A Pension Trust Fund of the State of Minnesota

2016

Comprehensive Annual Financial Report

Teachers Retirement Association

for fiscal year ended June 30, 2016

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, 2016

Retirement Systems of Minnesota Building

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

651.296.2409
800.657.3669

TTY 800.627.3529

www.minnesotatra.org

Laurie Fiori Hacking
Executive Director

Report Prepared by the TRA accounting and executive staff

Table of Contents

Introduction

Financial Section

Investments Section

Actuarial Section

Statistical Section

Plan Statement

Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

Minnesota Teachers Retirement Association

For its Comprehensive Annual Financial Report for the Fiscal Year Ended

June 30, 2015

Jeffrey R. Emer

Executive Director/CEO

Public Pension Coordinating Council

Recognition Award for Administration 2016

Presented to

Minnesota Teachers Retirement Association

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

Presented by the Public Pension Coordinating Council, a confederation of

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

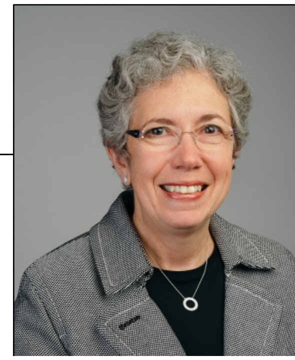
Alan H. Winkle

Alan H. Winkle
Program Administrator

Teachers Retirement Association

60 Empire Drive • Suite 400 • St Paul MN 55103-4000

Letter of Transmittal



Laurie Fiori Hacking
Executive Director

December 29, 2016

Members of the Board of Trustees

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

Dear Trustee:

We are pleased to present this Comprehensive Annual Financial Report (CAFR) of the Teachers Retirement Association (TRA) for the fiscal year ended June 30, 2016, our 85th year of service.

J. Michael Stoffel
Deputy
Executive Director

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.

The independent Office of the Legislative Auditor has issued an unmodified (clean) opinion on TRA's financial statements for the year ended June 30, 2016. 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.

Readers are encouraged to refer to the Management Discussion and Analysis on pages 15-19 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, 2016, TRA had 595 reporting units, 80,530 active members and a total of 63,503 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 Comprehensive Annual Financial Report of the State of Minnesota.

TRA follows the provisions of statements promulgated by the Governmental Accounting Standards Board (GASB). TRA's Comprehensive Annual Financial Report 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 and to provide results that assist board members and state policymakers in funding determinations. These statutes specify key funding policy elements including amortization period, actuarial cost method, COLA valuation method, asset smoothing and economic assumptions such as investment earnings and inflation rates. 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 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 62. 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 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 (MMB))

Well into the current economic expansion, Minnesota continues to add jobs at a fairly steady rate. Consistent job growth has contributed to the state's declining unemployment rate, which is now at 4.0 percent on a seasonally adjusted basis, 0.6 percentage points below the current U.S. rate. At the same time, the state's employment growth is seeing the effects of drags on exports and a tightening labor market. Total non-farm employment in Minnesota grew 1.0 percent in fiscal year 2016 and is forecast to accelerate slightly to 1.2 percent growth in fiscal year 2017. Employment growth is forecast to decelerate to 0.8 percent in fiscal year 2018 followed by 1.0 percent growth in fiscal year 2019.

Information from the Bureau of Economic Analysis, Quarterly Census of Employment and Wages (QCEW), and income tax withholding collections suggests Minnesota's nominal wage and salary disbursements grew 3.2 percent in fiscal year 2016. Wage income is now expected to accelerate to 5.3 percent growth in fiscal year 2017, followed by 4.7 percent in each of fiscal years 2018 and 2019. Minnesota personal income grew 2.0 percent in fiscal year 2016, and is now forecast to accelerate to 4.6 percent in fiscal year 2017, followed by 4.6 percent and 4.7 percent in fiscal year 2018 and 2019, respectively.

A global economic slowdown and a stronger U.S. dollar relative to major trading partners make Minnesota-produced goods and commodities more expensive elsewhere in the world, reducing demand for the state's products abroad. Exports of Minnesota manufactured goods have fallen over the last year, and manufacturing employment has declined. In the current forecast, we expect improvements in global growth to lead Minnesota manufacturers to add jobs starting in 2018. Minnesota's exports of goods and services to countries throughout the world are an important source of economic strength. According to data from the Minnesota Department of Employment and Economic Development for the second quarter of calendar year 2016, Minnesota exports, including agricultural, mining and manufactured products, were valued at $4.8

billion, showing a decline of 8.0 percent since the second quarter of calendar year 2015, which is 2.0 percent more than the national decline of exports over the same period.

Investment Results

The U.S. stock market, as measured by the Russell 3000 index, returned 2.1 percent for the fiscal year ended June 30, 2016. Positive global growth, albeit modest, helped US equities generate positive growth. Investors responded to the surprising "Brexit" development by continuing to rotate into low-volatility and high-dividend stocks. The SBI domestic stock portfolio underperformed the index, producing a zero return for the fiscal year.

International markets returned -10.2 percent for the fiscal year as measured by the Morgan Stanley Capital International (MSCI) All Country World Index excluding the United States net taxes on dividends (ACWI ex U.S.), which represents the developed and emerging markets outside the United States. Volatility was further amplified when the United Kingdom unexpectedly voted to leave the European Union at the end of June. Actual SBI performance in international equities was slightly better than the index at -9.7 percent for fiscal year 2016.

The U.S. fixed income (bond) market, as measured by the Barclays Capital Aggregate Bond Index, returned 6.0 percent for the fiscal year ended June 30, 2016. For the first time in seven years, calendar year 2015 brought a Federal Reserve rate hike of 0.25 percent. The Federal Open Market Committee (FOMC) stated future rate hikes will occur gradually, contingent on the strength of US economic data.

Within this investment environment, TRA retirement assets under SBI investment management as part of the Combined Funds (see page 57), produced an investment return of -0.1 percent for the fiscal year ended June 30, 2016, net of fees and using the time-weighted performance method. This was well below the assumed rate of 8.0 percent for fiscal year 2016 as specified in Minnesota Statute. Over the latest ten, twenty and twenty-five year periods, the funds have experienced an annualized investment return of 6.5 percent, 7.5 percent and 8.5 percent, respectively. For all three time periods, the performance of the Combined Funds exceeded the performance of the composite benchmark.

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. The SBI also utilizes a disciplined rebalancing policy to keep asset class allocations within policy guidelines.

Legislation

The TRA Board of Trustees proposed a legislative package of multiple funding reforms during the 2016 legislative session. Ultimately, the final amended bill which passed both legislative bodies was vetoed by Governor Mark Dayton. The final bill contained only a portion of the package which the TRA Board originally proposed. The final bill provided for only a one-year decrease in the cost of living adjustment (COLA) for TRA benefit recipients from 2 percent to 1 percent on January 1, 2017. In his veto message, Governor Dayton noted that the impact of the bill fell solely upon one segment of TRA stakeholders (retirees) and that a future pension bill must contain a balanced impact upon TRA's three major stakeholder groups: active members, retired members and employers.

In the interim, TRA's funded status has deteriorated due to flat-to-low investment returns and adoption of a number of actuarial assumptions recommended as part of the actuarial experience study report in 2015. TRA's actuarial consultant has conducted many studies estimating the cost savings of various plan provision changes and impacts of higher contribution rates from members and employers. TRA staff has conducted numerous presentations before its stakeholder groups including legislators and state budget officials, explaining the funding and contribution shortfalls that exist and the potential plan changes the board is considering as part of its 2017 legislative funding package.

Statutory Funding Status

The actuarial value of TRA assets increased as of June 30, 2016, compared to the previous year-end. For actuarial purposes, investments gains and losses are recognized over a five-year period. On June 30, 2016, the actuarial value of TRA assets was $20.2 billion, an increase from $19.7 billion on June 30, 2015. However, the five-year smoothing of investment gains and losses produced a deferred investment loss of $774 million as of June 30, 2016. The deferred loss will be recognized in future years, or be offset with future investment gains above actuarial expectations.

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 $5.87 billion on June 30, 2015 to $6.52 billion on June 30, 2016. The adoption of most of the actuarial recommendations from the 2015 Experience Study report was responsible for much of the increase. Another key measure to assess TRA funding health is the adequacy of employee and employer contributions. As of July 1, 2016, the TRA contribution rate deficiency was 2.78 percent of active member covered payroll. Under this estimate, TRA will receive about $135 million less in contributions during fiscal year 2017 than is needed to meet the full funding target date of June 30, 2039.

The recommendations of the experience study are of great significance both with this valuation and future reports. The most impactful assumption change was to the retiree life expectancy tables. The experience study report indicated that TRA retirees are living two years longer than previously estimated. A number of other economic and demographic assumptions were also changed. The actuarial impact of these changes produced a higher contribution requirement of 1.28 percent of active member payroll and increased the actuarial liability by $684 million in total.

The second actuarial recommendation in the 2015 experience study was to lower the investment earnings assumption from a bifurcated, "select and ultimate" rate (approximately 8.47 percent for fiscal year 2016) to a flat 8.0 percent for all years. This actuarial assumption is set in Minnesota Statute. The TRA Board of Trustees recommended changing the rate to 8.0 percent as part of its 2016 legislative proposal. Ultimately, the earnings assumption was left unchanged for this valuation report, as the 2016 Omnibus Pension Bill was vetoed by Governor Dayton. The official actuarial results according to current statute are presented on page 72.

The TRA Board will again seek legislative approval to change the investment earnings assumption in the 2017 legislature. Due to the likelihood that the earnings assumption will change and high stakeholder interest, we requested the TRA actuary to report the key actuarial measurements using the 8.0 percent earnings assumption for all years. Those results are presented in the Actuarial Section of this report on page 78. The lowering of the investment earnings assumption will produce the need for additional contributions and/or lowering of plan expenses to provide for long-term funding stability of the plan. Since the last legislation session, the TRA Board of Trustees and its management have updated and conducted additional studies for the development of its 2017 legislative proposal. We will continue to remain vigilant and monitor all key actuarial measures and report funding and plan sustainability issues to the membership, employers and the legislature.

Major Initiatives

During 2016, the highest internal strategic initiative was the .NET Project, a comprehensive assessment of current business processes and the rewriting of existing applications into a more powerful and structured computer language. Phase 1.0 of the project was implemented on July 1, 2014, with enhanced functionality for employer unit reporting. Phase 2.0 was implemented in September 2016. Key customer services include the benefit payment process and enhanced member online account features.

The communication of the aforementioned funding shortfalls necessitates a more robust presence with stakeholder groups. These groups will be engaged and consulted during the development of future legislation. Retired members are rightly concerned about the purchasing power of their TRA pension during their retirement years. TRA must also reach and engage the youngest of our active members to help them recognize the value of TRA's defined benefit plan in their personal retirement planning.

TRA also continues the internal development to provide the systems infrastructure to provide a wide array of member services and benefits processing. Retiring TRA members have consistently provided feedback that they highly value a private meeting with a TRA benefits counselor, away from their workplace. Although we are planning new and innovative ways to counsel members towards their retirement goals, the human interaction will continue to be there as the foundation of our member services.

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, 2015. This was the eighteenth consecutive year that the Association has achieved this prestigious award. In order 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 in 2016. 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 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.

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

Respectfully submitted,

Laurie Fiori Hacking

Laurie Fiori Hacking
Executive Director

J. Michael Stoffel

J. Michael Stoffel
Deputy Executive Director

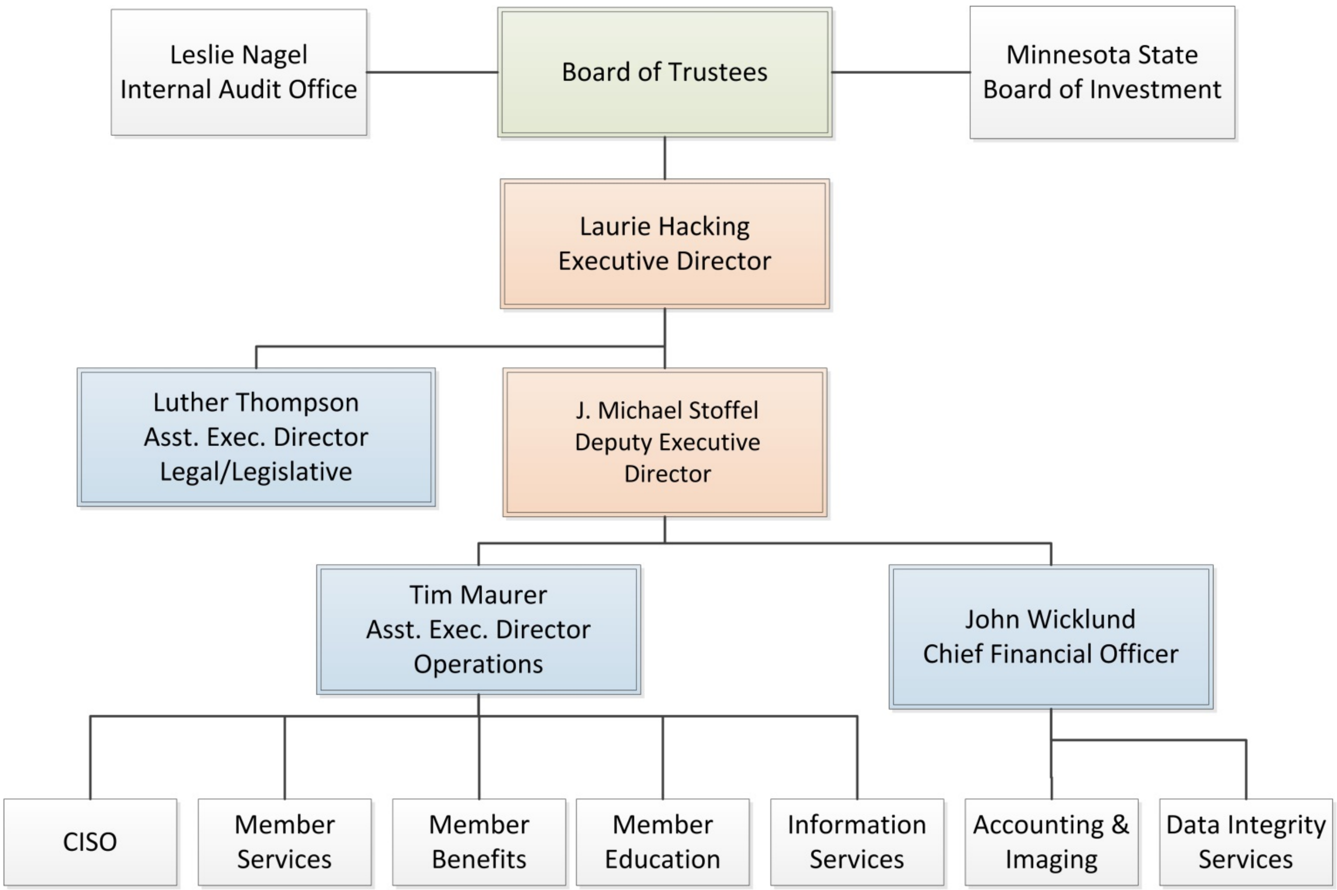
Board of Trustees

As of December 16, 2016

Administrative Staff

Administrative Organization

As of December 2016



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

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 **exceeds 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.

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

Financial

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

Ms. Laurie Hacking, Executive Director
Teachers Retirement Association

Report on the Financial Statements

We have audited the accompanying financial statements of the Teachers Retirement Association (TRA), which included the statement of fiduciary net position as of June 30, 2016, the related statement of changes in fiduciary net position, and notes to the financial statements, as listed in the Table of Contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal 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 as of June 30, 2016, and the changes in financial position for the period then ended in conformity with accounting principles generally accepted in the United States of America.

Emphasis Matter – GASB and Statutory Financial Reporting Requirements

Minnesota Statutes 2016, 356.20, require TRA to include in its financial report information using funding-focused statutory assumptions and methodologies. For its fiscal year 2016 financial report, the funding-focused information differs from the GASB-based information primarily for the following reasons:

(1) The discount rate required by statute for funding purposes was higher than the discount rate used for financial reporting purposes . The discount rate is the rate used to bring the projected benefit payments to the present value of those benefits (the pension liability). A higher discount rate results in a smaller pension liability.

(2) For funding purposes, statutes require investment gains and losses be recognized over a five-year period to "smooth" the volatility that can occur from year to year. For GASB financial reporting purposes, assets are valued at fair (market) value as of the end of the fiscal year.

Including funding-focused information was necessary for TRA to comply with state law and had no effect on our audit opinion.

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 Table of Contents, be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements.

We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Information 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 issued our report, also dated December 20, 2016, on our consideration of TRA's internal controls over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, grant agreements, and other matters. The purpose of that report is to describe the scope of our testing of internal controls over financial reporting and compliance and the results of that testing 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.

James R. Nobles
Legislative Auditor

Cecile M. Ferkul, CPA, CISA
Deputy Legislative Auditor

December 20, 2016
Saint Paul, Minnesota

Management Discussion and Analysis

June 30, 2016

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, 2016. 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 2016 include:

- The Net Position Restricted for Pension Benefits decreased in value by $1.0 billion during fiscal year 2016 for a total of $19.4 billion. Plan contributions and investment income totaled $719.7 million during the fiscal year. Plan benefits and other expenses totaled $1.7 billion during the fiscal year.
- Investment returns for the 2016 fiscal year were -0.1 percent using the time-weighted value method, resulting in net investment loss of $23.7 million.
- Contributions paid by employees, employers, and non-employers during fiscal year 2016 totaled $737.8 million, an increase of $21.2 million from the fiscal year 2015 total of $716.6 million.
- Pension benefits paid to retirees and beneficiaries during fiscal year 2016 was $1.7 billion. The fiscal year 2015 total was $1.7 billion, an increase of $59 million during the year.
- Refunds of member contributions plus interest during fiscal year 2016 were $11.3 million. The fiscal year 2015 total was $11.9 million.
- Administrative expenses of the fund during fiscal year 2016 were $11.3 million. The fiscal year 2015 total was $11.5 million, representing a decrease of $171 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 contribution rate deficiency.

As of June 30, 2016, the accrued liability funding ratio for TRA was 75.6 percent, a decrease from the comparable funding ratio of 77.1 percent as of June 30, 2015. TRA's unfunded actuarial accrued liability on June 30, 2015, was $5.9 billion. The June 30, 2016, unfunded actuarial liability was $6.5 billion, an increase of $657 million from the previous year. Adoption of several actuarial assumptions resulted in a $684 million loss in determining the unfunded actuarial liability. Those losses were partly offset by a $206 million gain in the unfunded liability of the plan due to actuarial experience during the year. TRA's unfunded liability, by state law, must be fully paid by June 30, 2039. Key actuarial funding ratios are presented on page 72.

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 2017 to assist employer units in their GASB 68 financial reporting presentations and disclosures later in 2017.

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; and

- required supplementary information, and
- other supplementary information.

The Statement of Fiduciary Net Position (page 20) 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 21) presents information detailing the changes in net position that occurred during the current fiscal year. All changes in net assets 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 22-41) provide additional information that is essential to 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 42-46) 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 2016 net pension liability for GASB 67 reporting purposes.

The Schedule of Employer and Non-Employer Contributions presents information about the annual required contributions and resulting contributions in relation to this requirement, covered employee 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 TRA Administrative Expenses (page 49) presents the overall cost of administering the Association. The Schedule of Professional Consultant Expenses (page 50) further details this category of administrative expense.

Financial Analysis of the TRA Fund

Plan Assets

Total plan assets of the TRA fund as of June 30, 2016, were $22.2 billion and were mostly comprised of cash, investments and contributions due from employers. Total plan assets decreased $351.4 million (1.6 percent) from the June 30, 2015, total of $22.5 billion. The primary reason for the decrease was the decline in the fair value of TRA assets by the end of the fiscal year.

Plan Liabilities

Total liabilities as of June 30, 2016, were $2.8 billion, an increase of 32.0 percent from the June 30, 2015, liability amount of $2.1 billion. The primary reason for the increase was the larger value of liabilities within 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 Association.

Net Position

Association assets exceeded liabilities on June 30, 2016, by $19.4 billion. The amount is less than the June 30, 2015, amount of $20.4 billion by $1.0 billion. TRA relies heavily on investment earnings to help pay benefits and expenses over the long term, since annual employee and employer contributions are less than one-third 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.

Revenues — Additions to Fiduciary Net Position

Total additions to the TRA Fund during fiscal year 2016 were $719.7 million, a decrease of $889 million from $1.6 billion in fiscal year 2015. The decrease is due to weaker investment earnings in fiscal year 2016 than in the prior fiscal year.

Total employee and employer contributions for fiscal year 2016 increased $21.2 million from the previous fiscal year for a combined fiscal year total of about $737.8 million. The increase is attributable to higher covered salaries earned by active members for fiscal year

2016. Contributions during fiscal year 2016 were prescribed in statute at 7.5 percent employee and 7.5 percent employer for Coordinated Plan members of TRA.

A net investment loss of $23.7 million was recorded for fiscal year 2016. This amount decreased by $911.0 million from the fiscal year 2015 amount of $887.3 million.

Fiduciary Net Position

Dollar Amounts in Thousands

	2016	2015	Change
Cash and Investments	$ 22,145,519	$ 22,498,193	$ (352,674)
Receivables	21,765	23,111	(1,346)
Other	21,595	18,981	2,614
Total Assets	22,188,879	22,540,285	(351,406)
Total Liabilities	2,764,448	2,094,194	670,254
Fiduciary Net Position	$ 19,424,431	$ 20,446,091	$ (1,021,660)

Changes in Fiduciary Net Position

Dollar Amounts in Thousands

Additions	2016	2015	Change
Employee Contributions	$ 347,256	$ 334,826	$ 12,430
Employer Contributions	390,549	381,795	8,754
Net Investment Income/(Loss)	(23,672)	887,280	(910,952)
Other	5,529	4,897	632
Total Additions	$ 719,662	$ 1,608,798	$ (889,136)

Deductions	2016	2015	Change
Monthly Benefits	$ 1,718,694	$ 1,659,069	$ 59,625
Refunds of Contributions	11,290	11,885	(595)
Administrative Expenses	11,338	11,509	(171)
Total Deductions	1,741,322	$ 1,682,463	$ 58,859
Change in Fiduciary Net Position	$ (1,021,660)	$ (73,665)	$ (947,995)

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 system. Retirement benefit expenses increased by $59.0 million due to an increase in the number of recipients and a 2.0 percent benefit increase paid to eligible recipients on January 1, 2016.

Member refunds of $11.3 million decreased by $600 thousand during fiscal year 2016 from the fiscal year 2015 total of $11.9 million.

Administrative expenses decreased by1.5 percent during the fiscal year – from $11.5 million in fiscal year 2015 to $11.3 million in fiscal year 2016. Overall, fund deductions increased $58.9 million during fiscal year 2016.

Actuarial 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 356.215. These financial statements should also be reviewed in conjunction with the Actuarial section of this CAFR.

Due to investment gains earned over three of the preceding five years, the actuarial value of assets increased from $19.7 billion on June 30, 2015, to $20.2 billion as of June 30, 2016. 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 $19.4 billion on June 30, 2016. The difference between the actuarial value and the fair value of assets is $774 million and represents deferred losses that will be recognized in future years or will be recovered by investment gains should the markets increase.

TRA's actuarial accrued liability on June 30, 2016, increased to $26.7 billion from the June 30, 2015, amount of $25.6 billion, an increase of 4.5 percent. Accrued liabilities increased, in part, due to additional service earned by active members during fiscal year 2016 and interest charged to the fund on the existing unfunded liability.

TRA's unfunded actuarial liability on June 30, 2015, was $5.9 billion. The June 30, 2016, unfunded actuarial liability increased to $6.5 billion, representing an increase of about $657 million. By statute, the unfunded liability must be recovered in full by June 30, 2039, two years longer than the date calculated in the fiscal year 2015 actuarial valuation report. The adoption of revised demographic actuarial assumptions increased TRA actuarial liabilities by $684 million.

TRA's funding objective is to meet long-term benefit obligations through the accumulation of contributions and investment income. As of June 30, 2016, the actuarial accrued liability funding ratio for TRA was 75.6 percent, a decrease from the comparable funding ratio of 77.1 percent as of June 30, 2015. The funding decrease was driven primarily by the adoption of new demographic actuarial assumptions, including longer retiree life expectancies and partial recognition of investment losses incurred during the past two fiscal years.

TRA's statutory contribution rate of 15.94 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 18.72 percent. The resulting contribution deficiency is 2.78 percent of employee covered payroll, or about $135.4 million projected in fiscal year 2017.

Employee and employer contribution rates are reviewed and set into law by the Minnesota legislature. The actuarial results presented are reflective of most, but not all of the economic and demographic assumptions recommended in TRA's experience study report of June 2015. The actuary's recommendation to lower the investment earnings and liability discount assumption to 8.0 percent for all years was not adopted due to the Governor's veto of the 2016 Omnibus Retirement Bill. If the earnings assumption is modified during the 2017 legislative session as TRA management expects, the impact upon the actuarial results presented in the Actuarial section of this report would produce a weaker funded ratio and higher contribution deficiency.

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 42, 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 $23.9 billion on June 30, 2016 and a contribution deficiency of $69.2 million for fiscal year 2016. The GASB 67 investment return for fiscal year 2016, using the money-weighted method, was -0.12 percent.

The Net Pension Liability of $23.9 billion on June 30, 2016, is a sharp increase of 286% from the $6.2 billion calculated at June 30, 2015. The sharp increase is due to the low investment return of -0.12 percent and a decline in fund net position that occurred during fiscal year 2016. Under GASB 67 parameters, the actuary must calculate the date on which June 30, 2016 assets would be depleted, absent future cash flows and asset accumulations that would occur related to future members of the Association.

The actuarial consultant has determined that using the GASB 67 methodology, TRA assets would be depleted on June 30, 2052. For benefit payments TRA will make after 2052, a lower discount rate of 3.01 percent must be used. The discount rate for payments from the current time through June 30, 2052, was set by TRA management to be 8 percent annually. Under GASB 67, a single equivalent rate is determined based on the weighting of these two discount rates. The single equivalent interest rate (SEIR) was calculated at 4.66 percent annually, a steep decline from the 8.00 percent annually used for all benefit payments in the fiscal year 2015 actuarial valuation. The impact of the SEIR on the fund's liabilities is responsible for the large increase in net pension liability.

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 first quarter of calendar year 2017 to facilitate their compliance with the financial reporting requirements of GASB Statement 68 for their fiscal year 2017 financial reporting cycle.

The complete GASB 67 accounting valuation report is available at:
www.MinnesotaTRA.org/FORMSPUB/eepubs.html

Summary

Due to the long-term nature of defined benefit plans, one must review the financial performance of TRA over a period of years and not at any one point in time. The funding ratio of the TRA fund decreased from 77.1 percent to 75.6 percent for fiscal year 2016. The recognition of most of the recommendations in the 2015 experience study report increased the TRA unfunded actuarial accrued liability by about $684 million and increased the required contribution rate by 1.28 percent of member payroll.

The long-term financial health of TRA, like all retirement systems, is heavily dependent on two key items: (1) future investment returns and (2) contributions. A contribution deficiency of 2.78 percent of member payroll exists based on the assumptions used for the 2016 valuation. If the investment earnings assumption for the funding valuation report is changed to 8 percent for all years, the contribution deficiency would worsen to 5.43 percent of member payroll. Acknowledging the magnitude of the contribution deficiency, the TRA Board of Trustees is developing a 2017 legislative package of benefit provision cuts and increased contribution rates to narrow that deficiency and improve the funded ratio. Ultimately, the actual market returns over the coming years will be the most significant factor in whether or not TRA's goal of amortizing the unfunded actuarial accrued liability by June 30, 2039, will be reached.

Teachers Retirement Fund
Statement of Fiduciary Net Position

For the Fiscal Year Ended June 30, 2016

Assets		
Cash and Short-term Investments		
Cash	$	8,491,219
Building Account Cash		64,096
Short-term Investments		410,604,790
Total Cash and short-term investments		419,160,105
Accounts Receivable		21,764,970
Investments (at fair value)		
Bond Pool		4,788,124,747
Alternative Investments Pool		2,482,640,103
U.S. Stock Index Pool		2,995,719,589
U. S. Stock Actively Managed Pool		5,996,792,209
Broad International Stock Fund		2,714,605,374
Total Investments		18,977,882,022
Securities Lending Collateral		2,748,476,498
Building		
Land		171,166
Building & Equipment Net of Depreciation		6,522,451
Total Building		6,693,617
Capital Assets Net of Depreciation and Amortization		14,901,604
Total Assets	$	22,188,878,816
Liabilities		
Current		
Accounts Payable	$	9,135,924
Accrued Compensated Absences		111,341
Accrued Expenses - Building		4,380
Bonds Payable		603,000
Bond Interest Payable		12,096
Securities Lending Collateral		2,748,476,498
Total Current Liabilities		2,758,343,239
Long Term		
Accrued Compensated Absences		807,767
Bonds Payable		5,296,611
Total Long Term Liabilities		6,104,378
Total Liabilities		2,764,447,617
Net Position Restricted For Pensions	$	19,424,431,199

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, 2016

Additions		
Contributions		
Employee	$	347,255,904
Employer		354,961,140
Direct Aid (State/City/District)		35,587,410
Earnings Limitation Savings Account (ELSA)		1,960,563
Total Contributions	$	739,765,017
Investment Income		
Net Depreciation in Fair Value of Investments	$	(9,471,299)
Investment Expense		(26,264,400)
Net Investment Loss	$	(35,735,699)
Securities Lending Activities		
Securities Lending Income	$	20,348,092
Securities Lending Expenses:		
Borrower Rebates		(4,064,699)
Management Fees		(4,219,287)
Total Securities Lending Expenses	$	(8,283,986)
Net Income from Securities Lending	$	12,064,106
Total Net Investment Loss	$	(23,671,593)
Other Income	$	3,568,887
Total Additions	$	719,662,311
Deductions		
Retirement Benefits Paid	$	1,716,733,350
Earnings Limitation Savings Account		1,960,563
Refunds of Contributions to Members		11,289,626
Administrative Expenses		11,338,305
Total Deductions	$	1,741,321,844
Net Decrease	$	(1,021,659,533)
Net Position Restricted for Pensions		
Beginning of Year	$	20,446,090,732
End of Year	$	19,424,431,199

The accompanying notes are an integral part of this statement.

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 city of St. Paul and by the University of Minnesota system) are required to be TRA members.

State university, community college, and technical college teachers first employed by the Minnesota State College and Universities (MnSCU) 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 MnSCU. A teacher employed by MnSCU 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	373
Colleges and universities	39
State agencies	4
Charter schools	174
Professional organizations	5
Total Employer Units	595
Membership	
Retirees, disabilitants and beneficiaries receiving benefits	63,503
Terminated employees with deferred vested benefits	13,680
Total	77,183
Current employees	
Vested	63,674
Non-vested	16,856
Total	80,530

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 age 62 with 30 or more years of allowable service.

(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 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 members and 2.7 percent per year for Basic 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 actuarial 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.

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. Twenty-eight 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 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 Association, though the State Legislature actually determines the contribution rates for members and employers and sets benefits levels. 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 Accounting

TRA financial statements for its defined benefit fund are prepared using the accrual basis of accounting. Employee and employer contributions are recognized as revenue in the year in which they are due pursuant to Minnesota Statute. Expenses including benefit payments and refunds are recorded when the liability is due and payable according to Minnesota Statute.

The Governmental Accounting Standards Board (GASB) is the independent organization that establishes accounting and financial reporting standards for governmental entities.

For the fiscal year ended June 30, 2016, TRA implemented GASB ***Statement No. 72, Fair Value Measurement and Application and Statement No. 82, Pension Issues – an amendment of GASB Statements No. 67, No. 68, and No. 73.*** Statement 72 addresses accounting financial reporting issues related to fair value measurements of assets and liabilities. The statement also provides guidance for applying fair value to certain investments and disclosures related to all fair value measurements. The adoption of GASB 72 resulted in increased disclosures related to the fair value measurement of investments. Statement 82 addresses issues regarding the presentation of payroll-related measures in required supplementary information, the selection of assumptions and the treatment of deviations from the guidance in Actuarial Standard of Practice for financial reporting purposes and the classification of payments made by employers to satisfy employee contribution requirements.

B. Accounts Receivable

Amounts classified as accounts receivable consist primarily of employee contributions, employer contributions, and direct statutory payments from employers received after the fiscal year end on salaries earned prior to June 30, 2016. 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, 2016, is presented in *Figure 2, Schedule of Accounts Receivable*.

Figure 2. Schedule of Accounts Receivable

Description	**Amount**
Employer Contributions	$ 10,095,401
Employee Contributions	10,095,098
Direct Aid (State/City/School)	1,125,000
Management Fees	328,965
Interest on Investments	118,645
Health/Wellness Reimbursement	499
Shared lease	1,319
Building fund	43
Total Receivables	$ 21,764,970

C. Investment Policies and Valuation Methodology

Pursuant to Minnesota Statutes, Chapter 11A, the state's retirement fund assets are commingled in various pooled investment accounts, administered by the State Board of Investment (SBI). As of June 30, 2016, the TRA Fund's share of the Combined Funds administered by SBI at fair value was approximately 33.5 percent ($19.4 billion – TRA and $57.8 billion – total).

Minnesota Statutes, section 11A.24, broadly restricts retirement fund investments to obligations and stocks of the United States and Canadian governments, their agencies and their registered corporations; short-term obligations of specified high quality; restricted participation as a limited partner in venture capital, real estate or resource equity investments; restricted participation in registered mutual funds; and some qualified foreign instruments. SBI's target allocation policy is shown in *Figure 3, Investment Allocation*.

Figure 3. Investment Allocation

	Target Allocation	Long-Term Expected Real Rate of Return (geometric)
Domestic Stocks	45%	5.50%
International Stocks	15%	6.00
Bonds	18%	1.45
Alternative Assets	20%	6.40
Cash	2%	0.50
Total	**100%**	

Information on investment activity, investment management fees and a listing of specific investments owned by the pooled asset accounts can be obtained from SBI, Suite 355, 60 Empire Drive, Saint Paul, Minnesota 55103.

Investments in the pooled accounts are reported at fair value. The pooled accounts have not been rated for credit quality. Figure 4, TRA Investment Portfolio, provides a summary of the cost and fair values of the investments as of June 30, 2016, as reported on the Statement of Fiduciary Net Position. Securities traded on a national or international exchange are valued using the last reported trade price. 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.

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.

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

Net investment income is summarized on the Statement of Changes in Fiduciary Net Position. The summarized amounts show net investment loss of $23.7 million for fiscal year 2016.

The cost of security transactions is included in the transaction price. Administrative expenses of SBI and investment management fees of the external money managers and the state's master custodian for pension fund assets are allocated to the funds participating in the pooled investment accounts (page 62). TRA's share of these expenses totaled $26.3 million (pages 60-61).

A detailed schedule of fees and commissions by brokerage firm, along with the number of shares traded, total commissions, and commissions per share may be obtained by writing:

Minnesota State Board of Investment
60 Empire Drive, Suite 355
St. Paul, MN 55103-3555

Rate of Return

For the year ended June 30, 2016, the annual money-weighted rate of return on the assets of the combined retirement fund, net of investment expense, was -0.118%. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

Figure 4. TRA Investment Portfolio

TRA Investment Portfolio		
TRA Fund	**Cost**	**Fair Value**
Pooled Accounts		
Bond Fund	$ 4,641,573,669	$ 4,788,124,747
US Stock Actively Managed Fund	5,332,335,685	5,996,792,209
US Stock Index Fund	2,457,568,165	2,995,719,589
Broad International Stock Fund	2,688,924,845	2,714,605,374
Alternative Investment	2,949,241,199	2,482,640,103
Total	$ 18,069,643,563	$ 18,977,882,022
Short-Term Cash Equivalents		
Money Market	$ 271,030,278	$ 271,072,832
CD Repo Pool	139,455,867	139,531,958
Total	$ 410,486,145	$ 410,604,790
Total Invested	$ 18,480,129,708	$ 19,388,486,812

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. In fiscal year 2016, software development costs of $4,083,620 were capitalized. Additional development costs are anticipated in the next year.

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, 2016, Statement of Fiduciary Net Position. The year-end balance plus changes during the year are shown in *Figure 5, 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, 2016, is $919,108. Of this, $111,341 is considered a short-term liability and $807,767 is shown as a long-term liability on the Statement of Fiduciary Net Position. The total increased by $111,413 during fiscal year 2016.

Figure 5. Schedule of Capital Assets

Description	**Balance 7/01/2015**	**Additions**	**Deletions**	**Balance 6/30/2016**
Furniture and equipment	$ 3,073,875	$ 71,010	$ (800,329)	$ 2,344,556
Reserve for depreciation	(2,557,374)	(211,801)	794,249	(1,974,926)
Internally developed software	12,137,054	4,083,620	-	16,220,674
Reserve for amortization	$ (844,350)	$ (844,350)	-	$ (1,688,700)
Net Capital Assets	$11,809,205	$ 3,098,479	$ (6,080)	$ 14,901,604

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: Quoted prices (unadjusted) in active markets for identical assets or liabilities that the reporting entity can access at the measurement date.

Level 2: 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.

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

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 6, Level 3 investments primarily consist of assets where the asset is distressed, or there is not an active market. The fair value of the assets measured at NAV have been determined using the March 31, 2016, values, adjusted for cash flows. The investments measured at NAV are typically not eligible for redemption. Distributions are received as underlying investments within the funds are liquidated, which occur over the life of the investment. Cash and short-term investments are not leveled under GASB Statement No. 72 and, therefore, are not included in the exhibit.

The SBI has 21 investments that are valued at NAV that are currently in the liquidation mode, totaling 1.5% of the NAV value. TRA's proportionate share of the unfunded commitments to the investments valued at NAV total $1,815,128,118. Unfunded Commitments are defined as an investor's commitment to a private equity fund that is satisfied over time as the general partner makes capital calls on the investor. If a private equity firm cannot find suitable investment opportunities, it will not draw on an investor's commitment, and an investor may potentially invest less than expected or committed.

Explanations of investment types follow Figure 6.

Figure 6. Fair Value of TRA Investments

As of June 30, 2016

Investments	Fair Value	Level 1	Level 2	Level 3
Equity				
Common Stock	$ 10,942,640,726	$ 10,931,688,152	$ 10,632,868	$ 319,706
Real Estate Investment Trust	412,787,533	412,775,054	–	12,479
Other Equity	186,925,626	162,172,675	24,731,045	21,906
Equity Total	$ 11,542,353,885	$ 11,506,635,881	$ 35,363,913	$ 354,091
Fixed Income				
Asset-Backed Securities	$ 233,637,284	–	$ 232,244,688	$ 1,392,596
Mortgage-backed securities	1,601,363,178	–	1,591,092,474	10,270,704
Corporate Bonds	1,650,438,036	–	1,650,438,024	12
Government Issues	1,446,992,005	–	1,444,558,952	2,433,053
Other Debt Instruments	749,097	–	749,097	–
Fixed Income Total	$ 4,933,179,600	–	$ 4,919,083,235	$ 14,096,365
Investment Derivatives -- Options	$ (42,087)	$ (42,087)	–	–
Total Investments by Fair Value	$ 16,475,491,398	$ 11,506,593,794	$ 4,954,447,148	$ 14,450,456

Investments Measured at the Net Asset Value (NAV)

	NAV	Unfunded Commitments
Private Equity	$ 1,528,103,909	$ 1,079,056,213
Real Estate	203,211,764	152,338,796
Resource	383,319,714	331,072,243
Yield Oriented	$ 304,834,445	$ 252,660,866
NAV total	$ 2,419,469,832	$ 1,815,128,118

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.

Common Stock Unit: A combination of more than one equity issue sold and traded as a package, usually a combination of common shares and warrants.

Depository Receipts: Certificates issued by a depository bank, representing foreign Shares held by the bank, usually by a Branch or Correspondent in the country of issue. One American depository receipt (ADR) may represent a portion of a foreign share, one share, or a bundle of shares of a foreign corporation. If the ADRs are "sponsored," the Corporation provides financial information and other assistance to the bank and may subsidize the administration of the ADR. "Unsponsored" ADRs do not receive such assistance.

Limited Partnership Units: Units of a Partnership that include one or more partners who have limited liability.

Mutual Funds: An open-ended fund operated by an investment company which raises money from shareholders and invests in a group of assets, in accordance with a stated set of objectives.

Non Security Asset (Equity): Long term instruments that do not have an actual certificate issued for them, but have equity characteristics. Examples include insurance policies, commodities, and escrow accounts.

Preferred Stock: Capital stock which provides a specific dividend that is paid before any dividends are paid to common stock holders, and which takes precedence over common stock in the event of a liquidation.

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.

Rights: The right to purchase newly issued securities in proportion to an investor's holdings of certain stocks. Generally, they are actively traded and must be exercised within a short period of time.

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

Auto Loan Receivable: The second largest subsector in the asset-backed security (ABS) market is auto loans. Auto finance companies issue securities backed by underlying pools of auto-related loans. Auto ABS are classified into three categories: prime, nonprime, and subprime. Prime auto ABS are collateralized by loans made to borrowers with strong credit histories, Nonprime auto ABS consist of loans made to lesser credit quality consumers, which may have higher cumulative losses. Subprime borrowers will typically have lower incomes, tainted credited histories, or both. Owner trusts are the most common structure used when issuing auto loans and allow investors to receive interest and principal on a sequential basis. Deals can also be structured to pay on a pro-rata or combination of the two.

Collateralized Mortgage Obligation (CMO): A mortgage-backed, investment-grade bond that separates mortgage pools into different maturity classes. CMOs are backed by mortgage-backed securities with a fixed maturity.

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.

Credit Card Receivables: Securities backed by credit card receivables have been a benchmark for the ABS market. Credit card holders may borrow funds on a revolving basis up to an assigned credit limit. The borrowers then pay principal and interest as desired, along with the required minimum monthly payments. Asset-backed securities backed by credit card receivables are issued out of trusts that have evolved over time from discrete trusts to various types of master trusts of which the most common is the de-linked master trust. Discrete trusts consist of a fixed or static pool of receivables that are tranched into senior/subordinated bonds.

Federal Home Loan Mortgage Corporation (FHLMC): A private corporation (also known as Freddie Mac) that was developed by congress in order to help support the secondary mortgage market. Like Fannie Mae, Freddie Mac purchases loans from lenders so lenders have additional funds that enable them to make more home loans to homebuyers.

Federal National Mortgage Association (FNMA): Also known as Fannie Mae, FNMA is the largest non-bank financial services company in the world. This federally-sponsored private company purchases conventional mortgages and mortgages that are insured by the federal government in order to allow lenders to clear up funds in order to make additional home loans to more homebuyers.

Government National Mortgage Association (GNMA I): A government owned corporation (nicknamed Ginnie Mae) with the authority to fully guarantee the full and timely payment of all monthly principal and interest payments on the mortgage backed securities.

Government National Mortgage Association (GNMA II): A government owned corporation (Ginnie Mae) with the authority to fully guarantee the full and timely payment of all monthly principal and interest payments on the mortgage backed securities collateralized by registered holders.

Government Issue: Government Issued security/bond

Municipals: 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. Historically, the interest paid on these bonds has been exempt from federal income taxes and is generally exempt from state and local taxes in the state of issuance. There are approximately $1.3 trillion municipal bonds outstanding and they generate about $50 billion of tax-free interest income each year.

Other (includes Other Asset Backed): There are many other cash-flow-producing assets, including manufactured housing loans, equipment leases and loans, aircraft leases, trade receivables, dealer floor plan loans, and royalties. Intangibles are another emerging asset class.

STIF Type Instrument: Short-term investment funds include cash, bank notes, corporate notes, government bills and various safe short-term debt instruments. These types of funds are usually used by investors who are temporarily parking funds before moving them to another investment that will provide higher returns. These funds traditionally have low management fees, usually well below 1% per year.

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

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. The SBI has 112 Private Equity investments representing 63% of the NAV value.

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. The SBI has 15 Real Estate investments representing 8% of the NAV value.

Resource Funds: The strategy for resource investments is to establish and maintain a portfolio of resource investment vehicles that provide an inflation hedge and additional diversification. Resource investments will include oil and gas investments and energy service industry investments that are diversified by geographic area as well as by type. The SBI has 25 Resource Funds' investments representing 16% of the NAV value.

Yield Oriented: The strategy for yield-oriented 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. The SBI has 36 Resource Funds' investments representing 13% of the NAV value.

B. Investment Risk

The Minnesota State Board of Investment (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% of the sum of the insured amount and the market value of the collateral. Throughout fiscal year 2016, 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. The State Board of Investment (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.

Items rated as Agency are not rated and include implicitly and explicitly guaranteed items of the federal government. The implicitly guaranteed items make up 88% of the value and include investments in the Federal Home Loan Bank, Federal National Mortgage Association (Fannie Mae), Federal home Loan Mortgage Corporation (Freddie Mac), Financing Corporation (FICO), Federal Farm Credit Banks, and Federal Agricultural mortgage Corporation (Farmer Mac). The balance of the Agencies quality rating consists of federally guaranteed investments.

TRA's share of the SBI's exposure to credit risk, based on the lower of S & P's or Moody's Quality Ratings, is shown in *Figure 7, Credit Risk Exposure*.

Figure 7. Credit Risk Exposure

Quality Rating	**Fair Value** *(in thousands)*
AAA	$255,915
AA	116,924
A	279,670
BBB	906,749
BB	512,091
B	73,941
CCC	34,470
CC	13,967
C	800
D	6,692
Agency	1,387,924
Treasury	1,260,523
Unrated	607,680
Total	$5,457,346

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's defined benefit plan does not have a concentration of credit risk.

F. Interest Rate Risk

Interest rate risk is the risk that changes in interest rates of debt instruments 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 8, Interest Rate Risk*.

Figure 8. Interest Rate Risk

Security Type	Weighted Average Maturity (in Years)
Foreign Country Bonds	20.61
Municipal	16.01
U.S. Treasuries	9.81
Corporate Debt	9.38
Yankee	8.33
Commercial Mortgage Backed Securities	5.08
U. S. Agency	4.34
Collateralized Mortgage Obligation	4.02
Mortgage Pass Through	3.99
Asset Backed	2.44
Cash Equivalent	0.88

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, 2016, was distributed among the currencies as shown in *Figure 9, Schedule of Foreign Currency Risk*.

Figure 9. Schedule of Foreign Currency Risk

Currency	Cash	Fixed Income or Debt	Equity	Total
Australian Dollar	$ 286,299	$ –	$ 128,247,135	$ 128,533,434
Brazilian Real	10,748	–	26,965,768	26,976,516
Canadian Dollar	1,289,016	168,526	166,476,123	167,933,665
Chilean Peso	5,225	–	3,150,903	3,156,128
Colombian Peso	69	–	2,400,549	2,400,618
Czech Koruna	817	–	2,591,266	2,592,083
Danish Krone*	(33,817)	–	50,258,123	50,224,306
Egyptian Pound	60,340	–	1,162,327	1,222,667
Euro Currency	1,126,978	2,382,602	767,656,695	771,166,275
Hong Kong Dollar	624,241	–	181,876,993	182,501,234
Hungarian Forint	7,183	–	254,320	261,503
Indian Rupee	15,927	–	56,060,283	56,076,210
Indonesian Rupiah	113,362	–	18,060,837	18,174,199
Japanese Yen	5,245,017	5,250,426	477,877,888	488,373,331
Malaysian Ringgit	17,023	–	5,859,673	5,876,696
Mexican Peso	4,335	–	13,909,511	13,913,846
Moroccan Dirham	11	–	–	11
New Israeli Sheqel	33,783	–	5,894,048	5,927,831
New Taiwan Dollar	74,129	–	50,972,309	51,046,438
New Zealand Dollar	130,981	–	6,404,582	6,535,563
Norwegian Krone	56,229	–	14,279,896	14,336,125
Philippine Peso	3,832	–	12,566,068	12,569,900
Polish Zloty	448	–	7,072,639	7,073,087
Pound Sterling	2,752,927	5,044,384	380,070,486	387,867,797
Qatari Rial	1,818	–	767,860	769,678
Singapore Dollar	64,592	–	23,262,670	23,327,262
South African Rand	161,514	–	32,323,570	32,485,084
South Korean Won	157	–	53,121,969	53,122,126
Swedish Krona	115,772	–	51,855,839	51,971,611
Swiss Franc	31,807	–	174,462,614	174,494,421
Thailand Baht	42,355	–	9,396,203	9,438,558
Turkish Lira	3,147	–	8,249,135	8,252,282
UAE Dirham	52	–	1,622,594	1,622,646
Total	**$ 12,246,317**	**$ 12,845,938**	**$ 2,735,130,876**	**$ 2,760,223,131**

** Timing issues resulted in an overdrawn account and negative cash and cash equivalents.*

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 notational amounts (or face value) at June 30, 2016, 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 2016 are shown in *Figure 10, 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.

SBI is exposed to credit risk through multiple 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, 2016, if all counter parties failed to perform as contracted is $2,217,604. 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 10. Schedule of Derivative Financial Instruments
(in thousands of dollars)

Derivative Investment Type	Changes in Fair Value During FY 2016	Fair Value at June 30, 2016	Notional Amount
Futures			
Index Futures – Long	$ (242)	$ -	$ 546
Index Futures – Short	$ 459	$ -	$ (6)
Fixed Income Futures – Long	$ 11,019	$ -	$ 122,049
Fixed Income Futures – Short	$ (23,024)	$ -	$ (228,645)
Options			
Futures Options Bought	$ (1,209)	$ -	$ -
Futures Options Written	$ 855	$ (42)	$ (88)
Currency Forwards			
Foreign Currency Forwards	$ 2,777	$ 1,307	$ 94,743
Stock Warrants and Rights			
Stock Warrants	$ (108)	$ 229	$ 91
Stock Rights	$ (9)	$ 192	$ 703

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 agent in lending securities to approved borrowers.

During the fiscal year, State Street lent, at the direction of the SBI, certain securities held by State Street as custodian and received cash (United States and foreign currency) or other collateral including securities issued or guaranteed by the United States government. State Street did not have the ability to pledge or sell collateral securities absent a borrower default. Under Minnesota Statutes, section 11A.24, borrowers were required to deliver collateral for each loan in amounts at least equal to the market value of the loaned securities.

SBI did not impose any restrictions during the fiscal year on the amount of the loans that State Street made on its behalf. There were no failures by any borrowers to return loaned securities or pay distributions thereon during the fiscal year. Moreover, there were no losses during the fiscal year resulting from a default of the borrowers or State Street.

During the fiscal year, SBI and the borrowers maintained the right to terminate all securities lending transactions on demand. The cash collateral received on each loan was invested in a separate investment pool. As of June 30, 2016, such investment pool had an average duration of 12.39 days and an average weighted maturity of 88.83 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, 2016, SBI had no credit risk exposure to borrowers. TRA's portion of the market value of the collateral held and the fair value of securities on loan from SBI as of June 30, 2016, were $4,805,821,947 and $4,635,980,215, respectively. Cash collateral totaling $2,748,476,498 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.

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 87, 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, 2016, TRA had 316 retirees with an ELSA account established. The total of all ELSA account balances was $4.3 million. The dollar amount of pension benefits withheld due to excess earnings during fiscal year 2016 was $1,960,563. ELSA assets are invested in the TRA Fund until distribution. Distributions of ELSA accounts for 122 retirees occurred during fiscal year 2016 and totaled $2.0 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 2016, Coordinated members were required to contribute 7.5 percent of their annual covered salary. Employers contributed 7.5 percent of their annual covered salary for Coordinated members. The total covered payroll salaries for all TRA employees during fiscal year 2016 was approximately $4.8 million or 0.1 percent of total membership-covered salaries. The total covered payroll salaries for the entire membership of TRA for fiscal year 2016 was approximately $4.5 billion. TRA paid 100 percent of its required employer contributions listed in Figure 11.

Figure 11. Schedule of TRA Employer Pension Contributions for TRA Employees

2016	2015	2014
$341,963	$329,098	$306,306

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 system occupies in the building.

Effective July 1, 2015, TRA's ownership interest decreased from 36.7 percent to 36.0 percent.

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.

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 system) 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 was approximately $3.51 million.

At fiscal year end, TRA's share of the bonds payable is $5,604,046, which includes bond principal of $5,244,000 and bond premium of $360,046. Interest expected to be paid over the remaining term of the bonds is $448,298. TRA's share of the long-term bond repayment schedule including interest is summarized in *Figure 12, Schedule of Building Debt Service Payments,*

TRA is depreciating its share of the facility over 40 years. The depreciation schedule, shown in *Figure 13, Schedule of Office Building and Equipment*, summarizes the asset valuation of the office building, building equipment and deferred bond charges.

Figure 12. Schedule of Building Debt Service Payments

(TRA Share @ 36.0%)
Effective: July 1, 2015

Fiscal Year	Principal	Interest	Premium	Total
2017	$ 603,000	$ 91,922	$ 53,230	$ 748,152
2018	615,600	81,924	51,168	748,692
2019	633,600	71,717	49,063	754,380
2020	642,600	61,212	46,896	750,708
2021	660,600	50,557	44,699	755,856
2022	675,000	39,604	42,440	757,044
2023	689,400	28,412	40,132	757,944
2024	664,200	16,982	23,986	705,168
2025	360,000	5,969	8,431	374,400
Totals	$5,544,000	$448,298	$360,046	$6,352,344

Figure 13. Schedule of Office Building and Equipment

(TRA Share @ 36.0%)

Description	Balance 7/01/2015	Additions	Deletions	Balance 6/30/2016
Land	$ 171,166	$ -	$ -	$ 171,166
Building	10,843,891	-	$ (206,832)	10,637,059
Reserve for Building Depreciation	(3,877,274)	(259,992)	-	(4,137,266)
Net Building	$ 6,966,617	$ (259,992)	$ (206,832)	$ 6,499,793
Building Equipment	$ 107,752	$ -	$ -	$ 107,752
Reserve for Bld. Equip Deprec.	(73,766)	(11,329)	-	(85,095)
Net Building Equipment	$ 33,986	$ (11,329)	$ -	$ 22,657

E. Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions

Nearly all TRA employees are covered by the State Employees Group Insurance Plan (SEGIP), a multiple employer cost sharing defined benefit plan administered by the Department of Minnesota Management and Budget. At present, this plan subsidizes the cost of retiree insurance by charging a single premium rate for active employees and retirees, regardless of underwriting experience. As of June 30, 2016, the SEGIP had an unfunded net obligation of $295,959,000 to be funded on a pay-as-you-go basis. TRA's allocated portion of this liability is $83,000.

Required OPEB Contributions and Net OPEB Obligation

(dollars in thousands)

FY Ended June 30	Annual Required Contribution (a)	Employer Contribution (b)	Percent (b)/(a)	Net OPEB Obligation
2016	$53	$36	68%	$83
2015	$51	$32	63%	$66
2014	$44	$36	82%	$47

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 87, 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, 2039.

Contributions totaling $737,804,454 ($347,255,904 employee and $390,548,550 employer and employer direct aid) were received in accordance with the statutory contribution rates and amounts. On page 87, Line C, statutory contributions are projected as insufficient to meet the actuarially determined required contributions. The deficiency is 2.78 percent of covered payroll. This translates into a contribution deficiency of about $135.4 million projected for fiscal year 2017.

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, 2016, are as follows for participating employers and nonemployers:

Net Pension Liability (in thousands)	
Total Pension Liability (TPL)	$ 43,276,817
Fiduciary Net Position (FNP)	$ 19,424,431
Net Pension Liability (NPL)	$ 23,852,386
Plan net position as a percentage of the total pension liability	44.88%

Key Methods and Assumptions Used in Valuation of Total Pension Liability	
Actuarial Information	
Valuation Date	July 1, 2016
Experience Study	June 5, 2015
Actuarial Cost Method	Entry Age Normal
Actuarial Assumptions:	
Investment Rate of Return	4.66%, from the Single Equivalent Interest Rate calculation
Wage Growth Rate	3.5%
Projected Salary increase	3.5 – 9.5%
Cost of living adjustment	2.0%
Mortality Assumptions	
Pre-retirement: 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.	
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 table, without adjustment.	

Discount Rate (SEIR)

The total pension liability (TPL) is calculated using a discount rate called the Single Equivalent Interest Rate (SEIR). The discount rate used to measure the TPL as of July 1, 2016 was 4.66%. The projection of cash flows used to determine the discount rate was performed in accordance with GASB 67. On that basis, TRA's FNP was projected to be depleted in 2052 and, as a result, the Municipal Bond Index Rate was used in the determination of the SEIR. The long-term expected rate of return was applied to periods before 2052 and the Municipal Bond Index Rate of 3.01 % was applied to periods on and after 2052, resulting in a SEIR of 4.66%. There was a change in the Municipal Bond Index Rate from the prior measurement date (3.82%). However the Municipal Bond Index Rate was not used at the prior measurement date to determine the SEIR (8.00%).

Projected Cash Flows

The projection of cash flows used to determine the discount rate assumed that plan contributions from employees (members) and employers will be made at the current contribution rates as set out in state statute:

- Employee contribution rates: 11.00 percent for Basic members and 7.50 percent for Coordinated members.
- Employer contribution rates: 11.50 percent for Basic members and 7.50 percent for Coordinated members. In addition, a supplemental amount equal to 3.64% of salary for active members of Special School District #1 until the System is fully funded.
- Supplemental aid: $3,256,410 every year until the amortization date of July 1, 2039, plus $32,331,000 every year until the System is fully funded.
- The TRA Board of Trustees has legislative authority to increase contribution rates at their discretion, subject to review by the Legislative Commission on Pensions and Retirement. Given that there is no past history relating to the use of the contribution stabilizer option, no change in the employee or employer contributions were considered in the projections. If future contribution rates were assumed to increase, it would likely impact the determination of the SEIR.
- 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.
- Projected future benefit payments for all current plan members were projected through 2115.

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 a statutory requirement to conduct experience studies. An experience study was prepared in June 2015 that resulted in a recommendation to select a long-term rate of return of 8.00%. 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 rate of returns (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 TRA's investment consultant, the State Board of Investment). These ranges were combined to produce the long-term expected rate of return by weighing the expected future real rate of returns 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

The SEIR (discount rate) determination uses the Municipal Bond Index Rate. The rate used is the monthly average of the Bond Buyers General Obligation 20-Year Municipal Bond Index Rate, published monthly by the Board of Governors of the Federal Reserve System. The rate was 3.82% on the Prior Measurement Date and 3.01% on the Measurement Date.

Assumed Asset Allocation

The target asset allocation and best estimates of geometric real rates of return for each major asset class, as provided by the Minnesota State Board of Investment (SBI) are summarized in the following table:

	Target Allocation	**Long-Term Expected Real Rate of Return (geometric)**
Domestic Stocks	45%	5.50%
International Stocks	15%	6.00
Bonds	18%	1.45
Alternative Assets	20%	6.40
Cash	2%	0.50
Total	**100%**	

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.

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

	1% Decrease (3.66%)	**Current Discount Rate (4.66%)**	**1% Increase (5.66%)**
NPL	$30,727,835	$23,852,386	$18,252,557

The complete *2016 Actuarial Valuation Accounting Report* is available at https://www.MinnesotaTRA.org/FORMSPUB/eepubs.html.

Required Supplementary Information

Schedule of Changes in the Employers' Net Pension Liability

For the Fiscal Year Ended June 30, 2016

(in thousands)

	2016	2015	2014
Total Pension Liability			
Service cost	$ 438,938	$ 399,228	$ 367,621
Interest	2,062,775	2,019,707	1,895,469
Benefit term changes	-	-	-
Differences between expected and actual experience *	(798)	7,113	475,265
Assumptions changes **	15,871,845	576,075	-
Benefit payments, including member refunds	(1,728,023)	(1,669,607)	(1,592,686)
Net change in Total Pension Liability	$ 16,644,737	$ 1,332,516	$ 1,145,669
Total Pension Liability – beginning* **	$ 26,632,080	$ 25,299,564	$ 23,755,943
Total Pension Liability – ending (a)	$ 43,276,817	$ 26,632,080	$ 24,901,612
Employer contributions	$ 354,961	$ 340,208	$ 299,300
Non-employer contributions-Direct Aid (State/City/District)	35,587	41,587	21,001
Employee contributions	347,256	334,826	294,632
Net investment income	(23,672)	887,280	3,257,693
Benefit payments, including member refunds	(1,728,023)	(1,669,607)	(1,592,686)
Administrative expenses	(11,338)	(11,509)	(9,430)
Other	3,569	3,550	3,855
Net Change in Plan Fiduciary Net Position	$ (1,021,660)	$ (73,665)	$ 2,274,365
Plan Fiduciary Net Position – beginning	$ 20,446,091	$ 20,519,756	$ 18,019,319
Plan Fiduciary Net Position - ending (b)	$ 19,424,431	$ 20,446,091	$ 20,293,684
Net Pension Liability - ending (a)-(b)	$ 23,852,386	$ 6,185,989	$ 4,607,928
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	44.88%	76.77%	81.50%
Covered Payroll	$ 4,515,699	$ 4,306,426	$ 4,056,482
Employers' Net Pension Liability as a percentage of covered payroll	528.21%	143.65%	113.59%

** Includes impact of date change for expected increase in COLA to 2.50%.*

*** 2016 assumption changes include $15,102,910 due to the change in the SEIR and $768,935 due to other assumption changes.*

**** 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 Employer and Non-Employer Contributions

For the Fiscal Year Ended June 30, 2016

(dollars in thousands)	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Actuarially determined employer contribution*	$ 459,699	$495,235	$ 492,731	$ 463,788	$ 401,725	$ 384,943	$ 421,813	$ 355,189	$ 280,327	$ 229,642
Actual non-employer contributions	$ 35,587	$ 41,587	$ 21,001	$ 19,954	$ 21,726	$ 21,510	$ 21,550	$ 20,448	$ 21,845	$ 21,880
Actual employer contributions	$ 354,961	$340,208	$ 299,300	$ 270,708	$ 244,935	$ 222,723	$ 220,538	$ 220,270	$ 209,717	$ 187,339
Total contributions	$ 390,548	$381,795	$ 320,301	$ 290,662	$ 266,661	$ 244,233	$ 242,088	$ 240,718	$ 231,562	$ 209,219
Annual contribution deficiency (excess)	$ 69,151	$113,440	$ 172,430	$ 173,126	$ 135,064	$ 140,710	$ 179,725	$ 114,471	$ 48,765	$ 20,423
Covered-employee payroll	$4,515,699	$4,306,426	$4,056,482	$3,917,310	$3,871,809	$3,838,111	$3,787,757	$3,761,484	$3,645,230	$3,532,159
Actual contributions as a percent of covered-employee payroll	8.65%	8.87%	7.90%	7.42%	6.89%	6.36%	6.39%	6.40%	6.35%	5.92%

** 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.

This schedule is built prospectively until it contains ten years of data.

Teachers Retirement Association Plan – FY 2016	-0.118%
Teachers Retirement Association Plan – FY 2015	4.479%
Teachers Retirement Association Plan – FY 2014	18.696%

Notes to Required Supplementary Information for the Fiscal Year Ended June 30, 2016

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:

2016	None
2015	The Duluth Teachers Retirement Fund Association was merged into TRA on June 30, 2015. This also resulted in an additional state-provided contribution stream of $14.377 million until TRA becomes fully funded.

2014	The increase in the post-retirement benefit adjustment will be made once the fund is 90% funded for two consecutive years, rather than just one year. 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.
2013	The early retirement reduction factors applicable for Level formula benefits to plan members were changed.
2010	The post-retirement benefit increases were suspended for 2011 and 2012, resuming in 2013 at 2.0 percent, and returning to 2.5% once the funding ratio of the plan reaches 90%. 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.
2006	The benefit multiplier for Coordinated members was increased, employee contribution rates were increased, and the deferred benefit increase rate was reduced.

Changes in Actuarial Assumptions

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	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. The investment return assumption was changed from 8.25 percent to 8.00 percent.
7/1/2014 Valuation	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.
7/1/2012 Valuation	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.
7/1/2011 Valuation	The salary increase assumption was changed to a service based assumption. The payroll growth assumption was decreased from 4.00 percent to 3.75 percent. 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. The disabled mortality assumption was changed to the RP-2000 Disabled Retiree Mortality Tables. Assumed disability rates were changed to more closely reflect actual experience. Assumed retirement rates for Coordinated members were changed to more closely reflect actual experience. Assumed form of annuity selection was changed to more closely reflect actual experience. Assumed difference in ages between spouses was changed to more closely reflect actual experience.
7/1/2008 Valuation	Ultimate salary increase rates were lowered. The payroll growth assumption was lowered. Retirement rates were revised.
7/1/2006 Valuation	The amortization date for the unfunded actuarial accrued liability was set at June 30, 2037.

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 Contributions* 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, 2016, based on the July 1, 2015 valuation).

Actuarial cost method	Entry Age Normal
Amortization method	Level percentage of payroll, closed
Remaining amortization period	22 years
Asset valuation method	5-year moving average
Inflation	3.00 percent
Wage growth rate	3.75 percent
Salary increase, including inflation	3.50 to 12.00 percent
Long-term rate of return, net of investment expense including price inflation	8.44 percent compounded annually to reflect an 8.00 percent assumption for two years and 8.50 percent thereafter
Cost of living adjustment	2.00 percent per year, increasing to 2.50 percent on July 1, 2037

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 Contributions*.

Supporting Schedules to Financial Section

This page intentionally left blank.

Teachers Retirement Fund
Administrative Expenses

For the Fiscal Year Ended June 30, 2016

Personnel Services		
Salaries	$	4,815,852
Employer contributions to Teachers Retirement Association		341,963
Employer contributions to Social Security		340,219
Insurance contributions		898,017
Employee training		76,705
Workers' compensation		3,548
Subtotal	**$**	**6,476,304**
Communication		
Duplicating and printing expenses	$	66,918
Postage		226,764
Telephone		85,935
Subtotal	$	**379,617**
Office Building Maintenance		
Lease of office and storage space	$	180,425
Building operating expenses		601,588
Rental of office machines/furnishings		87,945
Repairs and maintenance		534,000
Building equipment depreciation		11,329
Building depreciation		259,992
Bond interest expense		100,922
Subtotal	$	**1,776,201**
Professional Services		
Actuarial services	$	228,117
Audit fees		178,168
Legal fees		52,971
Management consultant services		21,338
Medical services		850
Subtotal	$	**481,444**
Other Operating Expenses		
Computer and system services	$	919,142
Department head expenses		1,227
Depreciation of office equipment		211,801
Dues and subscriptions		21,682
Insurance expense		6,700
Miscellaneous administrative expenses		19,891
Amortization		844,350
State indirect costs		45,910
Office supplies		67,153
Travel - director and staff		61,244
Travel - trustees		18,790
Board substitute teachers		1,071
Loss on disposal of assets		5,778
Subtotal	**$**	**2,224,739**
Total Administrative Expenses	$	**11,338,305**

Teachers Retirement Fund

Schedule of Professional Consultant Expenses

For the Fiscal Year Ended June 30, 2016

Investment Pool Managers		
State Board of Investment	$	1,666,700
Callan Investment		151,656
Pension Consultants		12,133
QED		107,773
Domestic equity pool managers		8,748,476
Global equity pool managers		7,650,992
Domestic bond pool managers		4,403,472
Semi-passive equity pool managers		3,234,301
Passive equity pool managers		288,897
Total investment pool managers	$	26,264,400
Actuarial		
Cavanaugh Macdonald Consulting	$	228,117
Total Actuarial Expenses	$	228,117
Audit		
Legislative auditor	$	86,134
State auditor		92,034
Total audit expenses	$	178,168
Computer Support Services		
Fulcrum Consulting	$	1,122,117
International Projects Consultancy		279,688
Talent Software Services		303,770
Sogheti USA		111,095
Performix Business Services		138,083
Hollstadt & Associate		46,957
Upnorth-Vet Inc.		24,510
Total computer support service expenses	$	2,026,220
Legal		
Attorney General	$	52,971
Total legal expenses	$	52,971
Management Consulting		
Kirby Kennedy & Associates	$	1,028
Rajan Law		4,598
KI		12,683
Best and Flannagan		3,029
Total management consulting expenses	$	21,338
Medical		
Examworks Inc.	$	850
Total medical expenses	$	850
Total Consultant Expenditures	$	28,772,063

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

Investments

MINNESOTA STATE BOARD OF INVESTMENT

60 Empire Drive
Suite 355
St. Paul, MN 55103
(651) 296-3328
FAX (651) 296-9572
E-mail:
minn.sbi@state.mn.us
www.sbi.state.mn.us

An Equal Opportunity 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. I'RA'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 2012 legislature lowered the actuarial return assumption from 8.5 percent to 8.0 percent annually for the period July 1, 2012 through June 30, 2017.

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 asset allocation for the Combined Funds as follows:

• Domestic Equity	45%
• International Equity	15%
• Alternatives	20%
• Fixed Income	18%
• Cash	2%

Based on values on June 30, 2016, the Combined Funds returned 5.3 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 28th percentile over the past five years and in the 22nd percentile over the past 10 years, compared to similar funds 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
Minnesota State Board of Investment

Investment Summary

Prepared by TRA management with data obtained from the State Board of Investment's Fiscal Year 2016 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 $19.4 billion as of June 30, 2016.

The four-member SBI Board consists of Governor Mark Dayton (Chair), Attorney General Lori Swanson, Secretary of State Steve Simon, and State Auditor Rebecca Otto.

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 corporate 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

As of December 2016

Jeffery Bailey, Chair
Sr. Director, Financial Benefits & Analysis
Target Corporation

Malcolm W. McDonald, Vice Chair
Director and Corporate Secretary (Retired)
Space Center, Inc.

Denise Anderson
Governor's Appointee
Active Employee Representative

Doug Anderson
Executive Director
Public Employees Retirement Association

David Bergstrom
Executive Director
MN State Retirement System

Kerry Brick
Manager, Pension Investments
Cargill, Inc.

Dennis Duerst
Director, Benefit Funds Investment
3M Company

Kim Faust
Vice President and Treasurer
Fairview Health Services

Myron Frans
Commissioner
Minnesota Management & Budget

Susanna Gibbons
Director
Carlson School Fixed Income Fund

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

Laurie Fiori Hacking
Executive Director
Teachers Retirement Association

Peggy Ingison
Governor's Appointee
Active Employee Representative

Gary Martin
Chief Investment Officer
Macalaster College

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

Elaine Voss
Governor's Appointee
Retiree Representative

Shawn Wischmeier
Chief Investment Officer
Margaret A. Cargill Philanthropies

Callan Associates, Inc., of Chicago are general consultants to the SBI. Pension Consulting Alliance of Studio City, California, 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 investment returns of at least 8.0 percent for fiscal years 2013 through 2017.

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 percent 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 assure 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.

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 both to provide some insulation against highly inflationary or deflationary environments and to diversify the portfolio sufficiently to avoid excessive return volatility.

Real estate and resource (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 were not highly correlated with common stocks. As a result, their inclusion in the Combined Funds served to dampen return volatility.

Yield oriented alternative investments provided the opportunity for higher long-term returns than those typically available from bonds yet still generated 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 helped reduce the volatility of the total portfolio, while generating higher returns relative to more traditional bond investments.

The allocation to fixed income (bonds) acts 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 resource funds, 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 for fiscal year 2016 of -0.1 percent. Over the last five years, the Combined Funds generated an annualized return of 7.7 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.)

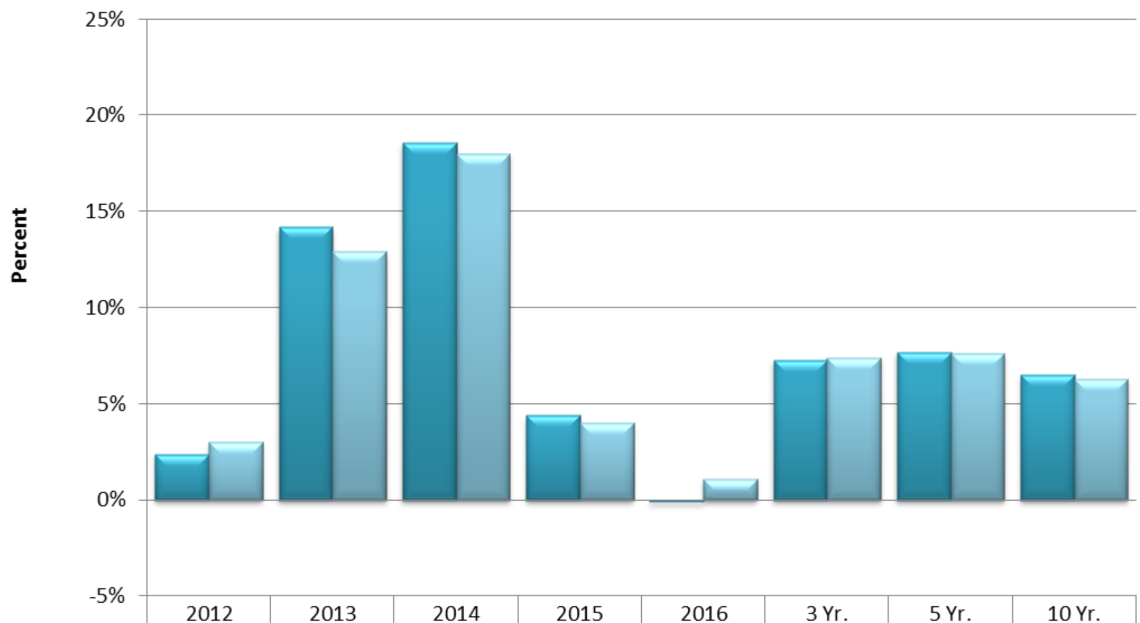
Combined Funds Performance vs. Composite Index

For the ten-year period ending June 30, 2016, the Combined Funds exceeded the composite index investment performance by 0.2 percent annualized. The Funds exceeded the composite index over the last five years by 0.1 percent annualized, and underperformed the index over the most recent fiscal year by 1.2 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 FY 2012 – 2016



	2012	2013	2014	2015	2016	3 Yr.	5 Yr.	10 Yr.
Combined Funds	2.4%	14.2%	18.6%	4.4%	-0.1%	7.3%	7.7%	6.5%
Composite Index	3.0%	12.9%	18.0%	4.0%	1.1%	7.4%	7.6%	6.3%

Combined Funds
Performance of Asset Pools (Net of Fees)

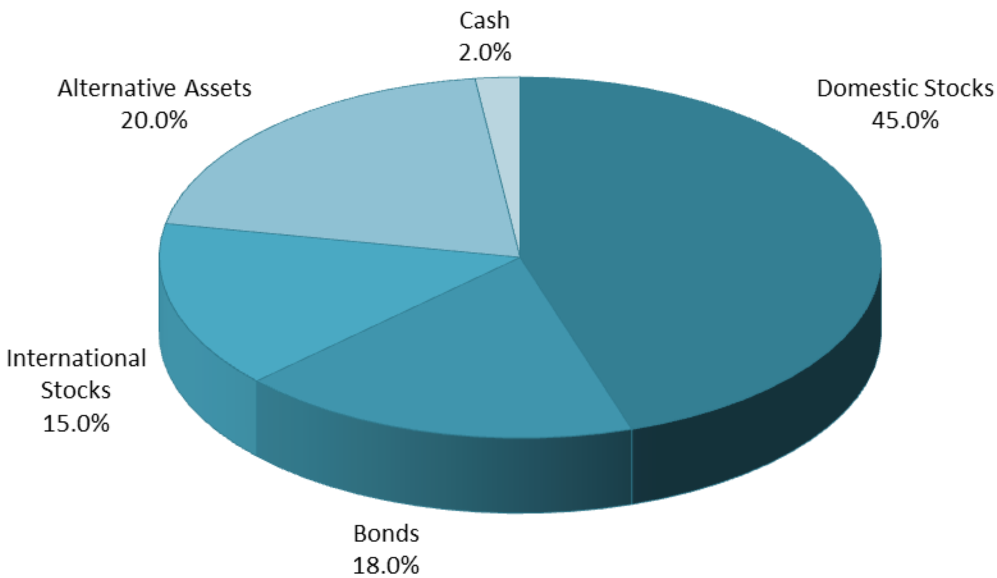
June 30, 2016 — Combined Funds

	Rates of Return (Annualized)			
	FY 2016	3-Year	5-Year	10-Year
Domestic Equity Pool	**0.0%**	**10.7%**	**11.2%**	**7.2%**
Asset Class Target (Russell 3000 – effective 10-1-03)	2.1%	11.1%	11.6%	7.4%
Fixed Income (Bond) Pool	**5.9%**	**4.3%**	**4.3%**	**5.4%**
Asset Class Target (Barclays Capital Aggregate Bond Index)	6.0%	4.1%	3.8%	5.1%
International Equity Pool	**-9.7%**	**1.8%**	**0.9%**	**2.4%**
Asset Class Target (Morgan Stanley Capital International All-Country World Index – since 10-1-03)	-10.2%	1.2%	0.1%	1.9%
Alternative Assets (Real Estate, Private Equity, Resource Pool and Yield Oriented Pool)	**0.2%**	**8.6%**	**9.4%**	**9.6%**
CPI-U Inflation (No Established Index for Alternative Assets)	1.0%	1.1%	1.3%	1.7%

All investment performance methodology is reported in compliance with the mandatory requirements of the Chartered Financial Analyst (CFA) Institute.

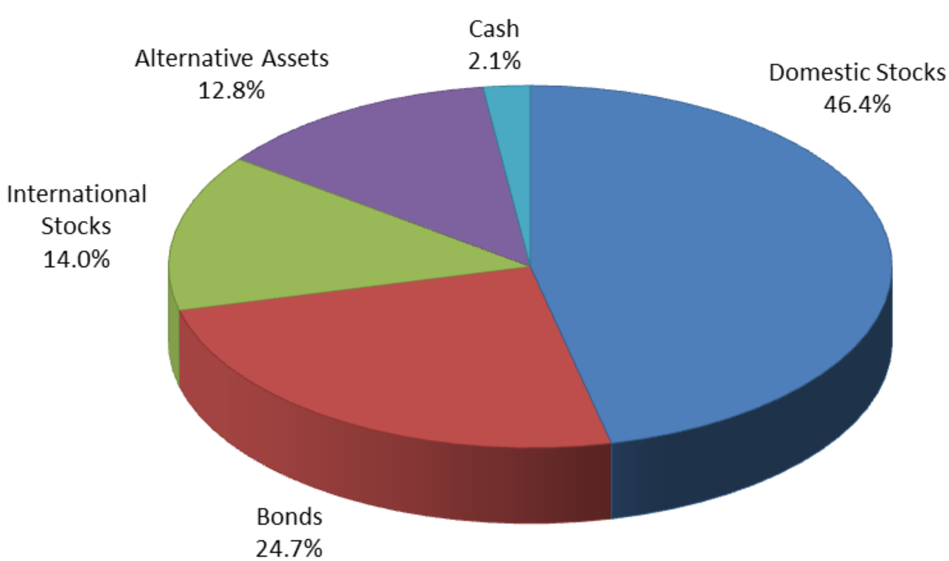
Combined Funds
Portfolio Distribution: Policy Asset Mix

As of June 30, 2016



Combined Funds
Portfolio Distribution: Actual Asset Mix

As of June 30, 2016



TRA Fund fair value of investment assets equals approximately $19.4 billion.

Teachers Retirement Fund
List of Largest Assets Held

June 30, 2016

Composite Holdings of Top Ten Equities
By Fair Value

Security	$ Fair Value (Millions)	% of Portfolio
Apple Inc	$ 182.8	.94
Microsoft Corp	$ 141.6	.73
Johnson + Johnson	$ 126.6	.65
Exxon Mobil Corp	$ 125.0	.64
Amazon.com Inc	$ 116.6	.60
Facebook Inc A	$ 116.5	.60
JPMorgan Chase + Co	$ 98.5	.51
Pfizer Inc	$ 94.6	.49
Wells Fargo + Co	$ 92.0	.47
General Electric Co W/D	$ 88.8	.46

Composite Holdings of Top Ten Bond Holdings
By Fair Value

Security	% Coupon	$ Fair Value (Millions)	% of Portfolio
FNMA TBA 30 YR 3.5	3.5	$ 46.9	.24
FNMA TBA 30 YR 4	4.0	$ 46.8	.24
US TREASURY N/B	1.375	$ 42.9	.22
US TREASURY N/B	2.5	$ 41.5	.21
US TREASURY N/B	0.875	$ 39.5	.20
US TREASURY N/B	0.625	$ 37.9	.20
US TREASURY N/B	1.375	$ 36.4	.19
US TREASURY N/B	1.5	$ 34.6	.18
US TREASURY N/B	1.375	$ 33.7	.17
FNMA TBA 30 YR 3	3.0	$ 31.4	.16

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, 2016

Domestic Activity Equity Pool Managers		
Barrow, Hanley	$	502,305
Earnest Partners		327,899
Goldman Equity		634,269
Hotchkis and Wiley		630,302
Intech Investment		597,782
Jacobs Levy Equity		650,022
LSV Asset		807,526
Martingale		511,723
Mckinley Cap		704,855
Next Century Growth		659,877
Peregrine Capital		697,704
Sands Capital		591,975
Systematic Fin		463,560
Winslow Capital		325,779
Zevenbergen Capital		642,898
Total Domestic Activity Equity Pool Managers	$	8,748,476
Passive Domestic Equity Pool Managers		
Blackrock	$	288,897
Total Passive Domestic Equity Pool Managers	$	288,897
Semi Passive Equity Pool Managers		
Blackrock	$	782,931
Intech		725,191
JP Morgan		939,945
Mellon Capital		786,234
Total Semi Passive Equity Pool Managers	$	3,234,301
Domestic Bonds Pool Managers		
Aberdeen Asset Management	$	603,592
Blackrock Financial Mgmt		363,464
Columbia Invest		391,555
Dodge & Cox		547,779
Goldman		607,041
Neuberger		260,638
PIMCO		1,120,200
Western Asset Management		509,203
Total Domestic Bonds Pool Managers	$	4,403,472
Page Subtotal	$	16,675,146

Teachers Retirement Fund
Schedule of Investment Management Fees (cont.)

For the Fiscal Year Ended June 30, 2016

Subtotal from Previous Page	$	16,675,146
Global Equity Pool Managers		
Acadian Asset	$	491,562
State Street Emerging		88,330
AQR Capital Mgmt		505,860
Capital Intern		1,460,691
Pyramis Global Advisors (Trust)		487,536
Pyramis Global Advisors		312,597
JP Morgan Fleming		354,705
Marathon Asset		784,828
Mckinley Capital Management		401,303
Morgan Stanley Dean		1,820,722
Columbia Investments		366,949
State Street Alpha		389,715
State Street		186,194
Total Global Equity Pool Managers	$	7,650,992
Total Investment Management Fees	$	24,326,138

Note: *The investment portfolio of TRA had a fair value of approximately $19.4 billion as of June 30, 2016.*

Teachers Retirement Fund
Summary of Investments

As of June 30, 2016

	Cost Value	Fair Value	% of Investments at Fair Value
Fixed Income Investments			
Bond Pool	$ 4,641,573,669	$ 4,788,124,747	24.7%
Equity Investments			
US Stock Index Fund	$ 2,457,568,165	$ 2,995,719,589	15.5%
Broad International Stock Fund	2,688,924,845	2,714,605,374	14.0%
US Stock Actively Managed Fund	5,332,335,685	5,996,792,209	30.9%
Total Equity Investments	$ 10,478,828,695	$ 11,707,117,172	60.4%
Alternative Investments			
Alternative Investment Pool	$ 2,949,241,199	$ 2,482,640,103	12.8%
Short Term Investments			
CD Repo Pool	$ 139,455,867	$ 139,531,958	0.7%
Short Term Cash Equivalents	271,030,278	271,072,832	1.4%
Total Short Term Investments	$ 410,486,145	$ 410,604,790	2.1%
Total Investments	$ 18,480,129,708	$ 19,388,486,812	100.0%

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.

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 7, 2016

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, 2016 for the plan year ending June 30, 2017. 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, 2016. There were several changes to the actuarial assumptions from the prior valuation as a result of an experience study prepared for the System that covered the six-year period from July 1, 2008 through June 30, 2014. The recommended changes include:

- Economic Assumptions
  - Lower price inflation from 3.00% to 2.75%.
  - Lower general wage growth and payroll growth from 3.75% to 3.50%.
  - Lower the investment return assumption from a select and ultimate rate (8.0% through June 30, 2017) to 8.0% for all years.
- Demographic Assumptions
  - Changes to active, retiree, and disabled mortality tables, reflecting improved mortality experience (longer life expectancy).
  - Separate retirement assumptions for members hired before or after July 1, 1989 to better reflect each group's behavior in light of different requirements for retirement eligibility.
  - Change termination of employment rates to be solely based on years of service in order to better fit the observed experience.
  - Minor adjustment and simplification of the assumption regarding the election of optional forms of payment at retirement.

While the Board adopted all of the recommendations presented in the experience study, the relevant sections of state law that set the investment return assumption were not changed during the 2016 legislative session because the changes were contained in a bill vetoed by the Governor. Therefore, the funding valuation report was prepared using the select and ultimate investment return assumption (8.0% through June 30, 2017 and 8.5% thereafter), as specified in statute. The change in actuarial assumptions increased the unfunded actuarial accrued liability by $684 million and the contribution deficiency by 1.28%.

3906 Raynor Pkwy, Suite 106, Bellevue, NE 68123
Phone (402) 905-4461 • Fax (402) 905-4464
www.CavMacConsulting.com
Offices in Englewood, CO • Kennesaw, GA • Bellevue, NE

Minnesota Statutes, Section 356.215, Subdivision 11 addresses the recalculation of the established date for full funding when there is a change in the actuarial assumptions, benefit structure, or actuarial cost method that produces a net increase in the unfunded actuarial accrued liability (UAAL). The change in the actuarial assumptions, first reflected in this valuation, resulted in a net increase in the UAAL so this section of statute was applicable for the 2016 valuation. Based on the required calculation in Minnesota Statutes, Section 356.215, Subdivision 11, the amortization period has been extended two years, from FY 2037 to FY 2039.

Under current statutes, the post-retirement cost of living adjustment (COLA) of 2.0% increases to 2.5% if the funded ratio of the System is at least 90% for two consecutive years. Based on the current benefit structure and contribution rates, TRA is not expected to reach a 90% funded ratio so the COLA is not assumed to increase from 2.0% to 2.5% in the future. In the July 1, 2015 funding valuation, the COLA was assumed to increase from 2.0% to 2.50% in the July 1, 2037 valuation.

As described in the funding valuation report, the results of the valuation indicate that the System is 75.6% funded and the current statutory contribution rates are deficient by 2.78% of payroll to meet the target of full funding by 2039. 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 3.93% of payroll. The funding report was prepared exclusively for TRA and the LCPR to determine the annual required contribution rate.

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 Trustees. These parties are responsible for selecting the plan's funding policy, actuarial valuation methods, asset valuation method, and actuarial assumptions. 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. However, as discussed earlier, during 2015 an experience study was performed resulting in several recommended assumption changes. All of these changes were adopted by the Board and approved by the Legislative Commission on Pensions and Retirement. However, the recommended change to the investment return assumption (8.0%) which requires legislative action was not enacted this year. There will be a significant increase in the actuarial accrued liability and the ongoing cost of the System if that assumption ultimately is passed. The Board's recommended legislative package to address the contribution shortfall resulting from the new assumptions was not enacted during the 2016 session, but another bill is expected to be introduced in the 2017 session to address TRA's long term funding issues.

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
- 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, 2016 actuarial 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, 2016 actuarial valuation report. Accordingly, additional determinations may be needed for other purposes.

We also prepared actuarial computations as of June 30, 2016 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 5, 2016. The actuarial assumptions used in the funding valuation report were also used for GASB 67 reporting, except for the use of an 8.0% discount rate for the GASB 67 calculation of the Total Pension Liability. In addition, the entry age normal actuarial cost method, which is required to be used under GASB 67, is also used in the statutory funding valuation report. The actuarial assumptions and methods used in both the funding and the GASB 67 accounting valuation reports meet the parameters set by Actuarial Standard of Practice (ASOPs), as issued by the Actuarial Standards Board, and generally accepted accounting principles (GAAP) applicable in the United State of America as promulgated by the Governmental Accounting Standards Board.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this information is complete and accurate and that the valuation was prepared in accordance with principles of practice which are consistent with the Actuarial Standards of Practice promulgated by the Actuarial Standards Board and the applicable Guides to Professional Conduct, amplifying Opinions, and supporting recommendation of the American Academy of Actuaries. In addition, the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the retirement System. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein. Also, we meet the requirements of "approved actuary" under Minnesota Statutes, Section 356.215, Subdivision 1, Paragraph (c).

Respectfully submitted,

Patrice Beckham

Brent A. Banister

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

Brent Banister PhD, FSA, EA, FCA, MAAA
Chief Pension 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. A description of plan provisions is provided beginning on page 113.

The Allowance for Combined Service Annuity was based on the recommendation of a prior actuary. We are unable to judge the reasonableness of this assumption without performing a substantial amount of additional work beyond the scope of this assignment.

All assumptions are prescribed by Statute, the Legislative Commission on Pensions and Retirement (LCPR), or the Board of Trustees. The date of TRA's last experience study was June 5, 2015. The LCPR last enacted changes to TRA's demographic actuarial assumptions on February 3, 2016.

Investment return	Pre-retirement: 8.47% compounded annually to reflect an 8.0% assumption for one (1) year and 8.5% thereafter.
Future post-retirement adjustments	2% per year. Once the funded ratio reaches 90% on a market value basis for two consecutive years, the COLA is scheduled by statute to revert back from 2.00% to 2.50%. Future assets and liabilities were projected using the 2016 valuation results as a starting point and assuming all actuarial assumptions are met in future years. These assumptions include a rate of return on the market value of assets of 8.0% for the next year and 8.5% thereafter. Further, there is an assumption that the stabilizer provisions will not be utilized by the Board. Based on this methodology, as of July 1, 2016, the increased COLA is not expected to be implemented during the next 40 years, and so we assume it will not occur. For the July 1, 2015, valuation, the COLA was expected to increase with the July 1, 2037, valuation.
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	3.50% 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 6 years and female rates set back 5 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 (page 70).
Withdrawal	Rates vary by service based on actual plan experience, as shown in the rate table.
Expenses	Prior year administrative expenses expressed as percentage of prior year payroll.
Retirement age	Graded rates beginning at age 55 as shown in rate table. Members who have attained the highest assumed retirement age will retire in one year.
Percentage married	85% of male members and 65% of female members are assumed to be married. Members are assumed to have no children.

Age difference – married	Females two years younger than males.
Allowance for Combined Service Annuity	Liabilities for active members are increased by 1.40% and liabilities for former members are increased by 4.00% to account for the effect of some Participants being eligible for a Combined Service Annuity.
Refund of contributions	All employees withdrawing after becoming eligible for a deferred benefit are assumed to take the larger of their contributions accumulated with interest or the value of their deferred benefit.
Interest on member contributions	Members and former members who are eligible for the money purchase annuity are assumed to receive interest credits equal to the Pre-Retirement interest rate. All other members and former members receive the interest crediting rate as specified in statutes.
Commencement of deferred benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at unreduced retirement age.
Form of payment	Married members are assumed to elect subsidized joint and survivor (J&S) form of annuity as follows: Males: 10% elect 50% J&S option 10% elect 75% J&S option 60% elect 100% J&S option 20% elect Straight Life option Females: 13.5% elect 50% J&S option 6.5% elect 75% J&S option 35% elect 100% J&S option 45.0% elect Straight Life option Members eligible for deferred annuities (including current terminated deferred members) and future disability benefits are assumed to elect a life annuity.
Missing data for members	Membership data was supplied by TRA as of the valuation date. This information has not been audited by CMC. We have reviewed the information for internal consistency and we have no reason to doubt its substantial accuracy. In the small number of cases where submitted data was missing or incomplete and could not be recovered from prior years, the following assumptions were applied if needed: Data for active members: Salary, service, and date of birth: Based on current active demographics Gender: Female Data for terminated members: Date of birth: July 1, 1970 Average salary: $38,000 Date of termination: Derived from date of birth, original entry age, and service Data for in-pay members: Beneficiary date of birth: Wife two years younger than husband Gender: Based on first name Form of payment: Life annuity for retirees and beneficiaries, 100% J&S option for disabled retirees.
Changes in actuarial assumptions since the previous valuation	Mortality, retirement, termination and optional forms of payment assumptions were updated. In addition, price inflation was lowered to 2.75%, general wage growth and payroll growth were lowered to 3.50% and total salary increases were changed.

Pre-Retirement Mortality Rates (%)*

Age	Male	Female
20	0.023	0.013
25	0.026	0.014
30	0.036	0.014
35	0.031	0.018
40	0.035	0.024
45	0.041	0.033
50	0.061	0.055
55	0.105	0.092
60	0.175	0.140
65	0.292	0.204

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

Annuitant Mortality Rates (%)

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

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

Termination Rates

Service	Male	Female
Less than 1	32.00%	29.00%
1	15.00%	13.00%
2	11.00%	11.00%
3	8.50%	9.00%
4	6.25%	7.00%
5	5.25%	5.50%
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% 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)	Salary Increase
1	9.50%
2	7.75%
3	7.25%
5	7.00%
10	6.25%
15	5.00%
20	4.10%
26 or more	3.50%

Valuation Report Highlights

Summary of Key Valuation Results

	Actuarial Valuation as of	
	July 1, 2016	**July 1, 2015**
Participant Data		
Active members		
Number	80,530	79,406
Projected annual earnings for fiscal year *(000s)*	$ 4,858,593	$ 4,672,229
Average projected annual earnings for fiscal year 2017	$ 60,333	$ 58,840
Average age	43.3	43.3
Average service	11.9	12.0
Service retirements	57,891	56,589
Survivors	5,091	4,826
Disability retirements	521	571
Deferred retirements	13,680	13,314
Non-vested terminated members	31,850	31,026
Total	**189,563**	**185,732**
Liabilities and Funding Ratios (dollars in thousands)		
Accrued Benefit Funding Ratio		
Current assets (AVA)	$ 20,194,279	$ 19,696,893
Current benefit obligations	25,304,940	24,402,760
Funding ratio	79.80%	80.72%
Accrued Liability Funding Ratio		
Current assets (AVA)	$ 20,194,279	$ 19,696,893
Fair value of assets (MVA)	19,420,131	20,441,993
Actuarial accrued liability	26,716,216	25,562,155
Unfunded actuarial accrued liability	6,521,937	5,865,262
Funding ratio (AVA)	75.59%	77.05%
Funding ratio (MVA)	72.69%	79.97%
Projected Benefit Funding Ratio		
Current and expected future assets	$ 29,080,864	$ 27,943,500
Current and expected future benefit obligations	30,950,072	29,172,991
Funding ratio	93.96%	95.79%
Contributions (% of payroll)		
Normal Cost Rate	8.79%	8.57%
UAAL Amortization Payment	9.70%	9.07%
Expenses	0.23%	0.23%
Total Required Contribution (Chapter 356)	18.72%	17.87%
Statutory Contribution (Chapter 354)	15.94%	15.97%
Contribution (Deficiency)/Sufficiency	(2.78%)	(1.90%)

Actuary's Selected Commentary

The Teachers Retirement Association of Minnesota (TRA) provides retirement, disability, and death benefits to Minnesota public school teachers, administrators, and college faculty. This report presents the results of the July 1, 2016, actuarial funding valuation. The primary purposes of performing the actuarial valuation are to:

- 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 experience of the fund since the last valuation date;
- disclose asset and liability measures as of the valuation date; and
- analyze and report on trends in contributions, assets, and liabilities over the past several years.

There were several changes to the actuarial assumptions from the prior valuation as a result of the experience study for the period July 1, 2008 through June 30, 2014. These changes include:

- Economic assumptions
  - Lower price inflation from 3.00% to 2.75%.
  - Lower general wage growth and payroll growth from 3.75% to 3.50%.
  - Lower the investment return assumption from a select and ultimate rate (8.0% through June 30, 2017, then 8.5%) to 8.0% for all years.
  - Minor changes at some durations for the merit scale of the salary increase assumption.

- Demographic assumptions
  - Changes to active, retiree, and disabled mortality tables, reflecting improved mortality experience (longer life expectancy).
  - Separate retirement assumptions for members hired before or after July 1, 1989 to better reflect each group's behavior in light of different requirements for retirement eligibility.
  - Change termination rates to be based solely on years of service in order to better fit the observed experience.
  - Minor adjustment and simplification of the assumption regarding the election of optional forms of payment at retirement.

While the Board adopted all of these recommended changes to the actuarial assumptions, the required statutory approval of the change in the investment return assumption to 8.0 percent has not yet been made. Therefore, the current investment return assumption (8.0 percent through June 30, 2017 and 8.5 percent thereafter) is used in this valuation. Later in this section of the report, comparative results using the 8.0 percent investment return assumption are presented.

The impact of the changes in assumptions due to the experience study on the July 1, 2016 valuation results, using the actuarial value of assets, is summarized in the table on the following page. Minnesota Statutes, Section 356.215, Subdivision 11 addresses the recalculation of the established date for full funding when there is a change in the actuarial assumptions, benefit structure, or actuarial cost method that produces a net increase in the unfunded actuarial accrued liability (UAAL). The change in the actuarial assumptions, first reflected in this valuation, resulted in a net increase in the UAAL so this section of statute was applicable for the 2016 valuation. Based on the required calculation in Minnesota Statutes, Section 356.215, Subdivision 11, the amortization period has been extended two years, from FY 2037 to FY 2039.

Impact of change in actuarial assumptions from experience study

(dollars in billions)	Assumption Changes Before	After	Impact
Projected Benefit Funding Ratio	96.7%	94.0%	(2.7%)
Actuarial Accrued Liability Funding Ratio (AVA)	77.6%	75.6%	(2.0%)
Actuarial Value of Assets (AVA)	$ 20.19B	$ 20.19B	$0.00B
Unfunded Actuarial Accrued Liability (UAAL)	$5.84B	$6.52B	$0.68B
Normal Cost Rate (percent of pay)	8.26%	8.79%	0.53%
Amortization of UAAL (percent of pay)	8.95%	9.70%	0.75%
Administrative Expenses (percent of pay)	0.23%	0.23%	0.00%
Total Required Contribution (percent of pay)	17.44%	18.72%	1.28%
Member and Employer Contributions	15.20%	15.20%	0.00%
State Aid	0.74%	0.74%	0.00%
Contribution Deficiency (percent of pay)	(1.50%)	(2.78%)	(1.28%)

The actuarial valuation results provide a "snapshot" view of the fund's financial condition on July 1, 2016. The results reflect net favorable experience for the past plan year as demonstrated by an UAAL that was lower than expected. The UAAL on July 1, 2016 is $6.522 billion as compared to an expected UAAL of $6.677 billion (reflecting the $684 million increase due to the new assumptions adopted as a result of the experience study, other than the 8.0 percent investment return assumption). The net favorable experience of $155 million was the combination of an experience gain of $206 million on the fund liabilities and an experience loss of $51 million on the actuarial value of assets. The majority of the liability gain was due to the change in the projected date the COLA is expected to increase from 2.0 percent to 2.5 percent, which occurs when the fund has been 90 percent funded for two consecutive years.

A summary of the key results from the July 1, 2016 actuarial valuation is shown below. Further detail on the valuation results can be found on the following pages.

	Actuarial Valuation as of July 1, 2016	July 1, 2015
Total Required Contribution Rate (Chapter 356)	18.72%	17.87%
Statutory Contribution Rate (Chapter 354)	15.94%	15.97%
Sufficiency/(Deficiency)	(2.78%)	(1.90%)
Unfunded Actuarial Accrued Liability ($M)	$6,522	$5,865
Funded Ratio (Actuarial Assets)	75.59%	77.05%

The contribution deficiency increased from 1.9 percent of payroll in last year's valuation to 2.78 percent in the 2016 valuation. The most significant component of this increase was the impact of the new actuarial assumptions, adopted following the presentation of the experience study report.

Experience for the Last Plan Year

Numerous factors contributed to the change in assets, liabilities and actuarial contribution rate between July 1, 2015, and July 1, 2016. The components are examined in the following discussion.

Assets

As of June 30, 2016, TRA had net assets of $19.4 billion, when measured on a fair market basis. This was a decrease of approximately $1.0 billion from the prior year.

The market value of assets is not used directly in the calculation of the unfunded actuarial accrued liability and the Required Contribution Rate (actuarial 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, 2016 was $20.2 billion, an increase of $0.5 billion from the value in the prior valuation. The components of change in the asset values are shown in the following table:

(dollars in millions)	Fair Value	Actuarial Value
Net Assets, June 30, 2015	**$20,442**	**$19,697**
Employer & Member Contributions	+ $738	+ $738
Benefit Payments and Administrative Expenses	– $1,739	– $1,739
Investment Income	– $21	+ $1,498
Net Assets, June 30, 2016	**$19,420**	**$20,194**
Asset Return	**-0.1%**	**7.7%**

On a market value basis, the rate of return was -0.1 percent as reported by the State Board of Investment (SBI). Due to the application of the asset smoothing method, including the scheduled recognition of the deferred investment experience, the rate of return, measured on the actuarial value of assets, was 7.7 percent. Because this rate of return was slightly lower than the assumed rate of return for this period of 8.0 percent, there was an actuarial loss of $51 million. Please see page 83 of this report for more detailed information on the market 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 fund 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, 2016, in the following table.

(dollars in millions)	Market Value of Assets	Actuarial Value of Assets
Actuarial Accrued Liability	$26,716	$26,716
Value of Assets	$19,420	$20,194
Unfunded Actuarial Accrued Liability	$ 7,296	$ 6,522
Funded Ratio	72.69%	75.59%

See page 86 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, 2015, to July 1, 2016, was $657 million. The components of this net change are shown in the table below (in millions).

(dollars in millions)

Unfunded Actuarial Accrued Liability, July 1, 2015	**$5,865**
Expected increase from amortization method	$29
Expected increase from contributions below required rate	92
Investment experience	51
Liability experience	(206)
Other experience	7
Assumption changes	684
Subtotal	657
Unfunded Actuarial Accrued Liability, July 1, 2016	**$6,522**

As shown above, various components impacted the UAAL. 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 and 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 fund experienced a net actuarial gain of $155 million. The actuarial gain may be explained by considering the separate experience of assets and liabilities. As noted earlier, there was a $206 million gain on liabilities and a $51 million loss on the actuarial value of assets. The liability gain primarily arose from the fact that because of the 0 percent return on the market value of assets, the funded ratio is not expected to reach 90 percent and therefore the COLA is not expected to increase from 2.0 percent to 2.5 percent in the future.

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 market value of assets, the results could differ. The funded ratios and unfunded actuarial accrued liability measures, as shown, are not indicative of whether or not the fund 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 below (in millions).

Date	Funded Ratio	Unfunded Actuarial Accrued Liability (SM)
7/1/12	73.0%	$6,219
7/1/13	71.6%	$6,644
7/1/14	74.1%	$6,347
7/1/15	77.1%	$5,865
7/1/16	75.6%	$6,522

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 87 of the report for the detailed development of these contribution rates is shown in the following table.

Contribution Rates	July 1, 2015	July 1, 2016
Normal Cost Rate	8.57%	8.79%
UAAL Contribution Rate	9.07%	9.70%
Expenses	0.23%	0.23%
Total Required Contribution	17.87%	18.72%
Statutory Contribution Rate	15.97%	15.94%
Deficiency	(1.90%)	(2.78%)

When the Statutory Contribution Rate is less than the Required Contribution Rate, the resulting contribution deficiency creates an increase in the unfunded actuarial accrued liability. For the plan year ending June 30, 2016, the contribution deficiency increased the UAAL by an estimated $92 million.

The actuarial contribution rate (Required Contribution Rate) is determined based on the snapshot of the System taken on the valuation date, July 1, 2016. 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. Further, the date the funded ratio is projected to reach 90 percent for two consecutive years, triggering the increase in the COLA from 2.0 percent to 2.5 percent can move significantly with the actual investment return on the market value of assets. As a result, actual returns above the assumed rate of return tend to move the projected date forward and increase the actuarial accrued liability, while actual investment returns below the expected return extend the projected date, lowering the actuarial accrued liability. This interactive dynamic between liabilities and asset performance somewhat dampens the impact of investment return volatility on funding.

Summary

The investment return on the market value of assets for FY 2016 was -0.1 percent, as reported by SBI. However, due to the application of the asset smoothing method, the return on the actuarial value of assets was 7.7 percent. Since this return was slightly below the assumed rate of return of 8.0 percent, there was an actuarial loss on the actuarial value of assets and the funded ratio decreased from 77.05 percent in last year's valuation to 75.59 percent 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 funds, 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 $0.8 billion represents about 4 percent of the market value of assets.

The key valuation results from the July 1, 2016, actuarial valuation are shown below, using both actuarial and market value of assets.

	Fair Value	Actuarial Value
Statutory Rate	15.94%	15.94%
Required Contribution		
Normal Cost	8.79%	8.79%
UAAL Contribution	10.85%	9.70%
Expenses	0.23%	0.23%
Total Required Contribution	19.87%	18.72%
Deficiency	(3.93%)	(2.78%)
UAAL (millions)	$7,296	$6,522
Funded Ratio	72.69%	75.59%

As discussed earlier, following the presentation of the experience study results during 2015, the Board adopted all of the recommended assumptions, including an 8.0 percent investment return assumption. However, for purposes of the statutorily required actuarial valuation report for funding, the investment return assumption is set in statute. The relevant sections of state law were not changed during the 2016 legislative session because the changes were contained in a bill vetoed by the Governor. Therefore, the results in this report have been prepared using an investment return assumption of 8.0 percent through June 30, 2017, and 8.5 percent thereafter as specified in statute. Had the lower investment return assumption of 8.0 percent for all years been changed in statute, the valuation results presented in this report would have been different. The following table provides a summary of the key valuation measurements using the valuation investment return assumption and the 8.0 percent investment return assumption.

If the total required contribution rate is calculated, based on the UAAL using the market value of assets, the rate increases to 22.45 percent and the resulting contribution deficiency is 6.51 percent.

The long-term financial health of the fund, like all retirement funds, is heavily dependent on two key items: (1) future investment returns and (2) contributions. Changes were made by the 2010 Legislature to strengthen the funding of TRA and enhance its long term sustainability. Contributions were increased by a total of 4 percent, phased in over four years beginning July 1, 2011, and benefit reductions were implemented. These changes, along with strong investment performance in several of the following years, significantly improved the projected long term funding. However, the recommended assumption changes and two recent years of actual investment experience significantly below the expected investment return have eroded some of this progress. If the investment return assumption of 8.0 percent, as adopted by the Board, is changed in statute, the subsequent valuation results will reflect further erosion. It is 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.

Teachers Retirement Association
Comparison of Official Valuation Results versus 8% - All Years

Fiscal year ended June 30, 2016

(dollars in billions)	**Valuation Results**	**8% Assumption**
Projected Benefit Funding Ratio	94.0%	88.3%
Actuarial Accrued Liability Funding Ratio (AVA)	75.6%	71.7%
Actuarial Value of Assets (AVA)	$ 20.19B	$ 20.19B
Unfunded Actuarial Accrued Liability (UAAL)	$6.52B	7.98B
Normal Cost Rate (percent of pay)	8.79%	9.99%
Amortization of UAAL (percent of pay)*	9.70%	11.15%
Administrative Expenses (percent of pay)	0.23%	0.23%
Total Required Contribution (percent of pay)	18.72%	**21.37%**
Member and Employer Contributions	15.20%	15.20%
State Aid	0.74%	0.74%
Contribution Deficiency (percent of pay)	(2.78%)	(5.43%)

**Reflects extension of amortization period to 23 years following Minnesota Statute Section 356.215, Subdivision 11.*

The complete *Actuarial Valuation Funding Report* is available on the TRA website at
https://www.minnesotatra.org/images/pdf/2016%20MN%20TRA%20Valuation%20Report%20FINAL.pdf

Reconciliation of Member Data*

Fiscal Year Ended June 30, 2016

	Active** Members	Former*** Members	Benefit Recipients**** Service Retirements	Disability Retirements	Survivors	Total
Members on July 1, 2015	79,406	44,340	56,589	571	4,826	185,732
New hires	5,457					5,457
Return from inactive	1,683	(1,683)				0
Return from zero balance	516					516
Transfer to inactive	(4,226)	4,226				0
Refunded	(222)	(949)				(1,171)
Restored writeoff		151				151
Repay refunds		26				26
Transfer from non-status		21				21
Retirements	(2,001)	(573)	2,580	(83)		(77)
Benefits began				62	527	589
Benefits ended				(5)	(54)	(59)
Deaths	(51)	(43)	(1,249)	(23)	(208)	(1,574)
Adjustments for disabilitants	34					34
Adjustments (other)	(66)	14	(2)		(1)	(55)
Adjustments (DTRFA merger)			(27)	(1)	1	(27)
Net changes	1,124	1,190	1,302	(50)	265	3,831
Members on June 30, 2016	**80,530**	**45,530**	**57,891**	**521**	**5,091**	**189,563**

* *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 and Variable optional joint annuitants. We found these results to be reasonable.*

** *Active members include 4 Basic and 80,526 Coordinated members.*

*** *Former members include 24 Basic and 45,506 Coordinated members.*

**** *Benefit recipients include 4,064 Basic members and 59,439 Coordinated members.*

Former Member Statistics	Vested	Non-Vested	Total
Number	13,680	31,850	45,530
Average Age	48.0	45.7	46.4
Average Service (years)	7.5	0.9	2.9
Average annual benefits, with augmentation to Normal Retirement Date and 4 percent Combined Service Annuity load	$10,536	N/A	N/A
Average refund value, with 4 percent Combined Service Annuity load	$31,526	$2,424	$11,168

Statement of Fiduciary Net Position

Fiscal Year Ended June 30, 2016

(dollars in thousands)

Assets		Fair Value
Cash and short term investments		
Cash	$	8,491
Building account cash		64
Short-term investments		410,605
Total cash and short-term investments	$	419,160
Receivables		21,765
Investments (at fair value)		
Fixed income pool	$	4,788,125
Alternative investments pool		2,482,640
Indexed equity pool		2,995,720
Domestic equity pool		5,996,792
Global equity pool		2,714,605
Total investments	$	18,977,882
Securities lending collateral		2,748,476
Building		
Land	$	171
Building and equipment – net of depreciation		6,523
Total building	$	6,694
Capital assets net of accumulated depreciation	$	14,902
Total Assets	**$**	**22,188,879**

Statement of Fiduciary Net Position *(continued)*

Fiscal Year Ended June 30, 2016

(dollars in thousands)

Liabilities		Fair Value
Current		
Accounts payable	$	9,136
Accrued compensated absences		111
Accrued expenses - building		4
Bonds payable		603
Bonds interest payable		12
Securities lending collateral		2,748,477
Total current liabilities	$	2,758,343
Long term		
Accrued compensated absences	$	808
Bonds payable		5,297
Total long-term liabilities	$	6,105
Total Liabilities	**$**	**2,764,448**
Net Position Restricted for Pension Benefits	**$**	**19,424,431**
Earnings Limitation Savings Account (ELSA) accounts payable*		(4,300)
Net Position Restricted, after adjustment for ELSA accounts	**$**	**19,420,131**

** Not calculated by Cavanaugh Macdonald; TRA determined.*

Statement of Changes in Fiduciary Net Position

Fiscal Year Ended June 30, 2016

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, 2015 to June 30, 2016.

(dollars in thousands)

Change in Assets	Fair Value
1. Net position at fair value at July 1, 2015	**$ 19,696,893**
2. Contributions	
a. Member	$ 347,256
b. Employer	354,961
c. Direct aid (state/city/county)	35,587
d. Earnings Limitation Savings Account (ELSA)	1,961
e. Total contributions	$ 739,765
3. Investment income	
a. Investment income/(loss)	$ (9,471)
b. Investment expenses	(26,265)
c. Total investment income/(loss)	$ (35,736)
4. Securities lending activities	
a. Securities lending income	$ 20,348
b. Securities lending expenses	
Borrowing rebates	$ (4,065)
Management fees	(4,219)
c. Total securities lending expenses	(8,284)
d. Net income from securities lending	12,064
5. Total net investment income *(3c + 4d)*	$ (23,672)
6. Other	3,569
7. Total additions *(2e + 5 + 6))*	**$ 719,662**
8. Benefits Paid	
a. Annuity benefits	$ (1,716,733)
b. Refunds	(11,290)
c. Total benefits paid	$ (1,728,023)
9. Administrative Expenses	(11,338)
10. Total deductions *(8c + 9)*	**$ (1,739,361)**
11. Increase in ELSA account value	(2,163)
12. Net position at fair value at June 30, 2016 *(1 + 7 – 10 – 11)*	$ (1,021,862)
13. End of year	**$ 19,420,131**

Actuarial Value of Assets

Fiscal Year Ended June 30, 2016

(dollars in thousands)

1.	**Fair value of assets available for benefits**				**$**	**19,420,131**
2.	Determination of average balance					
	a. Assets available at July 1, 2015*				$	20,446,091
	b. Assets available at June 30, 2016*					19,424,431
	c. Net investment income for fiscal year ending June 30, 2016					(23,672)
	d. Average balance *[a. + b. - c.] / 2*				$	19,947,097
3.	Expected return *[8.0 percent * 2.d.]*					1,595,768
4.	Actual return					(23,672)
5.	Current year unrecognized asset return					(1,619,440)
6.	Unrecognized asset returns					
			Original Amount	**% Not Recognized**		
	a. Year ended June 30, 2016	$	(1,619,440)	80%	$	(1,295,552)
	b. Year ended June 30, 2015	$	(706,091)	60%	$	(423,655)
	c. Year ended June 30, 2014	$	1,855,481	40%	$	742,192
	d. Year ended June 30, 2013	$	1,014,336	20%	$	202,867
	e. Total return not yet recognized				$	(774,148)
7.	**Actuarial value at June 30, 2016** *(1. - 6.e.)*				**$**	**20,194,279**

* *Before recognition of ELSA accounts payable.*

Actuarial Valuation Balance Sheet

Fiscal Year Ended June 30, 2016

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.

The contributions made in excess of amounts required for current benefit payments are accumulated as a reserve to help meet benefit payments in later years. This reserve fund enables the establishment of a level rate of contribution each year.

(dollars in thousands)

A. Actuarial Value of Assets			$ 20,194,279
B. Expected Future Assets			
1. Present value of expected future statutory supplemental contributions*			$ 4,652,729
2. Present value of expected future normal cost contributions			4,233,856
3. Total expected future assets *(1. + 2.)*			$ 8,886,585
C. Total Current and Expected Future Assets**			$ 29,080,864
D. Current Benefit Obligations	Non-Vested	Vested	Total
1. Benefit recipients			
a. Service retirements	$ 0	$ 15,988,969	$ 15,988,969
b. Disability	0	144,388	144,388
c. Survivors	0	1,053,975	1,053,975
2. Deferred retirements with augmentation to Normal Retirement Date	0	594,186	594,186
3. Former members without vested rights***	77,015	0	77,015
4. Active members	61,345	7,385,062	7,446,407
5. Total current benefit obligations	$ 138,360	$ 25,166,580	$ 25,304,940
E. Expected Future Benefit Obligations			$ 5,645,132
F. Total Current and Expected Future Benefit Obligations			$ 30,950,072
G. Unfunded Current Benefit Obligations *(D.5 – A)*			$ 5,110,661
H. Unfunded Current and Future Benefit Obligations *(F. – C.)*			$ 1,869,208

* *Under LCPR guidelines, this amount does not include supplemental payments, which could occur after the expiration of the remaining 23-year amortization period.*

** *Does not reflect deferred investment experience in the asset smoothing method. Total expected future assets on a fair value basis are $28,306,716.*

*** *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, 2016

(dollars in thousands)	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	$ 12,304,339	$ (3,470,774)	$ 8,833,565
b. Disability benefits	265,720	(108,812)	156,908
c. Survivor benefits	99,342	(36,704)	62,638
d. Deferred retirements	406,959	(466,699)	(59,740)
e. Refunds	15,179	(150,867)	(135,688)
f. Total	$ 13,091,539	$ (4,233,856)	$ 8,857,683
2. Deferred retirements with future augmentation to Normal Retirement Age	594,186	0	594,186
3. Former members without vested rights	77,015	0	77,015
4. Benefit recipients	17,187,332	0	17,187,332
5. Total	$ 30,950,072	$ (4,233,856)	$ 26,716,216
B. Determination of Unfunded Actuarial Accrued Liability (UAAL)*			
1. Actuarial accrued liability			$ 26,716,216
2. Actuarial value of assets (page 83, line 7)			20,194,279
3. Unfunded actuarial accrued liability			$ 6,521,937
C. Determination of Supplemental Contribution Rate*			
1. Present value of future payrolls through the amortization date of June 30, 2039			$ 67,235,963
2. Supplemental contribution rate *(A.3/B.1)***			9.70%

* *On a fair value of assets basis, the unfunded actuarial accrued liability is $7,296,085 and the supplemental contribution rate is 10.85 percent of payroll.*

** *The amortization factor as of July 1, 2016 is 13.8386.*

Changes in Unfunded Actuarial Accrued Liability

Fiscal Year Ended June 30, 2016

(dollars in thousands)		Amount
A. Unfunded actuarial accrued liability at beginning of year	$	5,865,262
B. Changes due to interest requirements and current rate of funding*		
1. Normal cost and actual administrative expenses	$	411,786
2. Contributions		(739,765)
3. Interest on A., B.1 and B.2.		456,354
4. Total *(B.1. + B.2. + B.3.)*	$	128,375
C. Expected unfunded actuarial accrued liability at end of year *(A. + B.4.)*	$	5,993,637
D. Increase (decrease) due to actuarial losses (gains) because of experience deviations from expected		
1. Salary increases	$	(122,517)
2. Investment return (AVA)		51,338
3. Mortality of active members		(469)
4. Mortality of benefit recipients		2,843
5. Retirement from active service		51,523
6. Change in date COLA is expected to increase		(203,316)
6. Other items		65,336
7. Total	$	(155,262)
E. Unfunded actuarial accrued liability at end of year before plan amendments and changes in actuarial assumptions *(C. + D.7.)*	$	5,838,375
F. Change in unfunded actuarial accrued liability due to DTRFA merger		683,562
G. Unfunded actuarial accrued liability at end of year *(E. + F.)*	$	6,521,937

* *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, 2016

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

(dollars in thousands)	Percent of Payroll	Dollar Amount
A. Statutory Contributions - Chapter 354		
1. Employee contributions	7.50%	$ 364,408
2. Employer contributions*	7.70%	374,140
3. Supplemental contributions**		
a. 1993 Legislation	0.10%	5,000
b. 1996 Legislation	0.07%	3,256
c. 1997 Legislation	0.27%	12,954
d. 2014 Legislation	0.30%	14,377
4. Total	15.94%	$ 774,135
B. Required Contributions - Chapter 356		
1. Normal Cost		
a. Retirement benefits	7.27%	$ 353,245
b. Disability benefits	0.21%	10,204
c. Survivor	0.08%	3,888
d. Deferred retirement benefits	0.91%	44,216
e. Refunds	0.32%	15,548
f. Total	8.79%	$ 427,101
2. Supplemental contribution amortization by July 1, 2039 of Unfunded Actuarial Accrued Liability	9.70%	$ 471,284
3. Allowance for expenses	0.23%	11,175
4. Total annual contribution for fiscal year ending June 30, 2016***	18.72%	$ 909,560
C. Contribution Sufficiency/(Deficiency) *(A.4 - B.4)****	(2.78%)	$ (135,425)
Note: Projected annual payroll for fiscal year beginning on the valuation date		$ 4,858,593

* *Employer contribution rate is blended to reflect rates of 15.14 percent of pay for Basic members, 7.50 percent for pay for Coordinated members not employed by Special School District #1, and 11.14 percent of pay for Coordinated members who are employed by Special School District #1.*

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

*** *On a fair value of assets basis, the total required contribution is 19.87 percent of payroll and the contribution deficiency is 3.93 percent of payroll.*

Solvency Test

(dollars in thousands)

Valuation as of June 30	Aggregate Accrued Liabilities (1) Member Contributions	(2) Retirees and Beneficiaries	(3) Members (Employer Financed Portion)	Valuation Assets	Portion of Actuarial Accrued Liabilities Covered by Reported Assets (1)	(2)	(3)
2007	$ 1,799,910	$ 13,112,891	$ 6,557,513	$ 18,794,389	100%	100%	59.2%
2008	$ 1,883,371	$ 13,567,065	$ 6,780,405	$ 18,226,985	100%	100%	40.9%
2009	$ 2,038,749	$ 14,203,926	$ 6,872,127	$ 17,882,408	100%	100%	23.9%
2010	$ 2,128,600	$ 13,650,631	$ 6,302,403	$ 17,323,146	100%	100%	24.5%
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%	0.0%
2013	$ 2,482,123	$ 15,145,239	$ 5,791,267	$ 16,774,626	100%	94.4%	0.0%
2014	$ 2,510,604	$ 15,798,610	$ 6,219,292	$ 18,181,932	100%	99.2%	0.0%
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%	0.0%

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
2007	77,694	$3,532,159	3.0%	$45,462
2008	76,515	$3,645,230	3.2%	$47,641
2009	77,162	$3,761,484	3.2%	$48,748
2010	77,356	$3,787,757	0.7%	$48,965
2011	76,755	$3,838,111	1.3%	$50,005
2012	76,649	$3,871,809	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

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

Through June 1, 2016 – End of Budget Year for Benefit Payments – Prepared by TRA***

	Added To Rolls		Removed From Rolls		June 1 Payment		
Fiscal Year	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances	Avg. Annual Allowances
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	$ 1,438,959,431	$ 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	$ 71,896,835	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
2010							
Retirement	2,034	$ 57,221,454	922	$ 28,024,798	46,902	$ 1,296,882,008	$ 27,651
Disability	51	$ 1,283,512	67	$ 1,578,194	618	$ 12,400,315	$ 20,065
Beneficiaries	391	$ 9,945,588	193	$ 4,237,320	3,945	$ 100,367,532	$ 25,442
2009							
Retirement	2,282	$ 65,082,777	874	$ 25,678,679	45,790	$ 1,271,277,327	$ 27,763
Disability	48	$ 959,551	26	$ 507,524	634	$ 12,364,085	$ 19,502
Beneficiaries	343	$ 7,938,855	213	$ 2,997,929	3,747	$ 94,308,262	$ 25,169
2008**							
Retirement	7,757	$267,146,737	1,580	$ 95,109,782	44,382	$ 1,231,768,186	$ 27,754
Disability	105	$ 2,596,324	93	$ 2,408,229	612	$ 11,635,841	$ 19,011
Beneficiaries	585	$ 24,054,314	398	$ 10,168,388	3,617	$ 93,067,932	$ 25,730
2007							
Retirement	2,222	$ 62,734,162	767	$ 20,372,241	38,205	$ 1,059,731,231	$ 27,738
Disability	59	$ 998,126	63	$ 1,347,548	600	$ 11,447,746	$ 19,080
Beneficiaries	355	$ 8,269,118	141	$ 2,933,302	3,430	$ 79,182,006	$ 23,085

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

***2008 data reflects higher additions, removals and fiscal year 2009 data adjustments associated with the conversion of former MTRFA 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)

Dollar Amounts 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)
07/01/07	$18,794,389	$21,470,314	$ 2,675,925	87.54%	$3,532,159	75.76%
07/01/08	$18,226,985	$22,230,841	$ 4,003,856	81.99%	$3,645,230	109.84%
07/01/09	$17,882,408	$23,114,802	$ 5,232,394	77.36%	$3,761,484	139.10%
07/01/10	$17,323,146	$22,081,634	$ 4,758,488	78.45%	$3,787,757	125.63%
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%

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

Dollar Amounts 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
2007	12.16%	$ 3,532,159	$ 199,869	$ 229,642	$ 209,219	91.11%
2008	13.44%	$ 3,645,230	$ 209,592	$ 280,327	$ 231,562	82.60%
2009	15.08%	$ 3,761,484	$ 212,043	$ 355,189	$ 240,718	67.72%
2010	16.81%	$ 3,787,757	$ 214,909	$ 421,813	$ 242,088	57.39%
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%					

**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 93 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 93 provides historical information on the total member and employer contribution rates.

The schedule of Pension Assets Compared to Pension Liabilities, found on pages 94-95, 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 96-97 and 106-109 include detailed information regarding the number and type of benefit recipients, and information as to the benefit amount.

The chart on page 102 provides a profile of TRA active members on June 30, 2016, by age and service credit totals.

The chart on page 103 contains information on the total number of members by type.

The schedules on pages 104-105 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 109) for the next 25 years have been supplied by TRA's actuarial advisor, Cavanaugh Macdonald Consulting.

10-Year History of TRA Fiduciary Net Position

June 30 Fiscal Year End	Fiduciary Net Position	% Change From Prior Year
2007	$19,938,881,872	12.2%
2008	$18,106,965,760	-9.2%
2009	$13,833,825,733	-23.6%
2010	$14,939,539,780	8.0%
2011	$17,303,575,561	15.8%
2012	$16,689,940,629	-3.6%
2013	$18,019,318,901	8.0%
2014	$20,293,684,479	12.6%
2015	$20,446,090,732	0.8%
2016	$19,424,431,199	-5.0%

10-Year History of TRA Contribution Rates

Fiscal Year	Basic Program Employee Contribution Rate	Basic Program Employer Contribution Rate	Basic Program Total Contribution Rate	Coordinated Employee Contribution Rate	Coordinated Employer Contribution Rate	Coordinated Total Contribution Rate
2007	9.00%	9.00%	18.00%	5.50%	5.00%	10.50%
2008	9.00%	9.50%	18.50%	5.50%	5.50%	11.00%
2009	9.00%	9.50%	18.50%	5.50%	5.50%	11.00%
2010	9.00%	9.50%	18.50%	5.50%	5.50%	11.00%
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%

Teachers Retirement Association
10-Year History of Changes in Fiduciary Net Position

Fiscal Year ended June 30	2007	2008	2009	2010
Additions				
Member Contributions	$ 199,868,969	$ 209,592,461	$ 212,042,535	$ 214,908,960
Employer Contributions	209,219,130	231,561,322	240,718,200	242,087,985
Net Income (Loss) From Investing Activity	3,056,492,094	(926,044,140)	(3,318,368,290)	2,087,639,841
Other Income, Net	7,901,279	7,529,753	6,526,400	4,850,206
Total Additions to Fiduciary Net Position	$ 3,473,481,472	$ (477,360,604)	$ (2,859,081,155)	$ 2,549,486,992
Deductions				
Pension Benefits	$ 1,273,093,384	$ 1,330,836,947	$ 1,383,667,466	$ 1,422,578,335
Refunds	12,088,193	11,770,086	14,429,351	11,607,086
Administrative Expenses	10,635,365	10,261,139	10,608,003	9,587,524
Other	3,309,099	1,687,335	5,354,052	0
Total Deductions from Fiduciary Net Position	$ 1,299,126,041	$ 1,354,555,508	$ 1,414,058,872	$ 1,443,772,945
Net Increase (Decrease)	$ 2,174,355,431	$ (1,831,916,112)	$ (4,273,140,027)	$ 1,105,714,047
Net Position Held in Trust, Beginning of Year	$ 17,764,526,441	$ 19,938,881,872	$ 18,106,965,760	$ 13,833,825,733
Net Position Held in Trust, End of Year	$ 19,938,881,872	$ 18,106,965,760	$ 13,833,825,733	$ 14,939,539,780

***"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

Fiscal Year ended June 30	2007	2008	2009	2010
Pension Assets (Actuarial Value)	$ 18,794,389,076	$ 18,226,985,000	$ 17,882,408,000	$ 17,323,146,000
Accrued Liabilities	$ 21,470,314,497	$ 22,230,841,000	$ 23,114,802,000	$ 22,081,634,000
Unfunded Liabilities (Sufficiency)	$ 2,675,925,421	$ (4,003,856,000)	$ (5,232,394,000)	$ (4,758,488,000)
Funded Ratio	87.5%	82.0%	77.4%	78.5%

2011	2012	2013	2014	2015*	2016
$ 218,023,736	$ 239,833,920	$ 265,808,686	$ 294,632,331	$ 334,825,844	$ 345,255,904
244,232,711	266,661,085	290,662,108	320,300,846	381,795,000	390,548,550
3,390,130,615	383,187,159	2,310,295,407	3,257,692,629	887,280,400	(23,671,593)
5,562,374	4,929,201	5,474,846	5,502,381	4,896,887	5,529,450
$ 3,857,949,436	$ 894,611,365	$ 2,872,241,047	$ 3,878,128,187	$ 1,608,798,131	$ 719,662,311
$ 1,460,836,392	$ 1,486,386,832	$ 1,523,269,003	$ 1,581,766,643	$ 1,659,068,988	$ 1,718,693,913
23,812,985	11,835,977	10,462,932	12,566,217	11,884,677	11,289,626
9,264,278	10,023,488	9,130,840	9,429,749	11,509,273	11,338,305
0	0	0	0	-	-
$ 1,493,913,655	$ 1,508,246,297	$ 1,542,862,775	$ 1,603,762,609	$ 1,682,462,938	$ 1,741,321,844
$ 2,364,035,781	$ (613,634,932)	$ 1,329,378,272	$ 2,274,365,578	$ (73,664,807)	$ (1,021,659,533)
$ 14,939,539,780	$ 17,303,575,561	$ 16,689,940,629	$ 18,019,318,901	$ 20,519,755,539	$ 20,446,090,732
$ 17,303,575,561	$ 16,689,940,629	$ 18,019,318,901	$ 20,293,684,479	$ 20,446,090,732	$ 19,424,431,199

2011	2012	2013	2014	2015	2016
$ 17,132,383,000	$ 16,805,077,000	$ 16,774,626,000	$ 18,181,932,000	$ 19,696,893,000	$ 20,194,279,000
$ 22,171,493,000	$ 23,024,505,000	$ 23,418,629,000	$ 24,528,506,000	$ 25,562,155,000	$ 26,716,216,000
$ (5,039,110,000)	$ (6,219,428,000)	$ (6,644,003,000)	$ (6,346,574,200)	$ (5,865,262,000)	$ (6,521,937,000)
77.3%	73.0%	71.6%	74.1%	77.1%	75.6%

10-Year History of TRA Benefits and Refunds by Type

Fiscal year ended June 30

Pension Benefits	2007	2008	2009	2010
Annuities	$ 1,241,862,723	$ 1,297,772,858	$ 1,352,741,935	$ 1,391,181,476
Disabilities	11,923,494	12,049,579	12,076,621	13,075,898
Survivor Benefits	15,774,162	17,460,466	16,547,705	17,124,339
Total Pension Benefits	$ 1,269,560,379	$ 1,327,282,903	$ 1,381,366,261	$ 1,421,381,713
Annuities Redirected to Earnings Limitation Savings Account (ELSA)	$ 3,533,005	$ 3,554,045	$ 2,301,205	$ 1,196,622
Member Refunds				
Regular	9,574,959	8,567,474	8,631,754	6,808,991
Death	642,960	995,710	1,967,544	1,272,971
ELSA Refunds	1,431,902	1,860,826	3,550,729	3,341,302
Employer Refunds	438,372	346,076	279,324	183,822
Total Refunds	$ 12,088,193	$ 11,770,086	$ 14,429,351	$ 11,607,086
Total Benefits and Refunds	$ 1,285,181,577	$ 1,342,607,034	$ 1,398,096,817	$ 1,434,185,421

10-Year History of TRA Benefit Recipients by Category

Fiscal year ended June 30

Year	Annuitants	Disabilitants	Survivors	Total
2007	42,679	636	3,223	46,538
2008	43,041	641	3,299	46,981
2009	46,009	624	3,575	50,208
2010	47,556	615	3,682	51,853
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

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

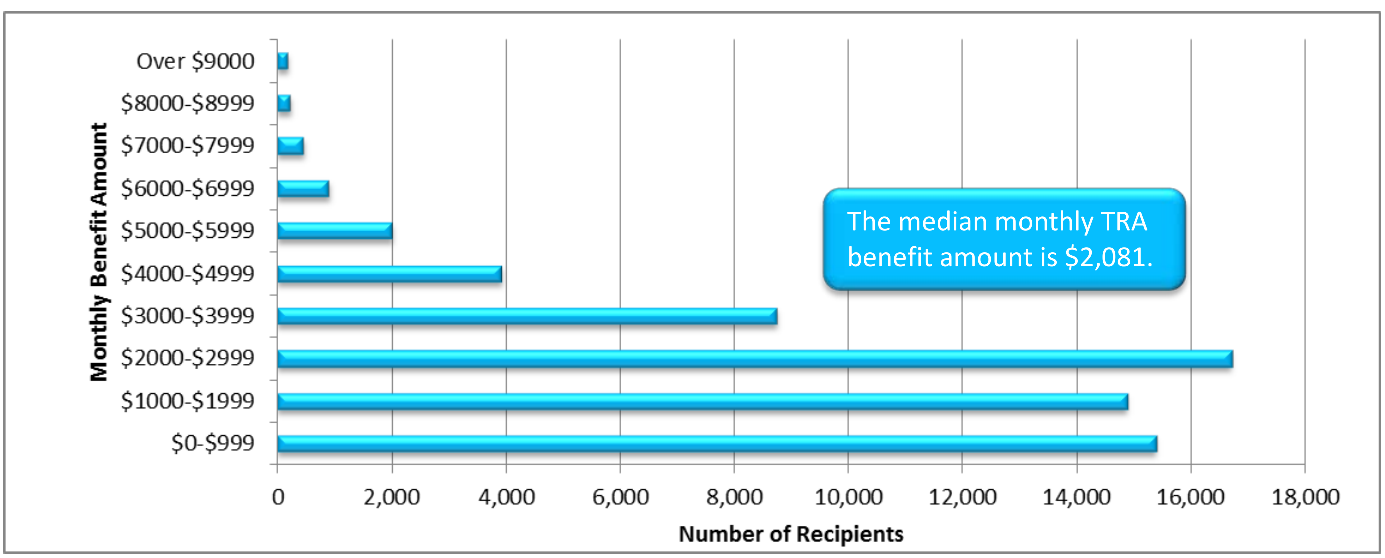
Fiscal year ended June 30

2011	2012	2013	2014	2015	2016
$ 1,429,842,960	$ 1,456,295,613	$ 1,492,612,137	$ 1,551,120,554	$ 1,626,702,812	$ 1,687,085,465
12,468,933	12,302,612	11,774,758	11,681,267	12,063,315	11,966,968
17,237,783	16,929,195	17,089,958	17,318,007	18,956,030	17,680,917
$ 1,459,549,676	$ 1,485,527,420	$ 1,521,476,853	$ 1,580,119,828	$ 1,657,722,157	$ 1,716,733,350
$ 1,286,716	$ 859,412	$ 1,792,150	$ 1,646,815	$ 1,346,831	$ 1,960,563
7,669,337	7,836,244	7,596,530	9,152,348	8,696,290	8,284,188
989,888	928,558	1,192,365	1,609,301	1,360,475	$ 1,183,915
14,947,274	2,864,780	1,366,885	1,579,841	1,658,854	1,620,650
206,486	206,395	307,152	224,727	169,058	200,874
$ 23,812,985	$ 11,835,977	$ 10,462,932	$ 12,566,217	$ 11,884,677	$ 11,289,626
$ 1,484,649,377	$ 1,498,222,809	$ 1,533,731,935	$ 1,594,332,860	$ 1,670,953,665	$ 1,741,321,844

Schedule of TRA Benefit Amounts Paid

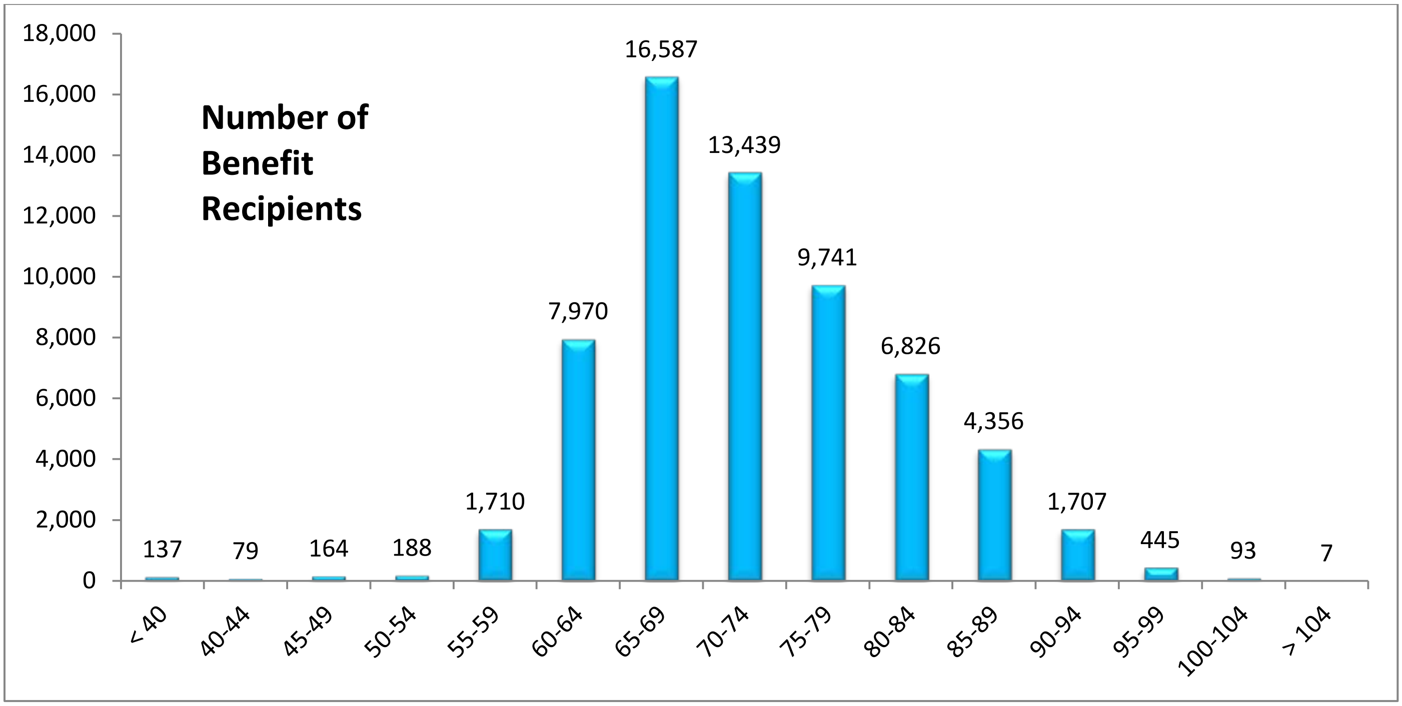
For Month of June 2016 – Payment Made June 1, 2016

Monthly Benefit Amount	Number of Recipients	Cumulative Total	Percent	Cumulative Percent
$ 0 – 499	8,861	8,861	13.97%	13.97%
$ 500 – 999	6,524	15,385	10.28%	24.25%
$ 1,000 – 1,499	6,567	21,952	10.35%	34.60%
$ 1,500 – 1,999	8,312	30,264	13.10%	47.70%
$ 2,000 – 2,499	8,919	39,183	14.06%	61.76%
$ 2,500 – 2,999	7,784	46,967	12.27%	74.03%
$ 3,000 – 3,499	5,336	52,303	8.41%	82.44%
$ 3,500 – 3,999	3,412	55,715	5.38%	87.82%
$ 4,000 – 4,499	2,273	57,988	3.58%	91.40%
$ 4,500 – 4,999	1,656	59,644	2.61%	94.01%
$ 5,000 – 5,499	1,221	60,865	1.92%	95.93%
$ 5,500 – 5,999	789	61,654	1.24%	97.17%
$ 6,000 – 6,499	522	62,176	0.82%	97.99%
$ 6,500 – 6,999	392	62,568	0.62%	98.61%
$ 7,000 – 7,499	255	62,823	0.40%	99.01%
$ 7,500 – 7,999	208	63,031	0.33%	99.34%
$ 8,000 – 8,499	145	63,176	0.23%	99.57%
$ 8,500 – 8,999	88	63,264	0.14%	99.71%
$ 9,000 – 9,499	55	63,319	0.09%	99.80%
$ 9,500 – 9,999	40	63,359	0.06%	99.86%
$ 10,000 – 10,499	28	63,387	0.04%	99.90%
$ 10,500 – 10,999	22	63,409	0.03%	99.93%
$ 11,000 – 11,499	14	63,423	0.02%	99.95%
$ 11,500 – 11,999	6	63,429	0.01%	99.96%
$ 12,000 – 12,499	9	63,438	0.01%	99.97%
$ 12,500 and over	11	63,449	0.02%	99.99%



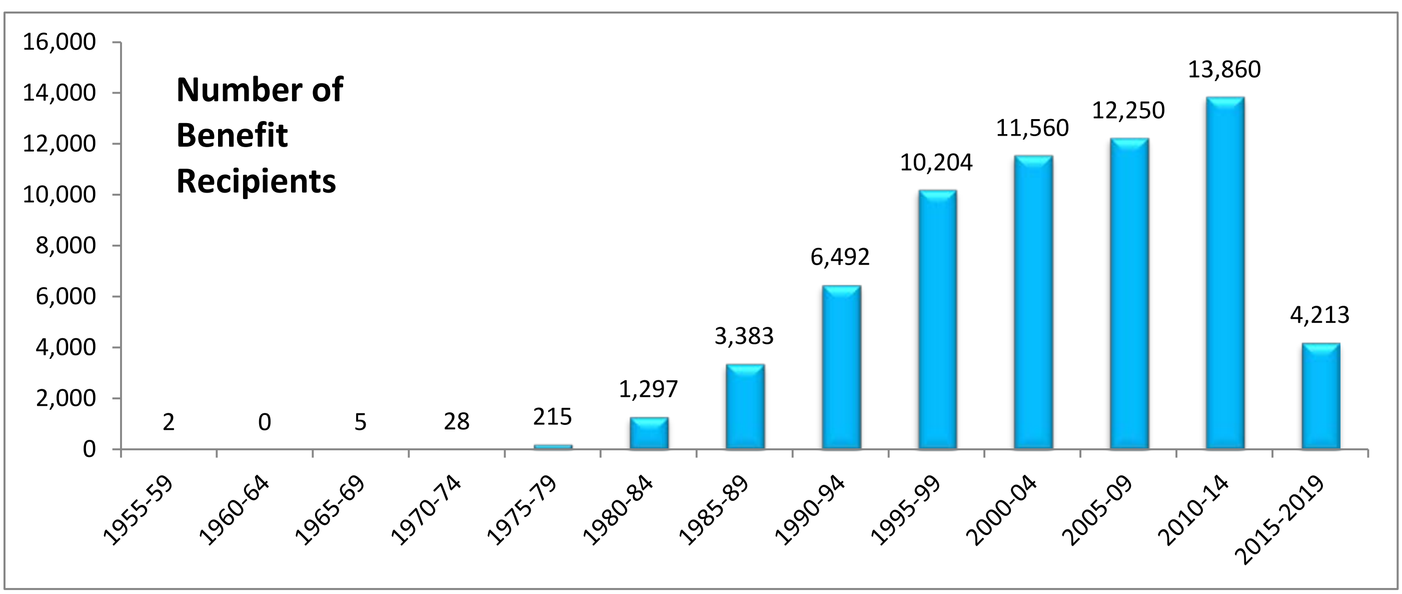
Schedule of TRA Benefit Recipients by Current Age

For Month of June 2016 – Payment Made June 1, 2016 Total Recipients: 63,449



Benefit Recipients by Effective Date of Retirement

For Month of June 2016 – Payment Made June 1, 2016 Total Recipients: 63,449



Schedule of New TRA Retirees and Initial Benefit Paid

For the Ten Fiscal Years Ending June 30, 2016

	Years of Formula Service							
						>30 (FY 2000-2008)		
Fiscal Year	<10	10-15	16-20	21-25	26-30	31-35 (FY 2009)	>35	Total
2007								
Avg. Monthly Benefit	$257	$781	$1,455	$1,932	$2,608	$3,548		$2,465
Final Average Salary	$22,846	$38,717	$50,770	$58,606	$61,332	$63,080		$55,098
Number of Retirees	256	162	183	181	190	1,238		2,210
2008								
Avg. Monthly Benefit	$284	$917	$1,471	$1,943	$2,663	$3,474		$2,524
Final Average Salary	$23,542	$42,298	$52,288	$58,998	$62,353	$65,360		$56,822
Number of Retirees	252	147	150	216	237	1,107		2,109
2009								
Avg. Monthly Benefit	$295	$885	$1,319	$1,975	$2,670	$3,463	$3,859	$2,507
Final Average Salary	$25,301	$39,270	$50,616	$59,550	$63,268	$66,179	$69,949	$56,972
Number of Retirees	285	139	160	180	223	793	257	2,037
2010								
Avg. Monthly Benefit	$299	$919	$1,497	$1,911	$2,636	$3,447	$3,884	$2,441
Final Average Salary	$24,488	$43,105	$54,513	$60,302	$64,611	$67,443	$70,941	$57,729
Number of Retirees	326	162	205	224	276	733	323	2,249
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
Avg. Final 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

Schedule of TRA Benefit Recipients by Type

For Month of June 2016 – Payment Made June 1, 2016

Monthly Benefit Amount				Number of Recipients	Regular	Type of Retirement Disability	Beneficiary
$	0	–	1,000	15,398	13,870	158	1,370
$	1,001	–	2,000	14,885	13,239	181	1,465
$	2,001	–	3,000	16,704	15,339	138	1,227
$	3,001	–	4,000	8,752	8,095	47	610
$	4,001	–	5,000	3,914	3,575	13	326
$	5,001	–	6,000	2,004	1,822	0	182
$	6,001	–	7,000	912	809	0	103
$	7,001	–	8,000	462	409	1	52
$	8,001	–	9,000	234	210	0	24
$	9,001	–	10,000	94	87	0	7
$	10,001	–	11,000	51	45	0	6
$	11,001	–	12,000	19	17	0	2
$	12,001	–	13,000	13	12	0	1
$	13,001	–	14,000	6	4	0	2
$	14,001	–	15,000	0	0	0	0
$	15,001	–	16,000	1	1	0	0
$	16,001		and over	0	0	0	0
			Totals:	63,449	57,534	538	5,377

TRA Membership Data

June 30, 2016

Distribution of Active Members*

Average Earnings in Dollars

Years of Service as of June 30, 2016**

Age	<3**	3-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 +	Total
<25	2,449	57									**2,506**
Avg. Earnings	28,610	43,335									**28,945**
25-29	4,545	3,042	1,492	1							**9,080**
Avg. Earnings	32,508	43,989	48,790	69,102							**39,034**
30-34	2,370	1,800	5,037	1,393							**10,600**
Avg. Earnings	32,385	44,912	52,374	62,442							**47,960**
35-39	1,857	994	2,643	4,748	1,367						**11,609**
Avg. Earnings	29,484	47,432	53,193	64,978	73,654						**56,137**
40-44	1,463	680	1,436	2,096	4,398	817					**10,890**
Avg. Earnings	25,878	46,910	53,400	63,740	73,809	79,048					**61,454**
45-49	1,254	616	1,291	1,521	2,591	3,638	648				**11,559**
Avg. Earnings	23,899	43,295	51,681	62,112	72,128	77,723	80,427				**63,984**
50-54	941	434	960	1,112	1,511	1,965	2,399	626	1		**9,949**
Avg. Earnings	21,451	43,328	48,340	61,777	69,997	75,760	79,446	81,008	59,409		**65,342**
55-59	791	287	711	876	1,177	1,225	1,544	1,452	267		**8,330**
Avg. Earnings	20,456	35,699	45,257	59,547	67,996	74,055	77,632	80,073	81,017		**64,739**
60-64	620	156	380	408	713	708	686	326	389	82	**4,468**
Avg. Earnings	12,161	32,790	39,721	56,810	66,553	72,706	77,474	82,319	82,448	76,890	**60,031**
65-69	378	74	107	125	128	114	96	50	43	75	**1,190**
Avg. Earnings	6,449	16,939	25,709	57,964	59,040	76,652	81,372	80,627	98,437	89,093	**44,320**
70 +	188	23	34	15	16	13	17	13	7	23	**349**
Avg. Earnings	5,929	12,448	14,462	49,457	60,059	91,572	71,023	99,153	71,428	90,597	**28,269**
Total	**16,856**	**8,163**	**14,091**	**12,295**	**11,901**	**8,480**	**5,390**	**2,467**	**707**	**180**	**80,530**
Avg. Earnings	**27,563**	**43,924**	**50,920**	**63,088**	**71,754**	**76,454**	**78,801**	**80,719**	**82,738**	**83,726**	**56,079**

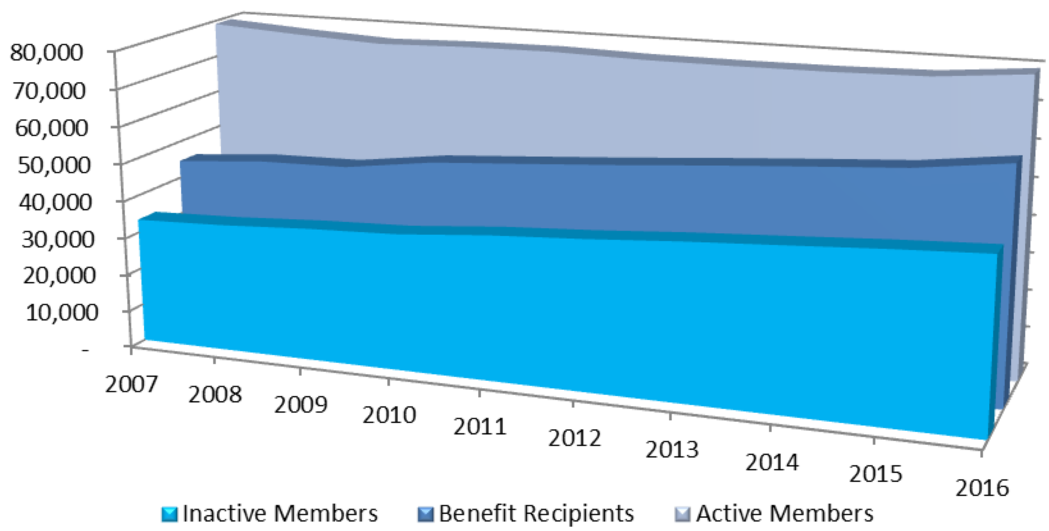
* *Active members include 4 Basic and 80,526 Coordinated members.*

** *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, 2016, as reported by the Teachers Retirement Association of Minnesota.

10-Year Summary of TRA Membership

Year Ended June 30	Active Members	Inactive Members	Benefit Recipients
2007	77,694	35,550	46,538
2008	76,515	34,283	46,981
2009	77,162	35,563	50,208
2010	77,356	36,407	51,853
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



TRA Principal Participating Employers

Fiscal year ended June 30, 2016 and June 30, 2007

	2016			2007		
Employer Unit Name	**Covered Employees**	**Rank**	**Percentage of Active Membership**	**Covered Employees**	**Rank**	**Percentage of Active Membership**
Minneapolis – Special School District #1	4,269	1	5.29%	4,217	1	5.43%
Anoka-Hennepin – ISD #11	3,152	2	3.90%	3,506 ,	2	4.51%
MnSCU (MN State Colleges & Universities)	2,687	3	3.33%	3,253	3	4.19%
Rosemount-Apple Valley-Eagan – ISD #196	2,580	4	3.20%	2,685	4	3.46%
Osseo – ISD #279	1,734	5	2.15%	1,973	5	2.54%
South Washington County – ISD #833	1,731	6	2.14%	1,454	6	1.87%
Rochester – ISD #535	1,672	7	2.07%	1,412	7	1.81%
Robbinsdale – ISD #281	1,204	8	1.49%	1,245	8	1.60%
Bloomington – ISD #271	1,090	9	1.35%	997	10	1.28%
St. Cloud	1,036	10	1.28%	–	–	–
Lakeville – ISD94	–	–	–	1,078	9	1.39%
All Other	59,586	–	73.80%	55,877		71.92%
Total	80,741		100.00%	77,694		100.00%

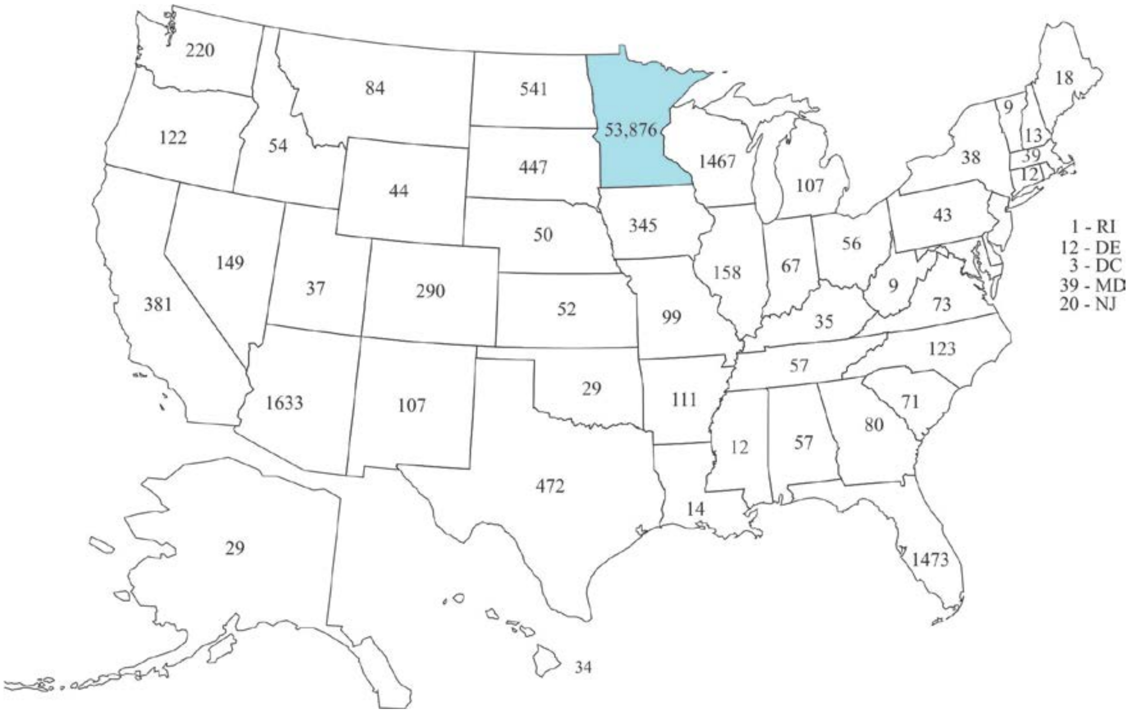
Number of TRA Employer Units

As of June 30, 2016

Year	Independent School Districts	Joint Power Units	MN State Colleges and Universities (MnSCU)	Charter Schools	State Agencies	Others	Total
2007	343	37	39	139	7	1	566
2008	344	33	39	157	5	2	580
2009	347	34	39	156	5	2	583
2010	342	37	39	154	4	2	578
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

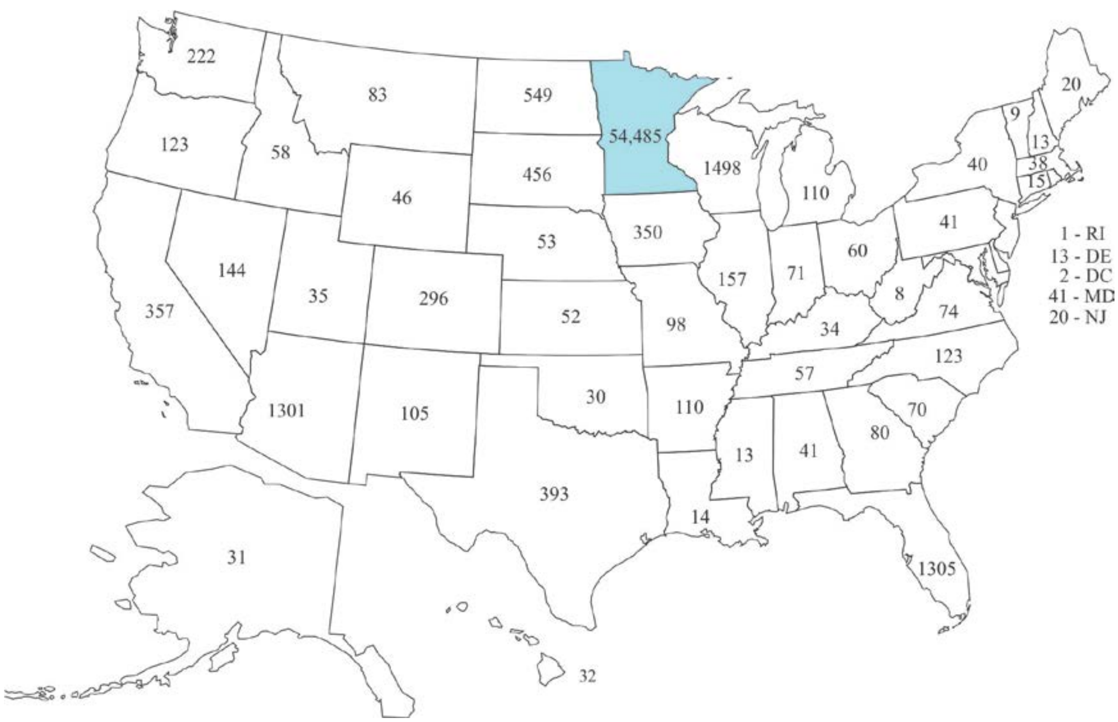
Distribution of TRA Benefits
Mailing Address of Benefit Recipient

February 1, 2016



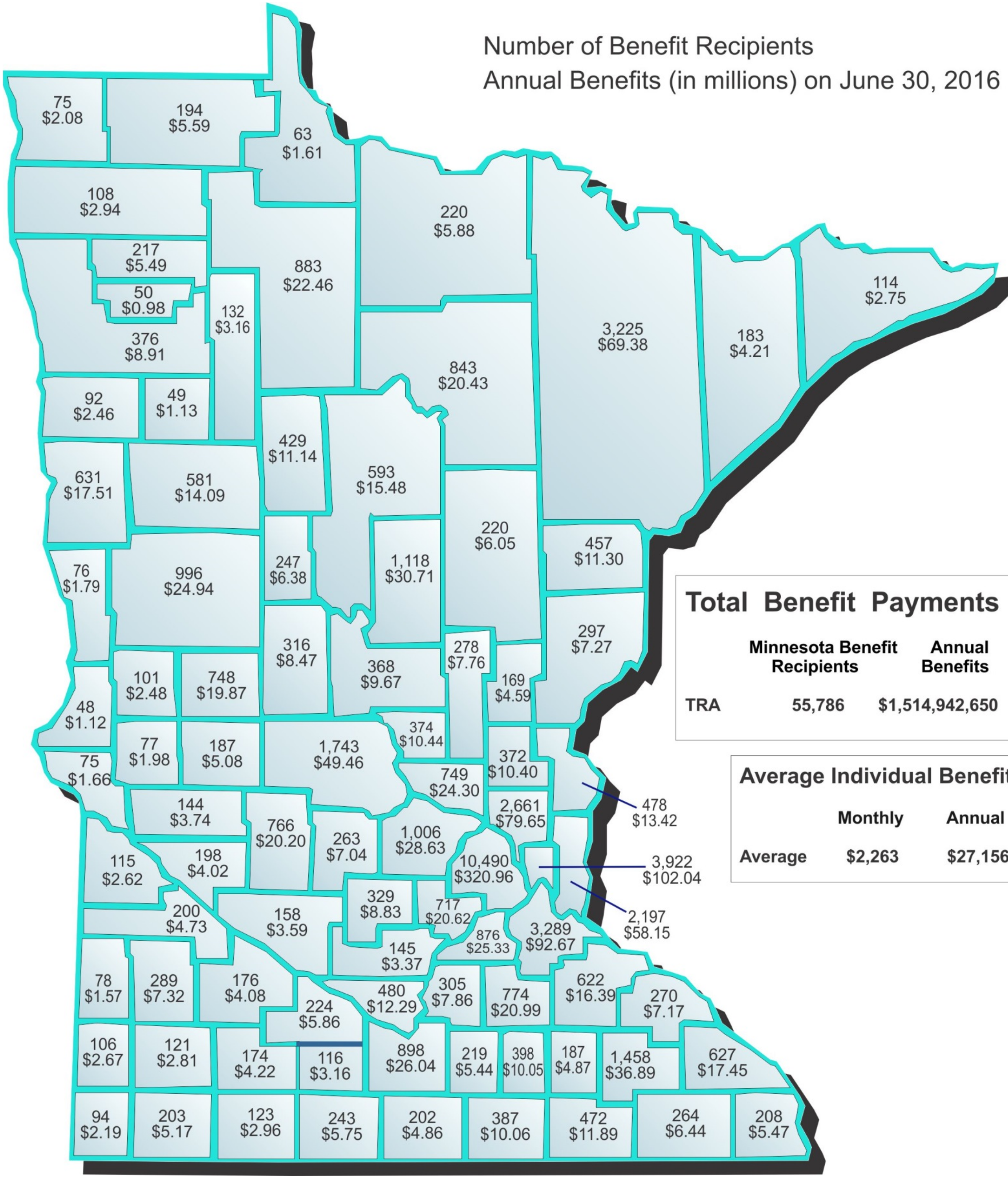
Total Recipients: 63,382
Note: 66 recipients reside outside the United States
Minnesota Recipients = 85.0 percent

June 1, 2016



Total Recipients: 63,449
Note: 65 recipients reside outside the United States
Minnesota Recipients = 85.9 percent

Annual Benefits for Minnesota TRA Benefit Recipients by County



Total Benefit Payments

	Minnesota Benefit Recipients	Annual Benefits
TRA	55,786	$1,514,942,650

Average Individual Benefit

	Monthly	Annual
Average	$2,263	$27,156

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

As of June 30, 2016

County	Members	Annual Benefit
Aitkin	220	$ 6,048,774
Anoka	2,661	$ 79,648,195
Becker	581	$ 14,092,517
Beltrami	883	$ 22,455,782
Benton	374	$ 10,439,147
Big Stone	75	$ 1,662,548
Blue Earth	898	$ 26,043,737
Brown	224	$ 5,858,960
Carlton	457	$ 11,296,744
Carver	717	$ 20,615,190
Cass	593	$ 15,477,664
Chippewa	198	$ 4,020,399
Chisago	478	$ 13,424,823
Clay	631	$ 17,510,100
Clearwater	132	$ 3,160,263
Cook	114	$ 2,753,191
Cottonwood	174	$ 4,222,574
Crow Wing	1,118	$ 30,713,603
Dakota	3,289	$ 92,673,073
Dodge	187	$ 4,869,458
Douglas	748	$ 19,867,488
Faribault	202	$ 4,863,086
Fillmore	264	$ 6,438,229
Freeborn	387	$ 10,058,503
Goodhue	622	$ 16,390,684
Grant	101	$ 2,481,598
Hennepin	10,490	$ 320,960,961
Houston	208	$ 5,469,813
Hubbard	429	$ 11,143,142
Isanti	372	$ 10,404,243
Itasca	843	$ 20,427,061
Jackson	123	$ 2,955,964
Kanabec	169	$ 4,586,962
Kandiyohi	766	$ 20,204,886
Kittson	75	$ 2,077,466
Koochiching	220	$ 5,878,916
Lac Qui Parle	115	$ 2,619,652
Lake	183	$ 4,212,483
Lake of the Woods	63	$ 1,609,106
Le Sueur	305	$ 7,860,209
Lincoln	78	$ 1,566,767
Lyon	289	$ 7,318,245
Mahnomen	49	$ 1,129,740
Marshall	108	$ 2,939,326

County	Members	Annual Benefit
Martin	243	$ 5,751,964
McLeod	329	$ 8,829,006
Meeker	263	$ 7,043,788
Mille Lacs	278	$ 7,756,860
Morrison	368	$ 9,671,253
Mower	472	$ 11,890,784
Murray	121	$ 2,814,124
Nicollet	480	$ 12,291,762
Nobles	203	$ 5,171,661
Norman	92	$ 2,462,765
Olmsted	1,458	$ 36,886,392
Otter Tail	996	$ 24,941,605
Pennington	217	$ 5,489,733
Pine	297	$ 7,270,703
Pipestone	106	$ 2,668,060
Polk	376	$ 8,906,738
Pope	187	$ 5,077,153
Ramsey	3,922	$ 102,044,439
Red Lake	50	$ 981,262
Redwood	176	$ 4,075,045
Renville	158	$ 3,590,990
Rice	774	$ 20,989,433
Rock	94	$ 2,185,468
Roseau	194	$ 5,593,370
Saint Louis	3,225	$ 69,376,080
Scott	876	$ 25,333,818
Sherburne	789	$ 24,300,747
Sibley	145	$ 3,374,821
Stearns	1,743	$ 49,463,872
Steele	398	$ 10,051,592
Stevens	77	$ 1,983,934
Swift	144	$ 3,735,184
Todd	316	$ 8,474,859
Traverse	48	$ 1,123,172
Wabasha	270	$ 7,174,032
Wadena	247	$ 6,378,563
Waseca	219	$ 5,441,427
Washington	2,197	$ 58,148,075
Watonwan	116	$ 3,155,694
Wilkin	76	$ 1,786,090
Winona	627	$ 17,453,905
Wright	1,006	$ 28,625,480
Yellow Medicine	200	$ 4,725,671
GRAND TOTAL	**55,786**	**$ 1,514,942,650**

Projected TRA Benefit Payments

Fiscal Year Ended June 30, 2016

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, 2016. The Retirees column shows benefits expected to be paid to all other members. This includes those who, as of July 1, 2016, 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
2017	$ 36,128	$ 1,735,784	$ 1,771,912
2018	89,023	1,715,616	1,804,639
2019	141,497	1,703,540	1,845,037
2020	199,409	1,691,724	1,891,133
2021	260,926	1,680,079	1,941,006
2022	323,898	1,668,289	1,992,187
2023	387,780	1,655,638	2,043,418
2024	451,332	1,641,846	2,093,178
2025	515,099	1,626,543	2,141,643
2026	581,481	1,608,810	2,190,291
2027	652,439	1,589,487	2,241,925
2028	729,470	1,567,328	2,296,798
2029	814,342	1,542,707	2,357,049
2030	908,258	1,514,335	2,422,593
2031	1,012,540	1,482,966	2,495,506
2032	1,127,561	1,448,928	2,576,489
2033	1,253,413	1,411,792	2,665,205
2034	1,388,799	1,371,570	2,760,370
2035	1,532,763	1,329,520	2,862,283
2036	1,684,765	1,284,186	2,968,951
2037	1,844,745	1,236,310	3,081,055
2038	2,010,539	1,185,400	3,195,939
2039	2,181,069	1,130,774	3,311,843
2040	2,358,066	1,074,368	3,432,433
2041	2,541,841	1,015,740	3,557,580

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.

Plan Statement

TRA Plan Statement

June 30, 2016

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 city of St. Paul or by the University of Minnesota) are required to be members of TRA.

Teachers employed by Minnesota State Colleges and Universities (MnSCU) may elect TRA coverage within one year of their eligible employment. Newly-tenured MnSCU 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 college or university 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 MnSCU 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 MnSCU 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. Turnover 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 11.5 percent of their annual salary, while Coordinated Plan members (coordinated with Social Security coverage) contribute 7.5 percent of their annual salary.

Employer Contributions

Local school districts and other TRA-covered employer units provide contributions of 11.5 percent of total salary for members in the Basic Plan and 7.5 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.

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 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, a money purchase annuity equal to the actuarial equivalent of 220.00 percent of the member's accumulated deductions plus interest thereon.

Effective July 1, 2015, the actuarial reduction factors for retirement before Normal Retirement Age will be modified for members first hired prior to July 1, 1989. The actuarial reductions will be based on a statutory definition rather than actuarial equivalence factors. The factors will be phased-in over a five-year period ending June 30, 2020.

Members who reach age 62 with 30 years of service are eligible for a special group of reduction factors. The following example illustrates how these special reduction factors will be applied to an eligible person of the normal retirement age of 65:

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	43.56%	Age 61	18.96%
Age 56	39.98%	Age 62	13.68%
Age 57	36.66%	Age 63	8.76%
Age 58	33.59%	Age 64	4.21%
Age 59	30.75%	Age 65	0.00%
Age 60	24.65%		

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) are 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.

Effective July 1, 2015, the actuarial reduction factors for retirement before Normal Retirement Age will be modified. The actuarial reduction will be based on a statutory definition rather than actuarial equivalence factors. The factors will be phased-in over a five-year period ending June 30, 2020.

Reduction factors for members of the normal retirement age of 66 first hired from July 1, 1989 through June 30, 2006, or 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%

Reduction factors for members of the normal retirement age of 66 first hired from July 1, 1989 through June 30, 2006, or who do not reach age 62 with 30 years of service credit:

Age 55	51.55%	Age 61	24.65%
Age 56	47.59%	Age 62	18.96%
Age 57	43.90%	Age 63	13.68%
Age 58	40.46%	Age 64	8.76%
Age 59	37.28%	Age 65	4.21%
Age 60	30.75%	Age 66	0.00%

Reduction factors for members of the normal retirement age of 66 first hired on or after July 1, 2006, or 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%

Reduction factors for members of the normal retirement age of 66 first hired on or after July 1, 2006, or who do not reach age 62 with 30 years of service credit:

Age 55	54.08%	Age 61	26.46%
Age 56	50.08%	Age 62	20.53%
Age 57	46.30%	Age 63	14.93%
Age 58	42.74%	Age 64	9.65%
Age 59	39.38%	Age 65	4.68%
Age 60	32.74%	Age 66	0.00%

Basic Members (Former MTRFA)

TRA has 28 active and 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, 2016, TRA had six 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: 2.0 percent
Members hired on or after July 1, 2006	Prior to July 1, 2012: 2.5 percent After July 1, 2012: 2.0 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
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 current Minnesota statute, the annual post-retirement increase is 2.0 percent. Once the TRA Fund reaches a market value funding ratio of 90 percent for two consecutive years, the annual post-retirement increase would be increased to 2.5 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 a post-retirement increase of 2.0 percent.
- 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 5 percent interest compounded annually if termination occurred before May 16, 1989, and 6 percent interest compounded annually if termination occurred on or after May 16, 1989. Since July 1, 2011, all account balances accrue interest at a rate of 4 percent annually, regardless of date of termination.

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. If a member has more than two years of refunded service, they may repay a minimum portion, which is at least 1/3 of the total service credit period for all refunds previously taken.

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.

This page intentionally left blank.

Teachers Retirement Association

60 Empire Drive, Suite 400
Saint Paul, Minnesota 55103-4000
651.296.2409
800.657.3669
800.627.3529 TTY