primarily due to investment performance in fiscal year 2019 and 2020 that was lower than the 7.5 percent assumed return and the contribution rate deficiency previously described, we currently expect to fall a little short of the goal to be fully funded by the year 2048. Periods of improved investment performance and/or actuarial experience would adjust that estimated date.

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 46,

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 \$7.4 billion on June 30, 2020 and a contribution deficiency of \$30.1 million for fiscal year 2020. The GASB 67 investment return for fiscal year 2018, using the money-weighted method, was 4.2 percent.

The Net Pension Liability of \$7.4 billion on June 30, 2020 is an increase of 16 percent from the \$6.4 billion calculated at June 30, 2019. The increase (worsening) is partially attributable to investment performance lower than the actuarial target of 7.5 percent.

Under GASB 67 parameters, the actuary must calculate the date on which June 30, 2020 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 2020, TRA assets will not be depleted in the future. Consequently the 2020 valuation report was able to discount all future benefit payments using 7.5 percent annually, as set by TRA management.

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 2021 to facilitate their compliance with the financial reporting requirements of GASB Statement 68 for their fiscal year 2021 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 slightly from 76.8 percent to 76.1 percent for fiscal year 2020. However, the 2018 legislature passed a package of benefit reductions and contribution rate increases that will not be fully implemented until 2028. The 2018 plan provision changes lowered TRA's long-term liabilities by \$2.86 billion.

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 1.19 percent of member payroll exists based on the assumptions used for the 2020 valuation. If the future employee and employer contribution rate increases had been reflected in this actuarial valuation the contribution deficiency would have declined from 1.19 percent to 0.32 percent of member payroll.

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 by June 30, 2048, as scheduled. However, if the contribution deficiency remains relatively small, the UAAL will be significantly reduced even if it is not eliminated.

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

Teachers Retirement Fund

Statement of Fiduciary Net Position

June 30, 2020

Dollars in Thousands

Assets

Cash and Short-Term Investments

Cash	\$	11,169
Building Account Cash		167
Short-Term Investments		1,057,847
Total Cash and Short-Term Investments	\$	1,069,183

Accounts Receivable	\$	22,821
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Investments (at fair value)

Treasuries Pool	\$	2,291,505
Bond Pool		2,318,276
Alternative Investments Pool		3,539,372
U.S. Stock Index Pool		6,975,267
U.S. Stock Actively Managed Pool		2,104,070
Broad International Stock Pool		4,419,260
Total Investments	\$	21,647,750

Securities Lending Collateral	\$	1,591,273
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Building

Land	\$	171
Building & Equipment Net of Depreciation		5,442
Total Building	\$	5,613

Capital Assets Net of Depreciation	\$	11,505
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Total Assets	\$	24,348,145
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Liabilities

Current

Accounts Payable	\$	7,685
Accrued Compensated Absences		86
Accrued Expenses - Building		54
Bonds Payable		661
Bond Interest Payable		4
Securities Lending Collateral		1,591,273
Total Current Liabilities	\$	1,599,763

Long Term

Accrued Compensated Absences	\$	838
Bonds Payable		2,548
Total Long Term Liabilities	\$	3,386

Total Liabilities	\$	1,603,149
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Net Position Restricted For Pensions	\$	22,744,996
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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, 2020

Dollars in Thousands

Additions

Contributions

Employee	\$	396,679
Employer		425,223
Direct Aid (State/City/District)		35,587
Earnings Limitation Savings Account (ELSA)		1,842
Total Contributions	\$	859,331

Investment Income

Net Appreciation in Fair Value of Investments	\$	953,036
Investment Expense		(20,927)
Net Investment Increase	\$	932,109
Securities Lending Activities:		
Securities Lending Income	\$	28,290
Securities Lending Expenses:		
Borrower Rebates	\$	(18,973)
Management Fees		(1,677)
Total Securities Lending Expenses	\$	(20,650)
Net Income from Securities Lending	\$	7,640
Total Net Investment Income	\$	939,749

Other Income	\$	1,560
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Total Additions	\$	1,800,640
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Deductions

Retirement Benefits Paid	\$	1,900,650
Earnings Limitation Savings Account		1,842
Refunds of Contributions to Members		13,815
Administrative Expenses		15,393
Total Deductions	\$	1,931,700

Net Increase	\$	(131,060)
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Net Position Restricted for Pensions

Beginning of Year	\$	22,876,056
End of Year	\$	22,744,996

The accompanying notes are an integral part of this statement.

Notes to the Financial Statements

For the Fiscal Year Ended June 30, 2020

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	375
Colleges and universities	39
State agencies	4
Charter schools	182
Professional organizations	4
Total Employer Units	604
Membership	
Retirees, disabilitants and beneficiaries receiving benefits	68,154
Terminated employees with deferred vested benefits	16,203
Other terminated, non-vested members entitled to a refund of contributions	37,177
Total	121,534
Current employees	
Vested	67,529
Non-vested	15,620
Total	83,149

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 percent per year
	All years after	2.7 percent per year
Coordinated	1st ten years if service years are prior to July 1, 2006	1.2 percent per year
	1st ten years if service years are July 1, 2006 or after	1.4 percent per year
	All other years of service if service years are prior to July 1, 2006	1.7 percent per year
	All other years of service if service years are July 1, 2006 or after	1.9 percent 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 percent 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

Tier II Benefits

For years of service prior to July 1, 2006, a level formula of 1.7 percent per year for Coordinated plan members and 2.7 percent per year for Basic Plan members. For years of service July 1, 2006 and after, a level formula of 1.9 percent 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.

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 merger on June 30, 2006. Eighteen 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 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 Comprehensive Annual Financial Report 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. 82.

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 2020.

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. Short-term investments, which the Minnesota State Board of Investment (SBI) staff manages, include U.S. Treasury issues, repurchase

agreements, banker’s acceptances, commercial paper, 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, 2020. 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, 2020, is presented in Figure 2, Schedule of Accounts Receivable.

Figure 2. Schedule of Accounts Receivable
Dollars in Thousands

Description	Amount
Member contributions	\$ 10,787
Employer contributions	11,391
SBI	428
Interest on Investments	203
Satellite Offices	9
Retirement Building	2
Other	1
Total Receivables	<u>\$ 22,821</u>

C. Investment Policies

The Minnesota State Board of Investment (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. The primary purpose of these beliefs is to guide the SBI toward sound principles related to investing on behalf of the Combined Funds. The beliefs help provide context for SBI's actions, reflect SBI's investment values, and acknowledge SBI's role in supporting the State's retirement systems. 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

The Following policy changes were approved at the end of Fiscal Year 2020 and will be implemented during Fiscal Year 2021.

- The fixed Income Program shall be restructured to include a 20% combined Cash plus Short Duration Treasury Ladder allocation; a 40% Treasury Protection allocation; and a combined 40% Core/Core-Plus and Return Seeking Bond allocation.
- The total combined funds allocation to the Fixed Income Program shall be modified to 25%, which will be comprised of the current 20% allocation to Core Bonds and Treasuries, the current 2% allocation to Cash, and a transfer of 3% from Public Equities.
- The policy for the upper limit for Private Markets Market Value plus Unfunded Commitments shall be temporarily increased to a maximum of 45% from 35% currently, and SBI staff must present a proposed new permanent recommendation for the management of Unfunded Commitments by the end of Fiscal Year 2021. The temporary policy maintains the current target Market Value level of 25%, but allows the portfolio to hold private market investments up to the current statutory maximum Market Value level of 35%.

The following strategies were approved in Fiscal 2020 for implementation in Fiscal Year 2021.

As shown in figure 3

- The segregation of the Unallocated Investment Funds associated with the Private Markets/ Alternatives Program from the dedicated Public Equities Program, including the development of an investment strategy using physical securities in combination with an overlay program fully collateralized by cash.
- The use of cash overlay strategies to facilitate rebalancing and enhance portfolio liquidity.
- The use of a currency overlay strategy to more effectively manage the portfolio's non-dollar exposure.

- Implement a procedure, consistent with all applicable fiduciary duties, to remove publicly traded companies which derive 25% or more of their revenue from the extraction and/or production of thermal coal as authorized investments in the SBI's Combined Funds Investment portfolio.

Figure 3. Asset Allocation by June 30, 2021

Public Equity		50.0 %
-Domestic Equity	33.5 %	
-International Equity	16.5 %	
Fixed Income		25.0 %
-Core Bonds	10.0 %	
-Treasuries	10.0 %	
-Cash & Laddered Bonds	5.0 %	
Private Markets		25.0 %

If the invested market value for Private Markets is less than the 25% allocation target, the difference will be invested using a strategy comprised of physical securities in combination with an overlay program fully collateralized by cash.

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 CAFR 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 69-70) found within the unaudited Investment Section of this comprehensive annual financial report. TRA's portion

of the management fees totaled \$20.93 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, private markets, treasuries, and cash equivalents. The asset allocation through June 30, 2020 is shown in *Figure 4*.

The SBI's long-term expected rate of return was determined using a building-block method. Best estimates of 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 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	Final Target Allocation	Long-term Expected Real Rate of Return (Geometric Mean)
Domestic Equity *	35.50%	5.10%
International Equity **	17.50%	5.30%
Fixed income ***	20.00%	0.75%
Private Markets ****	25.00%	5.90%
Cash	2.00%	0.00%
Total	100.00	

*Domestic Equity includes U.S. Stock Actively Managed and the U.S. Stock Index Fund.
 **International Equity includes Broad International Stock Fund.
 ***Fixed income includes the Bond Pool and Treasuries.
 ****Private Markets includes the Alternative Investment Pool. If a 25 percent allocation cannot be achieved, the uncommitted allocation is invested in Domestic and International Equities.

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, 2020, as reported on the Statement of Fiduciary Net Position.

Figure 5. TRA Investment Portfolio

Dollars in Thousands

TRA Investment Portfolio: June 30, 2020			
TRA Fund	Cost	Fair	
Pooled Accounts			
Treasuries Pool	\$ 1,911,819	\$ 2,291,505	
Bond Pool	2,111,074	2,318,276	
Alternative Investments	3,859,594	3,539,370	
U.S. Stock Index Pool	5,953,104	6,975,269	
U.S. Stock Actively Managed	2,420,501	2,104,070	
Broad International Stock Pool	4,231,205	4,419,260	
Total	\$ 20,487,297	\$ 21,647,750	
Short Term Cash Equivalents			
Money Market	\$ 988,713	\$ 988,844	
CD Repo Pool	68,931	69,004	
Total	\$ 1,057,644	\$ 1,057,848	
Total Invested	\$ 21,544,941	\$ 22,705,598	

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 income of \$939.7 million for fiscal year 2020.

Annual money-weighted return on plan investments

For the year ended June 30, 2020, the annual money-weighted rate of return on the assets of the combined retirement fund, net of investment expense, was 4.220 percent (*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 a 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 2020	4.220%
FY 2019	7.275%
FY 2018	10.485%
FY 2017	15.182%
FY 2016	(0.118)%
FY 2015	4.479%
FY 2014	18.696%

Ten years are not available. Additional years will be provided when they become available.

D. Capital Assets

Capital assets are capitalized at the time of acquisition at cost. Assets with a cost in excess of \$5,000 and internally generated software development costs in excess of \$1,000,000 are capitalized.

Depreciation and amortization is 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, 2020, 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, 2020, is \$924,000. Of this, \$86,000 is considered a short-term liability and \$838,000 is shown as a long-term liability on the Statement of Fiduciary Net Position. The total increased by \$61,400 during fiscal year 2020.

Figure 7. Schedule of Capital Assets

Dollars in Thousands

Description	Balance 7/1/2019	Additions	Deletions	Balance 6/30/2020
Furniture and equipment	\$ 3,203	\$ 672	\$ (204)	\$ 3,671
Reserve for depreciation	(2,528)	(418)	204	(2,742)
Internally developed software	20,116	—	—	20,116
Reserve for amortization	(7,528)	(2,012)	—	(9,540)
Net Capital Assets	<u>\$ 13,263</u>	<u>\$ (1,758)</u>	<u>\$ —</u>	<u>\$ 11,505</u>

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, 2020 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 SBI has 68 investments that are valued at NAV that are currently in the liquidation mode, totaling 3.0 percent of the NAV value. The majority of the remaining value of investments in liquidation mode will be returned to the SBI within a time period of three to five years. TRA has a total of \$3.2 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, 2020

Dollars in Thousands

Investments	Fair Value	Level 1	Level 2	Level 3
Equity				
Common Stock	\$ 12,576,740	\$ 12,571,545	\$ 5,134	\$ 61
Real Estate Investment Trust	354,641	354,641	—	—
Other Equity	442,631	277,148	3,896	161,587
Equity Total	\$ 13,374,012	\$ 13,203,334	\$ 9,030	\$ 161,648
Fixed Income				
Asset-Backed Securities	\$ 150,830	\$ —	\$ 135,876	\$ 14,954
Mortgage-Backed Securities	821,450	—	815,074	6,376
Corporate Bonds	916,247	—	916,232	15
Government Issues	2,719,001	—	2,711,479	7,522
Other Debt Instruments	—	—	—	—
Fixed Income Total	\$ 4,607,528	\$ —	\$ 4,578,661	\$ 28,867
Investment Derivatives				
Options	\$ 154	\$ 155	\$ —	\$ (1)
Derivative Total	\$ 154	\$ 155	\$ —	\$ (1)
Total Investments by Fair Value	\$ 17,981,694	\$ 13,203,489	\$ 4,587,691	\$ 190,514
Investments Measured at the Net Asset Value (NAV)				
	NAV	Unfunded Commitments		
Private Equity	\$ 2,281,172	\$ 2,158,036		
Real Estate	330,518	385,273		
Real Assets	542,337	247,384		
Private Credit	375,736	411,790		
NAV total	\$ 3,529,763	\$ 3,202,483		

Note: Cash, cash equivalents, and derivative futures (hedge type instruments) are not leveled under GASB Statement 72, so are not included in this figure. 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, 2020, 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 percent 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, and Mutual Funds.

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.

Other Debt Instruments: Includes STIF (Short Term Investment Funds) type instruments.

Investment Derivatives

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.

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 30. TRA cash funds are held in the state treasury, commingled with other state funds. Minnesota Statute Sec. 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 percent of the sum of the insured amount and the market value of the collateral. Throughout fiscal year 2020, 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 percent of the fund for which the state board is investing;

- Participation is limited to 50 percent of a single offering; and
- Participation is limited to 25 percent 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, 2020 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	\$ 126,410
AA	3,416,879
A	127,476
BBB	614,973
BB	271,888
B	31,753
CCC	7,594
CC	3,770
C	775
D	211
Unrated	1,324,650
Total	<u>\$ 5,926,379</u>

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 five percent; therefore, there is no material concentration of credit risk.

F. Interest Rate Risk

Interest rate risk is the risk that changes in interest rates of debt instruments, which could adversely affect the fair value of an investment. The State Board of Investment 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	17.26
U.S. Treasury	15.85
Foreign Country Bonds	11.06
Corporate Debt	10.87
Agency	8.07
Yankee	7.87
Asset Backed	5.61
Collateralized Mortgage Obligation	5.14
Mortgage Pass Through	4.11

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. Under SBI manager guidelines, approved by the Investment Advisory Committee (IAC) and SBI, each money manager may hedge foreign currency transactions at their own option. 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. TRA's share of investments as of June 30, 2020, 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 or Debt	Equity	Total
Australian Dollar	\$ 181	\$ —	\$ 192,769	\$ 192,950
Brazilian Real	80	—	45,455	45,535
Canadian Dollar	513	7,645	279,895	288,053
Chilean Peso	100	—	1,838	1,938
Colombian Peso	99	—	1,566	1,665
Czech Koruna	—	—	4,396	4,396
Danish Krone	5	—	84,896	84,901
Egyptian Pound	—	—	421	421
Euro Currency	1,088	5,497	1,319,446	1,326,031
Hong Kong Dollar	527	—	329,385	329,912
Hungarian Forint	—	—	7,123	7,123
Indian Rupee	1	—	—	1
Indonesian Rupiah	109	—	18,117	18,226
Japanese Yen	3,654	—	748,436	752,090
Malaysian Ringgit	30	—	8,760	8,790
Mexican Peso	(9)	—	13,506	13,497
Moroccan Dirham	—	—	—	—
New Israeli Sheqel	24	—	12,970	12,994
New Taiwan Dollar	437	—	121,808	122,245
New Zealand Dollar	—	—	8,424	8,424
Norwegian Krone	1	—	16,504	16,505
Philippine Peso	10	—	4,882	4,892
Polish Zloty	—	—	9,469	9,469
Pound Sterling	857	627	417,484	418,968
Qatari Rial	—	—	2,895	2,895
Romanian LEU	—	—	1,134	1,134
Singapore Dollar	180	—	34,376	34,556
South African Rand	57	—	29,312	29,369
South Korean Won	29	—	125,408	125,437
Swedish Krona	158	—	88,041	88,199
Swiss Franc	(2,795)	—	307,769	304,974
Thailand Baht	372	—	17,483	17,855
Turkish Lira	—	—	8,265	8,265
UAE Dirham	—	—	3,522	3,522
Yuan Renminbi	112	—	39,364	39,476
Total	\$ 5,820	\$ 13,769	\$ 4,305,119	\$ 4,324,708

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, 2020, 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 2020 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 market 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 ten 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, 2020, if all counter parties failed to perform as contracted is \$853,913. 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 FY 2020	Fair Value at June 30, 2020	Notional Amount
Futures			
Index Futures – Long	\$ 26,272	\$ —	\$ 404
Index Futures – Short	\$ 1,235	\$ —	\$ (4)
Fixed Income Futures – Long	\$ 54,196	\$ —	\$ 574,185
Fixed Income Futures – Short	\$ (38,053)	\$ —	\$ (496,627)
Options			
Futures Options Bought	\$ (1,516)	\$ 229	\$ 390
Futures Options Written	\$ 2,180	\$ (74)	\$ (1,432)
Currency Forwards			
Foreign Currency Forwards	\$ (2,428)	\$ 109	\$ 82,672
Stock Warrants and Rights			
Stock Warrants	\$ (43)	\$ 56	\$ 71
Stock Rights	\$ (104)	\$ 467	\$ 1,369
Swaps			
Credit Default Written	\$ (496)	\$ 188	\$ 16,407
Pay Fixed Interest Rate	\$ (5,585)	\$ (4,234)	\$ 70,041
Receive Fixed Interest Rate	\$ 71	\$ 58	\$ 4,638

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 Client's agent in lending Client's securities to approved borrowers.

State Street, as agent, enters into Securities Loan Agreements with borrowers.

During the fiscal year, State Street lent, on behalf of the client, certain securities of the Client 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 the Client 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, 2020, such investment pool had an average duration of 1.0 day and an average weighted maturity of 77.04 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, 2020, 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, 2020, were \$2.23 billion and \$2.17 billion respectively. See Figure 13 for the detail of the

securities on loan. Cash collateral totaling \$1,591,273,022 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

Product Type	Market Value of Loaned Securities as of June 30, 2020
Domestic Equity	\$ 1,877,161
International Equity	77,735
U.S. Government Bonds	216,851
Total	\$ 2,171,747

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 95, 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, 2020, TRA had 285 retirees with an ELSA account established. The total of all ELSA account balances was \$3.95 million. The dollar amount of pension benefits withheld due to excess earnings during fiscal year 2020 was \$1.51 million. ELSA assets are invested in the TRA Fund until distribution. TRA distributed 133 ELSA refunds during fiscal year 2020. They totaled \$1.79 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 2020, Coordinated members were required to contribute 7.50 percent of their annual covered salary. Employers contributed 7.92 percent of their annual covered salary for Coordinated members. The total covered payroll salaries for all TRA employees during fiscal year 2020 was approximately \$6.79 million or 0.12 percent of total membership-covered salaries. The total covered payroll salaries for the entire membership of TRA for fiscal year 2020 was approximately \$5.17 billion. TRA paid 100 percent of its required employer contributions listed in *Figure 14*.

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

Dollars in Thousands

2020	2019	2018
\$429	\$603	\$490

D. Ownership of Office Building

The 1999 Legislature enacted authorization 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 36.0 percent.

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 \$9.58 million. The bonds mature on June 1, 2025. TRA's share of the present value savings of the 2012 bond issuance was approximately \$3.51 million.

At fiscal year end, TRA's share of the bonds payable is 3.21 million, which includes bond principal of \$3.05 million and bond premium of \$159.7 thousand. Interest expected to be paid over the remaining term of the bonds is \$141.5 thousand. 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 @ 36.0%)				
Effective: July 1, 2015				
Fiscal Year	Principal	Interest	Premium	Total
2021	\$ 661	\$ 50	\$ 45	756
2022	675	40	42	757
2023	690	28	40	758
2024	664	17	24	705
2025	360	6	8	374
Totals	\$ 3,050	\$ 141	\$ 159	3,350

Figure 16. Schedule of Office Building and Equipment

Dollars in Thousands

(TRA Share @ 36.0%)				
Description	Balance 7/1/2019	Additions	Deletions	Balance 6/30/2020
Land	\$ 171	\$ —	\$ —	171
Building	\$ 10,637	\$ —	\$ —	10,637
Reserve for Building Depreciation	(4,929)	(266)	—	(5,195)
Net Building	\$ 5,708	\$ (266)	\$ —	5,442
Building Equipment	\$ 108	\$ —	\$ —	108
Reserve for Depreciation	(108)	—	—	(108)
Net Building Equipment	\$ —	\$ —	\$ —	—

5. Contributions Required and Made

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 98, 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, 2020, are as follows for participating employers and non-employers:

Contributions totaling \$857.49 million (\$396.68 million employee and \$460.81 million employer and employer direct aid) were received in accordance with the statutory contribution rates and amounts. On page 95, Line C, statutory contributions are projected as insufficient to meet the actuarially determined required contributions. The deficiency is 1.19 percent of covered payroll. This translates into a contribution deficiency of about \$65.45 million projected for fiscal year 2021.

Net Pension Liability	Dollars in
Total Pension Liability (TPL)	\$ 30,133,130
Fiduciary Net Position (FNP)	\$ 22,744,996
Net Pension Liability (NPL)	\$ 7,388,134
Plan net position as a percentage of the total pension liability	75.48%

Key Methods and Assumptions Used in Valuation of Total Pension Liability

Actuarial Information	
Price inflation	2.50 percent
Salary increases, including price inflation	2.85 to 8.85 percent before July 1, 2028 and 3.25 to 9.25 percent, after June 30, 2028
Wage growth rate	2.85 percent before July 1, 2028, and 3.25 percent, after June 30, 2028
Payroll growth rate	3.00 percent
Long-term rate of return, net of investment expense, including price inflation	7.50 percent
Municipal bond index rate	
Prior measurement date	3.50 percent
Measurement date	2.19 percent
Year FNP is projected to be depleted	N/A
Single equivalent interest rate, net of investment expense, including price inflation	
Prior measurement date	7.50 percent
Measurement date	7.50 percent
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 (SEIR) – volatility of SEIR

The discount rate used to measure the TPL as of the Measurement Date was 7.50 percent. 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 7.50 percent.

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: 11.00% for Basic members and 7.50% for Coordinated members. Effective July 1, 2023, employee contribution rates

will increase to 11.25% for Basic members and 7.75% for Coordinated members.

- Employer contribution rates: 12.13% for Basic members and 8.13% for Coordinated members. In addition, a supplemental amount equal to 3.64% of Salary for Special School District #1 members until the Fund is fully funded. Employer rates will increase by 0.21% per year until they reach 12.75% for Basic members and 8.75% for Coordinated members.
- 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 7.50% 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. An experience study of the economic assumptions was prepared in 2017 that resulted in a recommendation to reduce the long-term rate of return to 7.50 percent. 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 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 2.19% on the Measurement Date.

Periods of Projected Benefit Payments

Projected future benefit payments for all current plan members were projected through 2119.

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 29.

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 percent 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 (6.50%)	Current Discount Rate (7.50%)	1% Increase (8.50%)
NPL	\$ 11,311,155	\$ 7,388,134	\$ 4,155,763

The complete *2020 Actuarial Valuation Accounting Report* is available <https://minnesotatra.org/financial/annual-reports/>.

Required Supplementary Information

Schedule of Changes in the Employers' Net Pension Liability

For the Seven Fiscal Years Ended June 30, 2020

Dollars in Thousands

	2020	2019	2018
Total Pension Liability			
Service cost	\$ 489,790	\$ 476,708	\$ 1,056,681
Interest	2,123,261	2,079,081	2,064,148
Benefit term changes	—	—	(3,681,114)
Differences between expected and actual experience *	177,794	(70,899)	(17,461)
Assumptions changes **	6,673	—	(10,167,248)
Benefit payments, including member refunds	(1,914,465)	(1,877,836)	(1,831,887)
Net change in Total Pension Liability	\$ 883,053	\$ 607,054	\$ (12,576,881)
Total Pension Liability – beginning***	\$ 29,250,077	\$ 28,643,023	\$ 41,219,904
Total Pension Liability – ending (a)	\$ 30,133,130	\$ 29,250,077	\$ 28,643,023
Employer contributions	\$ 425,223	\$ 403,300	\$ 378,728
Non-employer contributions-Direct Aid (State/City/District)	35,587	35,587	35,587
Employee contributions	396,679	386,669	374,550
Net investment income	939,748	1,579,099	2,160,111
Benefit payments, including member refunds	(1,914,465)	(1,877,836)	(1,831,887)
Administrative expenses	(15,392)	(15,156)	(15,673)
Other	1,560	2,306	2,581
Net Change in Plan Fiduciary Net Position	\$ (131,060)	\$ 513,969	\$ 1,103,997
Plan Fiduciary Net Position – beginning	\$ 22,876,056	\$ 22,362,087	\$ 21,258,090
Plan Fiduciary Net Position - ending (b)	\$ 22,744,996	\$ 22,876,056	\$ 22,362,087
Net Pension Liability - ending (a)-(b)	\$ 7,388,134	\$ 6,374,021	\$ 6,280,936
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	75.48%	78.21%	78.07%
Covered Payroll	\$ 5,166,241	\$ 5,000,930	\$ 4,832,917
Employers' Net Pension Liability as a percentage of covered payroll	143.01%	127.46%	129.96%

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

** 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.

Note: Schedule is intended to show 10-year trend. Additional years will be reported as they become available.

Required Supplementary Information *(continued)*

Schedule of Changes in the Employers' Net Pension Liability

For the Seven Fiscal Years Ended June 30, 2020

Dollars in Thousands

	2017	2016	2015	2014
\$	1,267,304	\$ 438,938	\$ 399,228	\$ 367,621
	1,975,771	2,062,775	2,019,707	1,895,469
	—	—	—	—
	(167,572)	(798)	7,113	475,265
	(3,355,602)	15,871,845	576,075	—
	(1,776,814)	(1,728,023)	(1,669,607)	(1,592,686)
\$	(2,056,913)	\$ 16,644,737	\$ 1,332,516	\$ 1,145,669
\$	43,276,817	\$ 26,632,080	\$ 25,299,564	\$ 23,755,943
\$	41,219,904	\$ 43,276,817	\$ 26,632,080	\$ 24,901,612
\$	367,791	\$ 354,961	\$ 340,208	\$ 299,300
	35,587	35,587	41,587	21,001
	361,175	347,256	334,826	294,632
	2,855,218	(23,672)	887,280	3,257,693
	(1,776,814)	(1,728,023)	(1,669,607)	(1,592,686)
	(11,702)	(11,338)	(11,509)	(9,430)
	2,404	3,569	3,550	3,855
\$	1,833,659	\$ (1,021,660)	\$ (73,665)	\$ 2,274,365
\$	19,424,431	\$ 20,446,091	\$ 20,519,756	\$ 18,019,319
\$	21,258,090	\$ 19,424,431	\$ 20,446,091	\$ 20,293,684
\$	19,961,814	\$ 23,852,386	\$ 6,185,989	\$ 4,607,928
	51.57%	44.88%	76.77%	81.50%
\$	4,688,875	\$ 4,515,699	\$ 4,306,426	\$ 4,056,482
	425.73%	528.21%	143.65%	113.59%

Note: Schedule is intended to show 10-year trend. Additional years will be reported as they become available.

Required Supplementary Information *(continued)*

Schedule of Employer and Non-Employer Contributions

For the Ten Fiscal Years Ended June 30

<i>Dollars in Thousands</i>	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Actuarially determined employer contribution*	\$ 490,881	\$ 472,491	\$ 516,157	\$ 516,582	\$ 459,699	\$ 495,235	\$ 492,731	\$ 463,788	\$ 401,725	\$ 384,943
Actual non-employer contributions	\$ 35,587	\$ 35,587	\$ 35,587	\$ 35,587	\$ 35,587	\$ 41,587	\$ 21,001	\$ 19,954	\$ 21,726	\$ 21,510
Actual employer contributions	\$ 425,223	\$ 403,300	\$ 378,728	\$ 367,791	\$ 354,961	\$ 340,208	\$ 299,300	\$ 270,708	\$ 244,935	\$ 222,723
Total contributions	\$ 460,810	\$ 438,887	\$ 414,315	\$ 403,378	\$ 390,548	\$ 381,795	\$ 320,301	\$ 290,662	\$ 266,661	\$ 244,233
Annual contribution deficiency (excess)	\$ 30,071	\$ 33,604	\$ 101,842	\$ 113,204	\$ 69,151	\$ 113,440	\$ 172,430	\$ 173,126	\$ 135,064	\$ 140,710
Covered payroll	\$5,166,241	\$5,000,930	\$4,832,917	\$4,688,875	\$4,515,699	\$4,306,426	\$4,056,482	\$3,917,310	\$3,871,809	\$3,838,111
Actual contributions as a percent of covered employee payroll	8.92 %	8.78 %	8.57 %	8.60 %	8.65 %	8.87 %	7.90 %	7.42 %	6.89 %	6.36 %

* 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 2020	4.22%
Teachers Retirement Association Plan – FY 2019	7.28%
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%

Note: Schedule is intended to show 10-year trend. Additional years will be reported as they become available.

Notes to Required Supplementary Information for the Fiscal Year Ended

June 30, 2020

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:

2020	None
2019	None
2018	<p>The 2018 Omnibus Pension Bill contained a number of changes:</p> <ul style="list-style-type: none">• The COLA was reduced from 2.0% each January 1 to 1.0%, 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 zero percent beginning July 1, 2019. Interest payable on refunds to members was reduced from 4.0% to 3.0%, 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	<p>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.</p>
2014	<p>The increase in the post-retirement benefit adjustment will be made once the fund is 90 percent funded for two consecutive years, rather than just one year.</p> <p>Legislation provided for the merger of the Duluth Teachers Retirement Fund Association into TRA. The merger will not occur until June 30, 2015, so it had no impact on the July 1, 2014, valuation results.</p>
2013	<p>The early retirement reduction factors applicable for Level formula benefits to plan members were changed.</p>

2010 The post-retirement benefit increases were suspended for 2011 and 2012, resuming in 2013 at 2.0 percent, and returning to 2.5 percent once the funding ratio of the plan reaches 90 percent. Also in 2010, changes were made to the interest rate credited on employee contributions, future increases on deferred vested benefits, and the requirement to receive a full post-retirement benefit adjustment. In addition, employee and employer contribution rates were increased 0.50 percent per year beginning July 1, 2011, through July 1, 2014.

The legislation also created the “stabilizer,” whereby the Board was also granted authority to adjust contribution rates under certain circumstances.

Changes in Actuarial Assumption

- 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 8.50% to 7.50%.
 - The price inflation assumption was lowered from 3.00% to 2.50%.
 - The payroll growth assumption was lowered from 3.50% to 3.00%.
 - 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 2.0 percent annually to 2.5 percent annually on July 1, 2045.

Adjustments were made to the combined service annuity loads. The active load was reduced from 1.4 percent to 0.0 percent, the vested inactive load increased from 4.0 percent to 7.0 percent and the non-vested inactive load increased from 4.0 percent to 9.0 percent.

For GASB valuation:

- The investment return assumption was changed from 8.00 percent to 7.50 percent.
- The COLA was not assumed to increase to 2.5 percent, but remain at 2.0 percent for all future years.
- The price inflation assumption was lowered from 2.75 percent to 2.50 percent.
- The payroll growth assumption was lowered from 3.50 percent to 3.00 percent.
- The general wage growth assumption was lowered from 3.50 percent to 2.85 percent for 10 years followed by 3.25 percent, 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 2.0 percent for all future years).

The price inflation assumption was lowered from 3.00 percent to 2.75 percent.

The general wage growth and payroll growth assumptions were lowered from 3.75 percent to 3.50 percent.

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	<p>The cost-of-living (COLA) adjustment was assumed to increase from 2.0 percent annually to 2.5 percent annually on July 1, 2037, for funding calculations. The COLA was not assumed to increase for GASB calculations.</p> <p>The investment return assumption was changed from 8.25 percent to 8.00 percent.</p>
7/1/2014 Valuation	<p>Post-retirement benefit adjustments are now assumed to increase from 2.0 percent annually to 2.5 percent annually once the legally specified criteria are met. This is estimated to occur July 1, 2034 for GASB calculations and July 1, 2031 for funding calculations.</p>
7/1/2012 Valuation	<p>The investment return assumption was changed from 8.5 percent for all years to 8.0 percent for the next five years and 8.5 percent thereafter. This applies to funding calculations only.</p>
7/1/2011 Valuation	<p>The salary increase assumption was changed to a service based assumption.</p> <p>The payroll growth assumption was decreased from 4.00 percent to 3.75 percent.</p> <p>The post-retirement mortality assumption was changed to the RP-2000 Mortality Tables, with white-collar adjustments and male rates set back two years and female rates set back three years.</p> <p>The disabled mortality assumption was changed to the RP-2000 Disabled Retiree Mortality Tables.</p> <p>Assumed disability rates were changed to more closely reflect actual experience.</p> <p>Assumed retirement rates for Coordinated members were changed to more closely reflect actual experience.</p> <p>Assumed form of annuity selection was changed to more closely reflect actual experience.</p> <p>Assumed difference in ages between spouses was changed to more closely reflect actual experience.</p>
7/1/2008 Valuation	<p>Ultimate salary increase rates were lowered.</p> <p>The payroll growth assumption was lowered.</p> <p>Retirement rates were revised.</p>

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 48 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, 2020, (based on the July 1, 2019 valuation).

Actuarial cost method	Entry Age Normal
Amortization method	Level percentage of payroll, closed
Remaining amortization period	29 years
Asset valuation method	5-year moving average
Inflation	2.50 percent
Wage growth rate	2.85 percent before July 1, 2028 and 3.25 percent after June 30, 2028
Salary increase, including inflation	2.85 percent to 8.85 percent before July 1, 2028 and 3.25 to 9.25 percent after June 30, 2028
Long-term rate of return, net of investment expense including price inflation	7.50 percent
Cost of living adjustment	1.00 percent for January 2019 through January 2023, then increasing by 0.1 percent each year up to 1.5 percent 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 48.

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**Supporting Schedules
to Financial Section**

Teachers Retirement Fund Schedule of Administrative Expenses

For the Fiscal Year Ended June 30, 2020

Dollars in Thousands

Personnel Services

Salaries.....	\$	6,787
Employer contributions to Teachers Retirement Association.....		429
Employer contributions to Social Security.....		508
Insurance contributions.....		1,443
Employee training.....		80
Workers' compensation.....		8
Subtotal	\$	9,255

Communication

Duplicating and printing expenses.....	\$	98
Postage.....		202
Telephone.....		78
Subtotal	\$	378

Office Building Maintenance

Lease of office and storage space.....	\$	143
Building operating expenses.....		625
Rental of office machines/furnishings.....		43
Repairs and maintenance.....		124
Building depreciation.....		266
Bond interest expense.....		60
Subtotal	\$	1,261

Professional Services

Actuarial services.....	\$	123
Audit fees.....		168
Legal fees.....		56
Management consultant services.....		12
Subtotal	\$	359

Other Operating Expenses

Computer and system services.....	\$	1,342
Department head expenses.....		1
Depreciation of office equipment.....		418
Dues and subscriptions.....		16
Insurance expense.....		2
Miscellaneous administrative expenses.....		61
Amortization.....		2,012
State indirect costs.....		92
Office supplies.....		131
Travel - director and staff.....		51
Travel - trustees.....		14
Subtotal	\$	4,140

Total Administrative Expenses	\$	15,393
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Teachers Retirement Fund

Schedule of Professional Consultant Expenses

For the Fiscal Year Ended June 30, 2020

Dollars in Thousands

Investment Pool Managers

State Board of Investment	\$	1,408
Aon Hewitt Investment Consulting, Inc.....		165
Meketa Consulting		91
Broadridge (QED).....		102
Domestic equity pool managers		5,751
Global equity pool managers		8,827
Domestic bond pool managers		2,368
Semi-passive equity pool managers		823
Passive equity pool managers		343
Treasury protection pool manager.....		1,049
Total Investment Pool Managers Expenses.....	\$	<u>20,927</u>

Actuarial

Cavanaugh Macdonald Consulting	\$	123
Total Actuarial Expenses	\$	<u>123</u>

Audit

Legislative auditor	\$	102
State auditor		66
Total Audit Expenses	\$	<u>168</u>

Computer Support Services

Fulcrum Consulting	\$	243
Total Computer Support Service Expenses	\$	<u>243</u>

Legal

Attorney General	\$	20
Ice Miller.....	\$	36
Total Legal Expenses	\$	<u>56</u>

Management Consulting

Rajan Law	\$	5
My Pension Benefit Information LLC.....		7
Total Management Consulting Expenses	\$	<u>12</u>

Total Consultant Expenditures	\$	<u><u>21,529</u></u>
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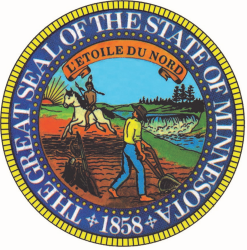
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Investments



State Board of Investment Letter

**MINNESOTA
STATE
BOARD OF
INVESTMENT**



Board Members:

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Tim Walz**

**State Auditor
Julie Blaha**

**Secretary of State
Steve Simon**

**Attorney General
Keith Ellison**

**Executive Director &
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minn.sbi@state.mn.us**

**Website:
www.sbi.state.mn.us**

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Employer*

INVESTMENT AUTHORITY

The assets of the Minnesota Teachers Retirement Association (TRA) are invested along with the assets of the Minnesota Public Employees Retirement Association and the Minnesota State Retirement System under the direction and authority of the State Board of Investment (SBI) 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

Investment policy states that the SBI will operate within standard investment practices of the prudent person. The SBI is 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 M.S., section 11A.09.) The SBI is authorized to own government obligations, corporate obligations, various short-term obligations, corporate stocks, venture capital interests, resource investments, and real estate interests subject to specific constraints. (See M.S., section 11A.24.) In particular, pension fund assets are to be invested for the exclusive benefit of the members of the fund.

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 active and retired public employees who participate in 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 in order to meet its actuarial return target and ensure that sufficient funds are available to finance promised benefits at the time of retirement. The 2018 Legislature reduced the actuarial interest rate assumption for TRA to 7.5%.

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 53%
- Fixed Income 20%
- Private Markets 25%
- Cash 2%

Based on values on June 30, 2020, the Combined Funds returned 4.3 percentage points above the CPI over the last 20 years and returned 0.2 percentage point above the composite index over the past 10 years. Investment returns ranked in the top 24th percentile over the past five years and in the top 14th percentile over the past 10 years, compared to other public and corporate plans with over \$1 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,



Mansco Perry III
Executive Director and Chief Investment Officer
Minnesota State Board of Investment
November 13, 2020

Investment Summary

Prepared by TRA management with data obtained from the State Board of Investment's Fiscal Year 2020 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 fair value of approximately \$22.7 billion as of June 30, 2020.

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 experienced in finance and investment. These members traditionally have come from the Minneapolis and Saint Paul pension, foundation, and endowment 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 2020)

Public Members:

Gary Martin, Chair
Chief Investment Officer
Macalester College

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

Malcolm W. McDonald
Director and Corporate Secretary
(Retired) Emeritus Member
Space Center, Inc.

Susanna Gibbons
Managing Director
Carlson Funds Enterprise

Ellen Brownell
Consultant

Morris Goodwin, Jr.
Senior Vice President and CFO
American Public Media Group

Dennis Duerst
Director, Benefit Funds Investment
3M Company

Nancy Orr
Chief Investment Officer
Fiduciary Consulting, Inc

Carol Peterfeso
Chief Treasury & Investment Officer
University of St. Thomas

Dan McConnell
Building Manager
Building & Construction Trades
Council of Minneapolis

Shawn Wischmeier
Chief Investment Officer
Margaret A. Cargill Philanthropies

Employee & Retiree Representatives:

Denise Anderson
Governor's Appointee
Active Employee Representative

Peggy Ingison
Governor's Appointee
Retiree Member Representative

Martha Severson Rush
Governor's Appointee
Active Employee Representative

Permanent Members:

Doug Anderson
Executive Director
Public Employees Retirement Association

Erin Leonard
Executive Director
Minnesota State Retirement System

Jay Stoffel
Executive Director
Teachers Retirement Association

Jim Showalter
Commissioner
Minnesota Management & Budget

IAC Representative for Jim Showalter

Jennifer Hassemer
Asst. Commissioner, Debt Mgmt.
Minnesota Management & Budget

Consultants

Aon Hewitt Investment Consulting, Inc., of Chicago is general consultant to the SBI. Meketa Consulting of Portland, Oregon serves as a special project consultant. 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 356.

Combined Retirement Funds

Investment Objectives

All TRA assets are accounted for within the Combined Funds managed by the Minnesota State Board of Investment (SBI). The Combined Funds consist not only of the TRA Fund, 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 7.5 percent, as specified in Minnesota statute.

While an active member is working, employee and employer contributions are placed into the TRA Fund. The pre-funding 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 fair value, net of investment expenses. Performance is measured net of all fees and costs 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 Investment Advisory Committee (IAC).

The policy changes are described in more detail in the Notes to the Financial Statements beginning on page 26.

Total Return Vehicles

SBI invested the majority of the Combined Funds' assets in common stocks (both domestic and international equities) and other equity investments. A large allocation is consistent with the long investment time horizon of the Combined Funds and the advantageous long-term risk-return characteristics of common stocks. Including international equities in the asset mix allowed SBI to diversify its holdings across world markets, offered the opportunity to enhance returns and reduced the risk/volatility of the total portfolio. The rationale underlying the inclusion of private equity alternative assets (e.g., venture capital) is similar.

SBI recognized that this sizable policy allocation to common stock and private equity likely produced 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 disappointing results. Nevertheless, the long run return benefits of this policy are expected to compensate for the additional volatility.

Diversification Vehicles

Other asset classes are included in the Combined Funds to provide some insulation against highly inflationary or deflationary environments. The classes also diversify the portfolio sufficiently to avoid excessive return volatility.

Real estate and real assets (oil and gas) investments provide an inflation hedge that other financial assets do not offer. Under more normal financial conditions, such as low to moderate inflation, the returns on these assets are not highly correlated with common stocks. As a result, their inclusion 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, including subordinated debt, mezzanine or resource income investments such as income-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. As such, they help reduce the volatility of the total portfolio, while generating higher returns relative to more traditional bond investments.

The allocation to fixed income (bonds) act as a hedge against a deflationary economic environment. In the event of a major deflation, high-quality fixed income assets, particularly long-term bonds, are expected to protect principal and generate significant capital gains. And, like real estate and real assets, under normal financial conditions, bonds help diversify the Combined Funds and thereby control return volatility.

Rate of Return Results

The Combined Funds produced a total rate of return of 4.2 percent for fiscal year 2020. Over the last five years, the Combined Funds generated an annualized return of 7.3 percent.

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

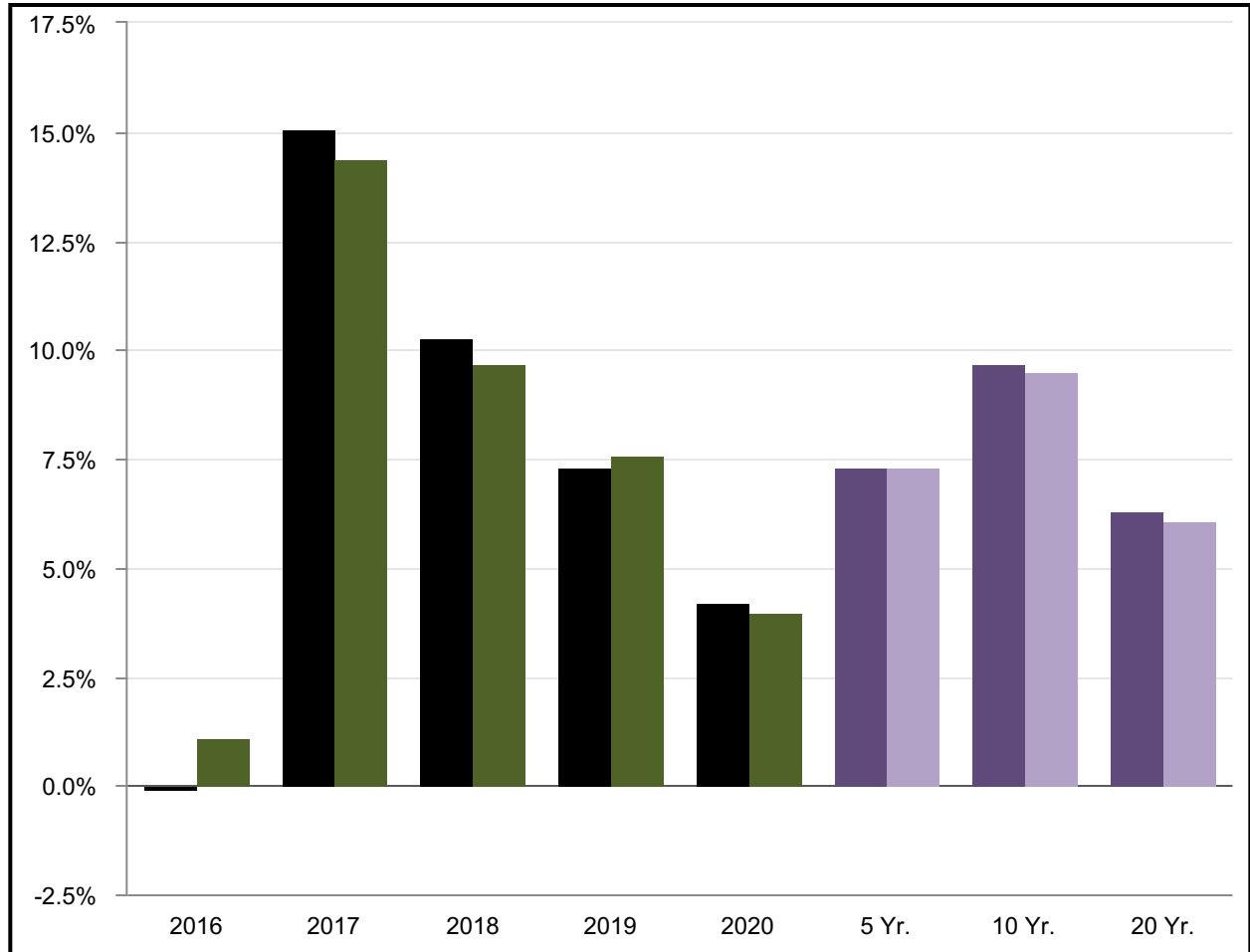
The investment return for the Combined Funds for the fiscal year ended June 30, 2020 was 4.2 percent. For the ten-year period ending June 30, 2020, the Combined Funds returned 9.7 percent and exceeded the composite index investment performance by 0.2 percent annualized. The Funds matched the composite index over the last five years and underperformed the index over the most recent fiscal year by 0.2 percentage points. Actual returns relative to the total fund composite index over the last five years are shown in the graph on the following page.

Combined Funds

Investment Performance

Combined Funds Performance vs. Composite Index (Past Five Fiscal Years and Longer-Term)

Fiscal Year Ended June 30, 2020



Combined Funds	(0.1)%	15.1%	10.3%	7.3%	4.2%	7.3%	9.7%	6.3%
Composite Index	1.1%	14.4%	9.7%	7.6%	4.0%	7.3%	9.5%	6.1%

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
Performance of Asset Pools (Net of Fees)**

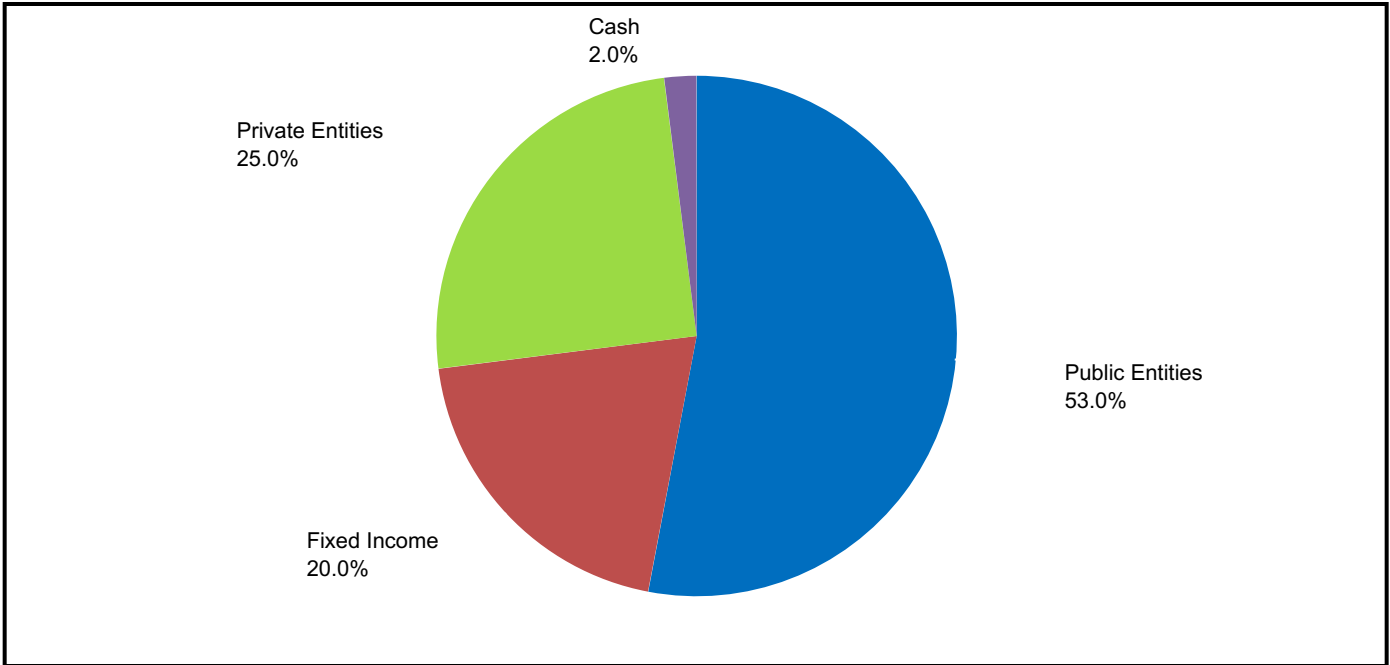
June 30, 2020

	Rates of Return (Annualized)					
	1 Year %	3 Year %	5 Year %	10 Year %	20 Year %	30 Year %
Public equity	2.7	7.1	7.5	11.4	5.3	8.8
Public equity benchmark	2.4	7.0				
Excess	0.3	0.1				
Domestic equity	6.2	9.9	9.7	13.7	5.9	9.4
Domestic equity benchmark	6.0	9.9	9.9	13.7	6.0	9.6
Excess	0.2	0.0	-0.2	0.0	-0.1	-0.2
International equity	-4.2	1.3	2.5	5.4	3.8	
International equity benchmark	-4.8	1.1	2.3	5.0	3.4	
Excess	0.6	0.2	0.2	0.4	0.4	
Fixed Income (Bond) Pool	9.2	5.8	4.8	4.5	5.5	6.4
Fixed Income Benchmark	8.7	5.3	4.3	3.8	5.1	6.0
Excess	0.3	0.5	0.5	0.7	0.4	0.4
Treasuries	16.7					
Treasury Benchmark	17.2					
Excess	-0.5					
Total private markets	-2.6	7.3	10.4	10.6	11.1	11.9
Private equity	3.6	12.3	13.5	15.9	11.7	
Private credit	0.4	7.6	11.9	13.4	11.4	
Resources	-25.4	10.2	-7.8	1.4	12.6	
Real estate	3.5	9.6	8.2	11.4	8.5	

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*

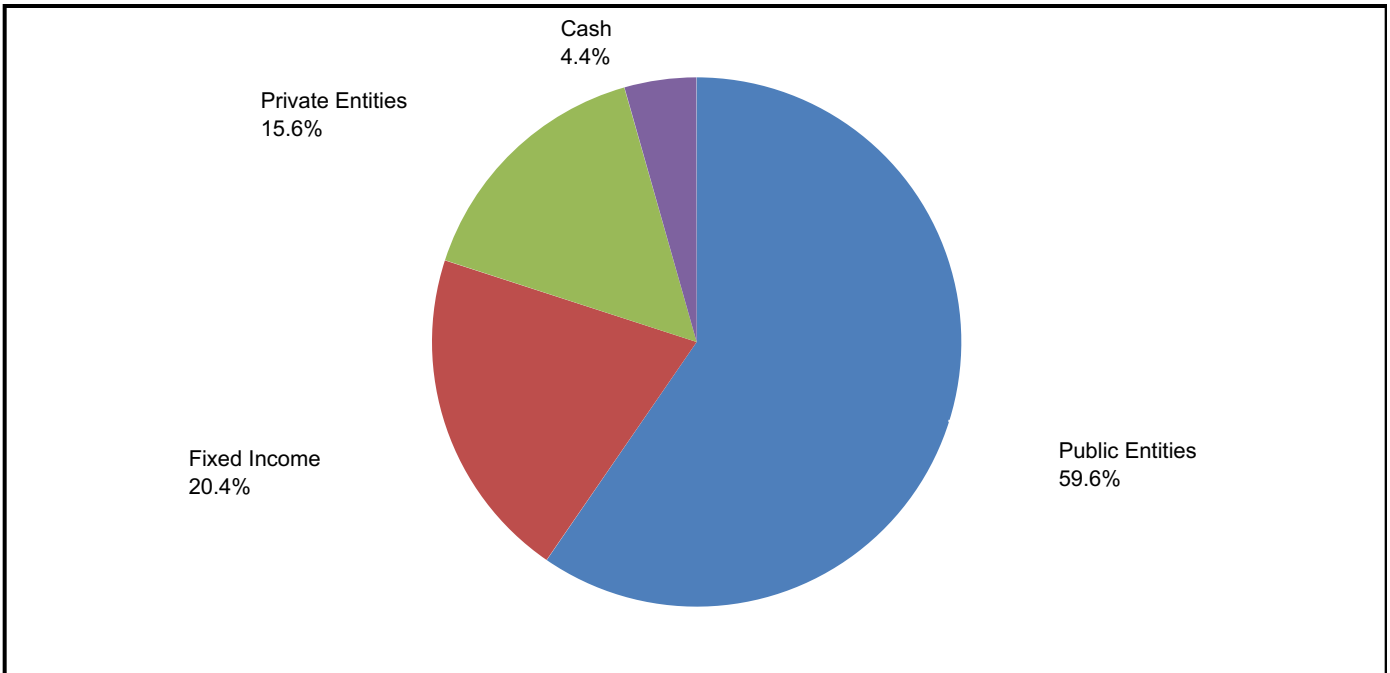
As of June 30, 2020



See note on page 26-29.

Combined Funds Portfolio Distribution: Actual Asset Mix

As of June 30, 2020



The fair value of the TRA Fund investment portfolio is approximately \$22.7 billion.

Teachers Retirement Fund

List of Largest Assets Held

June 30, 2020

Composite Holdings of Top Ten Equities

By Fair Value

Security	\$ Fair Value (Millions)	% of Portfolio
Microsoft Corp.	\$420.6	1.85
Apple Inc.	\$399.3	1.76
Amazon.com Inc.	\$338.0	1.49
Facebook, Inc Class A	\$154.6	0.68
Alphabet, Inc. Class A	\$121.6	0.54
Alphabet, Inc. Class C	\$112.2	0.51
Johnson & Johnson	\$99.1	0.49
Visa Inc. Class A Shares	\$97.2	0.43
Berkshire Hathaway Inc. Class B	\$91.8	0.40
United Health Group, Inc.	\$82.1	0.36

Composite Holdings of Top Ten Bond Holdings

By Fair Value

Security	% Coupon	\$ Fair Value (Millions)	% of Portfolio
US TREASURY N/B	3.125	\$113.8	0.50
US TREASURY N/B	1.625	\$109.7	0.48
US TREASURY N/B	3.000	\$88.4	0.39
US TREASURY N/B	2.375	\$78.3	0.34
US TREASURY N/B	3.000	\$73.3	0.32
US TREASURY N/B	3.750	\$68.4	0.30
US TREASURY N/B	2.750	\$66.8	0.29
US TREASURY N/B	2.500	\$63.7	0.28
US TREASURY N/B	3.625	\$59.7	0.26
US TREASURY N/B	2.875	\$56.2	0.25

TRA's assets are commingled in various pooled investment accounts administered by the State Board of Investment (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

For the Fiscal Year Ended June 30, 2020

Domestic Activity Equity Pool Managers

Barrow, Hanley.....	\$ 204,183
Earnest Partners.....	158,775
Goldman Equity.....	606,856
Hotchkis and Wiley.....	397,317
LSV Asset.....	153,835
Martingale.....	421,157
Peregrine Capital.....	515,221
Sands Capital.....	446,039
Winslow Capital.....	265,985
Zevenbergen Capital.....	475,648
Arrowpoint Asset Mgmt LLC.....	196,093
Hood River Capital Mgmt. LLC.....	599,521
Rice Hall James & Assoc., LLC.....	485,205
Wellington Mgmt. Co, LLP.....	525,009
Total Domestic Activity Equity Pool Managers	\$ 5,450,844

Passive Domestic Equity Pool Managers

Blackrock.....	\$ 15,041
Total Passive Domestic Equity Pool Managers	\$ 15,041

Large Cap Passive Domestic Equity Pool Managers

Blackrock.....	\$ 319,290
Total Passive Domestic Equity Pool Managers	\$ 319,290

Small Cap Passive Domestic Equity Pool Managers

Blackrock.....	\$ 8,943
Total Passive Domestic Equity Pool Managers	\$ 8,943

Semi Passive Equity Pool Managers

Blackrock.....	\$ 371,045
JP Morgan.....	452,125
Total Semi Passive Equity Pool Managers	\$ 823,170

Domestic Bonds Pool Managers

Columbia Invest.....	\$ 318,155
Blackrock Financial Mgmt.....	229,254
Dodge & Cox.....	356,538
Goldman.....	254,204
Neuberger.....	133,348
PIMCO.....	692,919
Western Asset Management.....	383,667
Total Domestic Bonds Pool Managers	\$ 2,368,085
Page Subtotal	\$ 8,985,373

Teachers Retirement Fund

Schedule of Investment Management Fees (cont.)

For the Fiscal Year Ended June 30, 2020

Subtotal from Previous Page..... \$ 8,985,373

Global Equity Pool Managers

Acadian Asset.....	\$ 475,204
State Street Emerging.....	187,139
AQR Capital Mgmt.....	479,128
Fidelity Investments.....	418,190
JP Morgan Fleming.....	357,313
Earnest Partners, LLC.....	599,974
Macquarie/Delaware Investments.....	558,962
Martin Currie, Inc.....	589,652
Marathon Asset.....	403,091
McKinley Capital Management.....	345,913
Morgan Stanley Dean.....	1,181,555
Neuberger Berman Investment.....	747,718
Pzena Investment Management.....	649,156
Rock Creek.....	1,221,467
Columbia Investments.....	381,736
State Street.....	230,674
Total Global Equity Pool Managers.....	<u>\$ 8,826,873</u>

Treasury Protection Pool

BlackRock.....	\$ 355,024
Goldman Sachs.....	367,494
Neuberger Berman.....	326,180
Total Treasury Protection Pool.....	<u>\$ 1,048,697</u>

Total Investment Management Fees..... \$19,160,945

Note: The investment portfolio of TRA had a fair value of approximately \$22.7 billion as of June 30, 2020.

Teachers Retirement Fund Summary of Investments

Dollars in Thousands

As of June 30, 2020

	Cost Value	Fair Value	% of Investments at Fair Value
Fixed Income Investments			
Treasuries Pool	\$ 1,911,819	\$ 2,291,505	10.09 %
Bond Pool	<u>2,111,074</u>	<u>2,318,276</u>	<u>10.21 %</u>
Total Fixed Income Investments	\$ 4,022,893	\$ 4,609,781	20.30 %
Alternative Investments			
Alternative Investment Pool	\$ 3,859,594	\$ 3,539,370	15.59 %
Equity Investments			
US Stock Index Pool	\$ 5,953,104	\$ 6,975,269	30.72 %
US Stock Actively Managed Pool	2,420,501	2,104,070	9.27 %
Broad International Stock Pool	<u>4,231,205</u>	<u>4,419,260</u>	<u>19.46 %</u>
Total Equity Investments	\$ 12,604,810	\$ 13,498,599	59.45 %
Short Term Cash Investments			
Money Market	\$ 988,713	\$ 988,844	4.36 %
CD Repo Pool	<u>68,931</u>	<u>69,004</u>	<u>0.30 %</u>
Total Short Term Investments	\$ 1,057,644	\$ 1,057,848	4.66 %
Total Investments	<u>\$ 21,544,941</u>	<u>\$ 22,705,598</u>	<u>100.00 %</u>

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. Wells Fargo, Saint Paul, 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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Teachers Retirement Association of Minnesota
A Pension Trust Fund of the State of Minnesota

Actuarial





Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

December 3, 2020

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, 2020 for the plan year ending June 30, 2021. 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). The valuation results reflect the benefit provisions in place on July 1, 2020.

There have been no changes to the plan provisions or actuarial methods since the last valuation. However, there have been a few minor changes to the actuarial assumptions. An experience study, based on the four-year period from July 1, 2014 through June 30, 2018, was completed in June 2019. The recommended assumption changes were adopted by the TRA Board and approved by the LCPR and are reflected in the July 1, 2020 valuation. The changes include:

- Mortality tables used for active members have been adjusted to reflect higher rates of death for males and lower rates for females, to better match actual experience.
- Termination rates in the first five years of employment have been adjusted to better reflect observed experience.
- The probability that new female retirees will elect to receive their benefit as a 100% joint and survivor annuity has been refined to more closely reflect recent experience.

The adoption of this new set of assumptions resulted in a \$6.7 million decrease in the unfunded actuarial accrued liability, an increase of 0.03% in the normal cost rate, and an increase in the total Required Contribution Rate of 0.03%.

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As described in the funding valuation report, the results of the valuation indicate that the System is 76.13% funded and the current statutory contribution rates are deficient by 1.19% of payroll to meet the target of full funding by 2048. The deficiency is determined using the actuarial value of assets which is higher 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 1.41% of payroll. If the scheduled future increases in the contribution rate are considered, the contribution deficiency is reduced to 0.54%. The funding report was prepared exclusively for TRA and the LCPR to determine the annual required contribution rate using the statutory investment return assumption of 7.50%.

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 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 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 discount rates, 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, the current funding policy is not expected to result in the Plan reaching full funding by the target date of 2048, but the Plan's funded ratio is expected to improve significantly over that time period. 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 so prescribed and are described in Appendix C of the valuation report.

Future actuarial results may differ significantly from the current results presented in this 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 normal 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 Comprehensive Annual 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

Actuary's Certification Letter

Board of Trustees
December 3, 2020
Page 3



- Schedule of Active Member Valuation Data

We also provided the following schedules in the Financial Section of the Comprehensive Annual 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, 2020 actuarial funding valuation report are for purposes of determining the recommended funding amounts for 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, 2020 actuarial funding valuation report. Accordingly, additional determinations may be needed for other purposes.

We also prepared actuarial computations as of June 30, 2020 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 December 2, 2020. 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,

A handwritten signature in blue ink that reads 'Patrice Beckham'.

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

A handwritten signature in blue ink that reads 'Brent A. Banister'.

Brent Banister PhD, FSA, EA, FCA, MAAA
Chief 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 and the study of economic assumptions presented to the Board in November 2017 and approved by the LCPR on February 19, 2018.

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	7.50 percent compounded annually. (Enacted into Minnesota Statute, May 31, 2018)
Future post-retirement adjustments	1.0% 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	3.00 percent 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. Generational projection uses the MP-2015 scale.
Post-disability	RP 2014 disabled retiree mortality, without adjustment.
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 percent of male members and 65 percent 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 7.00 percent and liabilities for non-vested former members are increased by 9.00 percent 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	<p>Married members are assumed to elect subsidized joint and survivor form of annuity as follows:</p> <p>Males: 10% elect 50% J&S option 10% elect 75% J&S option 60% elect 100% J&S option 20% elect Straight Life option</p> <p>Females: 13.5% elect 50% J&S option 6.5% elect 75% J&S option 38% elect 100% J&S option 42.0% elect Straight Life option</p> <p>Members eligible for deferred annuities (including current terminated deferred members) and future disability benefits are assumed to elect a life annuity.</p>
Missing data for members	<p>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 from prior years, the following assumptions were applied if needed:</p> <p>Data for active members:</p> <p> Salary, service, and date of birth: Based on current active demographics</p> <p> Gender: Female</p> <p>Data for terminated members:</p> <p> Date of birth: July 1, 1972</p> <p> Average salary: \$40,000</p> <p> Date of termination: Derived from date of birth, original entry age, and service</p> <p>Data for in-pay members:</p> <p> Beneficiary date of birth: Wife two years younger than husband</p> <p> Gender: Based on first name</p> <p> Form of payment: Life annuity for retirees and beneficiaries, 100% J&S option for disabled retirees.</p>
Changes in actuarial assumptions since the previous valuation	<p>An experience study, based on the four-year period from July 1, 2014 to June 30, 2018, was completed in June 2019 and the Legislative Committee on Pensions and Retirement has adopted the following changes:</p> <ul style="list-style-type: none"> • Mortality tables used for active members have been adjusted to reflect higher rates of death for males and lower rates for females, to better match actual experience. • Termination rates in the first 5 years of employment have been adjusted to better reflect observed experience. • The probability that new female retirees will elect to receive their benefits as a 100% joint and survivor annuity has been refined to reflect observed experience.

Summary of Actuarial Assumptions (continued)
Pre-Retirement Mortality Rates(%)*

Age	Male	Female
25	0.029	0.013
30	0.034	0.014
35	0.032	0.017
40	0.037	0.022
45	0.044	0.029
50	0.068	0.045
55	0.118	0.076
60	0.196	0.121
65	0.329	0.177

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

Annuitant Mortality Rates (%)

Age	Retirement*		Disability	
	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	32.00%	29.00%
1	14.00%	12.00%
2	10.00%	10.00%
3	7.50%	8.00%
4	5.75%	6.50%
5	5.00%	5.25%
6	4.60%	4.00%
7	4.10%	3.50%
8	2.80%	3.00%
9	2.30%	2.50%
10	2.00%	2.10%
15	1.10%	1.10%
20	0.60%	0.60%
25 or more	0.50%	0.50%

Summary of Actuarial Assumptions *(continued)*

Disability Rates (%)

Age	Male	Female
20	0.00	0.00
25	0.00	0.00
30	0.00	0.00
35	0.01	0.01
40	0.03	0.03
45	0.05	0.05
50	0.10	0.10
55	0.16	0.16
60	0.25	0.25
65	0.00	0.00

Retirement Rates for Coordinated Members (%)

Coordinated Tier 2 members age 62 or older with 30 or more years of service have 5 percent 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	15	
62	25	35	15	
63	25	35	15	
64	25	35	20	
65		40	30	
66		35		35
67		30		30
68		30		25
69		30		25
70		35		35
71 and over		100		100

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	5.60%	6.00%
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	
	7/1/2020	7/1/2019
Participant Data		
Active members		
Number	83,149	82,965
Projected annual earnings for fiscal year (000s)	\$ 5,521,463	\$ 5,340,671
Average projected annual earnings for the next fiscal year	\$ 66,404	\$ 64,373
Average age	43.3	43.2
Average service	12.1	12.0
Service retirements	61,748	61,073
Survivors	5,937	5,727
Disability retirements	469	485
Deferred retirements	16,203	15,517
Non-vested terminated members	37,177	35,919
Total	204,683	201,686
Liabilities and Funding Ratios (Dollars in Thousands)		
Accrued Benefit Funding Ratio		
Current assets (AVA)	\$ 22,936,908	\$ 22,466,848
Current benefit obligations	28,650,444	27,893,008
Funding ratio	80.06 %	80.55 %
Accrued Liability Funding Ratio		
Current assets (AVA)	\$ 22,936,908	\$ 22,466,848
Fair value of assets (MVA)	22,741,046	22,872,153
Actuarial accrued liability	30,129,180	29,246,174
Unfunded actuarial accrued liability	7,192,272	6,779,326
Funding ratio (AVA)	76.13 %	76.82 %
Funding ratio (MVA)	75.48 %	78.21 %
Projected Benefit Funding Ratio		
Current and expected future assets	\$ 34,469,708	\$ 33,586,725
Current and expected future benefit obligations	35,524,154	34,382,729
Funding ratio (AVA)	97.03 %	97.68 %
Contributions (% of payroll)		
Normal Cost Rate	9.23 %	9.11 %
UAAL Amortization Payment	8.12 %	7.77 %
Expenses	0.30 %	0.30 %
Total Required Contribution (Chapter 356)	17.65 %	17.18 %
Statutory Contribution (Chapter 354)	16.46 %	16.27 %
Contribution (Deficiency)/Sufficiency	(1.19)%	(0.91)%

Actuary's Selected Commentary

July 1, 2020 Valuation

The Teachers Retirement Association of Minnesota (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, 2020 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 no changes to the plan provisions or actuarial methods since the last valuation. However, there have been a few minor changes to the actuarial assumptions. An experience study, based on the four-year period from July 1, 2014 through June 30, 2018, was completed in June 2019. The recommended assumption changes were adopted by the TRA Board and approved by the LCPR. The changes include:

- Mortality tables used for active members have been adjusted to reflect higher rates of death for males and lower rates for females, to better match actual experience.
- Termination rates in the first five years of employment have been adjusted to better reflect observed experience.

- The probability that new female retirees will elect to receive their benefit as a 100% joint and survivor annuity has been refined to more closely reflect recent experience.

The adoption of this new set of assumptions resulted in a \$6.7 million decrease in the unfunded actuarial accrued liability, an increase of 0.03% in the normal cost rate. The increase in the total Required Contribution Rate was 0.03%.

The July 1, 2020 valuation also reflects a change in the method for determining which benefit formula should be applied to each active participant. Historically, the member's hire date, as provided by the System, was used to determine the appropriate benefit formula. In recent years, TRA staff has developed a reliable indicator that identifies these members more accurately. After discussions with the TRA staff, we believe using the tier codes provided in the data is now a better approach. As a result, about 3,800 active members previously valued as if they were hired on or after July 1, 1989 are now valued as if they were hired prior to July 1, 1989. With this data adjustment, the actuarial accrued liability as of July 1, 2020 increased by about \$216 million and the total required contribution rate increased by 0.34%.

The actuarial valuation results provide a “Snapshot” view of the System's financial condition on July 1, 2020. The results reflect net unfavorable experience for the past plan year as demonstrated by an UAAL that was higher than expected. The UAAL on July 1, 2020 is \$7.192 billion as compared to an expected UAAL of \$6.910 billion. The unfavorable experience of \$282 million was the combined result of an experience loss of \$121 million on the actuarial value of assets and an experience loss of \$161 million on the System liabilities. A summary of the key valuations results from the July 1, 2020 actuarial valuation, compared to the July 1, 2019 valuation, is shown in the following table. Further detail on the valuation results can be found in the following sections of this Executive Summary.

	Actuarial Valuation as of	
	July 1, 2020	July 1, 2019
Total Required Contribution Rate (Chapter 356)	17.65%	17.18%
Employer Contributions	8.32%	8.11%
Employee Contributions	7.50%	7.50%
Direct Aids (Chapters 354 and 423A)	.64%	.66%
Sufficiency/(Deficiency)	(1.19%)	(0.91%)
Unfunded Actuarial Accrued Liability (\$M)	\$7,192	\$6,779
Funded Ratio (Actuarial Assets)	76.13%	76.82%

The Contribution deficiency increased from 0.91% of payroll in last year's valuation to 1.19% of payroll in the 2020 valuation despite the scheduled increase in the employer contribution rate. The increase in the deficiency was primarily the result of unfavorable experience on the Plan's assets and liabilities during the year ended June 30, 2020.

Experience for the Last Plan Year

Numerous factors contributed to the change in assets, liabilities and Required Contribution Rate (actuarial contribution rate) between July 1, 2019, and July 1, 2020. The components are examined in the following discussion.

Assets

As of June 30, 2020, TRA had net assets of \$22.7 billion, as measured on a fair value basis. This was an decrease of approximately \$131 million from the prior year.

The fair value of assets is not used directly in the calculation of the unfunded actuarial accrued liability and the Required Contribution Rate. An asset valuation method, which smoothes 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, 2020 was \$22.9 billion, an increase of \$470 million from the value in the prior valuation. The components of change in the asset values are shown in the following table:

(Dollars in millions)	Actuarial Value	Fair Value
Net Assets, June 30, 2019	\$22,467	\$22,872
Employer & Member Contributions	\$857	\$857
Benefit Payments and Administrative Expenses	\$(1,930)	\$(1,930)
Investment Income	\$1,543	\$942
Net Assets, June 30, 2020	\$22,937	\$22,741
Rate of Return	7.0%	4.2%

The Minnesota State Board of Investment (SBI) reported a rate of return of 4.2% on the fair value of assets for fiscal year 2020. 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 7.0%. Because this rate of return was lower than the assumed rate of return of 7.5%, an actuarial loss of \$121 million occurred.

Please see page 91 of this report for more detailed information on the fair and actuarial value of assets.

Liabilities

The actuarial accrued liability is that portion of the present value of future benefits 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). The dollar amount of unfunded actuarial accrued liability is reduced if the contributions to the System exceed the normal cost for the year plus interest on the prior year's UAAL.

The unfunded actuarial accrued liability is shown as of July 1, 2020, in the following table:

(Dollars in Millions)	Actuarial Value	Fair Value
Actuarial Accrued Liability	\$30,129	\$30,129
Value of Assets	\$22,937	\$22,741
Unfunded Actuarial Accrued Liability	\$ 7,192	\$ 7,388
Funded Ratio	76.13%	75.48%

See pages 93-94 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, 2019, to July 1, 2020, was \$413 million. The components of this net change are shown in the table below:

(Dollars in Millions)

Unfunded Actuarial Accrued Liability, July 1, 2019	\$6,779
Expected increase from amortization method	\$78
Expected increase from contributions below required rate	50
Investment experience on Actuarial Assets	121
Liability experience	(55)
Assumption Changes	(7)
Data Refinement	216
Other experience	10
Subtotal	413
Unfunded Actuarial Accrued Liability, July 1, 2020	\$7,192

As shown above, various types of experience impacted the UAAL from July 1, 2019 to July 1, 2020. 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. As a result of the payment schedule, contributions in the first part of the amortization period are less than the interest on the UAAL and the dollar amount of the UAAL is expected to increase as demonstrated by the \$78 million increase shown in the table above.

To the extent the Statutory Contribution Rate is less than the Required Contribution Rate, the full amount of the scheduled UAAL payment is not paid to the system. As a result, the expected reduction in the UAAL does not occur. In fiscal year 2020, the contribution deficiency increased the UAAL by \$50 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 loss of \$282 million which may be explained by considering the separate experience of assets and liabilities. As noted earlier, there was a \$121 million loss on the actuarial value of assets and a \$161 million loss on liabilities.

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. Note that if the funded status were calculated using the fair 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. The funded status information is shown in the following table (in millions).

(Dollars in Millions)

Date	Funded Ratio	Unfunded Actuarial Accrued Liability
7/1/16	75.6%	\$6,522
7/1/17	76.8%	\$6,365
7/1/18	76.9%	\$6,620
7/1/19	76.8%	\$6,779
7/1/20	76.1%	\$7,192

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 95 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. Note that if the future scheduled contribution increases were reflected, the contribution deficiency would be significantly reduced, but entirely eliminated.

Contribution Rates	July 1, 2020	July 1, 2019
Normal Cost Rate	9.23%	9.11%
UAAL Contribution Rate	8.12%	7.77%
Expenses	0.30%	0.30%
Total Required Contribution Rate	17.65%	17.18%
Statutory Contribution Rate	16.46%	16.27%
Contribution Deficiency	(1.19%)	(0.91%)
Contribution (Deficiency)/Sufficiency Reflecting Future Scheduled Contributions Increases	(0.32%)	0.17%

The impact of the various factors discussed earlier on the Required Contribution Rate are shown in the table located on page 96.

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. However, 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.

The benefit and contribution changes enacted by the 2018 legislature had a significantly positive impact on the projected long term funding of TRA. While the funded ratio, as of July 1, 2020, is 76% and the Contribution Deficiency is 1.19%, future scheduled

increases to the Statutory Contribution Rate would reduce the Contribution Deficiency to 0.32%. This deficiency means that, if all assumptions are exactly met in the future, the UAAL will not be fully amortized by June 30, 2048 as scheduled. However, if the contribution deficiency remains relatively small, the UAAL will be significantly reduced even if it is not eliminated. We will need to closely monitor the contribution deficiency and projected full funding date in the future valuations 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, 2020. 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 helps to dampen the impact

Summary

The investment return on the fair value of assets for FY 2020 was 4.2%, as reported by SBI. However, due to the application of the asset smoothing method, the return on the actuarial value of assets was 7.0%. Since this return was below the assumed rate of return of 7.5% for the fiscal year ending 2020, there was an actuarial loss on the actuarial value of assets. Coupled with the demographic experience for the year, the funded ratio dropped from 76.82% in last year's valuation to 76.13% this year.

As mentioned earlier, the System utilizes an 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 \$196 million represents about 0.9% of the fair value of assets.

The key valuation results from the July 1, 2020 actuarial valuation are shown below, using both actuarial and fair value of assets.

	Actuarial Value	Fair Value
Statutory Rate	16.46%	16.46%
Required Contribution		
Normal Cost	9.23%	9.23%
UAAL	8.12%	8.34%
Expenses	0.30%	0.30%
Total Required Contribution	17.65%	17.87%
Deficiency	(1.19%)	(1.41%)
UAAL (millions)	\$7,192	\$7,388
Funded Ratio	76.13%	75.48%

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

As shown in the table, if the Required Contribution Rate is calculated, based on the UAAL, using the fair value of assets, it increases to 17.87% and the resulting Contribution Deficiency for FY 2021, reflecting the current contribution rates, is 1.41%. If the future scheduled increases in the contribution rates for both employers and member are considered, the contribution deficiency would be 0.54%

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 2018 Legislature to strengthen the funding of TRA and enhance its long-term sustainability. Contributions were increased by a total of 1.5%, phased-in over six years beginning July 1, 2018, and benefit reductions were implemented. These changes are expected to lead to improvement in the long-term funding of the System. Of course, actual experience over time will unfold differently from what is 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 to provide 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, 2020

	Benefit Recipients****					
	Active** Members	Former*** Members	Service Retirements	Disability Retirements	Survivors	Total
Members on 6/30/2019	82,965	51,436	61,073	485	5,727	201,686
New hires	5,069	—	—	—	—	5,069
Transfer from active to inactive	(4,688)	4,688	—	—	—	—
Transfer from inactive to active	1,494	(1,494)	—	—	—	—
Return from zero balance	359	10	—	—	—	369
Return from disability	5	2	—	—	—	7
Refunded	(295)	(729)	—	—	—	(1,024)
Refunded (non-repayable)	(14)	(98)	—	—	—	(112)
Retirements	(1,737)	(518)	2,255	(41)	—	(41)
Benefits began	—	—	—	47	568	615
Benefits ended	—	—	—	(4)	(53)	(57)
Deaths	(26)	(83)	(1,582)	(16)	(307)	(2,014)
Adjustments	17	166	2	(2)	2	185
Net changes	184	1,944	675	(16)	210	2,997
Members on 6/30/2020	83,149	53,380	61,748	469	5,937	204,683

* All figures in this chart were provided by the Teachers Retirement Association. Recipient counts include all pensions in force, including double counting of multiple benefit types. Service Retirements include Supplemental, Variable and optional joint annuitants. We found these results to be reasonable.

** Active members include 1 Basic and 83,148 Coordinated members.

*** Former members include 17 Basic and 53,363 Coordinated members.

**** Benefit recipients include 3,121 Basic members and 65,033 Coordinated members.

Former Member Statistics	Vested	Non-Vested	Total
Number	16,203	37,177	53,380
Average Age	48.4	47.2	47.5
Average Service (years)	7.7	0.8	2.9
Average annual benefits, with augmentation to Normal Retirement Date and Combined Service Annuity load	\$8,072	N/A	N/A
Average refund value, with Combined Service Annuity load	\$36,367	\$2,699	\$12,919

Statement of Fiduciary Net Position

Fiscal Year Ended June 30, 2020

(Dollars in Thousands)

Assets	Fair Value
Cash and short term investments	
Cash.....	\$ 11,169
Building account cash.....	167
Short-term investments.....	1,057,847
Total cash and short-term investments.....	\$ 1,069,183
Receivables.....	22,822
Investments (at fair value)	
Bond pool.....	\$ 4,609,781
Alternatives investments pool.....	3,539,370
Indexed equity pool.....	—
Domestic equity pool.....	9,079,338
International stock fund.....	4,419,260
Total investments.....	\$21,647,749
Securities lending collateral.....	1,591,273
Building	
Land.....	\$ 171
Building and equipment - net of depreciation.....	5,442
Total building.....	\$ 5,613
Capital assets net of depreciation.....	\$ 11,505
Total Assets.....	<u><u>\$24,348,145</u></u>

Statement of Fiduciary Net Position *(continued)*

Fiscal Year Ended June 30, 2020

(Dollars in Thousands)

Liabilities	Fair Value
Current	
Accounts payable.....	\$ 7,685
Accrued compensated absences.....	86
Accrued expenses - building.....	54
Bonds payable.....	661
Bonds interest payable.....	4
Securities lending collateral.....	1,591,273
Total current liabilities.....	\$ 1,599,763
Long Term	
Accrued compensated absences.....	\$ 838
Bonds payable.....	2,548
Total long-term liabilities.....	\$ 3,386
Total Liabilities.....	\$ 1,603,149
Net Position Restricted for Pension Benefits.....	\$22,744,996
Earnings Limitations Savings Account (ELSA) accounts payable*.....	(3,950)
Net Position Restricted, after adjustment for ELSA accounts.....	<u>\$22,741,046</u>

* Not calculated by Cavanaugh Macdonald; TRA determined.

Statement of Changes in Fiduciary Net Position

Fiscal Year Ended June 30, 2020

The following exhibit shows the revenue, expenses and resulting assets of the Fund as reported by the Teachers Retirement Association for the Plan's fiscal year July 1, 2019 to June 30, 2020.

(Dollars in Thousands)

Change in Assets	Fair Value
Additions	
Contributions	
Employee	\$ 396,679
Employer	425,223
Direct aid (state/city/county)	35,587
Earnings Limitation Savings Account (ELSA)	1,842
Total contributions	<u>\$ 859,331</u>
Investment Income	
Investment appreciation in fair value	\$ 953,036
Less investment income	(20,927)
Net investment income	<u>\$ 932,109</u>
Securities lending activities	
Securities lending income	\$ 28,289
Securities lending expenses	
Borrowing rebates	\$ (18,973)
Management fees	(1,677)
Total securities lending expenses	<u>(20,650)</u>
Net income from securities lending	<u>7,639</u>
Total net investment income	<u>\$ 939,748</u>
Other income	1,560
Total additions	<u>\$ 1,800,639</u>
Deductions	
Benefits Paid	
Retirement benefits	\$ (1,900,650)
Refunds of contributions to members	(13,815)
Total benefits paid	<u>\$ (1,914,465)</u>
Administrative Expenses	(15,392)
Total deductions	<u>\$ (1,929,857)</u>
Increase/(Decrease) in ELSA account value	<u>(1,889)</u>
Net position	<u>\$ (131,107)</u>
Beginning of year	<u>\$ 22,872,153</u>
End of year	<u>\$ 22,741,046</u>

Actuarial Value of Assets

Fiscal Year Ended June 30, 2020

(Dollars in Thousands)

1. Fair value of assets available for benefits				\$ 22,741,046
2. Determination of average balance				
a. Assets available at July 1, 2019*			\$	22,876,056
b. Assets available at June 30, 2020*				22,744,996
c. Net investment income for fiscal year ending June 30, 2020.....				939,748
d. Average balance $[a. + b. - c.]/2$			\$	22,340,652
3. Expected return $[7.5 \text{ percent} * 2.d.]$				1,675,549
4. Actual return.....				939,748
5. Current year unrecognized asset return.....				(735,801)
6. Unrecognized asset returns				
		Original	% Not	
		Amount	Recognized	
a. Year ended June 30, 2020	\$	(735,801)	80%	\$ (588,641)
b. Year ended June 30, 2019	\$	(58,115)	60%	(34,869)
c. Year ended June 30, 2018	\$	398,058	40%	159,223
d. Year ended June 30, 2017	\$	1,342,126	20%	268,425
e. Total return not yet recognized				<u>\$ (195,862)</u>
7. Actuarial value at June 30, 2020 (1. - 6.e.)				<u>\$ 22,936,908</u>

*Before recognition of ELSA accounts payable.

Actuarial Valuation Balance Sheet

Fiscal Year Ended June 30, 2020

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 future benefits.

(dollars in thousands)

A. Actuarial Future Assets				\$ 22,936,908
B. Expected Future Assets				
1. Present value of expected future statutory supplemental contributions*				\$ 6,137,826
2. Present value of expected future normal cost contributions				5,394,974
3. Total expected future assets (1. + 2.)				\$ 11,532,800
C. Total Current and Expected Future Assets**				\$ 34,469,708
D. Current Benefit Obligations				
1. Benefit recipients				
a. Service retirements	\$	—	\$ 17,674,854	\$ 17,674,854
b. Disability		—	140,114	140,114
c. Survivors		—	1,224,623	1,224,623
2. Deferred retirements with augmentation to Normal Retirement Date		—	678,027	678,027
3. Former members without vested rights***		100,348	—	100,348
4. Active members		67,438	8,765,040	8,832,478
5. Total current benefit obligations	\$	167,786	\$ 28,482,658	\$ 28,650,444
E. Expected Future Benefit Obligations				6,873,710
F. Total Current and Expected Future Benefit Obligations				35,524,154
G. Unfunded Current Benefit Obligations (D.5 - A)				5,713,536
H. Unfunded Current and Future Benefit Obligations (F. - C.)				1,054,446

* Under LCPR guidelines, this amount does not include supplemental payments, which could occur after the expiration of the remaining 28-year amortization period.

** Does not reflect deferred investment experience in the asset smoothing method. Total expected future assets on a fair value basis are \$34,273,846.

*** 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

July 1, 2020

<i>Dollars in Thousands</i>			
	Actuarial Present Value of Projected Benefits	Actuarial Present Value of Future Normal Costs	Actuarial Accrued Liability
A. Determination of Actuarial Accrued Liability (AAL)			
1. Active Members			
a. Retirement annuities.....	\$ 14,822,475	\$ (4,514,906)	\$ 10,307,569
b. Disability benefits.....	347,522	(146,717)	200,805
c. Survivor benefits.....	105,496	(39,677)	65,819
d. Deferred retirements.....	416,981	(513,042)	(96,061)
e. Refunds.....	13,714	(180,632)	(166,918)
f. Total.....	\$ 15,706,188	\$ (5,394,974)	\$ 10,311,214
2. Deferred retirements with future augmentation to Normal Retirement Age.....	678,027	—	678,027
3. Former members without vested rights.....	100,348	—	100,348
4. Benefit recipients.....	19,039,591	—	19,039,591
5. Total.....	\$ 35,524,154	\$ (5,394,974)	\$ 30,129,180
B. Determination of Unfunded Actuarial Accrued Liability (UAAL)*			
1. Actuarial accrued liability.....			\$ 30,129,180
2. Actuarial value of assets (page 94, line 7).....			\$ 22,936,908
3. Unfunded actuarial accrued liability.....			\$ 7,192,272
C. Determination of Supplemental Contribution Rate*			
1. Present value of future payrolls through the amortization date of June 30, 2048.....			\$ 88,568,911
2. Supplemental contributions.....			8.12 %

* On a fair value of assets basis, the unfunded actuarial accrued liability is \$7,388,134 and the supplemental contribution rate is 8.34 percent of payroll.

** The amortization factor as of July 1, 2020 is 16.0408.

Changes in Unfunded Actuarial Accrued Liability

Fiscal Year Ended June 30, 2020

<i>Dollars in Thousands</i>	Amount
A. Unfunded actuarial accrued liability at beginning of year.....	\$ 6,779,326
B Changes due to interest requirements and current rate of funding*	
1. Normal cost and actual administrative expenses.....	\$ 501,934
2. Contributions.....	(859,331)
3. Interest on A., B.1 and B.2.....	495,289
4 Total (B.1. + B.2. + B.3.).....	<u>\$ 137,892</u>
C. Expected unfunded actuarial accrued liability at end of year (A. + B.4.).....	\$ 6,917,218
D. Increase (decrease) due to actuarial losses (gains) because of experience deviations from	
1. Salary increases.....	\$ (103,034)
2. Investment return (AVA).....	120,967
3. Mortality of active members.....	292
4. Mortality of benefit recipients.....	(49,068)
5. Retirement from active service.....	84,257
6. Data Refinement.....	215,928
6. Other items.....	12,385
7. Total.....	<u>\$ 281,727</u>
E. Unfunded actuarial accrued liability at end of year before plan amendments and changes in actuarial assumptions (C. + D.7.).....	\$ 7,198,945
F. Change in unfunded actuarial accrued liability due to new provisions.....	\$ —
G. Change in unfunded actuarial accrued liability due to change in assumptions.....	<u>\$ (6,673)</u>
H. Unfunded actuarial accrued liability at end of year (E. + F. + G.).....	<u><u>\$ 7,192,272</u></u>

* 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, 2020

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

<i>Dollars in Thousands</i>	Percent of Payroll	Dollar Amount
A. Statutory Contributions - Chapter 354		
1. Employee contributions	7.50 % \$	414,113
2. Employee contributions*	8.32 %	459,393
3. Supplemental contributions**		
a. 1993 Legislations	0.09 %	5,000
b. 1996 Legislations	0.06 %	3,256
c. 1997 Legislations	0.23 %	12,954
d. 2014 Legislations	0.26 %	14,377
4. Total	16.46 % \$	909,093
B. Required Contributions - Chapter 356		
1. Normal cost		
a. Retirement benefits	7.78 % \$	429,578
b. Disability benefits	0.24 %	13,252
c. Survivor benefits	0.07 %	3,865
d. Deferred retirement benefits	0.83 %	45,828
e. Refunds	0.31 %	17,116
f. Total	9.23 % \$	509,639
2. Supplemental contribution for the amortization of the Unfunded Actuarial Accrued Liability by June 30, 2048	8.12 %	448,343
3. Allowance for expenses	0.30 % \$	16,564
4. Total annual contribution for fiscal year ending June 30, 2021***	17.65 % \$	974,546
C. Contribution Sufficiency / (Deficiency) (A.4. - B.4.)***	(1.19)% \$	(65,453)

Note: Projected annual payroll for fiscal year beginning on the valuation date: \$5,521,463

* Employer contribution rate is blended to reflect rates of 15.77 percent of pay for Basic members, 8.13 percent for pay for Coordinated members not employed by Special School District #1, and 11.77 percent 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 fair value of assets basis, the total required contribution is 17.87 percent of payroll and the contribution deficiency is 1.41 percent of payroll.

Solvency Test

(Dollars in Thousands)

Aggregate Accrued Liabilities									
Valuation as of June 30	(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)	(1)	(2)			(3)		
2011	\$ 2,308,427	\$ 13,964,552	\$ 5,898,514	\$17,132,383	100%	100%	14.6%		
2012	\$ 2,407,626	\$ 14,664,333	\$ 5,952,546	\$16,805,077	100%	98.2%	—%		
2013	\$ 2,482,123	\$ 15,145,239	\$ 5,791,267	\$16,774,626	100%	94.4%	—%		
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%	8.7%		
2016	\$ 3,033,160	\$ 17,187,332	\$ 6,495,724	\$20,194,279	100%	99.8%	—%		
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%		

Schedule of Active Member Valuation Data

Year Ended June 30	Active Members	(\$ in thousands) Annual Covered Payroll	% Increase in Covered Payroll	Average Annual Member Salary
2011	76,755	\$ 3,838,111	1.3%	\$ 50,005
2012	76,649	\$ 3,781,809	0.9%	\$ 50,514
2013	76,765	\$ 3,917,310	1.2%	\$ 51,030
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

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

Through June 1, 2020 – End of Budget Year for Benefit Payments – Prepared by TRA**

Fiscal Year	Added To Rolls		Removed From Rolls		June 1 Payment		Avg. Annual Allowances
	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances	
2020							
Retirement	2,431	\$ 75,403,042	1,527	\$ 48,401,177	61,654	\$ 1,716,225,832	\$ 27,836
Disability	45	\$ 1,071,593	67	\$ 1,693,134	478	\$ 10,199,737	\$ 21,338
Beneficiaries	600	\$ 15,484,216	375	\$ 11,073,721	6,258	\$ 170,485,292	\$ 27,243
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
Beneficiaries	597	\$ 16,566,582	333	\$ 9,425,264	6,032	\$ 164,750,333	\$ 27,308
2018							
Retirement	2,453	\$ 71,176,463	1,352	\$ 42,530,337	59,703	\$ 1,655,206,770	\$ 27,725
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
2017							
Retirement	2,362	\$ 67,444,049	1,264	\$ 38,365,148	58,632	\$ 1,608,549,654	\$ 27,436
Disability	73	\$ 1,774,135	75	\$ 1,683,296	536	\$ 11,352,435	\$ 21,180
Beneficiaries	512	\$ 13,397,711	327	\$ 8,017,689	5,562	\$ 150,944,018	\$ 27,124
2016							
Retirement	2,700	\$ 74,501,674	1,253	\$ 40,121,659	57,534	\$ 1,559,304,348	\$ 27,102
Disability	56	\$ 1,333,271	101	\$ 1,987,290	538	\$ 11,126,018	\$ 20,680
Beneficiaries	569	\$ 13,400,450	282	\$ 6,445,318	5,377	\$ 142,825,257	\$ 26,562
2015							
Retirement	3,901	\$ 139,486,500	1,219	\$ 113,360,695	56,087	\$ 1,507,085,583	\$ 26,871
Disability	91	\$ 4,201,093	74	\$ 5,046,531	583	\$ 11,561,844	\$ 19,832
Beneficiaries	623	\$ 25,490,532	269	\$ 17,055,001	5,090	\$ 134,071,302	\$ 26,340
2014							
Retirement	2,657	\$ 72,823,770	1,082	\$ 33,357,350	53,405	\$ 1,438,989,431	\$ 26,944
Disability	71	\$ 1,371,630	76	\$ 1,731,701	566	\$ 10,884,969	\$ 19,231
Beneficiaries	428	\$ 11,562,063	217	\$ 4,779,599	4,736	\$ 123,918,462	\$ 26,165
2013							
Retirement	2,719	\$ 73,367,192	1,079	\$ 33,267,557	51,830	\$ 1,393,126,889	\$ 26,879
Disability	54	\$ 1,049,388	80	\$ 1,799,928	571	\$ 11,051,118	\$ 19,354
Beneficiaries	449	\$ 11,519,816	237	\$ 6,491,835	4,525	\$ 116,204,127	\$ 25,680
2012							
Retirement	2,770	\$ 77,169,833	1,040	\$ 30,234,280	50,193	\$ 1,342,791,637	\$ 26,753
Disability	72	\$ 1,481,314	80	\$ 1,816,246	597	\$ 11,565,197	\$ 19,372
Beneficiaries	402	\$ 11,820,962	213	\$ 3,969,446	4,310	\$ 110,302,448	\$ 25,592
2011							
Retirement	2,573	\$ 71,896,935	1,012	\$ 30,381,621	48,463	\$ 1,320,885,728	\$ 27,256
Disability	59	\$ 1,365,130	72	\$ 1,841,934	605	\$ 11,896,607	\$ 19,664
Beneficiaries	400	\$ 9,199,307	224	\$ 4,179,950	4,121	\$ 104,083,869	\$ 25,257

* 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)
07/01/11	\$17,132,383	\$22,171,493	\$5,039,110	77.27%	\$3,838,111	131.29%
07/01/12	\$16,805,077	\$23,024,505	\$6,219,428	72.99%	\$3,871,809	160.63%
07/01/13	\$16,774,626	\$23,418,629	\$6,644,003	71.63%	\$3,917,310	169.61%
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%

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

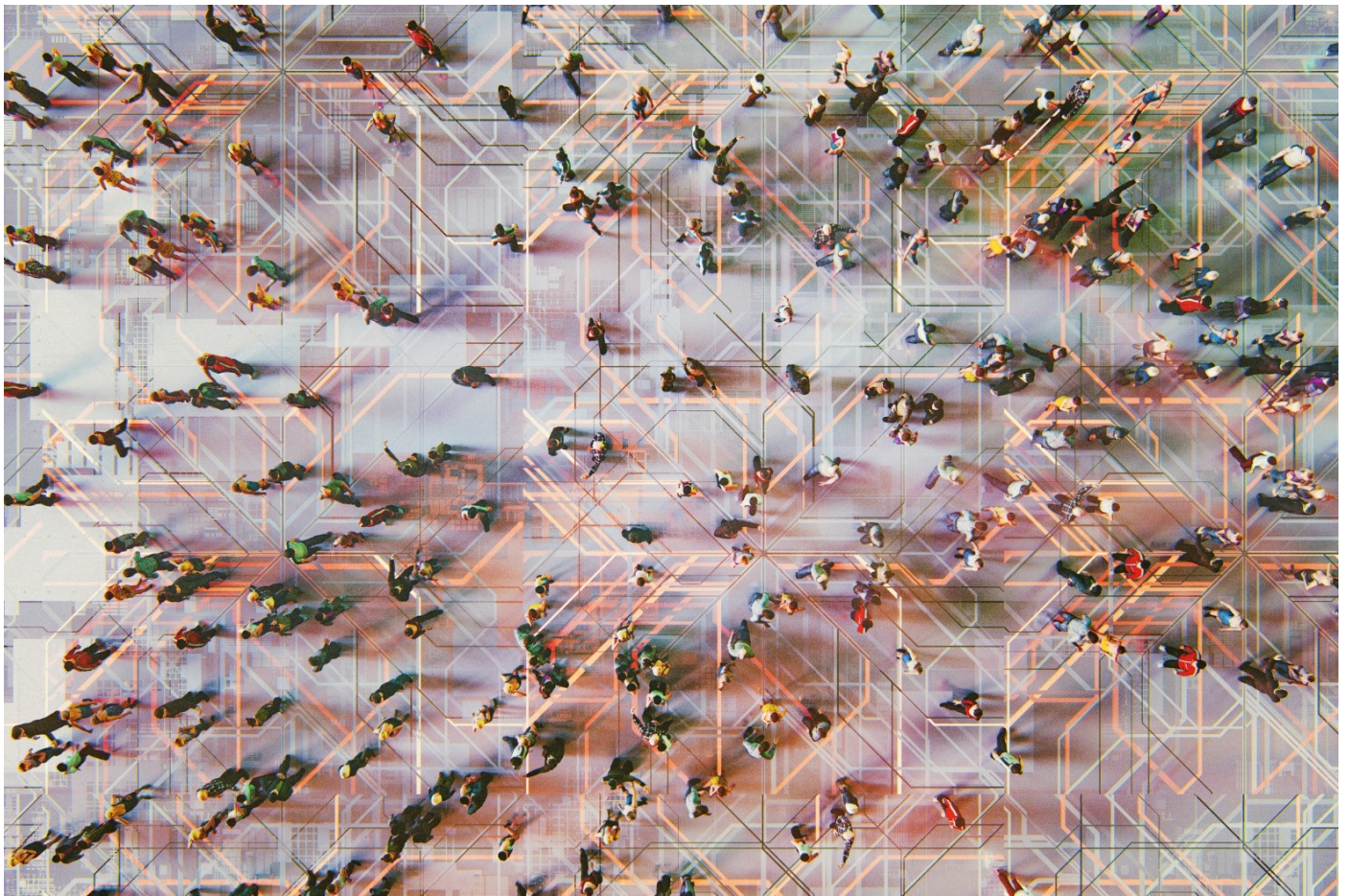
(Dollars in Thousands)

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
2011	15.71%	\$3,838,111	\$218,024	\$384,943	\$244,233	63.45%
2012	16.57%	\$3,871,809	\$239,834	\$401,725	\$266,661	66.38%
2013	18.75%	\$3,917,310	\$270,708	\$463,788	\$290,662	62.67%
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%

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

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

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 103 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 103 provides historical information on the total member and employer contribution rates.

The schedule of Pension Assets Compared to Pension Liabilities, found on pages 104-105, show the funding progress of the plan for the past 10 years on accumulating assets to cover projected pension liabilities which will ultimately be due at retirement.

The schedules on pages 106-111 include detailed information regarding the number and type of benefit recipients, and information as to the benefit amount.

The chart on page 112 provides a profile of TRA active members on June 30, 2020, by age and service credit totals.

The chart on page 108 contains information on the total number of members by type.

The schedules on pages 114-115 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 119) for the next 25 years have been supplied by TRA's actuarial advisor, Cavanaugh Macdonald Consulting.

10-Year History of TRA Fiduciary Net Position

Dollars in Thousands

Fiscal Year	Fiduciary Net Position	% Change From Prior Year
2011	\$17,303,576	15.8%
2012	\$16,689,941	(3.6)%
2013	\$18,019,319	8.0%
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)%

10-Year History of TRA Contribution Rates

Fiscal Year	Basic Program Employee Contribution Rate	Basic Program Employee Contribution Rate	Basic Program Total Contribution Rate	Coordinated Employee Contribution Rate	Coordinated Employee Contribution Rate	Coordinated Total Contribution Rate
2011	9.00%	9.50%	18.50%	5.50%	5.50%	11.00%
2012	9.50%	10.00%	19.50%	6.00%	6.00%	12.00%
2013	10.00%	10.50%	20.50%	6.50%	6.50%	13.00%
2014	10.50%	11.00%	21.50%	7.00%	7.00%	14.00%
2015	11.00%	11.50%	22.50%	7.50%	7.50%	15.00%
2016	11.00%	11.50%	22.50%	7.50%	7.50%	15.00%
2017	11.00%	11.50%	22.50%	7.50%	7.50%	15.00%
2018	11.00%	11.50%	22.50%	7.50%	7.50%	15.00%
2019	11.00%	11.71%	22.71%	7.50%	7.71%	15.21%
2020	11.00%	11.92%	22.92%	7.50%	7.92%	15.42%

Teachers Retirement Association

10-Year History of Changes in Fiduciary Net Position

Dollars in Thousands

Fiscal Year ended June 30	2011	2012	2013	2014
Additions				
Member Contributions	\$ 218,024	\$ 239,834	\$ 265,809	\$ 294,632
Employer Contributions	244,233	266,661	290,662	320,301
Net Income (Loss) From Investing Activity	3,390,130	383,187	2,310,295	3,257,693
Other Income, Net	5,562	4,929	5,475	5,502
Total Additions to Fiduciary Net Position	\$ 3,857,949	\$ 894,611	\$ 2,872,241	\$ 3,878,128
Deductions				
Pension Benefits	\$ 1,460,836	\$ 1,486,387	\$ 1,523,269	\$ 1,581,766
Refunds	23,813	11,836	10,463	12,566
Administrative Expenses	9,264	10,023	9,131	9,430
Other	—	—	—	—
Total Deductions from Fiduciary Net Position	\$ 1,493,913	\$ 1,508,246	\$ 1,542,863	\$ 1,603,762
Net Increase (Decrease)	\$ 2,364,036	\$ (613,635)	\$ 1,329,378	\$ 2,274,366
Net Position Held in Trust, Beginning of Year	\$ 14,939,540	\$ 17,303,576	\$ 16,689,941	\$ 18,019,319
Net Position Held in Trust, End of Year	\$ 17,303,576	\$ 16,689,941	\$ 18,019,319	\$ 20,293,685

**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

Dollars in Thousands

Fiscal Year ended June 30	2011	2012	2013	2014
Pension Assets (Actuarial Value)	\$ 17,132,383	\$ 16,805,077	\$ 16,774,626	\$ 18,181,932
Accrued Liabilities	\$ 22,171,493	\$ 23,024,505	\$ 23,418,629	\$ 24,528,506
Unfunded Liabilities (Sufficiency)	\$ (5,039,110)	\$ (6,219,428)	\$ (6,644,003)	\$ (6,346,574)
Funded Ratio	77.3%	73.0%	71.6%	74.1%

Teachers Retirement Association

10-Year History of Changes in Fiduciary Net Position (cont'd)

Dollars in Thousands

	2015	2016	2017	2018	2019	2020
\$	334,826	\$ 347,256	\$ 361,175	\$ 374,550	\$ 386,669	\$ 396,679
	381,795	390,549	403,379	378,728	403,300	425,223
	887,280	(23,672)	2,855,217	2,160,111	1,579,099	939,749
	4,897	5,529	4,398	40,105	39,824	38,989
\$	1,608,798	\$ 719,662	\$ 3,624,169	\$ 2,953,494	\$ 2,408,892	\$ 1,800,640
\$	1,659,069	\$ 1,718,694	\$ 1,767,568	\$ 1,820,751	\$ 1,865,693	\$ 1,902,492
	11,885	11,290	11,240	13,073	14,074	13,815
	11,509	11,338	11,702	15,673	15,156	15,393
	—	—	—	—	—	—
\$	1,682,463	\$ 1,741,322	\$ 1,790,510	\$ 1,849,497	\$ 1,894,923	\$ 1,931,700
\$	(73,665)	\$ (1,021,660)	\$ 1,833,659	\$ 1,103,997	\$ 513,969	\$ (131,060)
\$	20,519,756	\$ 20,446,091	\$ 19,424,431	\$ 21,258,090	\$ 22,362,087	\$ 22,876,056
\$	20,446,091	\$ 19,424,431	\$ 21,258,090	\$ 22,362,087	\$ 22,876,056	\$ 22,744,996

10-Year History of Pension Assets vs. Pension Liabilities (cont'd)

Dollars in Thousands

	2015	2016	2017	2018	2019	2020
\$	19,696,893	\$ 20,194,279	\$ 21,062,789	\$ 22,022,542	\$ 22,466,848	\$ 30,129,180
\$	25,562,155	\$ 26,716,216	\$ 27,427,702	\$ 28,643,023	\$ 29,246,174	\$ 22,936,908
\$	(5,865,262)	\$ (6,521,937)	\$ (6,364,913)	\$ (6,620,481)	\$ (6,779,326)	\$ 7,192,272
	77.1%	75.6%	76.8%	76.9%	76.8%	76.1%

10-Year History of TRA Benefits and Refunds by Type

Fiscal year ended June 30

Dollars in Thousands

Pension Benefits	2011	2012	2013	2014
Annuities	\$ 1,429,843	\$ 1,456,296	\$ 1,492,612	\$ 1,551,120
Disabilities	\$ 12,469	\$ 12,303	\$ 11,775	\$ 11,681
Survivor Benefits	\$ 17,238	\$ 16,929	\$ 17,090	\$ 17,318
Total Pension Benefits	\$ 1,459,550	\$ 1,485,528	\$ 1,521,477	\$ 1,580,119
Annuities Redirected to Earnings Limitation Savings Account (ELSA)	\$ 1,286	\$ 859	\$ 1,792	\$ 1,647
Member Refunds				
Regular	\$ 7,669	\$ 7,836	\$ 7,597	\$ 9,152
Death	\$ 990	\$ 929	\$ 1,192	\$ 1,609
ELSA Refunds	\$ 14,948	\$ 2,865	\$ 1,367	\$ 1,580
Employer Refunds	\$ 206	\$ 206	\$ 307	\$ 225
Total Refunds	\$ 23,813	\$ 11,836	\$ 10,463	\$ 12,566
Total Benefits and Refunds	\$ 1,484,649	\$ 1,498,223	\$ 1,533,732	\$ 1,594,332

10-Year History of TRA Benefit Recipients by Category

Fiscal year ended June 30

Year	Annuitants	Disabilitants	Survivors	Total
2011	49,079	602	3,856	53,537
2012	50,780	591	4,054	55,425
2013	52,331	568	4,269	57,168
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

10-Year History of TRA Benefits and Refunds by Type *(cont'd)*

Fiscal year ended June 30

Dollars in Thousands

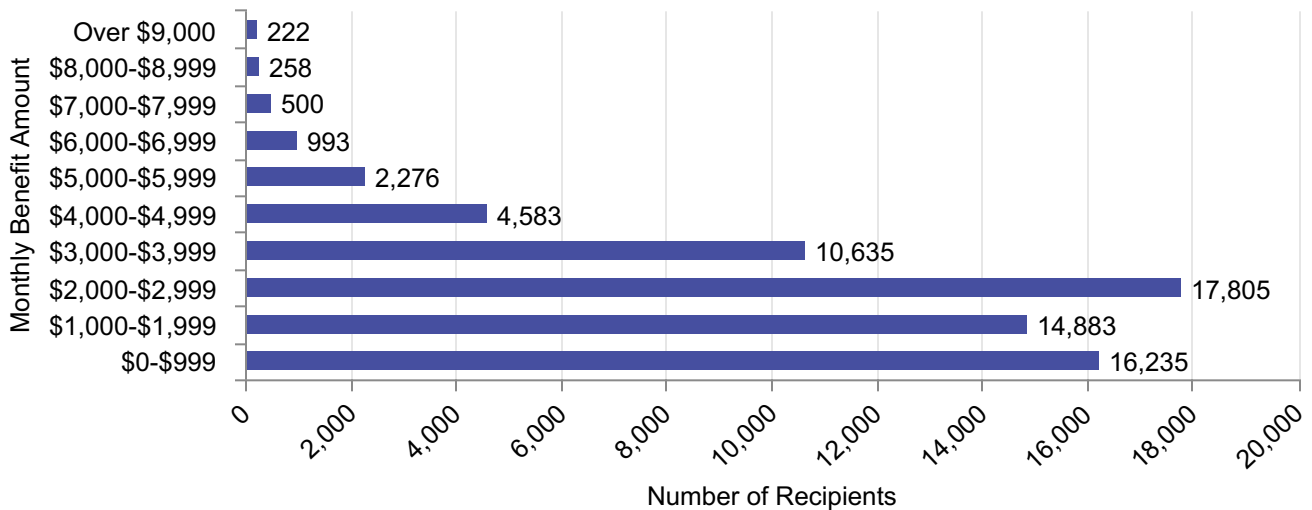
	2015	2016	2017	2018	2019	2020
\$	1,626,703	\$ 1,687,085	\$ 1,741,265	\$ 1,789,400	\$ 1,834,547	\$ 1,871,712
	12,063	11,967	11,985	11,559	11,296	10,767
	18,956	17,681	12,323	17,855	17,919	18,172
\$	1,657,722	\$ 1,716,733	\$ 1,765,573	\$ 1,818,814	\$ 1,863,762	\$ 1,900,650
\$	1,347	\$ 1,961	\$ 1,995	\$ 1,937	\$ 1,931	\$ 1,842
\$	8,696	\$ 8,284	\$ 7,847	\$ 8,799	\$ 9,839	\$ 10,179
	1,361	1,184	1,589	2,050	1,328	1,854
	1,659	1,621	1,632	2,020	2,508	1,786
	169	201	172	204	399	(4)
\$	11,885	\$ 11,290	\$ 11,240	\$ 13,073	\$ 14,074	\$ 13,815
\$	1,670,954	\$ 1,729,984	\$ 1,778,808	\$ 1,833,824	\$ 1,879,767	\$ 1,916,307

Schedule of Benefit Amounts Paid

For Month of June 2020 — Payment Made June 1, 2020

Monthly Benefit Amount	Number of Recipients	Cumulative Total	Percent	Cumulative Percent
\$ 0 – 499	9,473	9,473	13.85%	13.85%
\$ 500 – 999	6,762	16,235	9.89%	23.74%
\$ 1,000 – 1,499	6,755	22,990	9.88%	33.62%
\$ 1,500 – 1,999	8,128	31,118	11.88%	45.50%
\$ 2,000 – 2,499	9,250	40,368	13.53%	59.03%
\$ 2,500 – 2,999	8,555	48,923	12.51%	71.54%
\$ 3,000 – 3,499	6,492	55,415	9.49%	81.03%
\$ 3,500 – 3,999	4,143	59,558	6.06%	87.09%
\$ 4,000 – 4,499	2,780	62,338	4.06%	91.15%
\$ 4,500 – 4,999	1,803	64,141	2.64%	93.79%
\$ 5,000 – 5,499	1,354	65,495	1.98%	95.77%
\$ 5,500 – 5,999	922	66,417	1.35%	97.12%
\$ 6,000 – 6,499	572	66,989	0.84%	97.95%
\$ 6,500 – 6,999	421	67,410	0.62%	98.57%
\$ 7,000 – 7,499	287	67,697	0.42%	98.99%
\$ 7,500 – 7,999	213	67,910	0.31%	99.30%
\$ 8,000 – 8,499	155	68,065	0.23%	99.52%
\$ 8,500 – 8,999	103	68,168	0.15%	99.68%
\$ 9,000 – 9,499	68	68,236	0.10%	99.77%
\$ 9,500 – 9,999	46	68,282	0.07%	99.84%
\$ 10,000 – 10,499	35	68,317	0.05%	99.89%
\$ 10,500 – 10,999	20	68,337	0.03%	99.92%
\$ 11,000 – 11,499	18	68,355	0.03%	99.95%
\$ 11,500 – 11,999	10	68,365	0.01%	99.96%
\$ 12,000 – 12,499	8	68,373	0.01%	99.98%
\$ 12,500 – and over	17	68,390	0.02%	100.00%

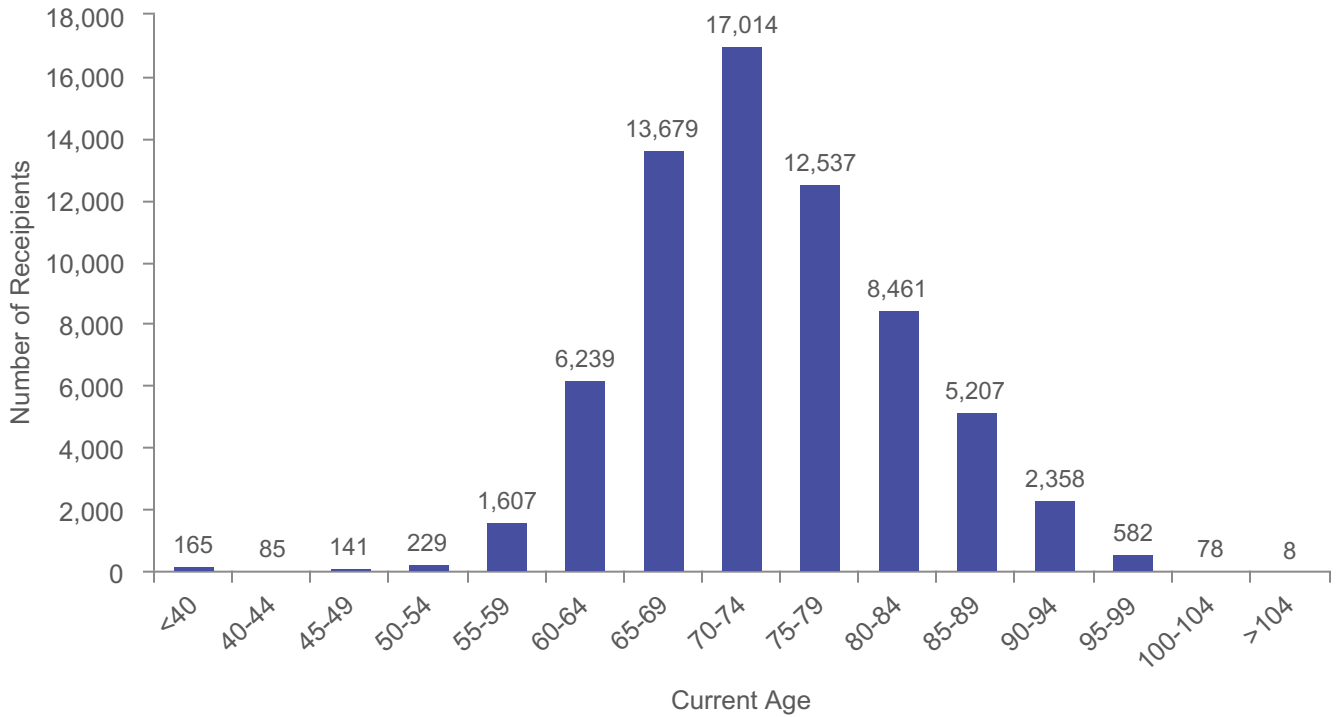
The median monthly TRA benefit amount is \$2,200



Schedule of TRA Benefit Recipients by Current Age

For Month of June 2020 – Payment Made June 1, 2020

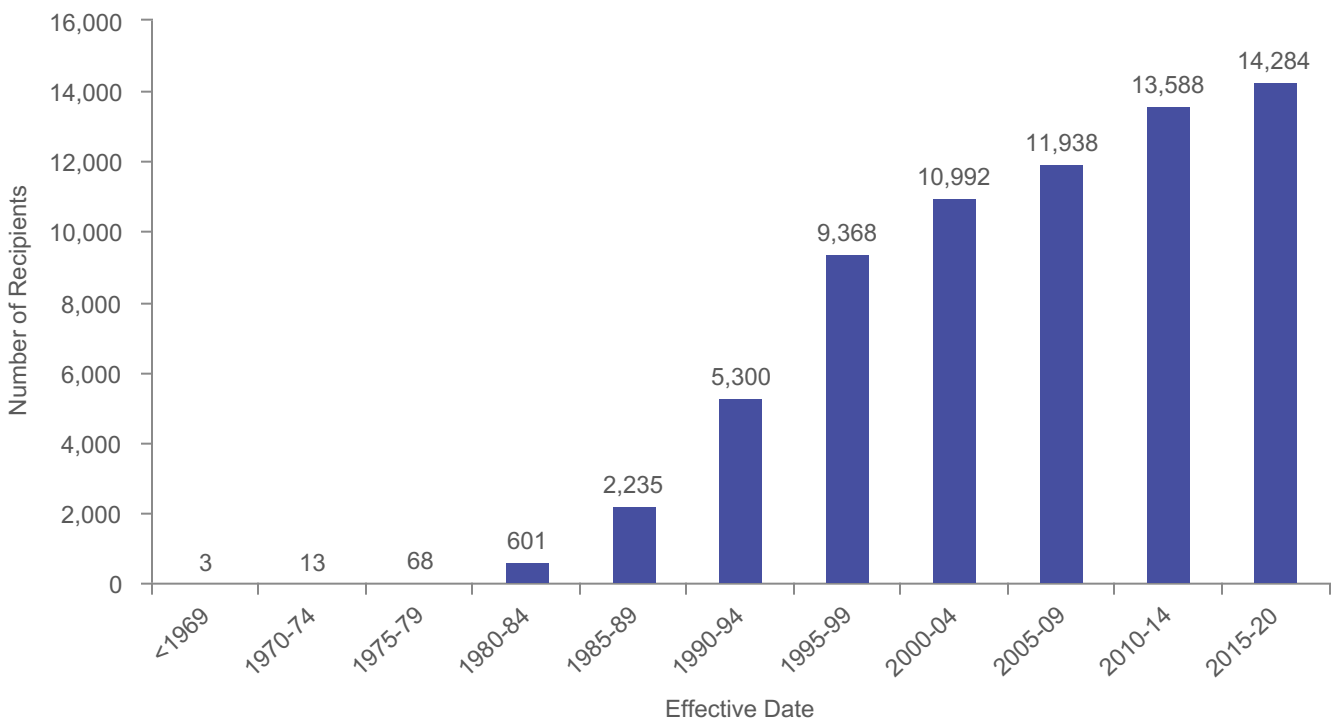
Total Recipients: 68,390



Benefit Recipients by Effective Date of Retirement

For Month of June 2020 – Payment Made June 1, 2020

Total Recipients: 68,390



Schedule of New TRA Retirees and Initial Benefit Paid

For the Ten Fiscal Years Ending June 30

Fiscal Year	Years of Formula Service							Total
	<10	10-15	16-20	21-25	26-30	31-35	>35	
2011								
Avg. Monthly Benefit	\$ 318	\$ 883	\$ 1,458	\$ 2,076	\$ 2,777	\$ 3,576	\$ 3,941	\$ 2,410
Final Average Salary	\$ 24,106	\$ 43,245	\$ 56,574	\$ 63,832	\$ 68,358	\$ 71,541	\$ 73,031	\$ 58,957
Number of Retirees	431	212	240	270	278	685	428	2,544
2012								
Avg. Monthly Benefit	\$ 388	\$ 935	\$ 1,485	\$ 2,011	\$ 2,747	\$ 3,592	\$ 4,004	\$ 2,301
Final Average Salary	\$ 28,337	\$ 44,368	\$ 55,772	\$ 63,085	\$ 68,043	\$ 70,400	\$ 74,259	\$ 58,233
Number of Retirees	518	254	253	337	345	668	371	2,746
2013								
Avg. Monthly Benefit	\$ 349	\$ 921	\$ 1,431	\$ 1,995	\$ 2,772	\$ 3,591	\$ 4,063	\$ 2,318
Final Average Salary	\$ 26,267	\$ 44,588	\$ 55,793	\$ 62,310	\$ 69,357	\$ 70,648	\$ 73,864	\$ 58,305
Number of Retirees	458	231	272	344	338	605	387	2,635
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

Schedule of Benefit Recipients by Type

For Month of June 2020 — Payment Made June 1, 2020

Monthly Benefit Amount	Number of Recipients	Type of Retirement		
		Regular	Disability	Beneficiary
\$ 0 – 1,000	16,248	14,613	120	1,515
\$ 1,001 – 2,000	14,894	13,050	176	1,668
\$ 2,001 – 3,000	17,802	16,223	125	1,454
\$ 3,001 – 4,000	10,636	9,813	47	776
\$ 4,001 – 5,000	4,578	4,183	7	388
\$ 5,001 – 6,000	2,262	2,043	3	216
\$ 6,001 – 7,000	995	880	0	115
\$ 7,001 – 8,000	496	429	0	67
\$ 8,001 – 9,000	257	224	0	33
\$ 9,001 – 10,000	114	98	0	16
\$ 10,001 – 11,000	55	51	0	4
\$ 11,001 – 12,000	28	26	0	2
\$ 12,001 – 13,000	14	13	0	1
\$ 13,001 – 14,000	6	4	0	2
\$ 14,001 – 15,000	4	3	0	1
\$ 15,001 – 16,000	0	0	0	0
\$ 16,001 – and over	1	1	0	0
Totals:	68,390	61,654	478	6,258

TRA Membership Data

June 30, 2020
 Distribution of Active Members*
 Average Earnings in Dollars

Years of Service as of June 30, 2020**

Age	<3**	3-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 +	Total
<25	2,531	79	2								2,612
Avg.	33,648	45,935	48,405								34,031
25-29	3,826	3,134	2,083								9,043
Avg.	36,454	48,364	53,693								44,552
30-34	2,028	1,729	5,677	1,182	1						10,617
Avg.	36,403	50,298	57,451	66,336	77,765						53,257
35-39	1,704	1,117	3,243	4,531	1,300						11,895
Avg.	33,553	53,470	60,680	71,140	79,429						62,150
40-44	1,577	855	2,005	2,297	4,196	1,341					12,271
Avg.	29,094	52,595	60,301	70,554	80,326	86,210					67,351
45-49	1,127	596	1,446	1,424	2,003	4,196	811				11,603
Avg.	27,483	49,836	60,875	70,211	77,887	84,944	89,426				71,847
50-54	950	457	1,067	1,059	1,347	2,334	3,226	606			11,046
Avg.	24,121	50,876	58,022	67,205	75,194	82,511	87,383	88,301			73,196
55-59	689	295	708	746	974	1,263	1,678	1,714	201		8,268
Avg.	21,977	46,326	53,212	64,354	74,386	80,134	84,337	88,081	86,153		72,525
60-64	544	195	432	453	558	641	615	422	247	57	4,164
Avg.	15,228	41,391	48,924	61,551	71,153	79,742	82,831	88,040	87,565	87,372	65,056
65-69	377	77	139	112	118	116	87	58	28	59	1,171
Avg.	7,406	23,635	35,531	63,020	72,602	77,016	78,498	86,978	89,385	93,670	43,126
70 +	267	28	36	30	23	10	19	12	9	25	459
Avg.	6,431	11,930	22,095	31,818	89,639	81,471	77,610	99,879	103,371	94,502	27,546
Total	15,620	8,562	16,838	11,834	10,520	9,901	6,436	2,812	485	141	83,149
Avg.	30,944	49,487	57,623	69,111	77,990	83,495	86,523	88,150	87,378	91,271	62,566

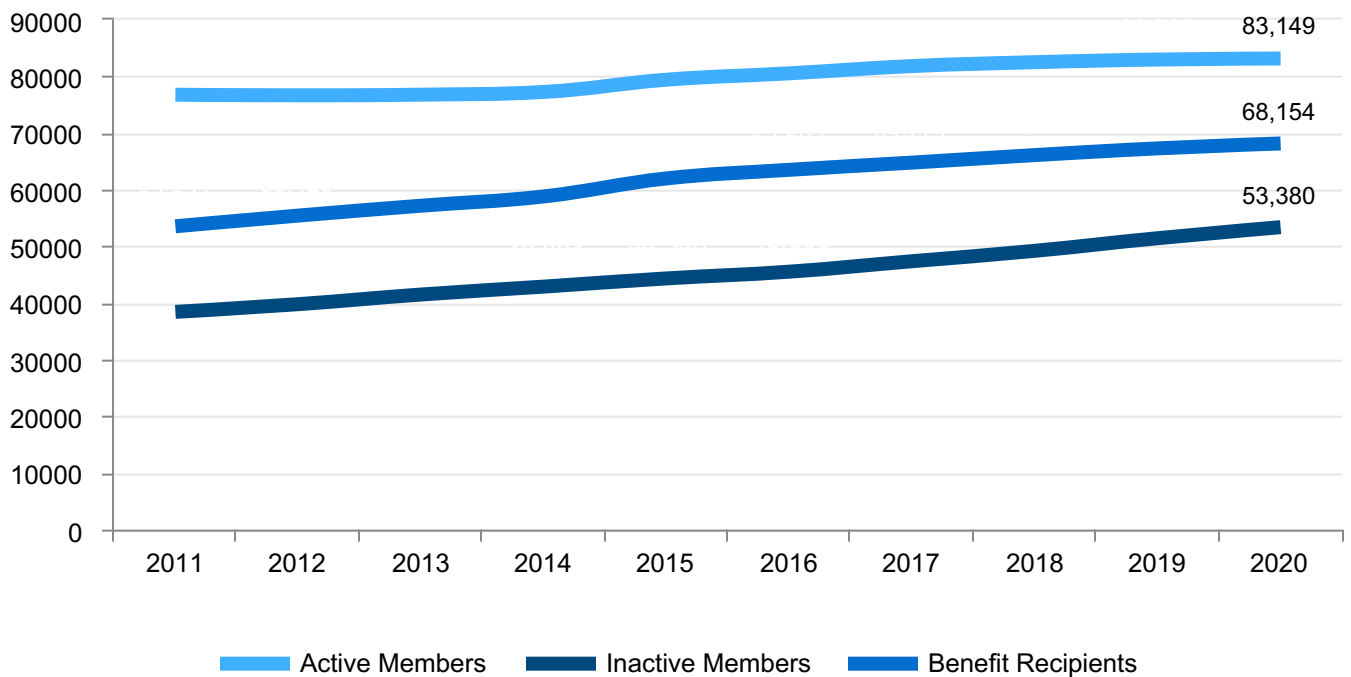
* Active members include 1 Basic and 83,149 Coordinated members.

** 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, 2020, as reported by the Teachers Retirement Association of Minnesota.

10-Year Summary of TRA Membership

Year Ended 30-Jun	Active Members	Inactive Members	Benefit Recipients
2011	76,755	38,433	53,537
2012	76,649	39,792	55,425
2013	76,765	41,495	57,168
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



TRA Principal Participating Employers

Fiscal year ended June 30, 2020 and June 30, 2011

Employer Unit Name	2020			2011		
	Covered Employees	Rank	Percentage of Active Membership	Covered Employees	Rank	Percentage of Active Membership
Minneapolis – Special School District #1	4,054	1	4.87 %	3,757	1	4.89 %
Anoka-Hennepin – ISD #11	3,492	2	4.20 %	3,158	2	4.11 %
Minnesota State	2,767	3	3.32 %	2,757	3	3.59 %
Rosemount-Apple Valley-Eagan – ISD #196	2,646	4	3.18 %	2,554	4	3.33 %
Osseo - ISD #279	1,840	5	2.21 %	1,743	5	2.27 %
South Washington County - ISD #883	1,779	6	2.14 %	1,559	6	2.03 %
Rochester – ISD #535	1,753	7	2.11 %	1,434	7	1.87 %
Robbinsdale – ISD #281	1,209	8	1.45 %	1,057	8	1.38 %
Bloomington – ISD #271	1,099	9	1.32 %	1,041	9	1.36 %
Wayzata - ISD #284	1,073	10	1.29 %			
St. Cloud - ISD #742				1,021	10	1.33 %
All Other	61,509		73.91 %	56,674		73.84 %
Total	83,221		100.00 %	76,755		100.00 %

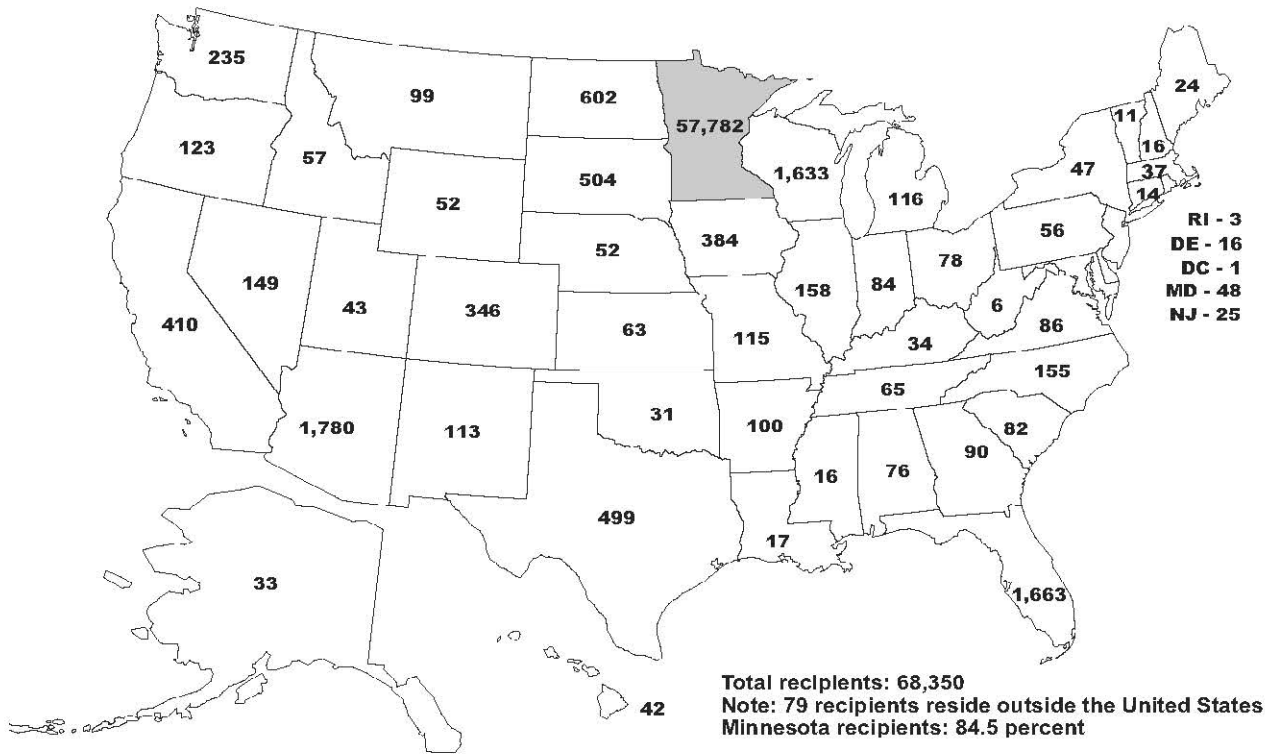
Number of TRA Employer Units

As of June 30,

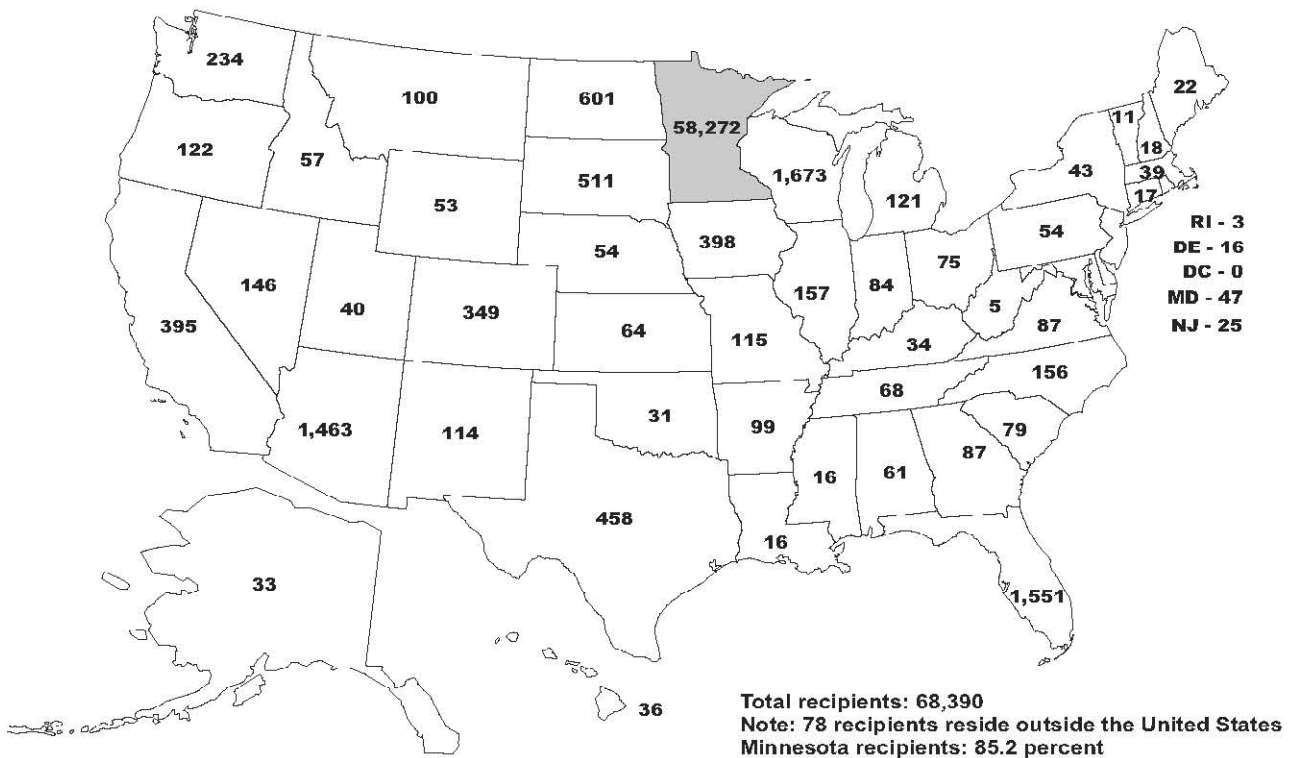
Year	Independent School Districts	Joint Power Units	Minnesota State	Charter Schools	State Agencies	Others	Total
2011	342	37	39	155	4	2	579
2012	344	34	39	158	4	6	585
2013	347	35	39	160	4	6	591
2014	341	37	39	163	5	5	590
2015	373	0	39	167	5	5	589
2016	373	0	39	174	4	5	595
2017	373	0	39	173	4	4	593
2018	374	0	39	169	4	4	590
2019	376	0	39	182	4	4	605
2020	375	0	39	182	4	4	604

Distribution of TRA Benefits Mailing Address of Benefit Recipient

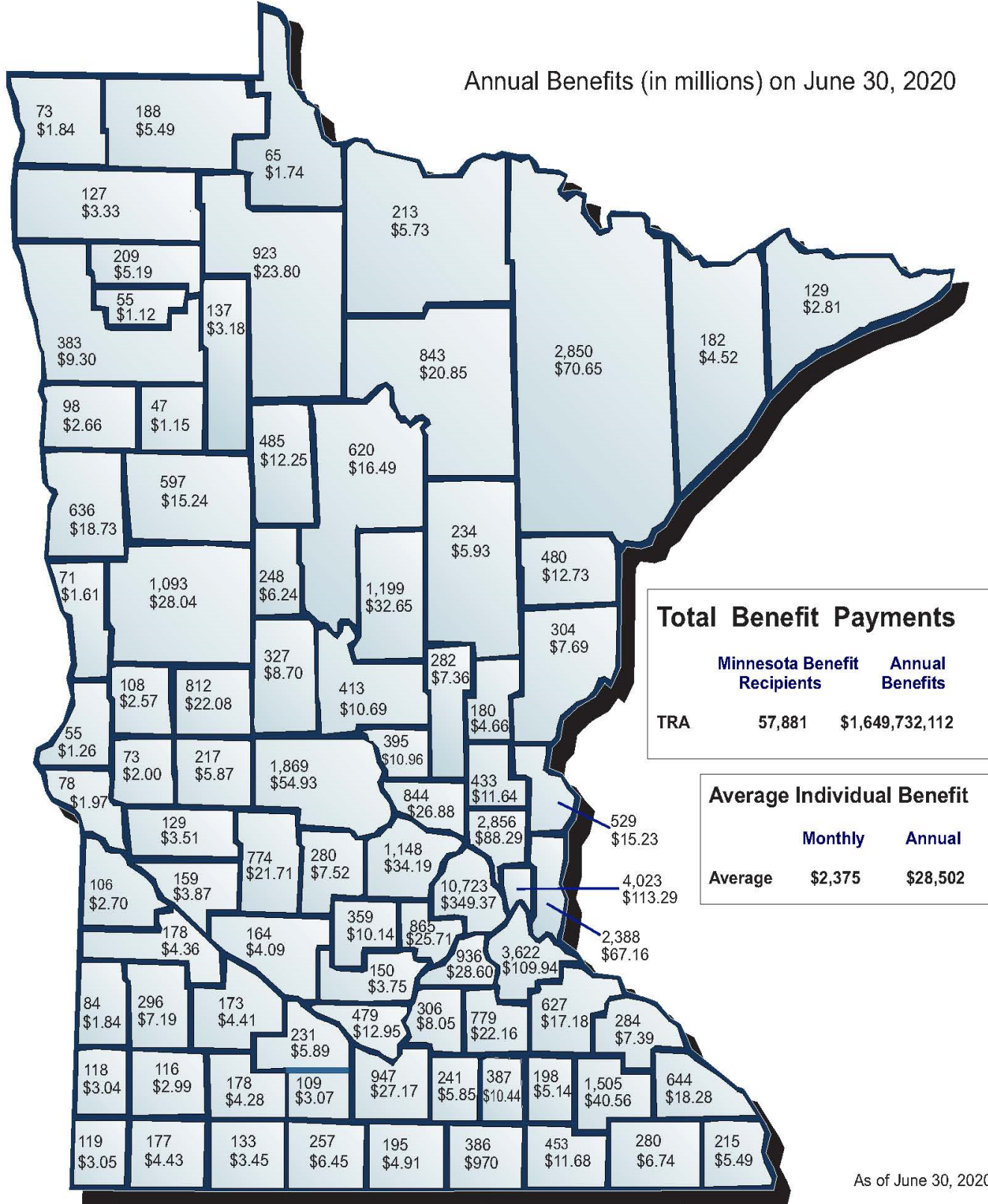
February 1, 2020



June 1, 2020



Annual Benefits for Minnesota TRA Benefit Recipients by County



As of June 30, 2020

Annual Benefits and Recipients by County for the Teachers Retirement Association (TRA)

As of June 30, 2020

County	Members	Annual Benefit	County	Members	Annual Benefit
Aitkin	234	\$ 5,929,731	Martin	257	\$ 6,452,235
Anoka	2,856	\$ 88,289,329	McLeod	359	\$ 10,135,983
Becker	597	\$ 15,237,925	Meeker	280	\$ 7,517,377
Beltrami	923	\$ 23,799,903	Mille Lacs	282	\$ 7,359,887
Benton	395	\$ 10,963,413	Morrison	413	\$ 10,689,360
Big Stone	78	\$ 1,974,810	Mower	453	\$ 11,683,411
Blue Earth	947	\$ 27,169,284	Murray	116	\$ 2,993,292
Brown	231	\$ 5,894,951	Nicollet	479	\$ 12,947,774
Carlton	480	\$ 12,730,540	Nobles	177	\$ 4,431,866
Carver	865	\$ 25,707,581	Norman	98	\$ 2,657,752
Cass	620	\$ 16,491,337	Olmsted	1,505	\$ 40,563,311
Chippewa	159	\$ 3,865,899	Otter Tail	1,093	\$ 28,038,521
Chisago	529	\$ 15,229,719	Pennington	209	\$ 5,185,264
Clay	636	\$ 18,734,294	Pine	304	\$ 7,687,638
Clearwater	137	\$ 3,178,743	Pipestone	118	\$ 3,038,101
Cook	129	\$ 2,809,307	Polk	383	\$ 9,299,144
Cottonwood	178	\$ 4,281,165	Pope	217	\$ 5,869,090
Crow Wing	1,199	\$ 32,652,945	Ramsey	4,023	\$ 113,285,282
Dakota	3,622	\$ 109,941,468	Red Lake	55	\$ 1,116,093
Dodge	198	\$ 5,142,401	Redwood	173	\$ 4,409,053
Douglas	812	\$ 22,084,553	Renville	164	\$ 4,086,201
Faribault	195	\$ 4,911,865	Rice	779	\$ 22,156,364
Fillmore	280	\$ 6,741,641	Rock	119	\$ 3,048,670
Freeborn	386	\$ 9,701,591	Roseau	188	\$ 5,486,953
Goodhue	627	\$ 17,183,857	Saint Louis	2,850	\$ 70,646,774
Grant	108	\$ 2,568,863	Scott	936	\$ 28,599,303
Hennepin	10,723	\$ 349,368,519	Sherburne	844	\$ 26,875,091
Houston	215	\$ 5,490,911	Sibley	150	\$ 3,749,871
Hubbard	485	\$ 12,249,148	Stearns	1,869	\$ 54,930,298
Isanti	433	\$ 11,636,199	Steele	387	\$ 10,438,095
Itasca	843	\$ 20,853,339	Stevens	73	\$ 1,995,774
Jackson	133	\$ 3,448,253	Swift	129	\$ 3,511,161
Kanabec	180	\$ 4,664,241	Todd	327	\$ 8,696,946
Kandiyohi	774	\$ 21,713,228	Traverse	55	\$ 1,264,743
Kittson	73	\$ 1,838,047	Wabasha	284	\$ 7,391,957
Koochiching	213	\$ 5,727,711	Wadena	248	\$ 6,237,063
Lac Qui Parle	106	\$ 2,704,678	Waseca	241	\$ 5,846,150
Lake	182	\$ 4,524,129	Washington	2,388	\$ 67,161,206
Woods	65	\$ 1,740,783	Watsonwan	109	\$ 3,067,335
Le Sueur	306	\$ 8,047,476	Wilkin	71	\$ 1,608,131
Lincoln	84	\$ 1,842,234	Winona	644	\$ 18,281,690
Lyon	296	\$ 7,191,359	Wright	1,148	\$ 34,188,919
Mahnomen	47	\$ 1,151,618	Yellow Medicine	178	\$ 4,359,010
Marshall	127	\$ 3,334,988	Grand Total	57,881	\$ 1,649,732,112

Projected TRA Benefit Payments

Fiscal Year Ended June 30, 2020

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, 2020. The Retirees column shows benefits expected to be paid to all other members. This includes those who, as of July 1, 2020, 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
2021	\$ 71,181	\$ 1,911,979	\$ 1,983,160
2022	128,724	1,874,630	2,003,354
2023	182,689	1,843,524	2,026,213
2024	235,870	1,810,957	2,046,827
2025	287,263	1,780,055	2,067,318
2026	337,577	1,751,051	2,088,628
2027	388,639	1,722,475	2,111,114
2028	442,604	1,693,707	2,136,311
2029	501,850	1,665,621	2,167,471
2030	567,939	1,635,119	2,203,058
2031	642,704	1,603,895	2,246,599
2032	726,918	1,569,821	2,296,739
2033	821,475	1,532,893	2,354,368
2034	925,087	1,493,273	2,418,360
2035	1,036,827	1,452,020	2,488,847
2036	1,156,146	1,408,262	2,564,408
2037	1,283,300	1,362,013	2,645,313
2038	1,416,794	1,312,537	2,729,331
2039	1,556,024	1,259,738	2,815,762
2040	1,701,719	1,204,752	2,906,471
2041	1,853,769	1,147,707	3,001,476
2042	2,011,433	1,088,806	3,100,239
2043	2,173,520	1,028,228	3,201,748
2044	2,338,821	966,734	3,305,555
2045	2,507,463	904,132	3,411,595

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 nonvested inactives and assume future retirees and future terminated members make benefit elections according to valuation assumptions.

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

Plan Statement

TRA Plan Statement

June 30, 2020

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 11.0 percent of their annual salary, while Coordinated Plan members (coordinated with Social Security coverage) contribute 7.50 percent of their annual salary.

Employer Contributions

Local school districts and other TRA-covered employer units provide contributions of 11.92 percent of total salary for members in the Basic Plan and 7.92 percent 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, 2020, the employer contribution rate increased by 0.21 percent for both plans.

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

TRA also receives approximately \$35.8 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 percent of average salary for the first 10 years of allowable service;
- 1.70 percent of average salary for each subsequent year prior to July 1, 2006; and
- 1.90 percent 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 percent 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 percent of average salary for each year of allowable service prior to July 1, 2006; and
- 1.90 percent of average salary for each year of allowable service beginning July 1, 2006.
- Actuarial reduction (averaging 4.0 percent to 5.5 percent 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 220.00 percent 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	0.00%

Members who do not reach age 62 with 30 years of service credit are eligible for a different group of factors. The following example illustrates how these reduction factors will be applied to an eligible person of the normal retirement age of 65:

Age 55	58.0%	Age 61	28.0%
Age 56	54.0%	Age 62	21.0%
Age 57	50.0%	Age 63	14.0%
Age 58	46.0%	Age 64	7.0%
Age 59	42.0%	Age 65	0.0%
Age 60	35.0%		

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 percent of average salary for each year of allowable service prior to July 1, 2006; and
- 1.90 percent 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 than 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	0.00%

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	65.0%	Age 61	35.0%
Age 56	61.0%	Age 62	28.0%
Age 57	57.0%	Age 63	21.0%
Age 58	53.0%	Age 64	14.0%
Age 59	49.0%	Age 65	7.0%
Age 60	42.0%	Age 66	0.0%

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	0.00%

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	65.0%	Age 61	35.0%
Age 56	61.0%	Age 62	28.0%
Age 57	57.0%	Age 63	21.0%
Age 58	53.0%	Age 64	14.0%
Age 59	49.0%	Age 65	7.0%
Age 60	42.0%	Age 66	0.0%

Contact TRA for the reduction factor in force for months prior to July 1, 2024.

Basic Members (Former MTRFA)

TRA has 1 active and 12 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 percent 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 percent of average salary for each year of teaching service with reduction of 0.25 percent for each month the member is under the age first eligible for a normal retirement benefit.

or

- b. 2.50 percent of average salary for each year of teaching service assuming augmentation to the age first eligible for a normal retirement benefit at 3.00 percent 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 percent "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, 2020, TRA had 5 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. 2.20 percent of average salary for each of the first ten years of allowable service and 2.70 percent of average salary for each subsequent year with reduction of 0.25 percent 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. 2.70 percent of average salary for each year of allowable service assuming augmentation to age 65 at 3.00 percent 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 220.00 percent 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: 3.0 percent annually through December 31 of the year in which the member would have reached 55 and 5.0 percent annually thereafter each year the benefit is deferred After July 1, 2012 until June 30, 2019: 2.0 percent After June 30, 2019; 0.0 percent
Members hired on or after July 1, 2006	Prior to July 1, 2012: 2.5 percent After July 1, 2012 to June 30, 2019: 2.0 percent After June 30, 2019: 0.0 percent

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. 50% Survivorship with Bounceback
6. 75% 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 1.0 percent for a five-year period. Beginning January 1, 2024, the adjustment will rise to 1.1 percent and on January 1, 2025, the adjustment will be 1.2 percent. The adjustment will be 1.3 percent on January 1, 2026 and 1.4 percent on January 1, 2027. Beginning January 1, 2028 and years following, the annual adjustment will be 1.5 percent.

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 percent. Contributions from July 1, 2011 to June 30, 2018 accrue interest at an annual rate of 4 percent. Beginning July 1, 2018, contributions will accrue interest at a rate of 3 percent 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 percent, compounded annually from the date of the refund(s) through June 30, 2018. The interest rate for the repayment accrues at 7.5 percent from July 1, 2018 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 percent. 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 percent. 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 percent. 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 percent 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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