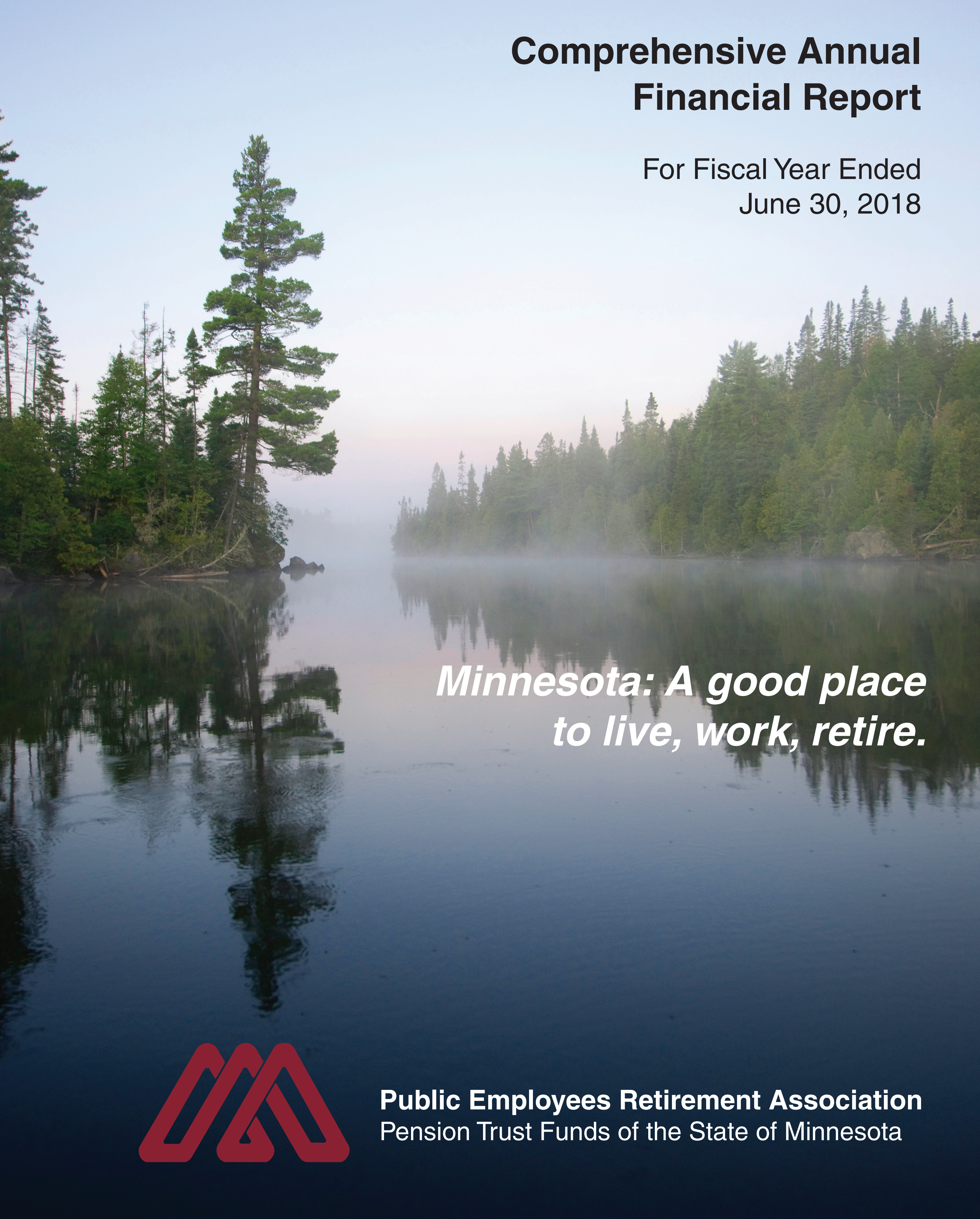

Comprehensive Annual Financial Report

For Fiscal Year Ended
June 30, 2018

Minnesota: A good place to live, work, retire.

Public Employees Retirement Association
Pension Trust Funds of the State of Minnesota

About the Cover

Minnesota ranks among the best nationwide

Life in Minnesota is good. As Minnesotans we realize what many national studies have confirmed: our state is a good place to work, live, and raise families.

Minnesota has had the honor of ranking in the top states in our nation. In a recent study, U.S. News and World Report named Minnesota the second best state in the nation. The study cited quality of life and opportunities available in Minnesota. In addition to ranking second overall, Minnesota also ranked in the top 10 for quality of life, opportunity, infrastructure, health care, and is the home of some of the lowest poverty rates in the country, along with the most employment equality between women and men.

Fiscal responsibility and meeting budgetary obligations are hallmark traits of the states that rank the highest in the U.S. News and World Report list. Of the 10 highest ranking states on this list, seven have pension systems with greater than average funding. Conversely, a review of Standard and Poor's ratings for all states show that states with poorly funded pension systems invariably have the lowest bond ratings. In Minnesota, passage of retirement legislation was cited by S&P as a factor in its decision to upgrade Minnesota's rating this past July to the highest category.

Retirement legislation adopted in 2018 made our pension plans even more sustainable. It was significant. It was the first retirement bill signed into law since 2015. The 2018 bill is an important step toward improving funding of Minnesota's public pension plans. For PERA, the legislative changes impact the funding projections for the plans we administer.

We can now report that the three defined benefit plans—the General Plan, Police & Fire Plan, and Correctional Plan—are expected to reach full funding within 20 years. We are proud of the fact that we are the only public pension plans in the State that can make this claim. The focus of the legislative changes was sustainability. And, the bill accomplishes that by reducing the State's pension liabilities by $3.4 billion immediately with an additional estimated reduction of $2.7 billion recognized over the next 30 years.

Our Board of Trustees has a history of being proactive in proposing legislative changes to maintain financially strong retirement plans. And, the Board also wants to make decisions and take action that align with our vision of the best pension policies.

As PERA members, we should be proud of the contributions we make to our state. We contribute a vital role in the economic health and condition of our state. PERA provides secure retirement benefits to almost 103,000 Minnesotans totaling $1.8 billion. Retirees spend their pension benefits in every community around the state.

PERA's Board of Trustees will continue to fulfill our mission statement to administer and promote sustainable retirement plans and provide services that our members value and help continue to make Minnesota a great place to live.

Public Employees Retirement Association

Pension Trust Funds of the State of Minnesota

Comprehensive Annual Financial Report

For the Fiscal Year Ended June 30, 2018

Executive Director

Doug Anderson

Prepared by PERA Finance, Executive, and Stakeholder Communications and Learning Divisions.

Member of Government Finance Officers Association of the United States and Canada

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TOP STATE FOR BUSINESS

Minnesota is America's #3 Best State for Business in 2017, according to a report released by CNBC. Minnesota moved into the third spot this year, after placing fourth in 2016 and coming in first as America's Top State for Business in 2015.

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Achievement Award

Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

Public Employees Retirement Association of Minnesota

For its Comprehensive Annual Financial Report for the Fiscal Year Ended

June 30, 2017

Executive Director/CEO

The Government Finance Officers Association (GFOA) recognizes public retirement systems that meet its rigorous reporting standards with its annual Certificate of Achievement for Excellence in Financial Reporting. It is the highest form of recognition for accounting and financial reporting in the public pension sector. PERA received this award for the 2017 Comprehensive Annual Financial Report.

December 14, 2018

Dear Members, Annuitants, Beneficiaries and Governmental Employers:

I am pleased to present the Public Employees Retirement Association (PERA) *Comprehensive Annual Financial Report* (CAFR) for the fiscal year ended June 30, 2018. The report provides financial, investment, actuarial, statistical and other related information about PERA and the funds it administers. Responsibility for the accuracy and completeness of the report rests with PERA.

The CAFR reports much good news for PERA's members. PERA is financially strong, our financial variables have been trending favorably, and the legislation passed in FY2018 has positioned us to build on our progress-to-date to have our plans fully funded well before the statutorily required funding date of June 30, 2048. As of June 30, 2018, the cost-sharing, defined benefit plans are reporting a combined fiduciary net position of $30.7 Billion, which is an increase of approximately $2.1 Billion or about 7.4 percent from last year. Fiduciary net position represents the net assets that are available to pay benefits to our retirees and their beneficiaries. This vigorous growth in our net position was propelled by our second year of very strong returns on our investments with the State Board of Investment (SBI). During FY2018 our investments earned a return of approximately 10.3 percent versus our statutorily assumed rate of return of 7.5 percent. Because of our strong investment income, our actuaries reported that the ratio of the value of our assets versus the estimated accrued liability for payments to members (funding ratio) increased in all three cost-sharing plans.

At the end of FY2018, the funding status of the three cost-sharing plans was as follows:

Fiscal Year End 2018 Funding in PERA's Cost-sharing Pension Plans

	General Plan	Police and Fire Plan	Correctional Plan
Based on actuarial (smoothed) asset value	78.0%	87.1%	95.6%
Based on market value	79.5%	88.8%	97.6%
Expected full funding date	2039	2035	2025
Statutory full funding date	2048	2048	2048

We believe our efforts over the past year have been consistent with PERA's mission to administer and promote sustainable retirement plans and provide services that our members value. During FY2018 the Board recommended and the legislature approved a variety of steps, most of which will be implemented over time, all of which either contribute to the sustainability of the plans or more equitably distribute benefits to our members. One change fully incorporated in this year's financial results was a change in the assumed rate of return on investments. In FY2018 the legislature revised the rate of return assumption to 7.5 percent from 8.0 percent. If only the return rate assumption had changed, then our funding status would have declined due to the conservative (higher) estimate of liabilities. However, because our actual rate of return was significantly higher than the assumed rate, and because of the other plan changes that were part of the 2018 pension bill, our funding status improved.

Like many pension plans, our year-to-year results are dependent upon investment income. Investment income is volatile: to paraphrase financier J.P. Morgan, the only thing we can depend on in the financial markets is that they will fluctuate. As trustees of the association it is our fiduciary duty to ensure the protection and furtherance of the interests of our members, annuitants, and beneficiaries. Therefore, we will continue to monitor the condition and direction of the funds and recommend changes when necessary to make sure PERA's pension plans are sustained in the future.

Kathryn A. Green

Kathryn A. Green
President
PERA Board of Trustees

December 14, 2018

Board of Trustees
Public Employees Retirement Association
of Minnesota
60 Empire Drive, Suite 200
St. Paul, Minnesota 55103

Dear President and members of
PERA Board of Trustees

On behalf of the management and staff of the PERA, it is our pleasure to present the Public Employee Retirement Association's *Comprehensive Annual Financial Report* (CAFR) for the fiscal year ended June 30, 2018. The CAFR should provide useful information for our stakeholders in making a wide variety of decisions concerning the certainty, amount, and timing of PERA's cash flows.

Management is responsible for the completeness and reliability of the information in this report. The following statements have been prepared in conformity with accounting principles generally accepted in the United States of America. The statements also comply with the reporting requirements of *Minnesota State Statutes* 356.20. We believe the enclosed financial statements and disclosures are fairly presented in all material respects. We believe that PERA's internal accounting controls are sufficient to provide reasonable assurance regarding the safekeeping of the Association's assets and the fair presentation of the financial statements and related schedules. The Association's financial reports are prepared on the accrual basis of accounting.

The Office of the Legislative Auditor has issued an unmodified opinion on the Public Employees Retirement Association's *Statement of Fiduciary Net Position* as of June 30, 2018 and the related *Statement of Changes in Fiduciary Net Position* for the fiscal year then ended. The independent auditor's report is found at the front of the *Financial Section* of this report.

Management's Discussion and Analysis (MD&A) follows the independent auditor's report to provide a narrative introduction, overview, and analysis of PERA's basis financial statements. The MD&A complements this letter of transmittal and should be read in conjunction with it.

Overview of the Association:

PERA was established in 1931 by the Minnesota State Legislature "to provide for the retirement of their members and to provide funds for the beneficiaries of members in the event of death of a member" (*Minnesota State Statutes*—MSS—356.001). PERA is a pension trust fund of the State and "must be maintained for the exclusive benefit of the members and the beneficiaries of the members" (Ibid.)

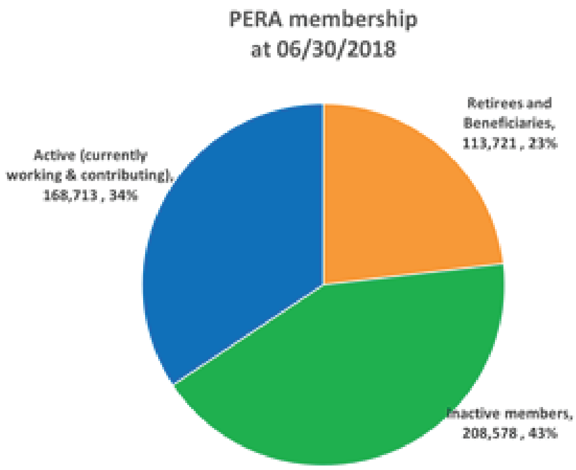
PERA's mission is to:
- Administer and promote sustainable pension plans

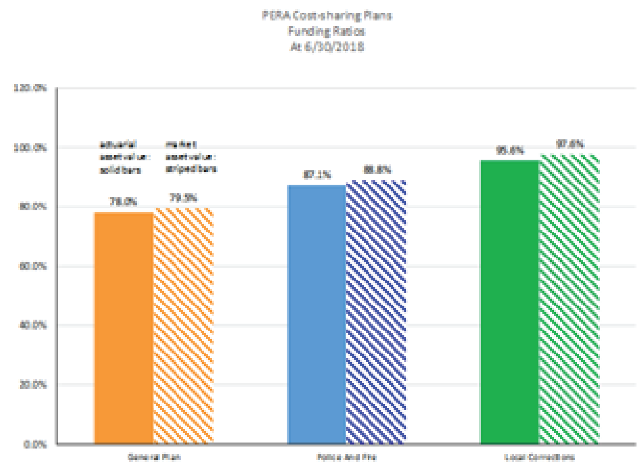
And
- Provide services that our members value

PERA administers:
- Three cost-sharing, multiple employer, defined benefit plans: The General Employees Plan; Police and Fire Plan; and Correctional Plan.
- One agent, multiple employer, defined benefit plan: the State Volunteer Firefighter Retirement Plan, and
- One Defined Contribution Plan.

PERA also serves in an administrative agent for local government entities that establish a postemployment benefit fund or a long-term equity investment account with the State Board of Investment.

More than 2,000 local governmental units participate in at least one of the cost-sharing plans. Combined, the three cost sharing plans covered more than 491,000 members (employees of the participating governmental units) distributed as shown in the accompanying chart.





In addition, there were a total of 4,093 volunteer firefighters from 159 fire departments covered by the State Volunteer Firefighter agent plan at FYE2018.

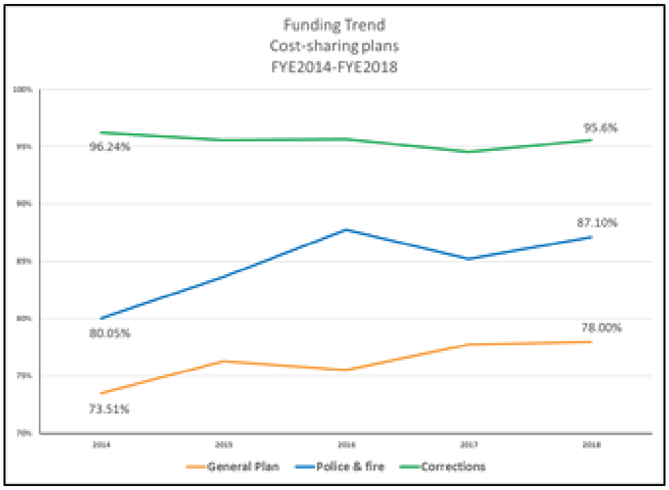
PERA provides a variety of services to its members including but not limited to, individual benefit determinations, personal benefit statements, access to preretirement group counseling, and individual retirement benefit counseling. Members can also use the online MY PERA system to check their total accumulated contributions and service credits and use the benefit calculator to estimate their retirement benefits at various ages or dates. We provide educational videos and specialized publications with information on specific topics of interest to members via our website. PERA also staffs a call center from which members and other stakeholders can access information and receive immediate responses to questions.

Funding:

Assessing the long-term sustainability of PERA's retirement plans requires using both financial and actuarial information. The most common measure of pension plans' financial health is the "funding ratio" The funding ratio is most commonly defined as an asset value divided by the actuarial accrued liability. At the end of fiscal year 2018, the ratio of actuarially valued assets to liabilities of the General Employees Fund was 78.0 *percent*. For the Police and Fire Fund and the Correctional Fund, the ratios were 87.1 *percent* and 95.6 *percent,* respectively. The actuarial value of assets reflects smoothing of the previous five years of asset gains and losses. When measured on a market value of asset basis, the respective funding ratios were slightly higher at 79.5 *percent*, 88.8 *percent*, and 97.6 *percent*.

All of the above ratios were determined using the 7.5 *percent* long-term investment return assumption defined by statute for funding purposes. PERA's historical funding ratios on an actuarial value of assets basis are shown in the *Schedule of Funding Progress* in the *Actuarial Section* of the report.

The *level* of plan funding is important. However, the *trend* of the ratio over time is also necessary for a full understanding of plan sustainability. Over the past five years, the General Employees Plan and the Police and Fire Plan have seen almost uninterrupted increases in their funding ratios. The funding trend in the other cost-sharing plan, the Correctional Plan, has remained relatively flat but at a very high level.



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Investments

In accordance with *Minnesota Statutes*, Section 353.06, PERA's financial assets are invested by the Minnesota State Board of Investment (SBI). All investments undertaken by SBI are governed by the common law prudent person rule and other standards codified in Chapter 11A of the *Minnesota Statutes*. SBI is comprised of the state's elected officers: Governor Mark Dayton; State Auditor Rebecca Otto; Secretary of State Steve Simon; and, State Attorney General Lori Swanson.

SBI appoints a 17-member Investment Advisory Council (IAC) to advise SBI on asset allocation and other policy matters relating to investments. The IAC also advises SBI on methods to improve the rate of return while assuring adequate security of the assets under management. PERA's executive director is a standing member of the IAC. All proposed investment policies are reviewed and discussed in detail by the full IAC before they are presented to SBI for action.

SBI has one overriding responsibility in the management of the pooled pension funds: to ensure that sufficient funds are available to finance promised retirement benefits. Within this context, SBI has established a long-term investment objective to outperform a composite market index weighted to reflect the long-term asset allocation policy. Performance is measured net of all fees and costs to assure SBI's focus is on true net return. For the year ended June 30, 2018, the Combined Funds produced a 10.3 *percent* rate of return. The Combined Fund's 3-year annualized rate of return at June 30, 2018 was 8.3 *percent*, its 5-year rate of return was 9.5 *percent*, and its 10-year rate of return was 7.8 *percent*. In the one-, three-, five-, and ten-year timeframes, SBI outperformed the assumed rate of return.

Economic Conditions and Outlook

Like most public pension funds, PERA is highly dependent upon investment earnings. Annual contributions are less than annual benefit payments so growth of plan assets to pay future benefits is dependent upon investment returns. The past two years have seen vigorous growth in the equity markets and PERA's trust funds have benefitted from that growth. However, it is unlikely the recent level of growth will continue. As investment returns revert to their long-term mean, PERA will have to carefully consider the ratio of risk to return on investments. It is possible that in the future the Board may wish to consider revisiting contribution rates.

During FY2018, the Minnesota State Legislature reduced the expected rate of return on PERA's plan assets from 8 *percent* to 7.5 *percent*. Reducing the expected rate of return caused the actuarial value of future benefits to increase. On the other hand, the lower assumed rate of return in conjunction with other plan changes passed by the legislature reduced the incentive to pursue higher risk/higher return assets to stay on track for full funding in a reasonable amount of time.

Legislative and other Strategic initiatives:

In FY2018, the State Legislature passed the 2018 Omnibus Pension Bill that included a wide variety provisions that add to the sustainability of PERA's pension plans. The changes included the following:

Plan	Funding adjustments	Benefit adjustments
General Employees	No change -- i.e. no change in contributions as *percent* of pay for either employees (members) or employers	• Phase out augmentation subsidy for early retirements • Reduce interest rate on refunds from 4 *percent* to 3 *percent* • Post-retirement adjustments tied to inflation and capped at 1.5 *percent*
Police & Fire	• $4.5 million direct aid from State in FY19 and FY20 and $9 million/year thereafter until full funding • Phased increase in contribution rates (1 *percent* for employees; 1.5 *percent* for employers)	• Post-retirement increases fixed at 1 *percent*
Correctional	No change	• Post-retirement adjustments tied to inflation and capped at 2.5 *percent* unless plan funding drops below 80 *percent* for one year or 85 *percent* for two years.

The net financial result of the changes in the FY2018 bill is to put all three cost-sharing plans on a trajectory to be fully-funded well before their statutory full funding date of 2048.

One significant effort PERA began in FY2018 and which is continuing in FY2019 is to locate inactive members, and particularly non-vested inactive members to advise them of their rights to withdraw their employee contributions. This is a particularly valuable service for the more than 140,000 terminated-but-not-vested members because it will allow them to move their funds into Individual Retirement Accounts or other retirement vehicles. It will help prevent inadvertent abandonment of accounts by members who have simply forgotten they have refundable balances.

In Fiscal 2018, the Board and entire staff of PERA engaged in strategic planning. The Board identified our various stakeholder groups and the reasonable expectations (needs) that PERA should meet for each group. The staff worked to identify and the variables that allow PERA to create successful outcomes for stakeholders ("drivers") and the variables that hinder producing successful results ("limits").

PERA staff and management identified risk intelligence throughout the organization as the principal driver of success. PERA scheduled two projects to enhance risk intelligence for FY2019:

- Updating and testing a continuation of operations (disaster recovery) plan, and,
- Assessing our Information Technology and related business processes to identify and mitigate risks to member data and, to ensure the availability of critical services, and enhance on-line services and security.

PERA identified information sharing and accountability (or the lack thereof) as the principal limit on PERA's ability to deliver successful results for its stakeholders. Two projects are underway to enhance information sharing and accountability:

- PERA is revising reporting relationships (reorganizing) to highlight who in the organization "owns" which decisions and ensure appropriate delegation authority so that decisions are made at the right time by the right persons.
- PERA is enhancing training to inculcate new business practices with a bias for action. We anticipate this effort will reduce overhead and will lead to more being done, faster, and with fewer resources.

Awards

PERA received national recognition in pension fund administration and disclosure of financial information. The Government Finance Officers Association of the United States and Canada (GFOA) awarded a *Certificate of Achievement for Excellence in Financial Reporting* to PERA for its CAFR for the fiscal year ended June 30, 2017.

The *Certificate of Achievement* is a prestigious national award, recognizing conformance with the highest standards for preparation of state and local government financial reports. To be awarded a *Certificate of Achievement*, a government unit must publish an easily readable and efficiently organized CAFR. This report must satisfy both generally accepted accounting principles and applicable legal requirements. A *Certificate of Achievement* is valid for one year only. We believe our current report continues to meet the *Certificate of Achievement* program's requirements, and we are submitting it to the GFOA to determine its eligibility for another certificate.

Acknowledgements

We wish to thank the Board of Trustees for their leadership and interest in conducting PERA's affairs in a progressive, fiduciarily responsible, and financially sound manner.

We wish to thank all the employees at PERA for their unrelenting daily efforts to serve the interests of our members and other stakeholders.

Respectfully Submitted,

Doug Anderson
Executive Director

Michael Hagerty
Chief Finance Officer

Luis Lugo
Chief Operating Officer

PERA Board of Trustees & Professional Consultants

Board of Trustees

Kathryn A. Green, President
Appointed School Board Representative
Trustee since April 2006
Current term expires January 2022

Paul Bourgeois
Elected General Membership Representative
Trustee since February 2011
Current term expires January 2019

Mary Falk
Appointed General Public Representative
Trustee since June 2015
Current term expires January 2019

Paul Ford
Elected Police & Fire Representative
Trustee since August 2017
Current term expires January 2019

Barb Johnson
Appointed City Representative
Trustee since January 2017
Current term expires January 2021

Leigh Lenzmeier
Appointed County Representative
Trustee since November 2010
Current term expires January 2021

Ross Arneson
Elected Retiree/Disabilitant Representative
Trustee since February 1999
Current term expires January 2019

Rebecca Otto
State Auditor
Trustee since February 2007
Current term expires January 2019

Thomas Stanley, Vice President
Elected General Membership Representative
Trustee since March 2013
Current term expires January 2019

Lori Volz
Elected General Membership Representative
Trustee since February 2015
Current term expires January 2019

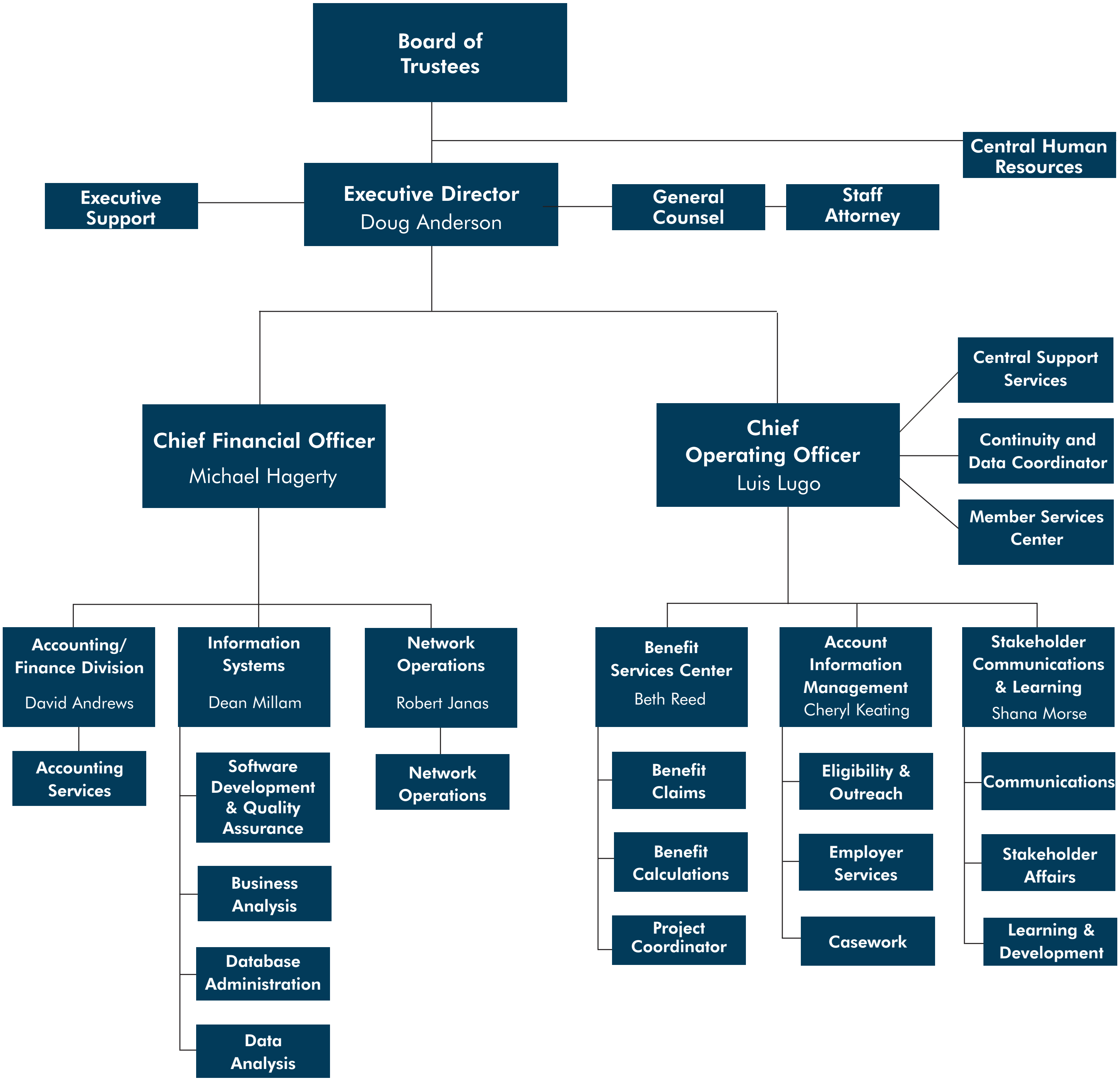
Lawrence J. Ward
Appointed Annuitant Representative
Trustee since February 2012
Current term expires January 2020

Professional Consultants

Actuary:
Gabriel Roeder Smith & Company
Auditor:
Minnesota Office of the Legislative Auditor
Clifton Larson Allen
Legal Counsel:
Minnesota Office of Attorney General
Medical Advisor:
MMRO - Managed Medical Review Organization

NOTE: PERA invests its funds in various investment pools administered by the Minnesota State Board of Investment (SBI). The SBI retains various investment advisors whose fees are paid by the pool participants, including PERA. A schedule of these advisors and PERA's share of their fees is located on page 87 in the *Investment Section* of this CAFR.

Organization Structure & Key Administrative Staff



Our Mission & Vision

PERA's mission is to administer and promote sustainable retirement plans and provide services that our members value. PERA's vision: PERA will be a recognized leader in efficient and excellent service delivery and plan management.

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BEST RUN STATE

Minnesota is the best run state in the nation, according to a study published by USA Today that cites Minnesota's strong fiscal management, low unemployment and poverty rates, above-average median household income, and the state's nearly perfect credit rating.

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

Independent Auditor's Report

Members of the Board of Trustees
Public Employees Retirement Association of Minnesota

Mr. Doug Anderson, Executive Director
Public Employees Retirement Association of Minnesota

Report on the Financial Statements

We have audited the accompanying financial statements of the Public Employees Retirement Association of Minnesota (PERA), which included the Statement of Fiduciary Net Position as of June 30, 2018, the related Statement of Changes in Fiduciary Net Position, and Notes to the Financial Statements, as listed in the Financial Section of the Table of Contents.

Management's Responsibility for the Financial Statements

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

Auditor's Responsibility

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

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal controls relevant to PERA'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 PERA'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.

Members of the Board of Trustees
Mr. Doug Anderson, Executive Director
Page 2

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Public Employees Retirement Association of Minnesota as of June 30, 2018, and the changes in financial position for the fiscal year then ended in conformity with accounting principles generally accepted in the United States of America.

Required Supplementary Information

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

Other Information Included with the Financial Statements

Our audit was conducted for the purpose of forming an opinion on the financial statements that collectively comprise PERA'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 14, 2018, on our consideration of the Public Employees Retirement Association of Minnesota'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 and results of our testing of internal controls over financial reporting and compliance and not to provide an opinion on the internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* and should be considered in assessing the results of our audit.

Chris Buse

Christopher Buse, CPA
Deputy Legislative Auditor

Tracy Gebhard

Tracy Gebhard, CPA
Audit Director

December 14, 2018
Saint Paul, Minnesota

Management Discussion and Analysis

Stakeholders of Minnesota's Public Employees Retirement Association (PERA) need information about the certainty, amount, and timing of the Agency's cash flows to make good decisions. The management of PERA offers the following Management Discussion and Analysis to help the users of our financial statements gain an understanding of PERA's overall financial condition and results of operations for the fiscal year ended June 30, 2018. The following narrative supplements the financial statements. It should be read in conjunction with the transmittal letter and notes to the statements presented elsewhere in this Comprehensive Annual Financial Report (CAFR).

Overview of PERA and its Financial Statements:

PERA is in the business of providing income security for persons who retire from local governmental units in the State of Minnesota. PERA has two primary product lines: defined benefit retirement plans and a defined contribution plan.

The defined benefit plans focus on making statutorily determined payments. All of PERA's defined benefit plans are all multiple employer plans. The plans fall into two categories: cost sharing, and agent. In the cost sharing plans, PERA pools the assets and the obligations of the participating government employers and the pooled assets can be used to pay the retirement obligations of any employer in the plan. In the agent plan, PERA pools the assets of the participating employers for investment purposes. However, a separate account is maintained for each employer. In essence, the agent plan can be thought of as a bundle of separate retirement plans with their own obligations and assets.

PERA accounts for each defined benefit plan in its own pension trust fund as follows:

Plan name	Type of Plan	Fund type
General Employees Retirement Plan	Cost sharing, multiple employer	Pension Trust
Police and Fire Plan	Cost sharing, multiple employer	Pension Trust
Correctional Plan	Cost sharing, multiple employer	Pension Trust
Statewide Volunteer Firefighter Plan	Agent, multiple employer	Pension Trust

Funding for the Statewide Volunteer Firefighter plan comes from two sources State Fire Aid derived from a tax on fire policies sold in the State and employer contributions. Sponsoring entities (usually cities) are assessed a required annual

Condensed Schedule of Fiduciary Net

	General Employees Fund
Assets	
Cash & Receivables	$46,269
Investments	21,513,315
Securities Lending Collateral	2,164,925
Capital Assets & Other	6,504
Total Assets	**$23,731,013**
Liabilities	
Accounts Payable	$7,001
Accrued Compensated Absences	959
Securities Lending Collateral	2,164,925
Bonds Payable	4,651
Total Liabilities	**$2,177,536**
Total Net Position	**$21,553,477**

contribution if State Fire Aid is insufficient to fully fund the benefit liability at the end of any given plan year. In addition, many sponsoring agencies make voluntary contributions each year.

PERA also administers one defined contribution plan that provides benefits limited to individual contributions and related earnings on the invested contributions.

Finally, PERA acts as custodial agent to account for the investments held by various entities with the State Board of Investments (SBI) to pay future Other Post-Employment Benefits (OPEB) costs. The participating entities, not PERA, are responsible for: setting and paying benefits; determining voluntary contribution amounts; ensuring withdrawals are compliant with GAAP and State Statutes; and, any related OPEB reporting requirements.

Because the financial risk to taxpayers, bond-holders, members, and their employers is centered in the cost-sharing defined benefit plans, the rest of this discussion will focus on the three cost-sharing plans.

Note 1 to the financial statements contains detailed information about each of the plans.

PERA's basic financial statements include:

1) *Statement of Fiduciary Net Position* reports, for each plan, the difference between the assets PERA holds in trust and the liabilities PERA owes third parties. Each plan is accounted for in its own fund with its own net position. Therefore, "the bottom line" of the Fiduciary Statement of Net Position ("Fiduciary net position") measures the resources PERA has available to pay retirement benefits as of the end of the fiscal year but not the aggregate pension liability owed by participating employers at that time. Fiduciary Net Position must be considered with other information to get a good understanding of the sustainability of PERA's retirement plans.

Position - Cost Sharing Plans (in thousands)

Police & Fire Fund	Correctional Fund	FY 2018 Combined Total	FY 2017 Combined Total	Change $	Change %
$22,201	$1,270	$69,740	$69,676	$64	0.1%
8,470,262	679,623	30,663,200	28,564,109	2,099,091	7.3%
852,918	68,366	3,086,209	2,953,400	132,809	4.5%
0	0	6,504	6,906	(402)	(5.8%)
$9,345,381	**$749,259**	**$33,825,653**	**$31,594,091**	**$2,231,562**	**7.1%**
$5,556	$498	$13,055	$12,475	$580	4.6%
0	0	959	970	(11)	(1.1%)
852,918	68,366	3,086,209	2,953,400	132,809	4.5%
0	0	4,651	5,328	(677)	(12.7%)
$858,474	**$68,864**	**$3,104,874**	**$2,972,173**	**$132,701**	**4.5%**
$8,486,907	**$680,395**	**$30,720,779**	**$28,621,918**	**$2,098,861**	**7.3%**

2) *The Statement of Changes in Fiduciary Net Position* reports the changes to the PERA's net position that happened during the year. Additions to net position include contributions from members, members' employers, and others as well as the net appreciation in the fair value of the investment portfolio. Deductions from net position during the year include benefit payments and administrative expenses.

3) *Notes to the Financial Statements* are an integral part of the basic financial statements and provide additional information that is necessary for understanding the financial statements.

In addition to the basic financial statements, the following required supplementary information is found after the notes to the financial statements:

1) Schedule of Changes in Net Pension Liability and Related Ratios

2) Schedule of Contributions from Employers and Non-Employers

3) Schedule of Investment Returns

Financial Highlights:

- *Fiduciary Net Position* increased by approximately $2.1 billion (7.4%) from $28.6 billion at fiscal year-end (FYE) 2017 to $30.7 billion at FYE2018.
- Net position growth was due to investment income.

The Statement of Changes in Fiduciary Net Position reports transactions affecting Net Fiduciary Position:

- Contributions to PERA's cost-sharing plans increased by approximately $39 million (3.3%) from approximately $1.19 billion in FY2017 to approximately $1.23 billion in FY2018.

Condensed Schedule of Changes in Fi

	General Employees Fund
Additions	
Employer Contributions	$488,819
State Contributions	16,000
Member Contributions	409,423
Investment Income (Loss)	2,063,582
Other Additions	56
Total Additions	**$2,977,880**
Deductions	
Benefits	$1,470,450
Refunds of Contributions	42,589
Administrative Expenses	11,943
Total Deductions	**$1,524,982**
Increase (Decrease) in Net Position	**$1,452,898**

- Investment income, including increases in fair market value and net of expense, decreased by approximately $880 Million from approximately $3.82 billion in FY2017 to approximately $2.94 billion in FY2018. Investments earned a money-weighted rate of return of 10.3% in FY2018 versus 15.1% in FY2017
- Benefit payments (including refunds) increased approximately $80 million (4%) from $1.98 billion in FY2017 to $2.06 billion in FY2018.
- Administrative expenses increased approximately $0.5 million (approximately 4%) from $12.6 million in FY2017 to $13.1 million in FY2018.

Other currently known conditions of future significance:

- Total Pension Liability is an actuarial estimate of the present value of pension benefits already earned by government employees. In FY2018, the Total Pension Liability for PERA's cost-sharing employers increased by approximately $710 million from approximately

duciary Net Position - Cost Sharing Plans (in thousands)

Police & Fire Fund	Correctional Fund	FY 2018 Combined Total	FY 2017 Combined Total	Change $	Change %
$170,781	$17,871	$677,471	$661,706	$15,765	2.4%
9,000	0	25,000	15,000	10,000	66.7%
105,479	11,956	526,858	513,854	13,004	2.5%
813,966	62,962	2,940,510	3,820,206	(879,696)	(23.0%)
58	1	115	435	(320)	(73.6%)
$1,099,284	**$92,790**	**$4,169,954**	**$5,011,201**	**($841,247)**	**(16.8%)**
$528,468	$13,183	$2,012,101	$1,936,860	$75,241	3.9%
1,902	1,364	45,855	40,831	5,024	12.3%
886	308	13,137	12,614	523	4.1%
$531,256	**$14,855**	**$2,071,093**	**$1,990,305**	**$80,788**	**4.1%**
$568,028	**$77,935**	**$2,098,861**	**$3,020,896**	**($922,035)**	**(30.5%)**

$36.6 billion in FY2017 to approximately $37.4 billion in FY2018.

- Net Pension Liability disclosed in the notes to the statement is the Association's Total Pension Liability less Fiduciary Net Position. Although Total Pension Liability increased by $710 million, because Net Fiduciary Position (net assets) increased by $2.1 billion, PERA's Net Pension Liability decreased by approximately $1.4 billion from $8 billion in FY2017 to $6.6 billion in FY2018. Information about Total and Net Pension Liability estimates are disclosed in the notes and required supplementary information of this report.

Analysis

Over the long run, a defined benefit plan must balance cash in from contributions and investment income with cash out for benefits and expenses as expressed in the equation:

Contributions + Investment Income = Benefits Paid + Expenses

$$\underbrace{C + I}_{\text{Cash in}} \qquad \underbrace{B + E}_{\text{Cash out}}$$

During any given year, one side of the equation may be larger than the other side. Differences accumulate in the Fiduciary Net Position which is a reserve for paying future benefits.

Additions to Fiduciary net Position in FY2018:

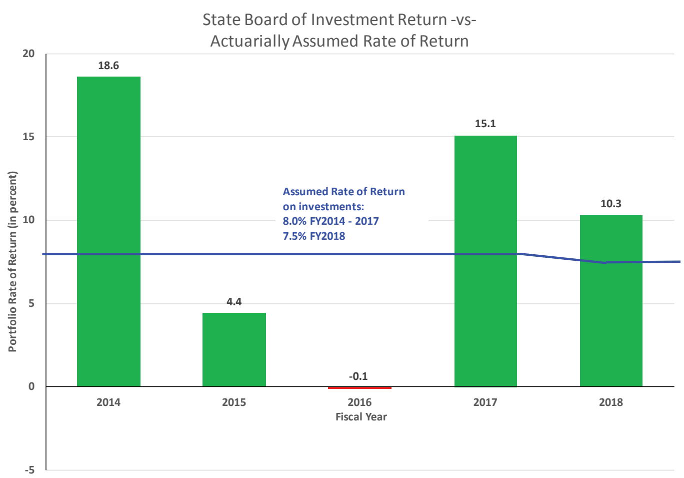
Investment income is the largest component of additions to PERA's net position. PERA's FY2018 Investment Income was approximately $2.9 Billion and represented approximately 70.5% of total additions to Fiduciary Net Position. In FY2017 investment income was approximately $3.8 Billion and represented 76% of total additions. Heavy dependence on investment income is common in pension plans. A study by the Employee Benefit Research Institute (EBRI) reported that investment earnings accounted for 71% - 82% of public pension funding.

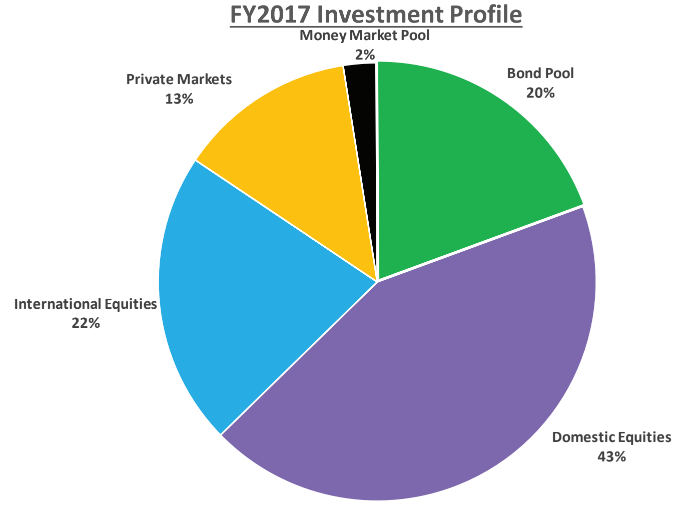
The volume of investment income for any year is a function of the effective rate of return times the volume of invested assets. The money-weighted rate of return in FY2018 was a very strong 10.3%.

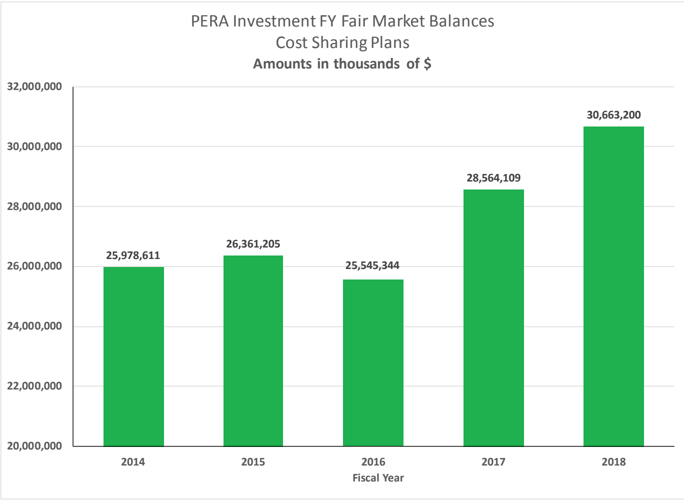
However, this is lower than the exceptionally strong money-weighted rate of return of 15.1% we enjoyed in FY2017. The rate of return times the average investment balance during the fiscal year generated approximately $2.9 Billion in investment income, most of which was retained, thus growing investments by approximately $2.1 Billion.

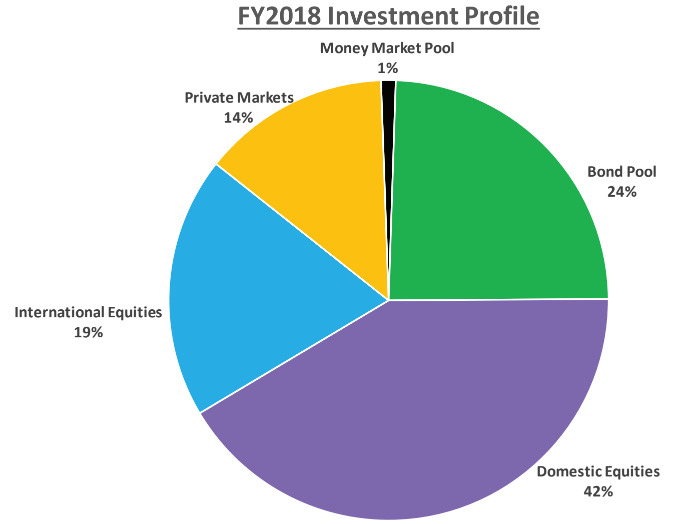
The rate of return on PERA's investments with the State Board of Investment (SBI) have exceeded the actuarially assumed rate of return in three out of the past five years. The 9.5% average rate of return for the past five years has also exceeded the assumed rate of return. In FY2018, the assumed rate of return on investments was reduced to 7.5% from 8%.

Another contributing factor to the lower rate of return in FY2018 was a change in the mix of combined investments. The changed mix de-risked the portfolio and reduced total return. At fiscal year-end 2017, domestic and international equities made up 65% of the combined portfolio while bonds accounted for 20%. At fiscal year-end 2018, equities made up 61% of the total combined investments and bonds made up 24%.









Contributions come from three sources: participating employers; covered employees; and, non-employer sources. Annual contributions to cost-sharing plans in FY2018 were approximately $1.23 billion or $39 million (about 3%) higher than FY2017 contributions of approximately $1.19 billion.

Schedule of Contributions: FY2018 versus FY2017 (in thousands)

	Employer Contributions	State Contributions	Member Contributions	Total Contributions FY 2018	Total Contributions FY 2017
General Employees Fund	$488,819	$16,000	$409,423	$914,242	$884,092
Police & Fire Fund	170,781	9,000	105,479	285,260	277,313
Correctional Fund	17,871	0	11,956	29,827	29,155
Total Contributions FY 2018	**$677,471**	**$25,000**	**$526,858**	**$1,229,329**	
Total Contributions FY 2017	$661,706	$15,000	$513,854		**$1,190,560**

One of the principal objectives of PERA's plans is stability of contributions as a percentage of payroll. Contribution rates for members and employers are set by Statute and were unchanged in FY2018 from FY2017.

Therefore, the increased total contributions in the cost-sharing plans were due almost entirely to increases in the number of covered employees and/or increased pension-eligible compensation per employee.

Schedule of Changes in Covered Members and Payroll - Multi Employer Cost Sharing Plans

	FY 2018			FY 2017			FY 2018 percent over (under) FY2017		
	Covered Payroll (in thousands)	Number of Active Employees	Average Pension-Eligible Compensation per Employee (in thousands)	Covered Payroll (in thousands)	Number of Active Employees	Average Pension-Eligible Compensation per Employee (in thousands)	Covered Payroll	Number of Active Employees	Average Pension-Eligible Compensation per Employee
General Employees Fund	$6,298,815	153,059	$41.2	$6,156,985	152,867	$40.3	2.3%	0.1%	2.2%
Police & Fire Fund	976,657	11,673	83.7	944,296	11,522	82.0	3.4%	1.3%	2.1%
Correctional Fund	205,077	3,981	51.5	200,103	3,842	52.1	2.5%	3.6%	(1.1%)
	$7,480,549	**168,713**		**$7,301,384**	**168,231**				

On a combined basis, total covered payroll grew approximately $179 million from $7.3 billion in FY2017 to approximately $7.48 Billion in FY2018. There were a combined total of 482 more active members in the three cost-sharing plans making contributions in FY2018 than in FY2017 (0.3% increase). Growth in membership accounted for approximately $27 million of the $179 million payroll growth. Growth in total per member pension-eligible compensation (wage inflation) accounted for approximately $152 million of the total covered payroll growth for the year.

Other Contributions totaling $25 million (approximately 2% of total contributions) in FY2018 are generally statutorily mandated and include contributions by the State of Minnesota to offset costs PERA incurred in the past to absorb underfunded local government retirement plans.

Deductions from Fiduciary Net Position in FY2018 (Cost Sharing Plans)

Benefit payments constitute 97% of total deductions from PERA's Fiduciary Net Position in both FY2017 and FY2018.

Schedule of Changes in Benefit Payments and Recipients - Multi Employer Cost Sharing Plans

	FY 2018			FY 2017			FY 2018 percent over (under) FY2017		
	Benefit Payments (in thousands)	Number of Benefit Recipients	Average Benefit per Recipient (in thousands)	Benefit Payments (in thousands)	Number of Benefit Recipients	Average Benefit per Recipient (in thousands)	Benefit Payments	Number of Benefit Recipients	Average Benefit per Recipient
General Employees Fund	$1,470,450	101,772	$14.4	$1,413,448	98,201	$14.4	4.0%	3.6%	0.4%
Police & Fire Fund	528,468	10,756	49.1	512,379	10,579	48.4	3.1%	1.7%	1.4%
Correctional Fund	13,183	1,193	11.1	11,033	1,085	10.2	19.5%	10.0%	8.7%
	$2,012,101	**113,721**		**$1,936,860**	**109,865**				

Annual benefit payments from cost-sharing plans in FY2018 were approximately $2.01 billion or $75 million (about 4%) higher than FY2017 payments of approximately $1.94 billion. Two factors increased benefit payments in FY2018:

1) There were 3,856 more benefit recipients in FY2018 than in FY2017 (1.7% increase). Of the $75 million increase in benefit payments, approximately $61 million was due to the increased number of persons receiving benefits.

2) Cost of living adjustments (COLA) made to retirees' benefits increased FY2018 benefit payments by approximately $14 million over FY2017's level.

Overall Financial Condition

The net fiduciary position of PERA's three cost-sharing, defined benefit plans increased from FY2017 to FY2018. Fiscal net position in all three cost-sharing plans has improved in FY2018 because of strong investment returns.

However, net fiduciary position only reflects the value of the assets held in trust less currently payable liabilities. Therefore, full understanding the sustainability of PERA's retirement plans requires an understanding of the actuarially estimated liability for future benefit payments and comparing the current level of that estimated liability with the level of net assets reported in PERA's financial statements ("funded ratio") as well as analyzing the trend of PERA's funding.

PERA's actuaries prepare two valuation reports each year for the cost-sharing, defined benefit plans: an "accounting" valuation and a "funding" valuation. The accounting valuation is to meet the requirements of the Governmental Accounting Board (GASB) standard No 67 which is meant to provide comparability and transparency of amounts reported as pension liabilities across organizations. The funding valuation is to assist the Board of Trustees to assess whether the statutorily determined contribution rates are likely to be sufficient to meet PERA's long-term obligations to pay benefits. An important measure in the accounting valuation is the net pension liability which is the difference between the net fiduciary position and the actuary's estimate of the total pension liability for all participating employers. An important measure for the funding valuation is the Unamortized Actuarially Accrued Liability which is the difference between the actuarially valued assets and the actuarially valued (pension) liability. Another significant difference between the two valuations is that the GASB valuation requires the use of the Fair Market Value of assets at the report date whereas the funding valuation uses the Board-approved funding policy to determine "market-related" asset values which represent market values that have been smoothed over a five-year period (in PERA's case).

PERA adopted GASB 67 beginning with the fiscal year ended June 30, 2014. Comparative measures of the status of PERA's funding (asset value versus pension liability) are:

Schedule of Funding Ratios

	General Employees Fund		Police & Fire Fund		Correctional Fund	
	Accounting	**Funding**	**Accounting**	**Funding**	**Accounting**	**Funding**
2018	79.5%	78.0%	88.8%	87.1%	97.6%	95.6%
2017	75.9%	77.8%	85.4%	85.2%	67.9%	94.5%
2016	68.9%	75.5%	63.9%	87.7%	58.2%	95.7%
2015	78.2%	76.3%	86.6%	83.6%	97.0%	95.6%
2014	78.8%	73.5%	87.1%	80.1%	98.4%	96.2%

As can be seen in the table above, particularly in the changes from FY2015 through FY2017, the Accounting (GASB) funding ratios are more volatile than more traditional actuarial funding ratios. The GASB funding ratios have two sources of volatility built-in: GASB valuation use the market value of assets, and GASB places different requirements on the discount rates used to value the liability for future payments. PERA reported a small reduction in invested assets in FY2016 due to a virtually 0% return during that fiscal year which is reflected very dramatically in the GASB ratio of Net Fiscal position to Total Pension Liability (shown in the "accounting" columns in the table).

Except for the Correctional Plan which is in a steady-state at virtually 100% funded, the trends in the funded status of both the General and Police and Fire plans are improving toward full funding.

Additional information about funding and actuarial results are available in the notes to the financial statements, the required supplementary information, and the actuarial section of the CAFR. However, the CAFR is not a substitute for the actuarial reports available on PERA's web-site. The actuarial valuations should be read in conjunction with this CAFR.

This financial report is designed to provide a general overview of the Minnesota Public Employees Retirement Association's finances for all interested parties. An electronic copy of this report is available at the System's website, www.MNPERA.Org. Questions or requests for additional information should be directed to PERA at: 60 Empire Drive, Suite 200, St. Paul, Minnesota, 55103-2088.

Statement of Fiduciary Net Position

As of June 30, 2018 (in thousands)

	Defined Benefit Funds		
	General Employees Fund	Police and Fire Fund	Correctional Fund
Assets			
Cash	**$4,243**	**$3,470**	**$424**
Receivables			
Accounts Receivable	40,621	18,645	839
Due from Other Funds	1,405	86	7
Total Receivables	**$42,026**	**$18,731**	**$846**
Investments at Fair Value			
U.S. Stock Actively Managed Pool	$2,276,782	$896,986	$71,898
Bond Pool	5,230,420	2,060,635	165,171
U.S. Stock Index Pool	6,661,641	2,624,494	210,368
Broad International Stock Pool	4,134,848	1,629,011	130,574
Private Markets Pool	2,976,338	1,172,591	93,990
Money Market Pool	233,286	86,545	7,622
Total Investments	**$21,513,315**	**$8,470,262**	**$679,623**
Securities Lending Collateral	**$2,164,925**	**$852,918**	**$68,366**
Net Investment in Capital Assets			
Equipment Net of Accumulated Depreciation	$132	$0	$0
Property Net of Accumulated Depreciation	6,372	0	0
Total Capital Assets	**$6,504**	**$0**	**$0**
Total Assets	**$23,731,013**	**$9,345,381**	**$749,259**
Liabilities			
Accounts Payable	$6,908	$4,669	$190
Payable to Other Funds	93	887	308
Securities Lending Collateral	2,164,925	852,918	68,366
Accrued Compensated Absences	959	0	0
Bonds Payable	4,651	0	0
Total Liabilities	**$2,177,536**	**$858,474**	**$68,864**
Net Position Restricted For Pensions	**$21,553,477**	**$8,486,907**	**$680,395**

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

Volunteer Firefighter Fund	Defined Contribution Fund	Agency Fund Other Post Employment Benefits	Total
$59	**$191**	**$937**	**$9,324**
187	104	0	60,396
1	0	0	1,499
$188	**$104**	**$0**	**$61,895**
$0	$12,261	$0	$3,257,927
40,111	3,114	155,086	7,654,537
31,161	45,280	429,639	10,002,583
12,906	3,449	0	5,910,788
0	0	0	4,242,919
4,153	5,679	51,461	388,746
$88,331	**$69,783**	**$636,186**	**$31,457,500**
$0	**$0**	**$0**	**$3,086,209**
$0	$0	$0	$132
0	0	0	6,372
$0	**$0**	**$0**	**$6,504**
$88,578	**$70,078**	**$637,123**	**$34,621,432**
$16	$34	$637,123	$648,940
0	211	0	1,499
0	0	0	3,086,209
0	0	0	959
0	0	0	4,651
$16	**$245**	**$637,123**	**$3,742,258**
$88,562	**$69,833**	**$0**	**$30,879,174**

Statement of Changes in Fiduciary Net Position

For the Fiscal Year Ended June 30, 2018 (in thousands)

	Defined Benefit Funds		
	General Employees Fund	**Police and Fire Fund**	**Correctional Fund**
Additions			
Contributions			
Employer	$488,819	$170,781	$17,871
State of Minnesota	16,000	9,000	0
Member	409,423	105,479	11,956
Total Contributions	**$914,242**	**$285,260**	**$29,827**
Investment Income			
Net Appreciation in Fair Value of Investments	$2,071,684	$817,150	$63,202
Less Investment Expense	(22,664)	(8,921)	(700)
Net Investment Income	$2,049,020	$808,229	$62,502
From Securities Lending Activities:			
Securities Lending Income	$45,132	$17,780	$1,425
Borrower Rebates	(28,853)	(11,367)	(911)
Management Fees	(1,717)	(676)	(54)
Net Income From Securities Lending	$14,562	$5,737	$460
Total Net Investment Income	**$2,063,582**	**$813,966**	**$62,962**
Other Additions	**$56**	**$58**	**$1**
Total Additions	**$2,977,880**	**$1,099,284**	**$92,790**
Deductions			
Benefits	$1,470,450	$528,468	$13,183
Refunds of Contributions	42,589	1,902	1,364
Administrative Expenses	11,943	886	308
Total Deductions	**$1,524,982**	**$531,256**	**$14,855**
Net Increase (Decrease) in Net Position	**$1,452,898**	**$568,028**	**$77,935**
Net Position Restricted For Pensions			
Beginning of year	$20,100,579	$7,918,879	$602,460
End of year	**$21,553,477**	**$8,486,907**	**$680,395**

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

Volunteer Firefighter Fund	Defined Contribution Fund	Total
$938	$2,036	$680,445
3,522	0	28,522
0	1,911	528,769
$4,460	**$3,947**	**$1,237,736**
$4,859	$6,552	$2,963,447
(178)	(62)	(32,525)
$4,681	$6,490	$2,930,922
$0	$0	$64,337
0	0	(41,131)
0	0	(2,447)
$0	$0	$20,759
$4,681	**$6,490**	**$2,951,681**
$8,048	**$0**	**$8,163**
$17,189	**$10,437**	**$4,197,580**
$4,161	$0	$2,016,262
0	4,326	50,181
70	211	13,418
$4,231	**$4,537**	**$2,079,861**
$12,958	**$5,900**	**$2,117,719**
$75,604	$63,933	$28,761,455
$88,562	**$69,833**	**$30,879,174**

Notes to the Financial Statements

For the Fiscal Year Ended June 30, 2018

NOTE 1
Plan Description

A) Organization

Established by the Minnesota Legislature in 1931, the Public Employees Retirement Association (PERA) of Minnesota administers pension plans that serve current or former county, school, and local public employees, their survivors and dependents. Retirement plans administered by PERA provide a variety of retirement pensions, survivor, and disability benefits.

PERA's Board of Trustees is responsible for administering these plans in accordance with statutes passed by the Minnesota Legislature and has a fiduciary obligation to PERA's members, their governmental employers, the state, and its taxpayers. PERA's Board of Trustees is composed of 11 members. The state auditor is a member by statute. The governor appoints five trustees. Serving four-year terms, these five trustees represent cities, counties, school boards, retired annuitants, and the general public, respectively. The remaining five board members are elected by the PERA membership at large to serve four-year terms. Three trustees represent the general active membership, one represents Police and Fire Plan members, and one represents benefit recipients.

The board appoints an executive director to serve as chief administrative officer of PERA. With approval of the board, the director develops the annual administrative budget, determines staffing requirements, contracts for actuarial and other services, and directs the day-to-day operations of PERA. The director also serves as a member of the State Investment Advisory Council, which advises the Minnesota State Board of Investment (SBI) on the management and investment of public pension funds and other assets.

The following is a summary of the laws, regulations, and administrative rules governing PERA's retirement plans and should not be interpreted as a comprehensive explanation thereof. If there is any discrepancy between this summary and the laws governing PERA, the statutes and regulations shall govern.

PERA is the administrator of five separate retirement plans and an agency fund that accounts for other post-employment benefits for participating employers. Each plan has specific membership, contribution, vesting, and benefit provisions. With certain statutory exceptions, an employee performing personal services for a governmental employer whose salary is paid, in whole or in part, from revenues derived from taxation, fees, assessments, or other sources, is a member of PERA. Plan participation is dependent on the occupation of the member. The plans, including benefit provisions and the obligation to make contributions, are established and administered in accordance with *Minnesota Statutes*, Chapters 353, 353D, 353E, 353G and 356. These statutes also define financial reporting requirements.

PERA administers three cost-sharing multiple-employer retirement plans: the General Employees Retirement Plan (accounted for in the General Employees Fund), the Public Employees Police and Fire Plan (accounted for in the Police and Fire Fund), and the Public Employees Local Government Correctional Service Retirement Plan, called the Public Employees Correctional Plan (accounted for in the Correctional Fund).

In addition to the cost-sharing multiple-employer plans, PERA administers one agent multiple-employer retirement plan, the Statewide Volunteer Firefighter Retirement Plan (accounted for in the Volunteer Firefighter Fund) and one multiple-employer defined contribution plan, the Public Employees Defined Contribution Plan (accounted for in the Defined Contribution Fund). PERA also administers an agency fund to track the investments placed in a trust by various entities with SBI to cover future other postemployment benefit costs (OPEB).

Figure 1 presents summary information on each retirement plan and the agency fund. Specific details unique to certain aspects of the plans follow the summary.

Figure 1: Retirement Plan Summary

	General Employees Plan	Police and Fire Plan	Correctional Plan
STATUTORY AUTHORITY:	• *Minnesota Statutes* Chapters 353 and 356	• *Minnesota Statutes* Chapters 353 and 356	• *Minnesota Statutes* Chapters 353E and 356
DATE ESTABLISHED:	• Basic Plan 1931, Coordinated Plan 1968, and MERF as a separate division in 2010 and merged into the plan in 2015	• 1959	• 1999
TYPE OF PENSION PLAN:	• Cost-sharing multiple employer defined benefit	• Cost-sharing multiple employer defined benefit	• Cost-sharing multiple employer defined benefit
MEMBERSHIP:	• Employees of counties, cities, townships and employees of schools in non-certified positions, and other entities whose revenues are derived from taxation, fees, or assessments	• Police officers and firefighters not covered by a local relief association and all police officers and firefighters hired since 1980. • Effective July 1, 1999 the plan also covers police officers and fire fighters belonging to a local relief association that elected to merge with and transfer assets and administration to PERA.	• Correctional officers serving in county and regional adult and juvenile corrections facilities. • Participants must be responsible for the security, custody and control of the facilities and their inmates
APPROXIMATE # OF EMPLOYERS:	• 2,000	• 500	• 80

Volunteer Firefighter Plan	Defined Contribution Plan	Agency Fund
• *Minnesota Statutes* Chapter 353G and 356 for the lump sum and monthly benefit divisions and Minnesota Statutes Chapter 424A for the monthly benefit division	• *Minnesota Statutes* Chapter 353D and Chapter 356	• *Minnesota Statutes* Chapter 471.6175
• 2010 for the lump sum division and 2016 for the monthly benefit division	• 1987	• 2008
• Agent multiple-employer defined benefit	• Multiple-employer defined contribution	• PERA serves as the trust administrator for multiple-employer other post employment benefit (OPEB) plans that create a revocable or irrevocable trust with the State Board of Investment to pay future OPEB costs
• Any municipal volunteer fire department or independent non-profit firefighting corporation	• Elected and appointed local government officials (except elected county sheriffs), city managers, emergency medical service personnel, including physicians, employed by or providing service to any participating public ambulance service who are not covered by another public or private pension and any publicly-operated ambulance service that receives an operating subsidy from a governmental entity and elects to participate in the plan	• Any political subdivision or other public entity that has an OPEB liability
• 159	• 1,000	• 23

Figure 1: Retirement Plan Summary (continued)

	General Employees Plan	Police and Fire Plan	Correctional Plan
VESTING:	• 3 years for members hired prior to July 1, 2010 • 5 years for members first hired on or after July 1, 2010	• 3 years for members hired prior to July 1, 2010 • Prorated basis from 50 percent after 5 years up to 100 percent after 10 years for members first hired on or after July 1, 2010 but before July 1, 2014 • Prorated basis from 50 percent after 10 years up to 100 percent after 20 years for members first hired on or after July 1, 2014	• 3 years for members hired prior to July 1, 2010 • Prorated basis from 50 percent after 5 years up to 100 percent after 10 years for members first hired on or after July 1, 2010
FINAL AVERAGE SALARY:	• Average monthly salary over the highest paid 60 consecutive months or all months if less than 60	• Average monthly salary over the highest paid 60 consecutive months or all months if less than 60	• Average monthly salary over the highest paid 60 consecutive months or all months if less than 60
SERVICE BENEFIT FORMULAS:	• Members hired prior to July 1, 1989, receive the higher of Method 1 or Method 2 formulas. Only Method 2 is used for members hired after June 30, 1989. • Method 1: The accrual rate for Coordinated members is 1.2% for each of the first 10 years of service and 1.7% for each additional year. The rates are 2.2% and 2.7%, respectively, for Basic members. • Method 2: The accrual rate for Coordinated members is 1.7% for all years of service, and 2.7% for Basic members. • The accrual rates for former MERF members is 2.0% for each of the first 10 years of service and 2.5% for each additional year.	• Annuity accrual rate is 3.0% of average salary for each year of credited service	• Annuity accrual rate is 1.9% of average salary for each year of credited service

Volunteer Firefighter Plan	Defined Contribution Plan	Agency Fund
• Prorated basis from 40% at 5 years to 100% at 20 years	• No vesting requirements for member or employer contributions or earnings	• No vesting requirements for member or employer contributions or earnings
N/A	N/A	N/A
• Lump sum division benefits are based on the number of years of service multiplied by a benefit level chosen by the entity sponsoring the fire department from possible levels ranging from $500 per year of service to $10,000 per year of service • Monthly division benefits are determined at the individual plan level.	N/A	N/A

General Employees Plan

The General Employees Plan encompasses two plans — the PERA Coordinated Plan and the PERA Basic Plan. The Coordinated Plan provides retirement and other benefits in addition to those supplied by Social Security. The Basic Plan was PERA's original retirement plan and is not coordinated with the federal program. PERA's Basic Plan was closed to new membership in 1968 with the creation of the Coordinated Plan. Today, fewer than five Basic members remain active public employees. The Minneapolis Employees Retirement Fund (MERF) was included in the General Employees Plan in June 2010 as a separate division and was merged into the plan January 1, 2015. A traditional defined benefit plan, MERF was closed to new membership in 1979. It encompasses employees of the City of Minneapolis, the Metropolitan Airports Commission, Minnesota State Colleges and Universities, and non-teaching personnel at Minneapolis schools. Annual state and employer appropriations of $37 million through 2031 ensure the plan remains self-sustaining. The active membership of the Minneapolis Employees Retirement Fund is also small with less than ten members

Defined Contribution Plan

Officials first elected to a governing body, such as a city council or county board after June 30, 2002, may only participate in PERA's Defined Contribution Plan. Previously, such officials could elect Coordinated Plan participation as an alternative to the Defined Contribution Plan. City managers may participate in the Defined Contribution Plan as an alternative to Coordinated Plan membership.

Volunteer Firefighter Plan

Funding is provided through Minnesota Fire State Aid (based on insurance premiums, and administered by the Minnesota Department of Revenue) and, if required, additional municipal contributions.

Agency Fund

The various entities participating in PERA's agency fund, used to account for any political subdivision or other public entity that has an OPEB liability to create a separate trust with SBI to pay future OPEB costs, are responsible for making sure any withdrawals are done in accordance with generally accepted accounting principles and *Minnesota Statutes*. They are also responsible for setting and paying benefits, for determining voluntary contribution amounts, and for handling any OPEB reporting requirements. PERA is the trust administrator.

B) Participating Members

Shown in **Figure 2** are the membership totals in PERA's multiple-employer defined benefit

Figure 2: PERA Membership — Defined Benefit Plans

	General Employees	Police and Fire	Correctional	Volunteer Firefighter	Total
Retirees and beneficiaries receiving benefits	101,772	10,756	1,193	86	113,807
Terminated employees entitled to benefits/refunds but not yet receiving them:					
Vested	61,066	1,580	3,165	751	66,562
Non-Vested	138,768	1,188	2,811	0	142,767
Current, active employees:					
Vested	90,184	9,200	2,143	2,017	103,544
Non-Vested	62,875	2,473	1,838	1,239	68,425
Total	**454,665**	**25,197**	**11,150**	**4,093**	**495,105**

plans as of June 30, 2018. In addition, the Defined Contribution Plan serves approximately 7,900 members.

C) Benefit Provisions -

Defined Benefit Annuity Plans

PERA's defined benefit plans are tax qualified plans under Section 401(a) of the Internal Revenue Code. PERA provides retirement and disability benefits to members, as well as survivors upon the death of eligible members.

Retirement benefits are based on a member's highest average salary for 60 consecutive months of allowable service, age, and years of credit at termination of service. A reduced retirement annuity is also available to eligible members seeking early retirement. Members of PERA's defined benefit plans receive one service credit for each month which they are paid. Individuals may earn a maximum of 12 service credits per year. Salary used in retirement and disability benefit calculations is the average monthly salary over an individual's 60 highest-paid consecutive months of public service (high-five salary), or all months of service if less than 60.

Members of the PERA General Employees Plan, Police and Fire Plan, and Correctional Plan may select from several types of retirement benefits.

Single-Life Pension — A Single-Life Pension is a lifetime annuity that ceases upon the death of the retiree. No survivor benefit is payable.

Survivor Options — Upon retirement, members may choose from one of four survivor options. All of these pensions are payable for the lifetime of the retiree. At the time of the retiree's death, the designated survivor begins to receive monthly benefit payments at varying levels for his or her lifetime. Depending on the survivor option chosen by the member, survivor payments are at a 25, 50, 75, or 100 percent level of that received by the member at retirement. Selection of a survivor option will result in a reduced pension benefit from the single-life benefit level. The amount of the reduction depends on the age of both the retiring member and the survivor. Due to the passing of the 2018 Omnibus Retirement Bill, plan assumptions, including mortality and investment expectations, were updated and resulted in minimal changes to survivor option reduction factors. All PERA Plans' survivor factors will be updated for benefits beginning July 1, 2019, or later. All survivor pension options incorporate an "automatic bounce back" feature. This returns the amount of the pension to the level of the single-life benefit in the event the designated survivor predeceases the retiree. The cost of this protection is borne by the funds, not by the retiree.

Deferred Pension — A vested member who terminates public service may leave contributions in the fund(s) in which he or she participated and qualify for a pension at retirement age. For members who terminated public service prior to January 1, 2012, the benefit amount calculated as of the date of termination will increase at a rate of one percent per year, compounded annually. Benefit increases will continue to accrue until December 31, 2018, at which point all benefit increases are discontinued. For members who terminate public service after December 31, 2011, there is no benefit growth.

Beginning June 30, 2018, if a deferred member returns to the same PERA plan, pension benefit increases will no longer apply to the entire benefit calculation.

Combined Service and Proportionate Pensions — Retiring members may elect to combine service in a PERA-covered position with service in any of the other eligible Minnesota pension funds and qualify for a retirement benefit from each fund in which they participated. These funds are designated by statute. Vested members qualify for a combined service pension if they have six or more months of service in each fund and have not begun to receive a benefit from any of the designated funds. Pensions are based upon the formula of each fund and the member's average salary over the 60 highest-paid consecutive months of service, no matter when it was earned.

Public employees who retire at or over their Social Security full retirement age with between one and ten years of service in one or more designated funds may qualify for a proportionate pension. Benefits are paid by each applicable fund in which the employee has credit and are based upon the formula of each fund and the member's average salary during the period of service covered by that fund.

General Employees Plan

Under Method 1, members are eligible for a full (unreduced) retirement annuity if they are age 65 or over with at least one year of public service or their age plus years of public service equal 90 (Rule of 90) for members who were first hired prior to July 1, 1989. A reduced retirement annuity is payable as early as age 55 with three or more years of service. The reduction is 0.25 percent for each month under age 65. A member with 30 or more years of service may retire at any age with the monthly 0.25 percent reduction made from age 62 instead of 65.

Method 2 provides for unreduced retirement benefits at age 65 for members first hired prior to July 1, 1989, or age 66 (the age for unreduced Social Security benefits) for those first hired into public service on or after that date. Early retirement may begin at age 55 with an actuarial reduction for members retiring prior to full retirement age. Benefits beginning July 1, 2019, or later, will have actuarial reduction factors phased in over five years that reflect the true actuarial cost of early retirement. These factors recognize recent updates to plan assumptions, including mortality and investment expectations, as well as the removal of the augmentation subsidy.

All members, including deferred members, will have an early retirement factor based on the benefit effective date beginning July 1, 2019, and later.

MERF members may choose a death benefit option with the death benefit being at least $500 and not more than one-half the value of the employee's total retirement benefit.

Police and Fire Plan

A full unreduced pension is earned when members meet the following conditions: age 55 and vested, or age plus years of service total at least 90 if first hired prior to July 1, 1989. A reduced retirement annuity is available to members between the ages of 50 and 55. Under legislation enacted in the 2013 legislative session, the reduction for Police and Fire Plan early retirement began increasing incrementally in July 2014. It will culminate in a five percent per year reduction in July 2019.

Correctional Plan

A full, unreduced pension is earned when members meet the following conditions: age 55 and vested, or age plus years of service total at least 90 if first hired prior to July 1, 1989. Early retirement may begin at age 50 with an actuarial reduction in a member's benefit.

Post Retirement Increases

General Employees Plan — Beginning in 2019, the COLA for the General Employees Plan will be equal to 50 percent of the increase announced by the Social Security Administration (SSA), with a minimum increase of at least 1 percent and a maximum of 1.5 percent. Post retirement increases are given each year except for annuitants who have been receiving a benefit for only 7 to 17 months. These annuitants will receive a prorated amount of the increase on a sliding scale. For members retiring on January 1, 2024, or later, the COLA will be delayed until normal retirement age (age 65 if hired prior to July 1, 1989, or age 66 for individuals hired on or after July 1, 1989). Members retiring under Rule of 90 (Step formula) are exempt from the delay to normal retirement.

Police and Fire Plan — Beginning in 2019, the COLA will be fixed at 1 percent. Under funding measurements from 2017, the 2.5 percent COLA trigger was never expected to occur and was subsequently removed from law. Post retirement increases are given each year except for annuitants who have been receiving a benefit for only 31 to 41 months. These annuitants will receive a prorated amount of the increase on a sliding scale.

Correctional Plan — Beginning in 2019, the COLA will be equal to 100 percent of the increase announced by SSA, with a minimum increase of at least 1 percent and a maximum of 2.5 percent. If the Plan's funding status declines to 85 percent or below for two consecutive years or 80 percent for one year, the maximum will be lowered from 2.5 percent to 1.5 percent. Post retirement increases are given each year except for annuitants who have been receiving a benefit for only 7 to 17 months. These annuitants will receive a prorated amount of the increase on a sliding scale.

The benefit provisions stated in the preceding paragraphs of this section are current provisions and apply to active plan participants. Vested, terminated employees who are entitled to benefits but are not receiving them yet are bound by the provisions in effect at the time they last terminated public service.

D) Benefit Provisions – Volunteer Firefighter Plan

The lump-sum retirement division account is funded by fire state aid, investment earnings, and (if necessary) employer contributions. Members do not contribute to the plan.

The service pension from the lump-sum division is based on a benefit level chosen by the entity associated with the fire department and vesting percent specified in *Minnesota Statute* 353G.09. The service pension from the monthly division is specified in the retirement benefit plan document applicable to the fire department.

E) Benefit Provisions – Defined Contribution Plan

The Defined Contribution Plan is a tax qualified plan under Section 401(a) of the Internal Revenue Code and all contributions by or on behalf of employees are tax deferred until time of withdrawal. Plan benefits depend solely on amounts contributed to the plan plus investment earnings, less administrative expenses. Employer and employee contributions are combined and used to purchase shares in one or more of the six accounts of the Minnesota Supplemental Investment Fund administered by the SBI. Investment options include the Broad International Stock Pool, U.S. Stock Actively Managed Pool, U.S. Stock Index Pool, Bond Pool, Private Markets, and Money Market Pool. PERA receives 2.0 percent of employer contributions paid during the year, plus 0.25 percent of the assets in each member's account each year for administering the plan.

At the time of retirement or termination, PERA distributes the market value of a member's account to the member or transfers it to another qualified plan or individual retirement account. Upon the member's death, PERA distributes the value of the account to the member's designated beneficiary.

F) Earnings Limitation

Retirees who return to work in a PERA- covered position are subject to the same earnings limitations as Social Security recipients. Benefits are reduced if these limits are exceeded, with the amount held in escrow. The retiree may request repayment of these funds one year after leaving the position. If reemployment extends through the end of a calendar year, the deductions from that year may be reclaimed one year later.

The earnings limitation only applies to PERA-covered employment. Self or private employment and elected official service will result in no benefit reduction for retirees. Earnings limits are waived for Coordinated Plan members who begin receiving benefits under a Phased Retirement Agreement. Phased Retirement allows members age 62 and above to begin receiving a pension without termination of public service if they accept a reduction in hours worked to less than 1,044 per year.

The agreements can be up to one year in length and can be renewed for up to five years. The program is scheduled to sunset in 2019. Because they only provide lump-sum benefits, the Defined Contribution Plan and the Volunteer Firefighter Plan lump-sum division have no earnings limits.

G) Disability Benefits

Members may be eligible for benefits from PERA if they are unable to work because of a physical or mental disability. Disability is defined by statute, and PERA may require periodic medical examinations of those receiving these benefits.

Disability benefit calculations are based upon years of service and average high-five salary for Coordinated Plan members. For Police and Fire Plan members, there is a minimum duty-related disability benefit of 60 percent of salary. The minimum duty-related disability benefit is 47.5 percent for Correctional Plan members. Disability under any other circumstances results in a minimum benefit of 45 percent of salary for Police and Fire Plan members and 19 percent for Correctional Plan members. A duty-related disability benefit will only be awarded if the disabling event occurred while the member was engaged in hazardous activities inherent to the occupation.

Coordinated Plan members qualify for disability when vested for a retirement benefit and by meeting the statutory definition. Police and Fire Plan and Correctional Plan members qualify by meeting the definition with one or more years of service if disabled outside the line of duty. If disabled in the line of duty, there is no minimum service requirement.

Neither the Defined Contribution Plan nor the Volunteer Firefighter Plan has specific disability benefits. However, the Defined Contribution Plan does allow for monthly benefit payments until the account balance is exhausted.

H) Survivor Benefits

PERA also provides survivor (death) benefits for families of members who qualify for such coverage should they die before commencing retirement benefit payments. The qualifications and types of benefits vary with each plan. As of August 1, 2013, Minnesota recognizes same-sex marriage. PERA's governing statutes make no distinction concerning the gender of a spouse, and the agency therefore follows the state's definition of a valid marriage.

A lifetime survivor benefit is available to the surviving spouse of a General Employees Plan, Correctional Plan, or Police and Fire Plan member. For Police and Fire Plan members, this benefit is based on either 50 percent of the average of the full-time monthly base salary rate in effect during the last six months of allowable service or a formula using the member's total years of service, high-five salary, age at death, and age of the spouse. The surviving spouse benefit for General Employees Plan and Correctional Plan members is only based on the formula. This benefit is payable to the spouse of a deceased member for life, even upon remarriage. Automatic lifetime survivor benefits are also available to the spouse of Police and Fire Plan members who suffer total and permanent duty disability. Survivor benefits for other disabled members are only available if the member chooses a survivor option on their disability benefit.

For the surviving spouse of a General Employees Plan or Correctional Plan member, there are alternative term-certain benefits of 10, 15, or 20 years duration. The monthly payment, however, may not exceed 75 percent of the member's average highest 60 months of consecutive salary. Survivor benefits are immediately suspended for any survivor charged with causing the death of a PERA member. The benefit is permanently revoked upon conviction of such a crime.

Dependent children of active or disabled Police and Fire Plan members are eligible for benefits until age 18, or age 23 if full-time students. In this case, the maximum family benefit is 70 percent of the member's average monthly salary. If a General Employees Plan or Correctional Plan member dies and there is no surviving spouse, any children under age 20 qualify to receive a monthly term-certain benefit.

Instead of a monthly benefit, the surviving spouse, if a designated beneficiary, may elect a refund of any remaining employee contributions in the account, plus interest. However, a refund may not be elected if there are dependent children who are eligible for benefits.

The Volunteer Firefighter Plan provides for payment of the member's accrued benefits to a surviving spouse or, if none, to minor children or, finally, the member's estate, based on retirement at age 50. Similarly, the Defined Contribution Plan provides for payment of the account balance to beneficiaries.

I) Refunds

Refunds of contributions are available at any time to members who terminate public service and have not yet begun receiving a pension. The refund includes employee contributions plus interest, compounded annually. Interest on member contributions is 6 percent prior to June 30, 2011, 4 percent July 1, 2011 through June 30, 2018, and 3 percent July 1, 2018 thereafter. Employer contributions are not refundable to the member or beneficiary; they remain with the plan to pay retirement, disability and survivor benefits.

A refund of member contributions plus interest may also be elected by the designated beneficiary of a member or former member who dies before reaching retirement. If there is no beneficiary, payment is made to the surviving spouse or, if none, to the estate of the deceased member or former member.

If a retiree and designated survivor, if any, die before all employee contributions are paid in the form of a pension or benefits, the remaining balance would be paid in the same manner outlined for beneficiaries. No interest is paid to beneficiaries on the balance in an account if the member was receiving retirement benefits.

A former member who has received a refund may repay all or a portion of the refund after having reentered public service for a minimum of six months. This restores forfeited service. Interest charged on repayment is 8.5 percent, compounded annually until June 30, 2015, 8 percent July 1, 2015 through June 30, 2018, and 7.5 percent July 1, 2018 thereafter.

NOTE 2
Summary of Significant Accounting Policies

A) Reporting Entity

PERA functions as a separate statutory entity. PERA maintains rights to sue or be sued in its own name and to hold property in its own name. For financial reporting purposes, PERA 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. PERA does not have any component units.

B) Basis of Presentation and Basis of Accounting

The accompanying financial statements are prepared in accordance with accounting principles generally accepted in the United States of America (GAAP) that apply to governmental accounting for fiduciary funds. Financial statements for all funds are prepared using the accrual basis of accounting. Employee and employer contributions are recognized as revenues when due, pursuant to formal commitments and statutory requirements. Expenses are recorded when the corresponding liabilities are incurred, regardless of when payment is made. Benefits and refunds are recognized when due and payable in accordance with the terms of each plan.

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenue and expenses. Actual results could differ from those estimates.

C) Cash

For PERA's defined benefit and defined contribution funds, cash includes cash on deposit in the state's treasury, which is commingled with other state funds. Cash on deposit consists of year-end receipts not yet processed as of the investment cutoff on June 30. In the Agency Fund, cash consists of recent receipts held by the SBI that have not yet been invested in one of the three investment pools available.

D) Receivables

Accounts receivable represents plan member and employer contributions which are received after fiscal year end for services rendered prior to fiscal year end. For the General Employees Fund, the receivable also includes an employer supplemental contribution of $21 million billed in fiscal year 2018 but not due from employers until fiscal year 2019.

Due from Other Funds represents the reallocation of administrative expenses, which is done annually in October once the fiscal year's expenses have been finalized.

E) Investments

Investment Policy

The SBI is made up of Minnesota's governor, state auditor, secretary of state and attorney general. The authority for establishing and amending investment policy decisions is granted to the SBI in *Minnesota Statutes*, Section 11A.04. The legislature has also established a 17-member Investment Advisory Council (IAC) to advise the Board and its staff on investment-related matters. PERA's executive director is a permanent member of the IAC. *Minnesota Statutes*, Section 11A.24, broadly restricts retirement fund investments to obligations and stocks of 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. Short-term investment securities include investments that have high credit quality and are highly liquid. The securities have a low-risk, low-return profile and include U.S. Government Treasury bills, bank certificates of deposit, bankers' acceptances, corporate commercial paper, and other money market instruments.

Pursuant to *Minnesota Statutes*, Section 11A.04, the state's retirement plan assets are commingled in various pooled investment accounts, administered by SBI. As of June 30, 2018, the participation shares in the combined retirement fund at fair value totaled approximately 31.5 percent for the General Employees Fund, 12.4 percent for the Police and Fire Fund, and 1.0 percent for the Correctional Fund.

Investments in the pooled accounts, including assets of the Defined Contribution Fund and the Agency Fund, are reported at fair value. Fair value is the proportionate share of the combined market value of the investment portfolio of the SBI investment pool in which the funds participate. All securities within the pools are valued at fair value except for U.S. Government short-term securities and commercial paper, which are valued at market less accrued interest. Accrued interest is recognized as short-term income. Note 3 provides additional disclosures on fair value reporting of investments.

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

For financial reporting purposes, the cost of security transactions is included in the transaction price. Investment expenses include administrative expenses of the SBI to manage the state's investment portfolio and investment management fees paid to the external money managers and the state's master custodian for pension plan assets. These expenses are allocated to the funds participating in the pooled investment accounts. Information on specific investments owned by the pooled accounts, investment activity, currency risk, interest rate risk, and a detailed schedule of fees and commissions by brokerage firm, along with the number of shares traded, total commissions, and commissions per share for the pooled investment accounts may be obtained from the SBI, 60 Empire Drive, Suite 355, Saint Paul, Minnesota 55103.

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

Description of Significant Investment Policy Changes During the Year

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

SBI Investment Beliefs

In September 2017, the State Board of Investment adopted a set of ten Investment Beliefs. The primary purpose of these beliefs is to guide the SBI toward sound principles related to investing on behalf of the Combined Funds. The beliefs help provide context for the SBI's actions, reflect the SBI's investment values, and acknowledge the SBI's role in supporting the State's retirement systems.

Following are the ten SBI Investment Beliefs:

1. The SBI is a long-term investor whose primary mission is to maintain the viability of the retirement systems it supports.
2. The SBI's strategic allocation policy is the primary determinant of the asset portfolio's long-term investment return and asset portfolio's risk.
3. While the SBI can sacrifice some short-term liquidity to pursue a greater long-term return, the investment portfolio's net cash flows and ability to pay benefits on a year-by-year basis are key risk considerations.
4. Diversification improves the risk-adjusted return profile of the SBI investment portfolio.
5. There are long-term benefits to the SBI managing investment costs.
6. The equity risk premium is significantly positive over a long-term investment horizon although it can vary over time.
7. Private market investments have an illiquidity premium that the SBI can capture.
8. It is extremely challenging for a large institutional investor to add significant value

over market-representative benchmarks, particularly in the highly-competitive public global equity markets.

9. The SBI benefits significantly when roles and levels of authority are clearly defined and followed.

10. Utilizing engagement initiatives to address economic, social, and governance-related (ESG) issues can lead to positive portfolio and governance outcomes.

Strategic Asset Category Framework

In December 2017, the SBI approved a Strategic Asset Category Framework for the Combined Funds. The framework defined a broader array of asset classes and assigned asset classes to Strategic Allocation Categories. Using the Strategic Asset Category approach better defines the role that asset classes play in a portfolio, identifying the relative risk levels of the asset classes, and allows the SBI to focus less on what they invest in but why they invest in it.

Following are the strategic allocation categories:

- Growth-Appreciation: This is the primary return-seeking category with the objective of generating long-term capital appreciation. Potential Growth-Appreciation asset classes include U.S Equity, Non-U.S Developed Market Equity, Emerging Market Equity, Private Equity, and Non-Core Real Estate.
- Growth-Income Oriented: This category has attributes that include generating stable levels of current income and capital appreciation at lower levels of risk than growth-appreciation assets. Asset classes in this category include Investment Grade Credit, Private Credit, and Return-Seeking Fixed Income Classes.
- Real Return: The Real Return category provides diversification through investments in assets that have inflation sensitive characteristics and the ability to hedge against inflation. This category has two sub-categories: Real Assets and Inflation Protection. Real Assets are considered to be hard whereas Inflation Protection Assets are considered to be soft. Potential asset classes include Private and Public Real Assets, Core Real Estate, Inflation-Linked Bonds, and Commodities.
- Protection: The Protection category provides stability, protection during a crisis, and can act as a hedge against deflation. Asset classes include U.S. Treasuries and U.S. Government Bonds.
- Liquidity: This category provides liquidity to meet daily obligations, primarily benefit payments and capital commitment calls. Asset classes consist of cash and cash equivalents.
- Opportunity: The opportunity category's purpose is to allow for investment in new strategies that do not fit within clearly-defined asset class lines. Classes in this category

Figure 3: SBI Strategic Allocation Framework

Strategic Allocation Category	Proposed Minimum % of Total Fund	Proposed Maximum % of Total Fund	Proposed Maximum Private Investments % of Total Fund
Growth - Appreciation	50%	75%	20%
Growth Income - Oriented	15	30	15
Real Return			
Real Assets	0	10	10
Inflation Protection	0	10	5
Protection	5	20	0
Liquidity	0	5	NA

include niche opportunities in multiple asset categories.

Additionally, the SBI approved ranges for adoption of the Strategic Allocation Category Framework, which are shown in **Figure 3**. Due to the nature of the Opportunity allocation category, no specific target ranges are assigned. Private investments, which include private equity, real estate, resource funds, and yield-oriented investments, are limited to 30 percent of the total fund.

Asset Allocation

To match the long-term nature of pension obligations, the SBI maintains an asset allocation for the Combined Funds that includes allocations to public equity (both domestic and international), fixed income (formerly, domestic bonds), private markets, and cash equivalents.

Through December 2017, the allocation was as follows:

Public Equity 58%
↳*Domestic Equity........39%*
↳*International Equity... 19%*
Fixed Income....................... 20%
Private Markets.................... 20%
Cash..................................... 2%

During Fiscal Year 2018, the SBI made Board approved changes to the asset allocation policy, such that the long-term asset allocation would be:

Public Equity........................ 53%
↳*Domestic Equity........36%*
↳*International Equity... 17%*
Fixed Income....................... 20%
Private Markets.....................25%
Cash..................................... 2%

The Executive Director of the SBI implemented the approved Board changes beginning January 2018. The Private Markets allocation was increased from 20 percent to 25 percent. Until the allocation to Private Markets reaches its target of 25 percent, the un-invested portion of the allocation will continue to be invested in the Public Equity pool. In order to increase the Private Markets allocation, the Public Equities target allocation was reduced from 58 percent to 53 percent.

The Combined Funds Fixed Income allocation is undergoing a transition which may continue through the end of fiscal year 2019. The target allocation for Fixed Income remains at 20 percent. However, during the transitional period from January 1, 2018, through the end of fiscal year 2019, the allocation may exceed 20 percent in aggregate. By the end of fiscal year 2019, the core Fixed Income asset class will be drawn down from its current allocation to a level such that the aggregation of the fixed income investment asset classes will total 20 percent.

Rate of Return

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

Figure 4: Target Asset Allocation and Long-term Expected Real Rate of Return by Asset Class

For the Combined Funds: Asset Class	Target Allocation	Final Target Allocation	Long-term Expected Real Rate of Return (Geometric)
Domestic Stocks	33%	36%	5.10%
International Stocks	16%	17%	5.30%
Private Markets	25%	25%	5.90%
Fixed Income	24%	20%	0.75%
Unallocated Cash	2%	2%	0.00%
	100%	**100%**	

(1) Domestic Equity includes U.S. Stock Actively Managed and the U.S. Stock Index Fund.
(2) International Equity includes Broad International Stock Fund.
(3) Private Markets includes the Alternative Investment Pool.

Statewide Voluntary Firefighter Fund

Asset Class	Target Allocation	Long-term Expected Real Rate of Return (Geometric)
Domestic Stocks	35%	5.10%
International Stocks	15%	5.30%
Bonds	45%	0.75%
Unallocated Cash	5%	0.00%
Total	**100%**	

to produce a geometric, long-term expected real rate of return for the portfolio. Inflation expectations were applied to derive the nominal rate of return for the portfolio. The target asset allocation and best estimates of geometric real rates of return for each major asset class included in the plan's target asset allocation as of June 30, 2018 are summarized in **Figure 4**.

The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the actual cash flows that took place during the performance period. Since PERA's various funds have different cash flows throughout the year, they have different money-weighted rates of return. The money-weighted rate of return for each fund is presented in **Figure 5**.

Figure 5: Money-weighted Rate of Return

Fund	Fiscal Year 2018
General Employees Fund	10.47%
Police and Fire Fund	10.48%
Correctional Fund	10.35%
Volunteer Firefighter Fund	5.83%

F) Capital Assets

Capital assets, generally assets with a cost in excess of $30,000 and a useful life greater than one year, are capitalized at cost at the time of acquisition (see Note 4). Depreciation is computed on a straight-line basis over the estimated useful life of the related assets. The estimated useful lives are three to ten years for furniture and equipment, and forty years for the building. PERA's threshold for intangible assets is $1,000,000. PERA did not have any intangible assets in fiscal year 2018.

G) Accrued Compensated Absences

PERA's employees 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, 2018, is $958,849. Of this, $107,091 is considered a short-term liability and $851,757 is considered a long-term liability. The total decreased by $11,333 during fiscal year 2018.

H) Administrative Expenses

PERA's administrative expenses are paid during the year from the General Employees Fund. At year-end, a portion of the expenses are allocated to the Police and Fire Fund and the Correctional Fund, based on membership counts. The Defined Contribution Fund reimburses the General Employees Fund to the extent of fees collected for recovery of administrative costs. The Volunteer Firefighter Fund reimburses the General Employees Fund $30 per firefighter. The applicable amounts are reported as expenses and reported on the *Statement of Fiduciary Net Position* as a payable to other funds or due from other funds. Administrative costs are funded from investment income for the defined benefit plans.

NOTE 3
Deposits and Investment Risk Disclosures

A) Fair Value Reporting

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

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

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

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

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

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

Figure 6: Fair Value of PERA Investments
As of June 30, 2018 (in thousands)

Equity Investments	Fair Value	Level 1	Level 2	Level 3
Common Stock	$17,724,811	$17,691,457	$33,067	$287
Real Estate Investment Trust	537,386	537,111	275	0
Other Equity	602,751	400,613	54,961	147,177
Equity Total	**$18,864,948**	**$18,629,181**	**$88,303**	**$147,464**
Fixed Income Investments				
Government Issues	$5,418,737	$0	$5,408,075	$10,662
Corporate Bonds	1,712,111	0	1,704,631	7,480
Mortgage-Backed Securities	401,635	0	372,033	29,602
Asset-Backed Securities	310,263	0	294,425	15,838
Other Debt Instruments	7,671	0	7,671	0
Fixed Income Total	**$7,850,417**	**$0**	**$7,786,835**	**$63,582**
Investment Derivatives - Options	-$76	-$76	$0	$0
Total Investments by Fair Value	**$26,715,289**	**$18,629,105**	**$7,875,138**	**$211,046**

Investments Measured at the Net Asset Value (in thousands)	NAV	Percent of NAV	Number of Investments	Unfunded Commitments
Private Equity	$2,543,269	61%	131	$2,289,329
Real Estate	306,761	7%	22	363,282
Resource	948,158	23%	36	411,743
Yield Oriented	382,808	9%	31	381,071
NAV total	**$4,180,996**	**100%**		**$3,445,425**

Cash and cash equivalents (investments with less than 12 months to maturity) are not leveled per GASB Statement No. 72. Therefore cash and short term investments are not included in **Figure 6**. 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, 2018, values, adjusted for cash flows. The investments measured at NAV are typically not eligible for redemption. Distributions are received as underlying investments when the funds are liquidated, which occur over the life of the investment.

The SBI has 52 investments that are valued at NAV that are currently in the liquidation mode, totaling 3% of the NAV value. The majority of the remaining value of investments in liquidation mode will be returned to the SBI within a time period of three to five years. PERA's proportionate share of the unfunded commitments (funds committed to an investment but not yet transferred to the General Partner (Investor)) valued at NAV total $3,445,425,000.

The following are explanations of investment types listed in **Figure 6**.

Equity Investments

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 dividents and/or capital appreciation.

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

Other Equity: Includes Preferred Stock, Depository Receipts, Limited Partnerships Units, Common Stock Units, and Mutual Funds.

Fixed Income Investments

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

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

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

Government Issue: Securities or bonds issued by any of the 50 states, the territories and their subdivisions, counties, cities, towns, villages and school districts, agencies (such as authorities and special districts created by the states), and certain federally-sponsored agencies such as local housing authorities.

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

Investment Derivatives: Options -- Futures. A contract that gives the holder the right to buy from or sell to the writer a specified amount of securities at a specified price, good for a specified period of time.

Investments Measured at Net Asset Value (NAV)

Private Equity: The private equity investment strategy is to establish and maintain a broadly diversified private equity portfolio composed of investments that provide diversification by industry type, stage of corporate development and location. The SBI has 131 Private Equity investments representing 61% 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 22 Real Estate investments representing 7% 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 36 Resource Funds' investments representing 23% 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 31 Yield Oriented Funds' investments representing 9% of the NAV value.

B) Custodial Credit Risk

Custodial credit risk for cash deposits and investments is the risk that, in the event of a bank or custodian failure, PERA will not be able to recover the value of its investments or collateral securities. *Minnesota Statutes*, Section 9.031, requires that cash deposits be secured by depository insurance or a combination of depository insurance and collateral securities held in the state's name by an agent of the state. Such insurance and collateral shall be in amounts sufficient to ensure that deposits do not exceed 90 percent of the sum of the insured amount and the market value of the collateral. Throughout fiscal year 2018, the combined depository insurance and collateral was sufficient to meet legal requirements and secure all PERA deposits, eliminating exposure to custodial credit risk.

C) Credit Risk

Credit risk is the risk that an issuer or counterparty to an investment will be unable to fulfill its obligations to the holder of the investment. The 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.

The 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 quality categories.

Figure 7: Credit Risk Exposure (in thousands)

Quality Rating	Fair Value as of June 30, 2018
AAA	$330,085
AA	$5,611,027
A	$287,838
BBB	$1,056,764
BB	$477,710
B	$30,566
CCC	$12,472
CC	$11,696
C	$2,549
D	$345
Unrated Agency	$68,547
Unrated Corporate	$867,264
Total	$8,756,863

PERA's share of SBI's exposure to credit risk, based on the lower of Moody's or S&P Quality Ratings for debt securities and short-term investments, is shown in **Figure 7**. If a security is rated by only Moody's or S&P that rating will be used. Agency securities consist of implicitly guaranteed investments of the U.S. Government. As of June 30, 2018, one agency and three US Treasury securities did not receive a rating by the SBI's rating provider.

D) Concentration of Credit Risk

Concentration of credit risk is the risk of loss that may be attributed to the magnitude of a government's investment in a single issuer. The SBI determined concentration of credit risk based on security identification number. PERA does not have exposure to a single issuer that equals or exceeds 5% of the overall portfolio and, therefore, there is no material concentration of credit risk.

E) Interest Rate Risk

Interest rate risk is the risk that changes in interest rates of debt investments could adversely affect the fair value of an investment. The SBI does not have a policy on interest rate risk. Retirement plan and OPEB debt securities are held in external investment pools and PERA's share has the weighted average maturities shown in **Figure 8.**

F) Foreign Currency Risk

Foreign currency risk is the risk that changes in exchange rates between the U.S. dollar and foreign currencies could adversely affect the fair value of an investment. Most foreign currency risk resides within the SBI's international equity investment holdings. In order to reduce foreign currency risk, the SBI has developed the following policies. Government obligations, including guaranteed or insured issues of the International Bank for Reconstruction and Development, the Inter-American Development Bank, the Asian Development Bank, and the African Development Bank, must pay interest and principal in U.S. dollars. The principal and interest of obligations of corporations, including those corporations incorporated or organized under the laws of the Dominion of Canada or any province thereof, must also be paid in U.S. dollars. PERA's share of foreign security investments at June 30, 2018,

Figure 8: Interest Rate Risk

Security	Weighted Average Maturity (in years)
Short-Term Investment Securities	0.35
Commercial Mortgage-Backed Securities	3.28
Agency Securities	5.78
Mortgage-Backed Securities	6.61
Asset-Backed Securities	6.97
Collateralized Mortgage Obligations	9.58
U.S. Treasuries	10.84
Yankee Bonds	11.91
Corporate Debt Obligations	12.11
Municipal Debt Obligations	18.39
Foreign County Bonds	23.47

was distributed among the currencies shown in **Figure 9.**

G) Derivative Financial Instruments

On behalf of PERA, the SBI invests in various types of derivative financial instruments. Derivatives are defined as any financial arrangement between two parties that has value based on or derived from future price fluctuations. The derivative financial instruments that the SBI enters into include futures, options, stock warrants and rights, currency forwards, and synthetic guaranteed investment contracts.

Figure 9: Foreign Currency Risk (fair value in thousands)

Currency	Cash	Equity	Fixed Income
Euro Currency	$9,146	$1,643,655	$2,048
Japanese Yen	$6,301	$936,366	$2,384
Pound Sterling	$11,745	$747,161	$5,464
Hong Kong Dollar	$1,729	$417,835	$0
Canadian Dollar	$5,383	$391,230	$140
Swiss Franc	$11	$290,810	$0
Australian Dollar	$4,882	$267,139	$0
South Korean Won	-$100	$176,569	$0
New Taiwan Dollar	$970	$130,263	$0
Swedish Krona	$158	$98,094	$0
Danish Krone	$114	$78,114	$0
South African Rand	$66	$68,794	$0
Singapore Dollar	$1,210	$61,062	$0
Brazilian Real	$32	$57,007	$0
Indian Rupee	$73	$49,167	$0
Norwegian Krone	$79	$32,139	$0
Mexican Peso	$73	$31,917	$0
Indonesian Rupiah	$41	$29,508	$0
Malaysian Ringgit	$92	$27,432	$0
Thailand Baht	$29	$19,072	$0
Polish Zloty	$5	$17,852	$0
New Israeli Sheqel	$76	$16,291	$0
Philippine Peso	$8	$13,304	$0
Hungarian Forint	$0	$11,359	$0
Chilean Peso	$40	$10,202	$0
Turkish Lira	$3	$10,085	$0
New Zealand Dollar	$395	$9,078	$0
Czech Koruna	$0	$7,042	$0
Colombian Peso	$0	$4,083	$0
Uae Dirham	$21	$3,316	$0
Qatari Rial	$9	$2,763	$0
Yuan Renminbi	$122	$2,182	$0
Egyptian Pound	$2	$2,089	$0
Philippine Piso	$0	$0	$0
Moroccan Dirham	$0	$0	$0
Total	**$42,715**	**$5,662,980**	**$10,036**

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 provision 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 derivative activity is to equitize cash in the portfolio, to adjust the duration of the portfolio, or to off-set current futures positions.

The fair value balances and notional amounts (or face value) at June 30, 2018, classified by derivative instrument type (futures, options, currency forward contracts, and stock warrants and rights), and the changes in fair value for fiscal year 2018 are shown in **Figure 10.** Explanations of each derivative instrument type are presented below.

Derivative Investment Type

Futures: 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: 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: Foreign 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 to the contract.

Stock Warrants and Rights: Stock warrants, 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 stock warrants are 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.

Figure 10: Derivative Financial Instruments (in thousands)

Derivative Investment Type	Changes in Fair Value During Fiscal Year 2018	Fair Value at June 30, 2018	Notional Amount
Futures:			
Equity Futures–Long	$34,838	$0	$1,861
Equity Futures–Short	(1,754)	0	(34)
Fixed Income Futures–Long	(7,732)	0	1,443,829
Fixed Income Futures–Short	12,017	0	(899,705)
Options:			
Futures Options Bought	(2,672)	381	1,533
Futures Options Written	2,014	(457)	(3,114)
Foreign Currency Forwards	(3,489)	(521)	253,312
Stock Warrants and Rights:			
Stock Warrants	(693)	32	69
Stock Rights	128	314	3,867

The SBI maintains a fully benefit-responsive synthetic guaranteed investment contract for the Supplemental Investment Fund - Fixed Interest Account. The investment objective of the Fixed Interest Account is to protect investors from loss of their original investment and to provide a competitive interest rate. On June 30, 2018, the Fixed Interest Account portfolio of well-diversified high quality investment grade fixed income securities had a fair value of $1,460,451,000 that is $18,702,550 below of the value protected by the wrap contract. The Fixed Income Account also includes liquid investment pools with a combined fair value of $74,579,196.

Risks

The SBI is exposed to credit risk through the counterparties in foreign currency forward contracts used to offset the currency risk of a security. PERA's proportionate share of the maximum loss that the SBI would have recognized as of June 30, 2018, if all counterparties failed to perform as contracted is $814,381.

H) Securities Lending

PERA does not own specific securities, but instead owns shares in pooled funds invested by the SBI. The SBI is authorized to enter into securities lending transactions in accordance with *Minnesota Statutes*, Chapter 356A.06, Subd. 7 and has, pursuant to a Securities Lending Authorization Agreement, authorized State Street Bank and Trust Company (State Street) to lend its securities to broker-dealers and banks pursuant to a form of loan agreement.

During the fiscal year, State Street lent, at the direction of the SBI, certain securities held by State Street as custodian and received cash or other collateral including securities issued or guaranteed by the United States government. State Street does not have the ability to pledge or sell collateral securities delivered absent a borrower default. Borrowers were required to deliver collateral for each loan equal to at least 100% of the market value of the loaned securities.

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

During the fiscal year, the SBI and the borrowers maintained the right to terminate securities lending transactions upon notice. The cash collateral received on each loan was invested in a collective investment pool. As of June 30, 2018, the investment pool had an average duration of 14.42 days and an average weighted final maturity of 99.84 days for USD collateral. 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, 2018, the SBI had no credit risk exposure to borrowers. The market value of collateral held and the fair value of securities on loan from the SBI as of June 30, 2018 was $4,579,037,000 and $4,420,705,000 respectively. Cash collateral of $3,086,209,000 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*.

NOTE 4
Capital Assets, Building and Land

Capital assets are presented on the June 30, 2018, *Statement of Fiduciary Net Position* at historical cost, net of accumulated depreciation, as summarized in **Figure 11**. There were no significant leases as of June 30, 2018.

Legislation was passed in 1999 allowing PERA, the Minnesota Teacher's Retirement Association (TRA) and the Minnesota State Retirement System (MSRS) to purchase land and construct a 140,000 square foot building to house all three retirement systems. Ownership of the facility is prorated based on the amount of square footage each retirement system occupies in the building. PERA's ownership share is 36.5 percent. PERA's share of the cost to purchase the 4.3 acres of land was $170,308.

In June 2000 the State of Minnesota, under the authority of the Commissioner of Finance (currently known as Minnesota Management and Budget), issued revenue bonds totaling $29 million on behalf of the three retirement systems to pay for the construction of the facility. In August, 2012, the remaining bonds were refunded with the proceeds of a new, lower interest rate bond issue. The new bonds are secured by the value of the total assets of the largest defined benefit plans in the three statewide retirement systems. Through the issuance of the refunding bonds, which received a AAA rating, the bond term was reduced by five years and the present value of the savings to the retirement systems was $9,582,538. PERA's portion of the savings was $3,497,626.

Figure 11: Capital Assets (in thousands)

	Balance June 30, 2017	Additions	Disposals	Balance June 30, 2018
Capital assets, not being depreciated:				
Land	**$170**	**$0**	**$0**	**$170**
Capital assets, being depreciated:				
Building (includes generator)	10,893	0	0	10,893
Equipment, Furniture & Fixtures	1,164	504	0	1,668
Total capital assets being depreciated	**$12,057**	**$504**	**$0**	**$12,561**
Less accumulated depreciation for:				
Building (includes generator)	(4,410)	(281)	0	(4,691)
Equipment, Furniture & Fixtures	(911)	(625)	0	(1,536)
Total accumulated depreciation	**$(5,321)**	**$(906)**	**$0**	**$(6,227)**
Total capital assets, net of accum. depr.	**$6,906**	**$(402)**	**$0**	**$6,504**

Figure 12: Debt Repayment Schedule by Fiscal Year

Fiscal Year	Principal	Interest	Premium	Total
2019	642,400	72,713	49,745	764,858
2020	651,525	62,062	47,548	761,135
2021	669,775	51,259	45,320	766,354
2022	684,375	40,154	43,029	767,558
2023	698,975	28,807	40,689	768,471
2024	673,425	17,218	24,319	714,962
2025	365,000	6,052	8,548	379,600
	4,385,475	**278,265**	**259,198**	**4,922,938**

Total Unpaid Principal, 06/30/18	$4,385,475
Total Unpaid Premium, 06/30/18	259,198
Accrued Interest, June 2018	6,059
Total Bonds Payable on Financial Statements	**$4,650,732**

Figure 12 shows the debt service amounts for which PERA is directly responsible. Pursuant to the joint and several liability clause in the bond sale official statement, in the event of default, PERA could be liable for the entire remaining outstanding principal and premium balances of the bonds, plus the interest accrued for the month of June, totaling $13,487,500. Bonds payable on the Statement of Fiduciary Net Position is PERA's share of outstanding debt at the current ownership interest. It includes the principal balance as of June 30, 2018, the premium balance as of June 30, 2018, and interest accrued for the month of June.

NOTE 5
Contribution Requirements

Minnesota Statutes, Chapters 353, 353E, 353G and 356 set the rates for employer and employee contributions. Contribution rates are shown in **Figure 13**. Legislation was passed in 2018 to extend the full funding date for the General Employees Plan, Police and Fire Plan, and Correctional Plan to 2048. The legislation also increased both employee and employer contribution rates in the Police and Fire Plan. Employee rates increase from 10.80 percent of pay to 11.30 percent and employer rates increase from 16.20 percent to 16.95 percent on January 1, 2019. On January 1, 2020 employee rates increase to 11.80 percent and employer rates increase to 17.70 percent. As a result of these changes, contribution rates in the General Employees Plan and the Police and Fire Plan are now sufficient to fund the plan by the full funding date of 2048. Contribution rates in the Correctional Plan are not yet sufficient to fully fund the plan by the full funding dates of 2048. The actuarially required contributions are expressed as a level percentage of covered payroll and are determined using an individual entry-age actuarial *cost method.*

Beginning in fiscal year 2014, the State of Minnesota was also required to begin contributing $9 million to the Police and Fire Fund each

Figure 13: Retirement Plan Contribution Rates

Effective Date	Contributor	General Employees Fund Basic	General Employees Fund Coordinated	General Employees Fund MERF	Police & Fire Fund	Correctional Fund
01/01/2018	Member	9.10%	6.50%	9.75%	10.80%	5.83%
	Employer	11.78%	7.50%	9.75%	16.20%	8.75%
01/01/2019	Member	9.10%	6.50%	9.75%	11.30%	5.83%
	Employer	11.78%	7.50%	9.75%	16.95%	8.75%
01/01/2020	Member	9.10%	6.50%	9.75%	11.80%	5.83%
	Employer	11.78%	7.50%	9.75%	17.70%	8.75%

year. This state aid will continue until the fund is 90 percent funded, or until the State Patrol Plan (administered by the Minnesota State Retirement System) is 90 percent funded, whichever occurs later.

The MERF was fully merged into the General Employees Fund in fiscal year 2015. Supplemental contribution amounts were recalculated after the merger based on the amount of MERF's unfunded liability as of the merger date. The State of Minnesota will be contributing $16 million and the MERF employers will be contributing $21 million in fiscal years 2016 through 2019 to the General Employees Fund. Thereafter, the state will contribute $6 million and the MERF employers will contribute $31 million through calendar year 2031.

Minnesota Statutes, Section 353D.03, specifies contribution rates for those who participate in the Defined Contribution Plan. An eligible elected official or physician who decides to participate contributes 5 percent of salary, which is matched by the employer. For ambulance service personnel, employer contributions are determined by the employer, and for salaried employees must be a fixed percentage of salary. Employer contributions for volunteer personnel may be a unit value for each call or period of alert duty. Employees who are paid for their services may elect to make member contributions in an amount not to exceed the employer share.

Employer required contributions are calculated annually for each employer in the Volunteer Firefighter Plan. If fire state aid (based on income generated from insurance policies) plus expected investment income are not enough to cover the expected normal cost of benefits during the next calendar year, an employer contribution is calculated and payable by the end of the next calendar year.

NOTE 6
Net Pension Liability of Employers and Nonemployer Contributing Entity

The components of the net pension liability of the defined benefit cost-sharing plans for participating employers and the State of Minnesota (a nonemployer contributing entity in the General Employees Fund) as of June 30, 2018, calculated in accordance with GASB Statement No. 67, are shown in **Figure 14.**

A) Actuarial Methods and Assumptions

The total pension liability for each of the defined benefit cost-sharing plans was determined by an actuarial valuation as of June 30, 2018, using the entry age normal actuarial cost method. Inflation is assumed to be 2.50 percent for the General Employees and Police and Fire Plans. Inflation is assumed to be 2.0 percent for the Correctional Plan. Salary growth assumptions in the General Employees Plan decrease in annual increments from 11.25 percent after one year of service, to 3.25 percent after 26 years of service. In the Police and Fire Plan, salary growth assumptions decrease from 12.25 percent after one year of service to 3.25 percent after 25 years of service. In the Correctional Plan, salary growth assumptions decrease from 8.50 percent at age 20 to 3.50 percent at age 65. Mortality rates for all plans are based on RP-2014 mortality tables. The tables are adjusted slightly to fit PERA's experience.

Actuarial assumptions for the General Employees Plan are reviewed every four to six years. The most recent six-year experience study for the General Employees Plan was completed in 2015. The most recent four-year experience study for the Police and Fire Plan was completed in 2016. The most recent five-year experience study for the Correctional Plan, prepared by a former actuary, was completed in 2012. Economic assumptions were updated in 2014 based on a review of inflation and investment return assumptions.

B) Discount Rate

The discount rate used to measure the total pension liability in 2018 was 7.50 percent. The projection of cash flows used to determine the discount rate assumed that contributions from plan members and employers will be made at rates set in *Minnesota Statutes*. Based on these assumptions, the fiduciary net positions of the General Employees Fund, the Police and Fire Fund, and the Correctional Fund were projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Figure 14: NPL Components (in thousands)

	General Employees Fund	Police and Fire Fund	Correctional Fund
Total Pension Liability (A)	$27,101,067	$9,552,804	$696,842
Fund Fiduciary Net Position (B)	(21,553,477)	(8,486,907)	(680,395)
Net Pension Liability (A-B)	$5,547,590	$1,065,897	$16,447
Fund Fiduciary Net Position as a Percentage of the **Total Pension Liability (B/A)**	**79.5%**	**88.8%**	**97.6%**

Figure 15: Sensitivity Analysis (in thousands)

Net Pension Liability (Asset) at Different Discount Rates

	General Employees Fund		Police and Fire Fund		Correctional Fund	
1% Decrease	6.50%	$9,015,544	6.50%	$2,285,350	6.50%	$140,758
Current Discount Rate	7.50%	5,547,590	7.50%	1,065,897	7.50%	16,447
1% Increase	8.50%	2,684,893	8.50%	57,460	8.50%	(82,998)

C) Sensitivity Analysis

Figure 15 presents the net pension liability of employers and the State of Minnesota for PERA's defined benefit cost-sharing plans as of June 30, 2018, calculated using the current discount rate of 7.5 percent, as well as what each plan's net pension liability would be if it were calculated using a discount rate that is 1 percent lower and 1 percent higher than the current rate.

NOTE 7

Other Notes

A) New Asset Transfers

The Volunteer Firefighter Plan was created by the Minnesota Legislature in 2009. The plan is an agent multiple-employer defined benefit plan. Seventeen fire departments joined the plan in fiscal year 2018, bringing the total number of fire departments in the Volunteer Firefighter Plan to 159. The amount of assets transferred, $8,048,320 is shown as an *Other Addition* in PERA's *Statement of Changes in Fiduciary Net Position*. Each fire department has a separate account and retains its own assets and liabilities.

B) Participating Pension Plan

All employees of PERA are covered by the General Employees Plan and eligible for the plan provisions described in Note 1.D. *Minnesota Statutes,* Section 353.27 sets the rates for employee and employer contributions. These statutes are established and amended by the Minnesota Legislature. Contribution rates were shown previously in Figure 13. Total covered payroll for PERA employees during fiscal year 2018 was approximately $6.8 million.

Employer pension contributions for PERA employees for the fiscal years ending June 30, 2018, 2017, and 2016 were $512,920, $481,841, and $460,443 respectively. Employer contributions were equal to the required contributions for each year as set by state statute. Employer contributions paid by PERA on behalf of these employees are funded by General Employees Fund investment income.

Schedule of Changes in Net Pension Liabilities and Related Ratios*

Required Supplementary Information (unaudited, in thousands)

General Employees Fund

	Fiscal Year				
	2018	2017	2016	2015	2014
Total Pension Liability					
Service Cost	$513,422	$471,706	$434,551	$421,602	$388,391
Interest on the Total Pension Liability	1,948,853	1,921,869	1,839,388	1,712,534	1,591,756
Change of Benefit Terms	(79,217)	-	-	1,147,198	-
Difference between Expected and Actual Experience	8,763	280,527	(647,197)	(348,383)	96,123
Assumption Changes	(262,228)	(853,320)	2,119,742	-	645,499
Benefit Payments	(1,470,450)	(1,413,448)	(1,359,176)	(1,235,303)	(1,109,866)
Refund Payments	(42,589)	(37,234)	(37,209)	(35,655)	(38,264)
Net Change in Total Pension Liability	$616,554	$370,100	$2,350,099	$1,661,993	$1,573,639
Total Pension Liability–Beginning	26,484,513	26,114,413	23,764,314	22,102,321	20,528,682
Total Pension Liability–Ending (a)	$27,101,067	$26,484,513	$26,114,413	$23,764,314	$22,102,321
Plan Fiduciary Net Position					
Contributions--Employer	$488,819	$477,888	$459,978	$435,115	$382,251
Contributions--Member	409,423	400,204	375,291	353,765	334,495
Contributions–Nonemployer Contributing Entity	16,000	6,000	6,000	-	-
Net Investment Income	2,063,582	2,682,901	(20,851)	777,504	2,760,854
Benefit Payments	(1,470,450)	(1,413,448)	(1,359,176)	(1,235,303)	(1,109,866)
Refund Payments	(42,589)	(37,234)	(37,209)	(35,655)	(38,264)
Administrative Expenses	(11,943)	(11,292)	(11,350)	(10,367)	(9,861)
Other**	56	411	671	891,914	605
Net Change in Plan Fiduciary Net Position	$1,452,898	$2,105,430	$(586,646)	$1,176,973	$2,320,214
Plan Fiduciary Net Position--Beginning	20,100,579	17,995,149	18,581,795	17,404,822	15,084,608
Plan Fiduciary Net Position--Ending (b)	$21,553,477	$20,100,579	$17,994,909	$18,581,795	$17,404,822
Net Pension Liability (a)-(b)	$5,547,590	$6,383,934	$8,119,504	$5,182,519	$4,697,499
Plan Fiduciary Net Position as a (b)/(a) Percentage of Total Pension Liability	79.53%	75.90%	68.91%	78.19%	78.75%
Covered-Employee Payroll	$6,298,815	$6,156,985	$5,773,708	$5,549,255	$5,351,920
Net Pension Liability as a Percentage of Covered Employee Payroll	88.07%	103.69%	140.63%	93.39%	87.77%

*This schedule is intended to show information for ten years; additional years will be displayed as the information becomes available.
**Restated 2017 and 2016 for rounding and other differences; no effect on Plan Fiduciary Net Position.

Notes to Schedule of Changes in Net Pension Liabilities and Related Ratios

General Employees Fund

2018 Changes
Changes in Actuarial Assumptions:

The morality projection scale was changed from MP-2015 to MP-2017

The assumed benefit increase was changed from 1.00% per year through 2044 and 2.50% per year thereafter to 1.25% per year.

2017 Changes
Changes in Actuarial Assumptions:

The Combined Service Annuity (CSA) loads were changed from 0.8% for active members and 60% for vested and non-vested deferred members. The revised CSA load are now 0.0% for active member liability, 15.0 % for vested deferred member liability, and 3.0% for non-vested deferred member liability.

The assumed post-retirement benefit increase rate was changed for 1.0% per year for all years to 1.0% per year through 2044 and 2.5% per year therafter.

2016 Changes
Changes in Actuarial Assumptions:

The assumed post-retirement benefit increase rate was changed from 1.0% per year through 2035 and 2.5% per year thereafter to 1.0% per year for all years.

The assumed investment return was changed from 7.9% to 7.5%. The single discount rate changed from 7.9% to 7.5%.

Other assumptions were changed pursuant to the experience study June 30, 2015. The assumed future salary increases, payroll growth, and inflation were decreased by 0.25% to 3.25% for payroll growth and 2.5% for inflation.

2015 Changes
Changes in Plan Provisions:

On January 1, 2015, the Minneapolis Employees Retirement Fund was merged into the General Employees Fund, which increased the total pension liability by $1.1 billion and increase the fiduciary plan net position by $892 million. Upon consolidation, state and employer contributions were revised.

Changes in Actuarial Assumptions:

The assumed post-retirement benefit increase rate was changed from 1.0% per year through 2030 and 2.5% per year thereafter to 1.0% per year through 2035 and 2.5% per year thereafter.

Continued

Schedule of Changes in Net Pension Liabilities and Related Ratios*

Required Supplementary Information (unaudited, in thousands)

Police and Fire Fund

	Fiscal Year				
	2018	2017	2016	2015	2014
Total Pension Liability					
Service Cost	$203,131	$318,401	$194,352	$187,959	$169,124
Interest on the Total Pension Liability	682,903	616,740	658,198	648,233	598,165
Change of Benefit Terms	(50,771)	-	-	-	-
Difference between Expected and Actual Experience	21,720	37,292	(375,575)	(221,112)	1,813
Assumption Changes	(42,807)	(2,300,201)	2,650,350	-	323,945
Benefit Payments	(528,468)	(512,379)	(498,608)	(481,330)	(452,462)
Refund Payments	(1,902)	(2,119)	(2,391)	(1,953)	(1,633)
Net Change in Total Pension Liability	$283,806	$(1,842,266)	$2,626,326	$131,797	$638,952
Total Pension Liability--Beginning	9,268,998	11,111,264	8,484,938	8,353,141	7,714,189
Total Pension Liability--Ending (a)	$9,552,804	$9,268,998	$11,111,264	$8,484,938	$8,353,141
Plan Fiduciary Net Position					
Contributions--Employer	$170,781	$166,329	$156,065	$144,317	$132,632
Contributions--Member	105,479	101,984	95,172	88,733	81,213
Contributions--Nonemployer Contributing Entity	9,000	9,000	9,000	9,000	9,000
Net Investment Income	813,966	1,058,942	(8,949)	317,556	1,158,389
Benefit Payments	(528,468)	(512,379)	(498,608)	(481,330)	(452,462)
Refund Payments	(1,902)	(2,119)	(2,391)	(1,953)	(1,633)
Administrative Expenses	(886)	(992)	(906)	(803)	(798)
Other	58	24	3	84	18
Net Change in Plan Fiduciary Net Position	$568,028	$820,789	$(250,614)	$75,604	$926,359
Plan Fiduciary Net Position--Beginning	7,918,879	7,098,090	7,348,704	7,273,100	6,346,741
Plan Fiduciary Net Position--Ending (b)	$8,486,907	$7,918,879	$7,098,090	$7,348,704	$7,273,100
Net Pension Liability (a)-(b)	$1,065,897	$1,350,119	$4,013,174	$1,136,234	$1,080,041
Plan Fiduciary Net Position as a Percentage of Total Pension Liability (b)/(a)	88.84%	85.43%	63.88%	86.61%	87.07%
Covered-Employee Payroll	$976,657	$944,296	$881,222	$845,076	$820,333
Net Pension Liability as a Percentage of Covered Employee Payroll	109.14%	142.98%	455.41%	134.45%	131.66%

*This schedule is intended to show information for ten years; additional years will be displayed as the information becomes available.

Notes to Schedule of Changes in Net Pension Liabilities and Related Ratios

Police and Fire Fund

2018 Changes:

Changes in Actuarial Assumptions:

The morality projection scale was changed from MP-2016 to MP-2017

2017 Changes:

Changes in Actuarial Assumptions:

Assumed salary increases were changed as recommended in the June 30, 2016 experience study. The net effect is proposed rates that average 0.34% lower than the previous rates.

Assumed rates of retirement were changed, resulting in fewer retirements.

The Combined Service Annuity (CSA) load was 30% for vested and non-vested, deferred members. The CSA has been changed to 33% for vested members and 2% for non-vested members.

The base mortality table for healthy annuitants was changed from the RP-2000 fully generational table to the RP-2014 fully generational table (with a base year of 2006), with male rates adjusted by a factor of 0.96. The mortality improvement scale was changed from Scale AA to Scale MP-2016. The base mortality table for disabled annuitants was changed from the RP-2000 disabled mortality table to the mortality tables assumed for healthy retirees.

Assumed termination rates were decreased to 3.0% for the first three years of service. Rates beyond the select period of three years were adjusted, resulting in more expected terminations overall.

Assumed percentage of married female members was decreased from 65% to 60%.

Assumed age difference was changed from separate assumptions for male members (wives assumed to be three years younger) and female members (husbands assumed to be four years older) to the assumption that males are two years older than females.

The assumed percentage of female members electing Joint and Survivor annuities was increased.

The assumed post-retirement benefit increase rate was changed from 1.00% for all years to 1.00% per year through 2064 and 2.50% thereafter.

2016 Changes:

Changes in Actuarial Assumptions:

The assumed post-retirement benefit increase rate was changed from 1.0% per year through 2037 and 2.5% per year thereafter to 1.0% per year for all future years.

The assumed investment return was changed from 7.9% to 7.5%. The single discount rate changed from 7.9% to 5.6%.

The assumed future salary increases, payroll growth, and inflation were decreased by 0.25% to 3.25% for payroll growth and 2.5% for inflation.

2015 Changes:

Changes in Plan Provisions:

The post-retirement benefit increase to be paid after the attainment of the 90% funding threshold was changed from inflation up to 2.5%, to a fixed rate of 2.5%.

Changes in Actuarial Assumptions:

The assumed post-retirement benefit increase rate was changed from 1.0% per year through 2030 and 2.5% per year thereafter to 1.0% per year through 2037 and 2.5% per year thereafter.

Schedule of Changes in Net Pension Liabilities and Related Ratios*

Required Supplementary Information (unaudited, in thousands)

Correctional Fund

	Fiscal Year				
	2018	**2017**	**2016**	**2015**	**2014**
Total Pension Liability					
Service Cost	$45,378	$49,202	$25,950	$25,098	$26,488
Interest on the Total Pension Liability	53,811	47,336	40,605	37,043	33,955
Change of Benefit Terms	(66,822)	-	-	-	-
Difference between Expected and Actual Experience	1,018	(3,516)	382	(7,892)	(5,327)
Assumption Changes	(209,457)	(66,147)	310,332	-	(34,168)
Benefit Payments	(13,183)	(11,033)	(9,381)	(7,777)	(6,711)
Refund Payments	(1,364)	(1,478)	(982)	(1,057)	(1,105)
Net Change in Total Pension Liability	$(190,619)	$14,364	$366,906	$45,415	$13,132
Total Pension Liability--Beginning	887,461	873,097	506,191	460,776	447,644
Total Pension Liability--Ending (a)	$696,842	$887,461	$873,097	$506,191	$460,776
Plan Fiduciary Net Position					
Contributions--Employer	$17,871	$17,489	$16,490	$15,736	$15,054
Contributions--Member	11,956	11,666	11,008	10,472	10,030
Contributions--Nonemployer Contributing Entity	-	-	-	-	-
Net Investment Income	62,962	78,363	209	20,373	69,451
Benefit Payments	(13,183)	(11,033)	(9,381)	(7,777)	(6,711)
Refund Payments	(1,364)	(1,478)	(982)	(1,057)	(1,105)
Administrative Expenses	(308)	(330)	(290)	(247)	(236)
Other	1	-	(2)	(1)	(1)
Net Change in Plan Fiduciary Net Position	$77,935	$94,677	$17,052	$37,499	$86,482
Plan Fiduciary Net Position--Beginning	602,460	507,783	490,731	453,232	366,750
Plan Fiduciary Net Position--Ending (b)	$680,395	$602,460	$507,783	$490,731	$453,232
Net Pension Liability (a)-(b)	$16,447	$285,001	$365,314	$15,460	$7,544
Plan Fiduciary Net Position as a Percentage of Total Pension Liability (b)/(a)	97.64%	67.89%	58.16%	96.95%	98.36%
Covered-Employee Payroll	$205,077	$200,103	$188,816	$179,623	$172,041
Net Pension Liability as a Percentage of Covered Employee Payroll	8.02%	142.43%	193.48%	8.61%	4.39%

*This schedule is intended to show information for ten years; additional years will be displayed as the information becomes available.

Notes to Schedule of Changes in Net Pension Liabilities and Related Ratios

Correctional Fund

2018 Changes:
Changes in Actuarial Assumptions:

The Single Discount Rate was changed from 5.96% per annum to 7.50% per annum.

The morality projection scale was changed from MP-2016 to MP-2017

The assumed post-retirement benefit increase was changed from 2.50% per year to 2.00% per year.

2017 Changes:
Changes in Actuarial Assumptions:

The base mortality table for healthy annuitants was changed from the RP-2000 fully generational table to the RP-2014 fully generational table (with a base year of 2006), with male rates adjusted by a factor of 0.96. The mortality improvement scale was changed from Scale AA to Scale MP-2016, and is applied to healthy and disabled members. The base mortality table for disabled annuitants was changed from the RP-2000 disabled mortality table to the RP-2014 disabled annuitant mortality table (with future mortality improvement according to MP-2016).

The Combined Service Annuity (CSA) load was 30% for vested and non-vested, deferred members. The CSA has been changed to 35% for vested members and 1% for non-vested members.

The Single Discount Rate was changed from 5.31% per annum to 5.96% per annum.

2016 Changes:
Changes in Actuarial Assumptions:

The assumed investment return was changed from 7.9% to 7.5%. The single discount rate changed from 7.9% to 5.31%.

The assumed future salary increases, payroll growth, and inflation were decreased by 0.25% to 3.25% for payroll growth and 2.5% for inflation.

Schedule of Contributions from Employers and Nonemployers

Required Supplementary Information (unaudited, in thousands)

General Employees Fund

Year Ended June 30	Actuarially Determined Contribution (A)	Statutorily Determined Contribution (B)	Actual Contributions (C)	Contribution Deficiency (Excess) (A)-(C)	Covered Payroll (D)	Actual Contribution as a % of Covered Payroll (C)/(D)
2018	$609,725	$504,819	$504,819	$104,906	$6,298,815	8.01%
2017	615,083	483,888	483,888	131,195	6,156,985	7.86%
2016	542,151	465,978	465,978	76,173	5,773,708	8.07%
2015	523,017	435,115	435,115	87,902	5,549,255	7.84%
2014	476,321	382,251	382,251	94,070	5,351,920	7.14%
2013	430,773	372,652	372,652	58,121	5,246,928	7.10%
2012	371,295	368,037	368,037	3,258	5,142,592	7.16%
2011	321,782	357,596	357,596	(35,814)	5,079,429	7.04%
2010	443,548	342,678	342,678	100,870	4,804,627	7.13%
2009	381,151	328,603	328,603	52,548	4,778,708	6.88%

Notes to Schedule of Contributions

Required Supplementary Information

Methods and Assumptions

The following methods and assumptions are used to calculate actuarially determined contributions and are, in a few cases, different from the methods and assumptions used to calculate the net pension liability in accordance with Governmental Accounting Standards Board requirements.

Valuation Date:	June 30, 2017 Actuarially determined contribution rates are calculated as of each June 30 and apply to the fiscal year beginning on the day after the measurement date.
Actuarial Cost Method:	Entry Age Normal
Amortization Method:	Level percentage of payroll, closed
Remaining Amortization Period:	16 years
Asset Valuation Method:	5-year smoothed market, no corridor
Inflation:	2.75%
Payroll Growth Rate:	3.50%
Salary Increases:	3.50% to 11.50%, including inflation
Investment Rate of Return:	8.00%
Retirement Age:	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2016 valuation pursuant to an experience study of the period 2008 - 2014
Mortality:	RP-2014 annuitant generational mortality table, projected with scale MP-2015 from a base year of 2014, white collar adjustment, set forward two years for males and rates adjusted by a factor of 0.90 for females
Cost of Living Increase:	The plan is assumed to pay a 2.5% post retirement benefit increase beginning January 1, 2036.

Schedule of Contributions from Employers and Nonemployers

Required Supplementary Information (unaudited, in thousands)

Police and Fire Fund

Year Ended June 30	Actuarially Determined Contribution (A)	Statutorily Determined Contribution (B)	Actual Contributions (C)	Contribution Deficiency (Excess) (A)-(C)	Covered Payroll (D)	Actual Contribution as a % of Covered Payroll (C)/(D)
2018	$193,183	$179,781	$179,781	$13,402	$976,657	18.41%
2017	165,252	175,329	175,329	(10,077)	944,296	18.57%
2016	189,375	165,065	165,065	24,310	881,222	18.73%
2015	197,325	153,317	153,317	44,008	845,076	18.14%
2014	163,985	141,632	141,632	22,353	820,333	17.27%
2013	189,254	125,995	125,995	63,259	796,188	15.82%
2012	152,369	121,891	121,891	30,478	794,417	15.34%
2011	124,284	109,604	109,604	14,680	775,806	14.13%
2010	150,220	107,066	107,066	43,154	740,101	14.47%
2009	140,591	101,548	101,548	39,043	733,164	13.85%

Notes to Schedule of Contributions

Required Supplementary Information

Methods and Assumptions

The following methods and assumptions are used to calculate actuarially determined contributions and are, in a few cases, different from the methods and assumptions used to calculate the net pension liability in accordance with Governmental Accounting Standards Board requirements.

Valuation Date:	June 30, 2017
	Actuarially determined contribution rates are calculated as of each June 30 and apply to the fiscal year beginning on the day after the measurement date.
Actuarial Cost Method:	Entry Age Normal
Amortization Method:	Level percentage of payroll, closed
Remaining Amortization Period:	26 years
Asset Valuation Method:	5-year smoothed market, no corridor
Inflation:	2.75%
Payroll Growth Rate:	3.50%
Salary Increases:	3.50% to 12.50%, including inflation
Investment Rate of Return:	8.00%
Retirement Age:	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2017 valuation pursuant to an experience study of the period 2011 - 2015 prepared by a former actuary.
Mortality:	RP-2014 annuitant generational mortality table, projected with mortality improvement scale MP-2016, from a base year of 2006. Male rates adjusted by a factor of 0.96.
Cost of Living Increase:	The plan is assumed to pay a 2.50% post retirement benefit increase beginning January 1, 2034.

Schedule of Contributions from Employers and Nonemployers

Required Supplementary Information (unaudited, in thousands)

Correctional Fund

Year Ended June 30	Actuarially Determined Contribution (A)	Statutorily Determined Contribution (B)	Actual Contributions (C)	Contribution Deficiency (Excess) (A)-(C)	Covered Payroll (D)	Actual Contribution as a % of Covered Payroll (C)/(D)
2018	$19,031	$17,871	$17,871	$1,160	$205,077	8.71%
2017	17,269	17,489	17,489	(220)	200,103	8.74%
2016	16,446	16,490	16,490	(44)	188,816	8.73%
2015	13,759	15,736	15,736	(1,977)	179,623	8.76%
2014	14,606	15,054	15,054	(448)	172,041	8.75%
2013	14,207	14,498	14,498	(291)	164,820	8.80%
2012	12,473	14,320	14,320	(1,847)	164,340	8.71%
2011	12,183	14,289	14,289	(2,106)	165,077	8.66%
2010	12,273	14,170	14,170	(1,897)	154,777	9.16%
2009	11,469	14,124	14,124	(2,655)	154,650	9.13%

Notes to Schedule of Contributions

Required Supplementary Information

Methods and Assumptions

The following methods and assumptions are used to calculate actuarially determined contributions and are, in a few cases, different from the methods and assumptions used to calculate the net pension liability in accordance with Governmental Accounting Standards Board requirements.

Valuation Date: June 30, 2017

Actuarially determined contribution rates are calculated as of each June 30 and apply to the fiscal year beginning on the day after the measurement date.

Actuarial Cost Method: Entry Age Normal

Amortization Method: Level percentage of payroll, closed

Remaining Amortization Period: 21 years

Asset Valuation Method: 5-year smoothed market, no corridor

Inflation: 2.75%

Payroll Growth Rate: 3.50%

Salary Increases: 3.75% to 8.75%, including inflation

Investment Rate of Return: 8.00%

Retirement Age: Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2012 valuation pursuant to an experience study of the period 2006 - 2011 prepared by a former actuary.

Mortality: RP-2014 annuitant generational mortality table, projected with mortality improvement scale MP-2016, from a base year of 2006. Male rates adjusted by a factor of 0.96.

Cost of Living Increase: The plan is assumed to pay a 2.50% post retirement benefit for all years.

Schedule of Investment Returns*

Required Supplementary Information (unaudited)

Year	General Employees Fund	Police and Fire Fund	Correctional Fund	Volunteer Firefighter Fund
2018	10.47%	10.48%	10.35%	5.83%
2017	15.23%	15.22%	15.22%	10.31%
2016	-0.07%	-0.09%	0.08%	2.82%
2015	4.45%	4.46%	4.42%	2.83%
2014	18.66%	18.66%	18.56%	13.12%

*The annual money-weighted rate of return for each plan is net of pension expense.

This schedule is intended to show information for ten years; additional years will be displayed as the information becomes available.

Statement of Changes in Assets and Liabilities—Agency Fund

For the Fiscal Year Ended June 30, 2018 (in thousands)

	Beginning Balance 07/01/2017	Additions	Deductions	Ending Balance 06/30/2018
ASSETS				
Cash	$872	$167,800	$167,735	$937
Investments				
Bond Pool	105,836	60,853	11,603	155,086
Index Stock Pool	452,823	107,049	130,232	429,640
Money Market	16,501	86,964	52,005	51,460
Total Assets	**$576,032**	**$422,666**	**$361,575**	**$637,123**
LIABILITIES				
Accounts Payable	$576,032	$422,666	$361,575	$637,123
Total Liabilities	**$576,032**	**$422,666**	**$361,575**	**$637,123**

Schedule of Investment Expenses

For the Fiscal Year Ended June 30, 2018 (in thousands)

	General Employees	Police & Fire Plan	Correctional Plan	SVF	DCP	Total
Source of Expenses						
Outside Money Managers–Equities	$17,448	$6,880	$540	$30	$33	$24,931
Outside Money Managers–Fixed Income	3,628	1,431	112	34	23	5,228
Minnesota State Board of Investment	1,200	473	37	114	3	1,827
Callan Investment	162	64	5	0	0	231
QED Consulting	97	38	3	0	0	138
Other Investments	40	0	0	0	3	43
Pension Consulting Alliance	89	35	3	0	0	127
	$22,664	$8,921	$700	$178	$62	$32,525

A *Schedule of Investment Fees* paid to money managers is provided in the *Investment Section* of this report.

Schedule of Payments to Consultants

For the Fiscal Year Ended June 30, 2018 (in thousands)

Individual or Firm Name	Fee Paid	
Actuary		
Gabriel Roeder Smith & Co.	$244	**$244**
Financial Services		
Clifton Larson Allen LLP	$109	
MMB / OLA Audit Fees	134	
SVF Audit Fees	70	**$313**
Legal		
Attorney General	$28	**$28**
Management Consultants		
MINNCOR	$37	
Berwyn Group	7	
Kusske Financial Mgmt	3	
Other	6	**$53**
Medical Evaluations		
MMRO	$369	
MMB	22	
Office of Administrative Hearings	8	**$399**
System Development		
Toshiba Business Solutions USA	$45	
Works Computing Inc	12	
Software House Intl Inc	2	**$59**
Total Professional Service Fees		**$1,096**

Schedule of Administrative Expenses

For the Fiscal Year Ended June 30, 2018 (in thousands)

Personal Services		
Staff Salaries	$9,219	
Part-Time, Seasonal Labor	76	
Other Benefits	91	
Total Personal Services		**$9,386**
Professional Services		
Actuary	$244	
Financial	313	
Legal	28	
Management Consultants	53	
Medical Evaluations	399	
System Development	59	
Total Professional Services		**$1,096**
Communications		
Mail & Telephone Services	$527	
Printing & Advertising	116	
Total Communications		**$643**
Office Building and Maintenance		
Building	$298	
Depreciation - Building	270	
Bond Interest	82	
Total Office Building and Maintenance		**$650**
Other		
Depreciation - Equipment	$133	
Employee Development	172	
Equipment Maintenance	295	
Indirect Costs	44	
Operating Costs	149	
Supplies & Materials	774	
Travel	76	
Total Other		**$1,643**
Total Administrative Expenses		**$13,418**

Allocation of Administrative Expenses

Defined Benefit Plans		
Public Employees Retirement Fund	$11,943	
Public Employees Police and Fire Fund	886	
Public Employees Correctional Fund	308	
Statewide Volunteer Firefighter	70	
Defined Contribution Plans		
Defined Contribution Fund	211	
Total Administrative Expenses		**$13,418**

TOP STATE TO RETIRE IN

Minnesota is the best state to retire, according to a study from AARP, the nation's largest advocate for seniors. The study looked at affordability, housing, health care, quality of life, supports for family caregivers, and more.

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MINNESOTA STATE BOARD OF INVESTMENT

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INVESTMENT AUTHORITY

The assets of the Public Employees Retirement Association (PERA) are invested along with the assets of the Teachers 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. PERA'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

PERA'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 PERA, the Minnesota State Retirement System, and the Minnesota Teachers Retirement Association. PERA does not own any underlying assets, but instead owns a participation in the pooled Combined Funds. Because these assets normally accumulate for thirty to forty years, SBI's objective is to take advantage of the long investment time horizon offered by equities and alternative assets in order to meet its actuarial return target and ensure that sufficient funds are available to finance promised benefits at the time of retirement. The 2018 Legislature reduced the actuarial interest rate assumption for PERA to 7.5%.

Continued

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:

• Public Equity	53%
• Fixed Income	20%
• Private Markets	25%
• Cash	2%

Based on values on June 30, 2018, the Combined Funds returned 4.6 percentage points above the CPI over the last 20 years and returned 0.4 percentage point above the composite index over the past 10 years. Investment returns ranked in the 8th percentile over the past five years and in the 8th 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
November 26, 2018

Investment Results

Fund Performance

Fund	Rates of Return (Annualized) FY 2018	3-Year	5-Year	10-Year	20-Year
Combined Funds (Active/Retiree)*	10.3%	8.3%	9.5%	7.8%	6.8%
Combined Composite Market Index	9.7%	8.3%	9.3%	7.4%	6.6%

* Percentages are net of all management fees.

Note: All composite indices are composed of the following market indicators, weighted according to asset allocation:

Domestic Stocks—Russell 3000 measures the performance of the largest 3,000 US companies based on total market capitalization.

International Stocks—Morgan Stanley Capital International All Country World Index measures equity market performance in the global developed and emerging markets other than the United States.

Bonds—Bloomberg Barclays U.S. Aggregate Bond Index reflects the performance of the broad bond market for investment grade (Baa or higher) bonds, US Treasury and agency securities, and mortgage obligations with maturities greater than one year.

Investment Returns by Sector

Performance of Asset Pools (Net of Fees)

	Rates of Return (Annualized) FY 2018	3-Year	5-Year	10-Year	20-Year
Domestic Stock Pool	15.4%	11.3%	13.3%	10.2%	6.5%
Russell 3000	14.8%	11.6%	13.3%	10.2%	6.6%
Bond Pool	0.1%	2.3%	2.8%	4.4%	5.0%
Bloomberg Barclays Aggregate	-0.4%	1.7%	2.3%	3.7%	4.7%
International Stock Pool	7.5%	5.3%	6.4%	3.0%	5.2%
MSCI ACWI ex US	7.3%	5.1%	6.0%	2.5%	4.9%
Private Markets	14.8%	11.3%	12.0%	9.2%	12.1%
Real Estate Pool	12.1%	9.4%	13.1%	4.8%	8.7%
Private Equity Pool	19.7%	15.1%	15.5%	11.7%	12.7%
Resource Pool	4.3%	-0.3%	0.9%	4.9%	13.8%
Private Credit Pool	12.0%	14.2%	14.4%	11.2%	13.0%

Note: Investment returns were calculated using a time-weighted rate of return.

Continued

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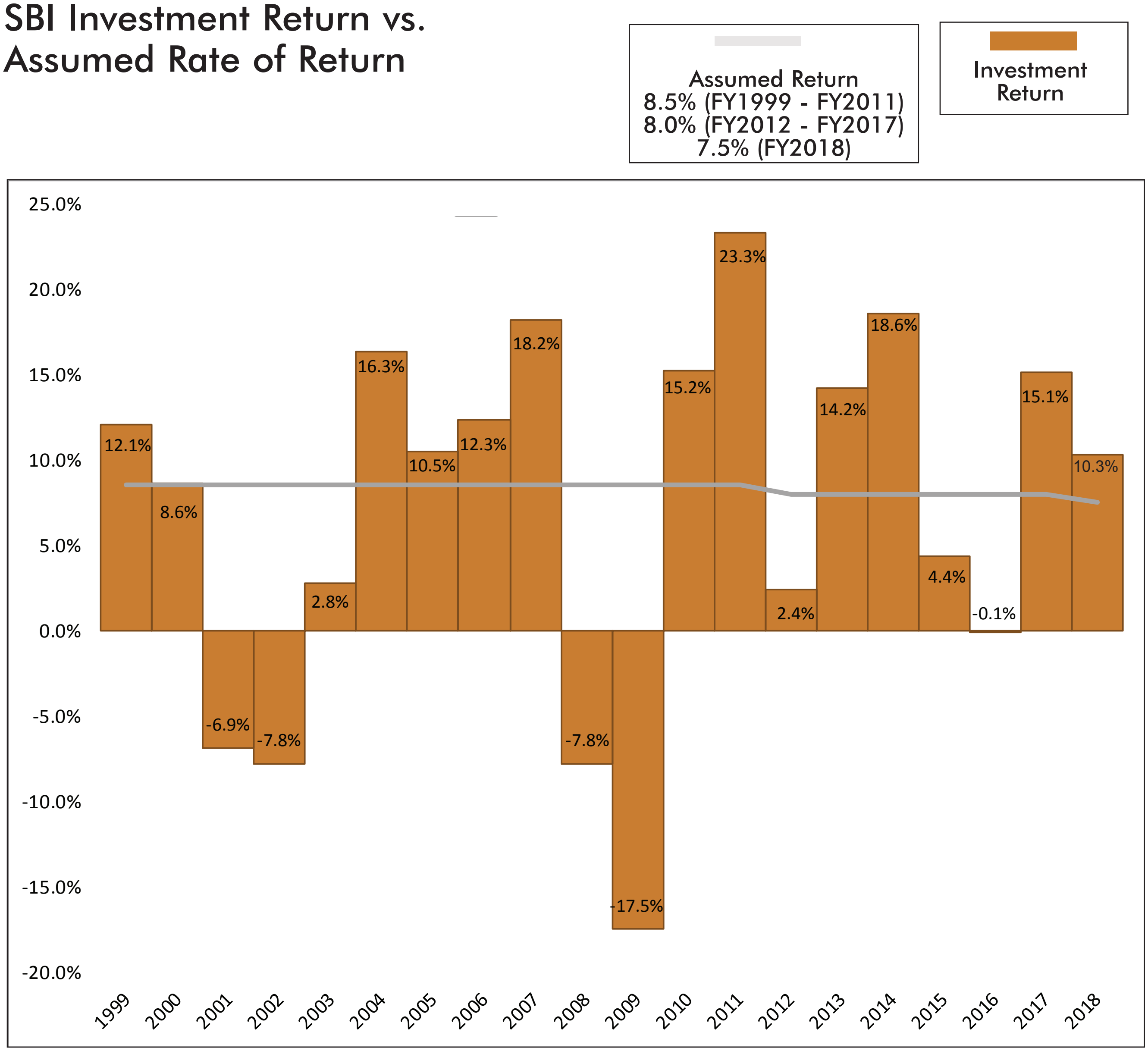
SBI Investment Return vs. Assumed Rate of Return



The State Board of Investment (SBI) has exceeded its assumed rate of return 12 of the past 20 years. Over those 20 years, the SBI has had annualized investment earnings of 6.8 percent.

TUCS Ranking

Percentage Ranking: 1 Year — 11th   3 Year — 8th   5 Year — 8th   10 year — 8th

Note: Comparison is with public and corporate pension plans greater than $1 billion, gross of fees.

Asset Allocation

As of June 30, 2018

Investment Type	Combined Funds Actual Asset Mix	Combined Funds Long-term Policy Target
Domestic Equity	41.6%	36.0%
International Equity	19.2%	17.0%
Fixed Income	24.3%	20.0%
Private Markets*	13.8%	25.0%
Cash	1.1%	2.0%
Total	100%	100%

* Percentages are net of all management fees.

Investment Section

List of Largest Assets Held

June 30, 2018

Top Ten Equity Holdings (By Fair Value)

Security	Fair Value (In millions)	% of Portfolio
Apple Inc.	$364.38	1.19%
Amazon.com Inc.	$328.16	1.07%
Microsoft Corporation	$315.09	1.03%
Facebook Inc.	$215.21	0.70%
Alphabet Inc. Class A Shares	$155.52	0.51%
JP Morgan Chase & Co.	$154.24	0.50%
Berkshire Hathaway Inc. Class B	$142.88	0.47%
Alphabet Inc. Class C Shares	$141.25	0.46%
Exxon Mobil Corporation	$140.17	0.46%
Johnson & Johnson	$139.49	0.45%

Top Ten Fixed Income Holdings (By Fair Value)

Security	Fair Value (In millions)	% of Portfolio	Maturity Date	Coupon %
U.S. Treasury N/B	$165.46	0.54%	02/15/2027	2.250%
U.S. Treasury N/B	$156.78	0.51%	09/30/2024	2.125%
U.S. Treasury N/B	$113.37	0.37%	11/15/2043	3.750%
U.S. Treasury N/B	$93.79	0.31%	11/15/2024	2.250%
GNMA II TBA 30 YR 4.5	$90.22	0.29%	07/19/2048	4.500%
U.S. Treasury N/B	$79.79	0.26%	05/15/2047	3.000%
U.S. Treasury N/B	$75.56	0.25%	08/15/2025	2.000%
U.S. Treasury N/B	$74.66	0.24%	11/15/2042	2.750%
U.S. Treasury N/B	$72.82	0.24%	05/31/2022	1.750%
U.S. Treasury N/B	$72.42	0.24%	02/29/2024	2.125%

PERA's assets are commingled in various pooled investment accounts administered by the State Board of Investment. PERA does not own specific values of the underlying assets. The percentages shown are those of the total pooled accounts. The fair value amounts are based on PERA's participation in the pools. 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 the Minnesota State Board of Investment.

Investment Summary at Fair Value

For Fiscal Year Ended June 30, 2018 (in thousands)

General Employees Fund

Pooled Accounts

	2018 Beginning Fair Value	2018 Ending Fair Value	Percent of Total Fair Value
U.S. Stock Actively Managed Pool	$5,359,025	$2,276,782	11%
Bond Pool	3,895,018	5,230,420	24%
U.S. Stock Index Pool	3,328,383	6,661,641	31%
Broad International Stock Pool	4,355,316	4,134,848	19%
Private Markets	2,635,922	2,976,338	14%
Money Market Pool	485,110	233,286	1%
Total Pooled Accounts	**$20,058,774**	**$21,513,315**	**100%**

Police and Fire Fund

Pooled Accounts

	2018 Beginning Fair Value	2018 Ending Fair Value	Percent of Total Fair Value
U.S. Stock Actively Managed Pool	$2,112,351	$896,986	11%
Bond Pool	1,535,288	2,060,635	24%
U.S. Stock Index Pool	1,311,939	2,624,494	31%
Broad International Stock Pool	1,716,722	1,629,011	19%
Private Markets	1,038,994	1,172,591	14%
Money Market Pool	188,309	86,545	1%
Total Pooled Accounts	**$7,903,603**	**$8,470,262**	**100%**

Correctional Fund

Pooled Accounts

	2018 Beginning Fair Value	2018 Ending Fair Value	Percent of Total Fair Value
U.S. Stock Actively Managed Pool	$160,652	$71,898	11%
Bond Pool	116,764	165,171	24%
U.S. Stock Index Pool	99,778	210,368	31%
Broad International Stock Pool	130,563	130,574	19%
Private Markets	79,019	93,990	14%
Money Market Pool	14,956	7,622	1%
Total Pooled Accounts	**$601,732**	**$679,623**	**100%**

Volunteer Firefighter Fund

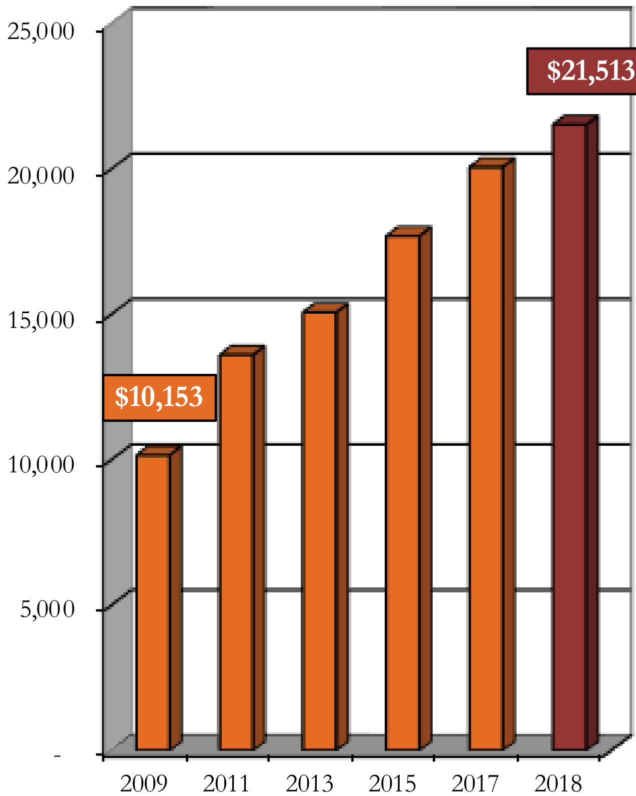
Volunteer Firefighter Account

	2018 Beginning Fair Value	2018 Ending Fair Value	Percent of Total Fair Value
Bond Pool	$34,052	$40,111	46%
U.S. Stock Index Pool	26,597	31,161	35%
Broad International Stock Pool	11,335	12,906	15%
Money Market Pool	3,448	4,153	4%
Total Volunteer Firefighter Account	**$75,432**	**$88,331**	**100%**

Fair Value of Investments

Last 10 Years (in millions)

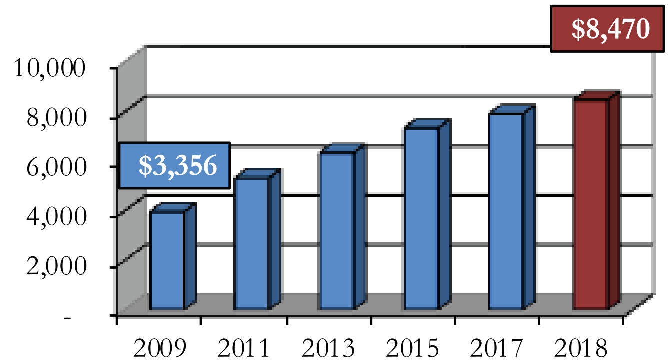
General Employees Fund



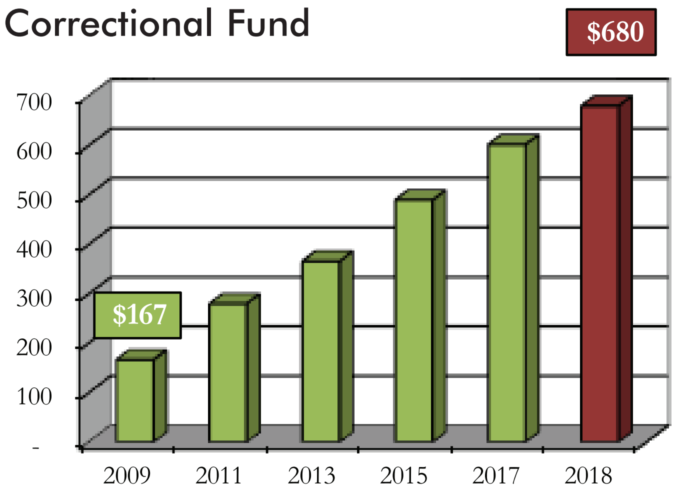
General Employees Fund
Minneapolis Employees Retirement Fund was merged into the General Employees Fund on January 1, 2015.

For comparison purposes, both funds are combined on this illustration.

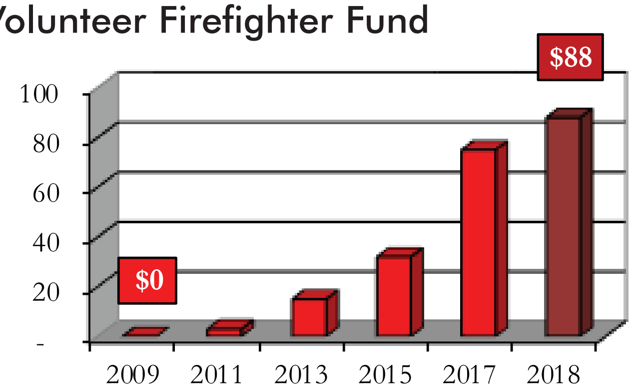
Police and Fire Fund



Correctional Fund



Volunteer Firefighter Fund



Schedule of Investment Fees

For Fiscal Year Ended June 30, 2018 (in thousands)

SBI & Consultants:

State Board of Investment	$1,827
Callan Investment	230
QED Consulting	137
Other Investments	43
Pension Consulting Alliance	127
Total	**$2,364**

Outside Money Managers:

Active Domestic Equity:

Barrow Hanley	$266
Earnest Partners	184
Goldman Equity	983
Hotchkis and Wiley	1,058
LSV Asset	641
Martingale	825
McKinley Capital	228
Peregrine Capital	955
Sands Capital	541
Winslow Capital	280
Zevenbergen Capital	736
Arrowpoint Asset Management LLC	683
Hood River Capital Management LLC	771
Rice Hall James & Associates LLC	674
Wellington Management Company LLP	656
Total	**$9,481**

Passive Domestic Equity:

Blackrock	**$211**

Passive Domestic Equity Large Cap:

Blackrock Passive	**$255**

Semi Passive Equity

Blackrock	$437
JP Morgan	671
Total	**$1,108**

Domestic Bonds:

Columbia	$509
Blackrock Financial Mgmt	473
Dodge & Cox	772
Goldman Sachs	731
Neuberger	294
Pimco	1,273
Western Asset Management	647
Total	**$4,699**

Global Equity:

Acadian Asset	$800
State Street Emerging	250
AQR Capital Management	836
Fidelity Investments GPK6	572
Fidelity Investments GPK2	536
JP Morgan Fleming	548
Earnest Partners, LLC	894
Macquarie/Delaware Investments	780
Martin Currie, Inc.	823
Marathon Asset	1,241
McKinley Capital	574
Morgan Stanley Dean Witter	1,968
Neuberger Berman Investment	1,088
Pzena Investment Management	1,023
Rock Creek	1,061
Columbia Investments	565
State Street Alpha	17
State Street	300
Total	**$13,876**

Treasury Protection Pool:

Blackrock Financial	$173
Goldman Sachs	181
Neuberger	167
Total	**$521**

Fixed Interest:

Galliard Capital Management	**$10**
Total Investment Fees	**$32,525**

PERA's assets are commingled in various pooled investment accounts administered by the State Board of Investment (SBI). The SBI uses outside money managers and consultants to invest the assets. The amounts in this schedule represent PERA's share of fees paid to SBI, and fees paid by SBI to consultants and money managers. A listing of commissions paid to brokers by the money managers can be obtained from the Minnesota State Board of Investment.

Investment Section

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TOP STATE FOR WOMEN

Minnesota is the best state for women, according to a study from WalletHub. The study looked at women's wages, health and safety, and economic and social well-being across all 50 states.

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GRS Retirement Consulting

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November 16, 2018

Board of Trustees
Public Employees Retirement
Association of Minnesota (PERA)
60 Empire Drive, Suite 200
St. Paul, MN 55103-2088

Dear Members of the Board:

We have previously prepared and presented to you our annual actuarial valuation of the General Employees Retirement Plan, the Public Employees Police and Fire Plan, and the Local Government Correctional Service Retirement Plan as of July 1, 2018. In order to gain a full understanding of the actuarial condition of the plans, it is important to read and understand the full actuarial reports and potentially other relevant information in addition to this CAFR. The actuarial reports are available on PERA's website, along with online copies of this and previous CAFRs. Reading this Comprehensive Annual Financial Report (CAFR) is not a substitute for reading the actuarial reports.

Valuation Results

The fundamental financing objective of the fund is to establish contribution rates which will remain approximately level as a percentage of active member payroll from generation to generation and meet the required deadline for full funding. The results of the valuations for funding purposes are summarized in the following table. For all plans, because the valuations smooth asset returns over five years, the actuarial value of assets is lower than the market value of assets. The funding ratios and contribution sufficiencies/(deficiencies) on both bases are presented in the following table.

	Accrued Liability Funding Ratio		Contribution Sufficiency/ (Deficiency) (% of Pay)		
Plan	Actuarial Value of Assets	Market Value of Assets	Actuarial Value of Assets	Market Value of Assets	Statutory Amortization Date
General	77.97%	79.53%	1.13%	1.52%	2048
Police/Fire	87.10%	88.84%	2.31%*	3.28%*	2048
Correctional	95.58%	97.64%	(0.34)%	0.05%	2048

*Based on a current snapshot of statutory contributions; does not reflect additional contribution increases to be phased in over the next two years

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Continued

(continued from previous page)

Board of Trustees
November 16, 2018
Page 2

All of the plans currently have a contribution sufficiency on a Market Value of Assets basis. A contribution sufficiency means that the fund is expected to meet the goal of full funding by the statutory amortization date.

The funded ratio measurements shown above are not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations (of transferring the obligations to an unrelated third party in an arm's length market value transaction). The measurements also are dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. The amounts of future required contributions will be different from those calculated in the actuarial reports due to future actual experience differing from assumed experience based upon the actuarial assumptions. A funded status measurement of 100% would not be synonymous with no required future contributions. If the funded status were 100%, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).

The following changes were recognized this year in the funding valuations for all plans:

- Investment return assumption reduced from 8.0% to 7.5%.
- Salary scale rates reduced by 0.25% at each year of service.
- Payroll growth assumption reduced from 3.50% to 3.25%.
- Inflation assumption reduced from 2.75% to 2.50%.
- Mortality projection scale updated to MP-2017.
- Augmentation on deferred benefits eliminated for members who left employment before 2012, on a prospective basis, effective January 1, 2019.
- Refund interest rate reduced from 4% to 3%, effective July 1, 2018.
- Actuarial equivalent factors updated to reflect revised mortality and interest assumptions.
- Amortization period reset to 30 years.

The following changes were recognized by the General Plan:

- Post-retirement benefit increases were changed from 1.0% per year with a provision to increase to 2.5% upon attainment of 90% funding ratio to 50% of the Social Security Cost of Living Adjustment, not less than 1.0% and not more than 1.5%, beginning January 1, 2019.
- The assumed benefit increase was changed from 1.00% per year through 2035 and 2.50% per year thereafter to 1.25% per year.
- The augmentation adjustment in early retirement factors will be phased out over a 5-year period beginning July 1, 2019, resulting in no augmentation adjustment in early retirement factors after June 30, 2024.
- For retirements on or after January 1, 2024, the first benefit increase will be delayed until the retiree reaches Normal Retirement Age. Does not apply to Rule of 90 retirees, disability benefit recipients, or survivors.
- Repeal of Minnesota Statute 353.27 (contribution stabilizer provisions).

Board of Trustees
November 16, 2018
Page 3

The following changes were recognized by the Police and Fire Plan:

- Post-retirement benefit increases were changed to 1.0% for all years, with no trigger.
- Member contributions increase to 11.3% of pay on January 1, 2019 and 11.8% of pay on January 1, 2020.
- Employer contributions increase to 16.95% of pay on January 1, 2019 and 17.7% of pay on January 1, 2020.
- An end date of July 1, 2048 was added to the existing state contribution.
- New annual state aid of $4.5 million in fiscal years 2019 and 2020, and $9 million thereafter until the plan reaches 100% funding, or July 1, 2048 if earlier.

The following changes were recognized by the Local Correctional Plan:

- Post-retirement benefit increases were changed from 2.50% per year with a provision to reduce to 1.00% if the funding status declines to a certain level, to 100% of the Social Security Cost of Living Adjustment, not less than 1.0% and not more than 2.5%, beginning January 1, 2019. If the funding status declines to 85% for two consecutive years or 80% for one year, the maximum increase will be lowered to 1.5%.
- The assumed post-retirement benefit increase was changed from 2.50% per year to 2.00% per year.
- The augmentation adjustment in early retirement factors will be phased out over a 5-year period beginning July 1, 2019, resulting in no augmentation adjustment in early retirement factors after June 30, 2024.

GRS performed a brief review of the basic financial and membership data provided to us by the association as of June 30, 2018, and determined that the data appears reasonable in comparison to last year. We have relied upon the data as submitted in performing the actuarial valuation and preparing trend data schedules. The actuarial cost method and the assumptions related to asset valuation, investment return, earnings progression and active member payroll growth are specified by State Statute. All other assumptions are based on actual experience with changes recommended by the actuary, adopted by the PERA Board, and approved by the Legislative Commission on Pensions and Retirement (LCPR).

In a 2018 analysis of long-term rate of investment return and inflation assumptions, GRS suggested that an investment return assumption in the range of 6.64% to 7.56% would be reasonable. Please see our letter dated October 3, 2018 for additional information. The current assumed rate, which is mandated by Minnesota Statutes, is 7.5% and is at the upper end of the reasonable range. This report also concluded that the probability of exceeding the current 7.5% assumption over 20 years is only 39%. If capital market assumptions decline further from present levels, the 7.5% return assumption might not comply with actuarial standards for the July 1, 2019 valuation.

Continued

Board of Trustees
November 16, 2018
Page 4

Actuarial standards do not require the actuary to evaluate the ability of the plan sponsor or other contributing entity to make required contributions to the plan when due. Such an evaluation was not within the scope of this project and is not within the actuary's domain of expertise. Consequently, the actuary performed no such evaluation.

The actuary prepared the following supporting schedules in the Actuarial Section of the CAFR:

- Schedule of Funding Progress
- Determination of Contribution Sufficiency
- Determination of Actuarial Value of Assets
- Schedule of Changes in Unfunded Actuarial Accrued Liabilities

All other supporting schedules in the Actuarial Section, along with the Schedule of Changes in Net Pension Liabilities and Related Ratios and the Schedule of Contributions from Employers and Non-employers in the Financial Section of the CAFR were prepared by PERA based on information included in the actuary's annual valuation.

To the best of our knowledge and belief, the valuations were performed in accordance with generally accepted actuarial principles and procedures, current Governmental Accounting Standards Board (GASB) pronouncements, the requirements of Minnesota Statutes, Section 356.215, and the requirements of the Standards for Actuarial Work established by the LCPR. In our opinion, the results of the valuations reflect the actuarial position of the plans on an ongoing basis under the prescribed assumptions, methods, and procedures.

Brian B. Murphy and Bonita J. Wurst are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this report. In addition, Mr. Murphy meets the requirements of "approved actuary" under Minnesota Statutes, Section 356.215, Subdivision 1, Paragraph (c). The signing actuaries are independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

Respectfully submitted,

Brian B. Murphy

Brian B. Murphy, FSA, EA, FCA, MAAA

Bonita J. Wurst

Bonita J. Wurst, ASA, EA, FCA, MAAA

BBM/BJW:bd

GRS

80 CELEBRATING 80 YEARS OF EXCELLENCE 1938-2018

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Summary of Actuarial Assumptions and Methods

PERA implemented *GASB Statement No. 67* in fiscal year 2014, which requires pension plans to calculate and disclose a net pension liability in financial statement footnote disclosures using a fairly specific set of actuarial methods and assumptions. The schedules found in the *Actuarial Section* of this *Comprehensive Annual Financial Report* (CAFR), on the other hand, are based on actuarial assumptions and methods specified by *Minnesota Statutes* or approved by the Legislative Commission on Pensions and Retirement to determine funding requirements. The actuarial assumptions are based on experience studies of PERA's demographics for each plan conducted by PERA's actuary.

While some of the actuarial assumptions used for GASB financial reporting purposes are the same as the actuarial assumptions used for funding purposes, there are a few differences. For example, when calculating the net pension liability for reporting purposes, the fair value of assets is used in accordance with *GASB Statement No. 67*. When calculating the unfunded actuarial accrued liability for funding purposes, the actuarial value of assets (smoothed over a 5-year period) is used in accordance with *Minnesota Statutes*.

The actuarial assumptions used in the funding actuarial valuations are set in statute or approved by the Legislative Commission on Pensions and Retirement. PERA's actuary uses the funding actuarial assumptions disclosed on the following pages when preparing the financial reporting actuarial valuations. The *Summary of Actuarial Assumptions and Methods* are listed on the following pages for each plan.

A summary of plan provisions is available in the *Notes to the Financial Statements*. The responsibility for establishing and maintaining a funding policy rests with the Minnesota Legislature.

General Employees Plan

The following assumptions were used in valuing the liabilities and benefits under the plan. All actuarial assumptions are prescribed by *Minnesota Statutes*, the Legislative Commission on Pensions and Retirement (LCPR), or the Board of Trustees. These parties are responsible for selecting the assumptions used for this valuation. Unless otherwise noted, the assumptions prescribed are based on the last experience study, dated June 30, 2015. The Allowance for Combined Service Annuity assumptions are based on an analysis completed by the LCPR actuary and documented in a report dated October 2016.

Actuarial Cost Method	Entry Age Normal, with costs allocated as a level percentage of payroll. Actuarial gains (losses) reduce (increase) the unfunded actuarial accrued liability. (1960)*
Asset Valuation Method	Fair market value smoothed over 5 years. (2008)
Investment return	7.5% per annum. (2018)
Benefit increases after retirement	1.25% per annum. (2018)
Salary increases	Reported salary at valuation date increased according to the rate table, to current fiscal year and annually for each future year. Prior fiscal year salary is annualized for members with less than one year of service earned during the year. (2018)
Inflation	2.5% per year. (2018)
Payroll growth	3.25% per year. (2018)
Mortality rates **Healthy pre-retirement**	RP-2014 Employee Mortality Table, adjusted for white collar and mortality improvements using projection scale MP-2017, from a base year of 2014. Rates are set forward one year for males and set back one year for females. (2018)
Healthy post-retirement	RP-2014 Healthy Annuitant Mortality Table, adjusted for white collar and mortality improvements using projection scale MP-2017, from a base year of 2014. Rates are set forward two years for males. Female rates are multiplied by a factor of 0.90. (2018)
Disabled retirees	RP-2014 Disabled Mortality Table, adjusted for mortality improvements using projection scale MP-2017, from a base year of 2014. Rates are set forward one year for males and set forward six years for females. (2018) The RP-2014 employee mortality table as published by the Society of Actuaries (SOA) contains mortality rates for ages 18 to 80 and the annuitant mortality table contains mortality rates for ages 50 to 120. We have extended the annuitant mortality table as needed for members younger than age 50 who are receiving a benefit by deriving rates based on the employee table and the juvenile table. Similarly, we have extended the employee table as needed for members older than age 80 by deriving rates based on the annuitant table.
Retirement	Members retiring from active status are assumed to retire according to the age related rates shown in the tables. Members who have attained the highest assumed retirement age are assumed to retire in one year. (2016)
Withdrawal	Service-related rates based on experience; see table of sample rates. (2016)
Disability	Age-related rates based on experience; see table of sample rates. (2016)
Allowance for combined service annuity	Liabilities for former members are increased by 15.0% for vested members and 3.0% for non-vested members to account for the effect that some participants have eligibility for a Combined Service Annuity. (2017)

* Year in parenthesis is the date of adoption.

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General Employees Plan

Administrative expenses	Prior year administrative expenses expressed as percentage of prior year projected payroll. (1989)
Refund of contributions	Account balances accumulate interest until normal retirement dates at the rates described in the Summary of Plan Provisions and are discounted back to the valuation date. All employees withdrawing after becoming eligible for a deferred benefit take the larger of their contributions accumulated with interest or the value of their deferred benefit.
Commencement of deferred benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at Normal Retirement.
Percentage married	80% of male and 70% of female active members are assumed to be married. Actual marital status is used for members in payment status.
Age of spouse	Males are assumed to have a beneficiary three years younger, while females are assumed to have a beneficiary two years older. For members in payment status, actual spouse date of birth is used, if provided.
Eligible children	Retiring members are assumed to have no dependent children.
Form of payment	Married members retiring from active status are assumed to elect subsidized joint and survivor form of annuity as follows: Males: 10% elect 25% Joint & Survivor option 15% elect 50% Joint & Survivor option 10% elect 75% Joint & Survivor option 35% elect 100% Joint & Survivor option Females: 10% elect 25% Joint & Survivor option 10% elect 50% Joint & Survivor option 5% elect 75% Joint & Survivor option 15% elect 100% Joint & Survivor option Remaining married members and unmarried members are assumed to elect the Straight Life option. Members receiving deferred annuities (including current terminated deferred members) are assumed to elect a straight life annuity.
Eligibility testing	Eligibility for benefits is determined based upon the age nearest birthday and service on the date the decrement is assumed to occur.
Decrement operation	Withdrawal decrements do not operate during retirement eligibility. Decrements are assumed to occur mid-fiscal year.
Service credit accruals	It is assumed that members accrue one year of service credit per year.
Pay Increases	Pay increases are assumed to happen at the beginning of the year. This is equivalent to assuming that reported earnings are pensionable earnings for the year ending on the valuation date.

General Employees Plan

Age in 2018	Percentage of Members Dying Each Year*					
	Healthy Post-Retirement Mortality		Healthy Pre-Retirement Mortality		Disability Mortality	
	Male	Female	Male	Female	Male	Female
20	0.03%	0.01%	0.03%	0.01%	0.06%	0.11%
25	0.05	0.02	0.03	0.01	0.25	0.26
30	0.07	0.04	0.03	0.02	0.58	0.49
35	0.10	0.07	0.04	0.02	1.00	0.75
40	0.15	0.11	0.05	0.03	1.40	1.00
45	0.21	0.14	0.07	0.05	1.71	1.22
50	0.30	0.18	0.12	0.08	2.00	1.46
55	0.43	0.25	0.21	0.13	2.34	1.78
60	0.60	0.36	0.37	0.20	2.76	2.25
65	0.92	0.58	0.65	0.28	3.33	2.99
70	1.50	0.91	1.13	0.47	4.17	4.27

* Generally, mortality rates are expected to increase as age increases. These standard mortality rates have been adjusted slightly to prevent decreasing mortality rates. If the rates were not adjusted as described, we would not expect the valuation results to be materially different.

Age	Disability Retirement	
	Male	Female
20	0.01%	0.01%
25	0.01	0.01
30	0.01	0.01
35	0.03	0.02
40	0.05	0.04
45	0.08	0.05
50	0.15	0.10
55	0.34	0.16
60	0.53	0.28
65	0.00	0.00
70	0.00	0.00

Continued

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General Employees Plan

Year	Salary Scale Increase
1	11.25%
2	8.25
3	6.75
4	5.75
5	5.25
6	4.95
7	4.65
8	4.55
9	4.45
10	4.25
11	4.00
12	3.85
13	3.75
14	3.65
15	3.65
16	3.60
17	3.55
18	3.50
19	3.50
20	3.50
21	3.50
22	3.45
23	3.35
24	3.35
25	3.35
26+	3.25

	% Withdrawals	
Year	Male	Female
1	25.00%	25.00%
2	20.00	20.00
3	15.00	15.00
4	10.00	11.00
5	9.00	10.00
6	7.00	9.00
7	5.50	7.50
8	5.00	6.50
9	4.50	5.50
10	4.00	5.00
11	3.25	4.25
12	3.00	4.00
13	2.75	3.75
14	2.50	3.50
15	2.50	3.25
16	2.25	3.00
17	2.00	2.75
18	1.75	2.50
19	1.50	2.50
20	1.50	2.25
21	1.50	2.25
22	1.50	2.25
23	1.00	2.00
24	1.00	2.00
25	1.00	1.75
26	1.00	1.75
27	1.00	1.50
28	1.00	1.50
29	1.00	1.50
30+	1.00	1.50

Police and Fire Plan

The following assumptions were used in valuing the liabilities and benefits under the plan. All actuarial assumptions are prescribed by Minnesota Statutes, the Legislative Commission on Pensions and Retirement (LCPR), or the Board of Trustees. These parties are responsible for selecting the assumptions used for this valuation. Unless otherwise noted, the assumptions prescribed are based on the last experience study, dated August 30, 2016. The Allowance for Combined Service Annuity assumptions are based on an analysis completed by the LCPR actuary and documented in a report dated October 2016.

Actuarial Cost Method	Entry Age Normal, with costs allocated as a level percentage of payroll. Actuarial gains (losses) reduce (increase) the unfunded actuarial accrued liability. (1960)*
Asset Valuation Method	Fair market value smoothed over 5 years. (2008)
Investment return	7.5% per annum. (2018)
Benefit increases after retirement	1.00% for all years, no trigger. (2018)
Salary increases	Reported salary at valuation date increased according to the rate table, to current fiscal year and annually for each future year. Prior fiscal year salary is annualized for members with less than one year of service earned during the year. (2018)
Inflation	2.50% per year. (2018)
Payroll growth	3.25% per year. (2018)
Mortality rates	
Healthy pre-retirement	RP-2014 employee generational mortality table projected with mortality improvement scale MP-2017, from a base year 2006. (2018)
Healthy post-retirement	RP-2014 annuitant generational mortality table projected with mortality improvement scale. MP-2017 from a base year of 2006. Male rates are adjusted by a factor of 0.96. (2018)
Disabled retirees	RP-2014 annuitant generational mortality table, improvement scale MP-2017 from a base year of 2006. Male rates are adjusted by a factor of 0.96. (2018) The RP-2014 employee mortality table as published by the Society of Actuaries (SOA) contains mortality rates for ages 18 to 80 and the annuitant mortality table contains mortality rate for ages 50 to 120. We have extended the annuitant mortality table as needed for members younger than age 50 who are receiving a benefit by deriving rates based on the employee table and the juvenile table. Similarly, we have extended the employee table as needed for members older than age 80 by deriving rates based on the annuitant table.
Retirement	Members retiring from active status are assumed to retire according to the age related rates shown in the rate table. Members who have attained the highest assumed retirement age are assumed to retire in one year. (2016)
Withdrawal	Select and Ultimate rates based on actual experience. Ultimate rates after the third year are shown in rate table. Select rates in the first three years are: (2011)

Year	Select Withdrawal Rates
1	3.00%
2	3.00%
3	3.00%

* Year in parenthesis is the date of adoption.

Continued

Summary of Actuarial Assumptions and Methods

(continued from previous page)

Police and Fire Plan

Disability	Age-related rates based on experience; see table of sample rates. All incidences are assumed to be duty-related.
Allowance for combined service annuity	Liabilities for former members are increased by 33.0% for vested members and 2.0% for non-vested members to account for the effect of some participants having eligibility for a Combined Service Annuity. (2017)
Administrative expenses	Prior year administrative expenses expressed as percentage of prior year projected payroll. (1989)
Refund of contributions	Account balances accumulate interest until normal retirement date and are discounted back to the valuation date. All employees withdrawing after becoming eligible for a deferred benefit take the larger of their contributions accumulated with interest or the value of their deferred benefit.
Commencement of deferred benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at age 55.
Percentage married	85% of male and 60% of female active members are assumed to be married. Actual marital status is used for members in payment status.
Age of spouse	Males are assumed to be two years older than females. For members in payment status, actual spouse date of birth is used, if provided.
Eligible children	Retiring members are assumed to have no dependent children.
Form of payment	Married members retiring from active status are assumed to elect subsidized joint and survivor form of annuity as follows: Males: 10% elect 25% Joint & Survivor option 20% elect 50% Joint & Survivor option 20% elect 75% Joint & Survivor option 35% elect 100% Joint & Survivor option Females: 20% elect 25% Joint & Survivor option 20% elect 50% Joint & Survivor option 10% elect 75% Joint & Survivor option 20% elect 100% Joint & Survivor option Remaining married members and unmarried members are assumed to elect the Straight Life option. Members receiving deferred annuities (including current terminated deferred members) are assumed to elect a straight life annuity.
Eligibility testing	Eligibility for benefits is determined based upon the age nearest birthday and service on the date the decrement is assumed to occur.
Decrement operation	Withdrawal decrements do not operate during retirement eligibility. Decrements are assumed to occur mid-fiscal year.
Service credit accruals	It is assumed that members accrue one year of service credit per year.
Pay Increases	Pay increases are assumed to happen at the beginning of the year. This is equivalent to assuming that reported earnings are pensionable earnings for the year ending on the valuation date.

Police and Fire Plan

Age in 2018	Percentage of Members Dying Each Year*					
	Healthy Post-Retirement Mortality		Healthy Pre-Retirement Mortality		Disability Mortality	
	Male	Female	Male	Female	Male	Female
20	0.04%	0.02%	0.04%	0.02%	0.04%	0.02%
25	0.06	0.03	0.05	0.02	0.06	0.03
30	0.09	0.07	0.05	0.02	0.09	0.07
35	0.13	0.12	0.06	0.03	0.13	0.12
40	0.19	0.17	0.07	0.05	0.19	0.17
45	0.27	0.22	0.10	0.07	0.27	0.22
50	0.39	0.27	0.17	0.11	0.39	0.27
55	0.56	0.38	0.28	0.18	0.56	0.38
60	0.78	0.58	0.49	0.27	0.78	0.58
65	1.12	0.85	0.88	0.39	1.12	0.85
70	1.67	1.31	1.43	0.64	1.67	1.31

*Generally, mortality rates are expected to increase as age increases. These standard mortality rates have been adjusted slightly to prevent decreasing mortality rates. If the rates were not adjusted as described, we would not expect the valuation results to be materially different.

Age	Withdrawal Rates After Third Year		Disability Retirement	
	Male	Female	Male	Female
20	3.00%	3.00%	0.11%	0.11%
25	2.60	2.60	0.13	0.13
30	2.10	2.10	0.16	0.16
35	1.60	1.60	0.19	0.19
40	1.25	1.25	0.29	0.29
45	1.25	1.25	0.54	0.54
50	0.00	0.00	1.04	1.04
55	0.00	0.00	2.03	2.03
60	0.00	0.00	0.00	0.00

Continued

Summary of Actuarial Assumptions and Methods

(continued from previous page)

Police and Fire Plan

Age	Retirement
50	10.00%
51	7.00
52	7.00
53	10.00
54	10.00
55	25.00
56	22.50
57	22.50
58	22.50
59	20.00
60	22.50
61	25.00
62	30.00
63	30.00
64	30.00
65	50.00
66	50.00
67	50.00
68	50.00
69	50.00
70+	100.00

Salary Scale	
Year	Increase
1	12.25%
2	10.50
3	8.75
4	7.75
5	6.25
6	5.75
7	5.25
8	5.00
9	4.75
10	4.50
11	4.25
12	4.15
13	4.05
14	3.95
15	3.85
16	3.75
17	3.75
18	3.75
19	3.75
20	3.75
21	3.65
22	3.55
23	3.45
24	3.35
25+	3.25

Correctional Plan

The following assumptions were used in valuing the liabilities and benefits under the plan. All actuarial assumptions are prescribed by *Minnesota Statutes*, the Legislative Commission on Pensions and Retirement (LCPR), or the Board of Trustees. These parties are responsible for selecting the assumptions used for this valuation. Unless noted otherwise, the assumptions prescribed are based on the last experience study, dated February 2012 prepared by a former actuary. The mortality assumption is based on the Public Employees Police and Fire Plan experience study, dated August 30, 2016. The Allowance for Combined Service Annuity assumptions are based on an analysis completed by the LCPR actuary and documented in a report dated October 2016.

Actuarial Cost Method	Entry Age Normal, with costs allocated as a level percentage of payroll. Actuarial gains (losses) reduce (increase) the unfunded actuarial accrued liability. (1960)*
Asset Valuation Method	Fair market value smoothed over 5 years. (2008)
Investment return	7.5% per annum. (2018)
Benefit increases after retirement	2.00% per annum. (2018)
Salary increases	Reported salary at valuation date increased according to the rate table, to current fiscal year and annually for each future year. Prior fiscal year salary is annualized for members with less than one year of service earned during the year. (2018)
Inflation	2.5% per year. (2018)
Payroll growth	3.25% per year. (2018)
Mortality rates	
Healthy Pre-retirement	RP-2014 employee generational mortality table projected with mortality improvement scale MP-2017, from a base year of 2006. (2018)
Healthy Post-retirement	RP-2014 annuitant generational mortality table projected with mortality improvement scale MP-2017 from a base year of 2006. Male rates are adjusted by a factor of 0.96. (2018)
Disabled retirees	RP-2014 annuitant generational mortality table projected with mortality improvement scale MP-2017 from a base year of 2006. Male rates are adjusted by a factor of 0.96. (2018) The RP-2014 employee mortality table as published by the Society of Actuaries (SOA) contains mortality rates for ages 18 to 80 and the annuitant mortality table contains mortality rates for ages 50 to 120. We have extended the annuitant mortality table as needed for members younger than age 50 who are receiving a benefit by deriving rates based on the employee table and the juvenile table. Similarly, we have extended the employee table as needed for members older than age 80 by deriving rates based on the annuitant table.
Retirement	Members retiring from active status are assumed to retire according to the age related rates shown in the rate table.
Withdrawal	Members who have attained the highest assumed retirement age are assumed to retire in one year. (2016) Select and Ultimate rates based on actual experience. Ultimate rates after the third year are shown in rate table. Select rates in the first three years are: (2011)

Year	Select Withdrawal Rates
1	25%
2	20%
3	15%

* Year in parenthesis is the date of adoption.

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Correctional Plan

Disability	Age-related rates based on experience; see table of sample rates. All incidences are assumed to be duty-related.
Allowance for combined service annuity	Liabilities for former members are increased by 35.0% for vested members and 1.0% for non-vested members to account for the effect of some participants having eligibility for a Combined Service Annuity. (2017)
Administrative expenses	Prior year administrative expenses expressed as percentage of prior year projected payroll. (1989)
Refund of contributions	Account balances accumulate interest until normal retirement date and are discounted back to the valuation date. All employees withdrawing after becoming eligible for a deferred benefit take the larger of their contributions accumulated with interest or the value of their deferred benefit.
Commencement of deferred benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at age 55.
Percentage married	85% of active members are assumed to be married. Actual marital status is used for members in payment status.
Age of spouse	Females are assumed to be three years younger than their male spouses. For members in payment status, actual spouse date of birth is used, if provided.
Eligible children	Retiring members are assumed to have no dependent children.
Form of payment	Married members retiring from active status are assumed to elect subsidized joint and survivor form of annuity as follows: Males: 5% elect 25% Joint & Survivor option 10% elect 50% Joint & Survivor option 10% elect 75% Joint & Survivor option 35% elect 100% Joint & Survivor option Females: 5% elect 25% Joint & Survivor option 5% elect 50% Joint & Survivor option 5% elect 75% Joint & Survivor option 5% elect 100% Joint & Survivor option Remaining married members and unmarried members are assumed to elect the Straight Life option. Members receiving deferred annuities (including current terminated deferred members) are assumed to elect a straight life annuity.
Eligibility testing	Eligibility for benefits is determined based upon the age nearest birthday and service on the date the decrement is assumed to occur.
Decrement operation	Withdrawal decrements do not operate during retirement eligibility. Decrements are assumed to occur mid-fiscal year.
Service credit accruals	It is assumed that members accrue one year of service credit per year.
Pay Increases	Pay increases are assumed to happen at the beginning of the fiscal year. This is equivalent to assuming that reported earnings are pensionable earnings for the year ending on the valuation date.

Correctional Plan

Age in 2018	Percentage of Members Dying Each Year* Healthy Post-Retirement Mortality Male	Female	Healthy Pre-Retirement Mortality Male	Female	Disability Mortality Male	Female
20	0.04%	0.02%	0.04%	0.02%	0.04%	0.02%
25	0.06	0.03	0.05	0.02	0.06	0.03
30	0.09	0.07	0.05	0.02	0.09	0.07
35	0.13	0.12	0.06	0.03	0.13	0.12
40	0.19	0.17	0.07	0.05	0.19	0.17
45	0.27	0.22	0.10	0.07	0.27	0.22
50	0.39	0.27	0.17	0.11	0.39	0.27
55	0.56	0.38	0.28	0.18	0.56	0.38
60	0.78	0.58	0.49	0.27	0.78	0.58
65	1.12	0.85	0.88	0.39	1.12	0.85
70	1.67	1.31	1.43	0.64	1.67	1.31

* Generally, mortality rates are expected to increase as age increases. These standard mortality rates have been adjusted slightly to prevent decreasing mortality rates. If the rates were not adjusted as described, we would not expect the valuation results to be materially different.

Age	Withdrawal Rates Male	Female	Disability Retirement Male	Female
20	14.70%	14.20%	0.04%	0.04%
25	14.70	14.20	0.06	0.06
30	9.10	11.40	0.10	0.08
35	6.00	8.60	0.18	0.11
40	4.40	6.90	0.23	0.18
45	3.40	4.30	0.34	0.39
50	2.40	3.10	0.55	0.70
55	1.40	2.20	0.88	1.18
60	0.10	0.20	1.41	2.41
65	0.00	0.00	1.67	2.67

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Correctional Plan

Age	Retirement
50	3.00%
51	2.00
52	2.00
53	2.00
54	5.00
55	20.00
56	8.00
57	8.00
58	8.00
59	8.00
60	15.00
61	15.00
62	30.00
63	30.00
64	30.00
65	40.00
66	40.00
67	40.00
68	40.00
69	40.00
70+	100.00

Salary Scale	
Age	Increase
20	8.50%
25	7.25
30	6.25
35	5.75
40	5.25
45	4.50
50	4.50
55	4.25
60	3.75
65	3.50
70+	3.50

Schedule of Funding Progress

Last 10 Years (in thousands, unaudited)

General Employees Plan

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL)-Entry Age (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll [(b-a)/c]
06/30/2018	$21,129,746	$27,101,067	$5,971,321	77.97%	$6,298,815	94.8%
06/30/2017	19,916,322	25,615,722	5,699,400	77.75%	6,156,985	92.6%
06/30/2016	18,765,863	24,848,409	6,082,546	75.52%	5,773,708	105.3%
06/30/2015	17,974,439	23,560,951	5,586,512	76.29%	5,549,255	100.7%
06/30/2014	15,644,540	21,282,504	5,637,964	73.51%	5,351,920	105.3%
06/30/2013	14,113,295	19,379,769	5,266,474	72.82%	5,246,928	100.4%
06/30/2012	13,661,682	18,598,897	4,937,215	73.45%	5,142,592	96.0%
06/30/2011	13,455,753	17,898,849	4,443,096	75.18%	5,079,429	87.5%
06/30/2010	13,126,993	17,180,956	4,053,963	76.40%	4,804,627	84.4%
06/30/2009	13,158,490	18,799,416	5,640,926	69.99%	4,778,708	118.0%

Police and Fire Plan

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL)-Entry Age (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll [(b-a)/c]
06/30/2018	$8,320,094	$9,552,804	$1,232,710	87.10%	$976,657	126.2%
06/30/2017	7,840,549	9,199,208	1,358,659	85.23%	944,296	143.9%
06/30/2016	7,385,777	8,417,621	1,031,844	87.74%	881,222	117.1%
06/30/2015	7,076,271	8,460,477	1,384,206	83.64%	845,076	163.8%
06/30/2014	6,525,019	8,151,328	1,626,309	80.05%	820,333	198.2%
06/30/2013	5,932,945	7,304,032	1,371,087	81.23%	796,188	172.2%
06/30/2012	5,797,868	7,403,295	1,605,427	78.31%	794,417	202.1%
06/30/2011	5,274,602	6,363,546	1,088,944	82.89%	775,806	140.4%
06/30/2010	5,188,339	5,963,672	775,333	87.00%	740,101	104.8%
06/30/2009	5,239,855	6,296,274	1,056,419	83.22%	733,164	144.1%

Correctional Plan

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL)-Entry Age (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll [(b-a)/c]
06/30/2018	$666,012	$696,842	$30,830	95.58%	$205,077	15.0%
06/30/2017	595,366	629,870	34,504	94.52%	200,103	17.2%
06/30/2016	529,879	553,840	23,961	95.67%	188,816	12.7%
06/30/2015	475,963	498,052	22,089	95.56%	179,623	12.3%
06/30/2014	410,489	426,508	16,019	96.24%	172,041	9.3%
06/30/2013	346,778	381,179	34,401	90.98%	164,820	20.9%
06/30/2012	306,454	343,199	36,745	89.29%	164,340	22.4%
06/30/2011	274,704	284,593	9,889	96.53%	165,077	6.0%
06/30/2010	242,019	248,867	6,848	97.25%	154,777	4.4%
06/30/2009	217,577	229,383	11,806	94.85%	154,650	7.6%

Solvency Test

Last 10 Years (in thousands)

General Employees Plan

Valuation Date	Actuarial Accrued Liability For: Active Member Contribution (1)	Current Retirees and Beneficiaries(2)	Active Members (Employer Financed) Portion (3)	Valuation Assets	Portion of Accrued Liabilities Covered by Valuation Assets 1	2	3
06/30/18	$3,239,795	$17,185,254	$6,676,018	$21,129,746	100%	100%	10.6%
06/30/17	3,148,413	15,800,416	6,666,893	19,916,322	100%	100%	14.5%
06/30/16	3,018,468	15,706,371	6,123,570	18,765,863	100%	100%	0.7%
06/30/15	2,915,621	14,666,626	5,978,704	17,974,439	100%	100%	6.6%
06/30/14	2,827,447	12,614,999	5,840,058	15,644,540	100%	100%	3.5%
06/30/13	2,739,037	11,432,882	5,207,850	14,113,295	100%	99%	0.0%
06/30/12	2,644,948	10,785,022	5,168,927	13,661,682	100%	100%	4.5%
06/30/11	2,548,609	10,195,812	5,154,428	13,455,753	100%	100%	13.8%
06/30/10	2,420,862	9,713,177	5,046,917	13,126,993	100%	100%	19.7%
06/30/09	2,273,256	10,368,306	6,157,854	13,158,490	100%	100%	8.4%

Police and Fire Plan

Valuation Date	Actuarial Accrued Liability For: Active Member Contribution (1)	Current Retirees and Beneficiaries(2)	Active Members (Employer Financed) Portion (3)	Valuation Assets	Portion of Accrued Liabilities Covered by Valuation Assets 1	2	3
06/30/18	$877,470	$6,021,677	$2,653,657	$8,320,094	100%	100%	53.5%
06/30/17	821,166	5,744,606	2,633,436	7,840,549	100%	100%	48.4%
06/30/16	769,533	5,279,381	2,368,707	7,385,777	100%	100%	56.4%
06/30/15	715,501	5,310,721	2,434,255	7,076,271	100%	100%	43.1%
06/30/14	662,732	5,190,447	2,298,149	6,525,019	100%	100%	29.2%
06/30/13	647,401	4,635,133	2,021,498	5,932,945	100%	100%	32.2%
06/30/12	609,387	4,654,847	2,139,061	5,797,868	100%	100%	24.9%
06/30/11	571,695	3,801,239	1,990,612	5,274,602	100%	100%	45.3%
06/30/10	531,676	3,547,230	1,884,766	5,188,339	100%	100%	58.9%
06/30/09	485,324	3,729,392	2,081,558	5,239,855	100%	100%	49.2%

Correctional Plan

Valuation Date	Actuarial Accrued Liability For: Active Member Contribution (1)	Current Retirees and Beneficiaries(2)	Active Members (Employer Financed) Portion (3)	Valuation Assets	Portion of Accrued Liabilities Covered by Valuation Assets 1	2	3
06/30/18	$86,410	$326,339	$284,093	$666,012	100%	100%	89.1%
06/30/17	84,107	280,963	264,800	595,366	100%	100%	87.0%
06/30/16	81,675	228,642	243,523	526,879	100%	100%	88.9%
06/30/15	77,771	194,694	225,587	475,963	100%	100%	90.2%
06/30/14	75,492	154,273	196,743	410,489	100%	100%	91.9%
06/30/13	70,603	134,069	176,507	346,778	100%	100%	80.5%
06/30/12	66,254	117,016	159,929	306,454	100%	100%	77.0%
06/30/11	62,736	88,904	132,953	274,704	100%	100%	92.6%
06/30/10	56,834	74,405	117,628	242,019	100%	100%	94.2%
06/30/09	51,082	69,198	109,103	217,577	100%	100%	89.2%

Schedule of Active Members Valuation Data

Last 10 Years

General Employees Plan

Valuation Date	Number	Valuation Payroll	Annual Average Pay	% Increase in Average Pay
06/30/18	153,059	$6,298,815,000	$41,153	2.2%
06/30/17	152,867	6,156,985,000	40,277	3.8%
06/30/16	148,745	5,773,708,000	38,816	1.9%
06/30/15	145,650	5,549,255,000	38,100	2.0%
06/30/14	143,343	5,351,920,000	37,336	-0.5%
06/30/13	139,763	5,246,928,000	37,542	1.7%
06/30/12	139,330	5,142,592,000	36,909	1.7%
06/30/11	139,952	5,079,429,000	36,294	6.0%
06/30/10	140,389	4,804,627,000	34,224	2.7%
06/30/09	143,353	4,778,708,000	33,335	1.3%

Police and Fire Plan

Valuation Date	Number	Valuation Payroll	Annual Average Pay	% Increase in Average Pay
06/30/18	11,673	$976,657,000	$83,668	2.1%
06/30/17	11,522	944,296,000	81,956	6.0%
06/30/16	11,398	881,222,000	77,314	2.1%
06/30/15	11,157	845,076,000	75,744	0.4%
06/30/14	10,879	820,333,000	75,405	3.6%
06/30/13	10,940	796,188,000	72,778	-0.5%
06/30/12	10,865	794,417,000	73,117	2.5%
06/30/11	10,880	775,806,000	71,306	6.0%
06/30/10	11,002	740,101,000	67,270	1.2%
06/30/09	11,035	733,164,000	66,440	3.5%

Correctional Plan

Valuation Date	Number	Valuation Payroll	Annual Average Pay	% Increase in Average Pay
06/30/18	3,981	$205,077,000	$51,514	-1.1%
06/30/17	3,842	200,103,000	52,083	5.6%
06/30/16	3,827	188,816,000	49,338	1.4%
06/30/15	3,692	179,623,000	48,652	1.9%
06/30/14	3,603	172,041,000	47,749	1.2%
06/30/13	3,493	164,820,000	47,186	-0.7%
06/30/12	3,460	164,340,000	47,497	1.0%
06/30/11	3,510	165,077,000	47,030	7.0%
06/30/10	3,521	154,777,000	43,958	5.6%
06/30/09	3,715	154,650,000	41,629	0.2%

Schedule of Retirees and Beneficiaries

Last 10 Years

General Employees Plan

Year Ended	Added to Rolls: Number Added	Added to Rolls: Annual Allowances	Removed from Rolls: Number Removed	Removed from Rolls: Annual Allowances	Year-End Total: Number	Year-End Total: Annual Allowances	% Change in Annual Allowances	Average Annual Allowances
06/30/18	6,878	$114,687,000	3,307	$55,454,136	101,772	$1,498,658,904	4.1%	$14,726
06/30/17	7,132	117,947,000	3,219	53,791,000	98,201	1,439,426,000	4.7%	14,658
06/30/16	6,783	110,107,000	3,087	52,933,000	94,288	1,375,270,000	4.3%	14,586
06/30/15*	10,537	241,065,000	3,079	54,630,000	90,592	1,318,096,000	16.5%	14,550
06/30/14	6,700	104,862,000	2,649	40,605,000	83,134	1,131,661,000	6.0%	13,612
06/30/13	6,166	92,483,000	2,618	40,328,000	79,083	1,067,404,000	5.1%	13,497
06/30/12	6,145	87,604,000	2,431	36,693,000	75,535	1,015,249,000	5.3%	13,441
06/30/11	5,717	81,013,000	2,370	36,249,000	71,821	964,338,000	4.9%	13,427
06/30/10	4,692	79,514,000	2,277	34,332,000	68,474	919,574,000	5.2%	13,430
06/30/09	4,358	71,682,000	2,179	32,436,000	66,059	874,392,000	4.7%	13,237

*MERF merged with the General Employees Plan effective January 1, 2015.

Police and Fire Plan

Year Ended	Added to Rolls: Number Added	Added to Rolls: Annual Allowances	Removed from Rolls: Number Removed	Removed from Rolls: Annual Allowances	Year-End Total: Number	Year-End Total: Annual Allowances	% Change in Annual Allowances	Average Annual Allowances
06/30/18	474	$28,399,145	297	$13,622,460	10,756	$536,185,685	2.8%	$49,850
06/30/17	517	31,389,000	290	12,513,000	10,579	521,409,000	3.8%	49,287
06/30/16	447	25,711,000	304	13,615,000	10,352	502,533,000	2.5%	48,545
06/30/15	431	31,109,000	261	11,409,000	10,209	490,437,000	4.2%	48,040
06/30/14	736	43,581,000	276	11,214,000	10,039	470,737,000	7.4%	46,891
06/30/13	442	27,616,000	269	10,645,000	9,579	438,370,000	4.0%	45,764
06/30/12	1,786	82,541,000	228	9,640,000	9,406	421,399,000	20.9%	44,801
06/30/11	527	23,608,000	220	8,333,000	7,848	348,498,000	4.6%	44,406
06/30/10	368	24,314,000	189	7,308,000	7,541	333,223,000	5.4%	44,188
06/30/09	338	21,685,000	170	6,396,000	7,362	316,217,000	5.1%	42,953

Correctional Plan

Year Ended	Added to Rolls: Number Added	Added to Rolls: Annual Allowances	Removed from Rolls: Number Removed	Removed from Rolls: Annual Allowances	Year-End Total: Number	Year-End Total: Annual Allowances	% Change in Annual Allowances	Average Annual Allowances
06/30/18	134	$2,471,430	26	$318,480	1,193	$14,187,950	17.9%	$11,893
06/30/17	142	2,365,000	24	329,000	1,085	12,035,000	20.4%	11,092
06/30/16	118	1,645,000	15	146,000	967	9,999,000	17.6%	10,340
06/30/15	121	1,722,000	26	336,000	864	8,500,000	19.5%	9,838
06/30/14	96	1,131,000	17	274,000	769	7,114,000	13.7%	9,251
06/30/13	100	1,125,000	17	180,000	690	6,257,000	17.8%	9,068
06/30/12	96	1,048,000	17	168,000	607	5,312,000	19.9%	8,751
06/30/11	92	866,000	5	68,000	528	4,432,000	22.0%	8,394
06/30/10	60	707,000	5	96,000	441	3,634,000	20.2%	8,240
06/30/09	77	755,000	9	108,000	386	3,023,000	27.2%	7,832

Determination of Contribution Sufficiency

As of June 30, 2018 (in thousands)

	General Employees Plan		Police and Fire Plan		Correctional Plan	
	Percent of Payroll	Dollar Amount	Percent of Payroll	Dollar Amount	Percent of Payroll	Dollar Amount
A. Statutory Contributions - M.S. Chapter 353						
1. Employee Contributions	6.50%	$413,876	11.05%	$110,552	5.83%	$12,698
2. Employer Contributions	7.50%	477,541	16.58%	165,829	8.75%	19,058
3. Employer Supplemental	0.49%	31,000	0.00%	0	0.00%	0
4. Minneapolis Police Contributions	0.00%	0	0.99%	9,892	0.00%	0
5. Minneapolis Fire Contributions	0.00%	0	0.54%	5,416	0.00%	0
6. Virginia Fire Contributions	0.00%	0	0.00%	30	0.00%	0
7. State of Minnesota	0.09%	6,000	1.35%	13,500	0.00%	0
8. Total	14.58%	$928,417	30.51%	$305,219	14.58%	$31,756
B. Actuarially Determined Contributions - M.S. Chapter 356						
1. Normal Cost						
a. Retirement	5.56%	$353,999	15.17%	$151,771	8.50%	$18,514
b. Disability	0.23%	14,660	3.45%	34,516	2.67%	5,815
c. Death	0.10%	6,368	0.67%	6,703	0.21%	457
d. Deferred	1.32%	84,054	1.50%	15,007	2.07%	4,509
e. Refunds	0.56%	35,656	0.11%	1,101	0.49%	1,067
f. Total	7.77%	$494,737	20.90%	$209,098	13.94%	$30,362
2. Amortization of Supplemental Contribution UAAL	5.49%	$349,542	7.21%	$72,134	0.83%	$1,808
3. Allowance for Administrative Expenses	0.19%	12,097	0.09%	900	0.15%	327
4. Total	13.45%*	$856,376	28.20%*	$282,132	14.92%*	$32,497
C. Contribution Sufficiency/ (Deficiency) (A.8 - B.4)	1.13%	$72,041	2.31%	$23,087	(0.34)%	$(741)
Projected annual payroll for fiscal year beginning July 1, 2018		$6,366,884		$1,000,474		$217,805
* The required contribution on a market value of assets basis of payroll is		13.06%		27.23%		14.53%

Actuarial Section

Determination of Actuarial Value of Assets

As of June 30, 2018 (in thousands)

General Employees Plan

Fair value of assets available for benefits (a)				**$21,553,477**
Calculation of unrecognized return	**Original Amount**	**% Not Recognized**	**Unrecognized Return**	
Year ended June 30, 2018	$479,963	80%	$383,971	
Year ended June 30, 2017	1,266,388	60%	759,833	
Year ended June 30, 2016	(1,484,753)	40%	(593,901)	
Year ended June 30, 2015	(630,861)	20%	(126,172)	
Total unrecognized return (b)				**$ 423,731**
Actuarial Value of Assets (a-b)				**$21,129,746**

Police and Fire Plan

Fair value of assets available for benefits (a)				**$8,486,907**
Calculation of unrecognized return	**Original Amount**	**% Not Recognized**	**Unrecognized Return**	
Year ended June 30, 2018	$190,293	80%	$152,235	
Year ended June 30, 2017	500,621	60%	300,372	
Year ended June 30, 2016	(587,179)	40%	(234,871)	
Year ended June 30, 2015	(254,614)	20%	(50,923)	
Total unrecognized return (b)				**$ 166,813**
Actuarial Value of Assets (a-b)				**$8,320,094**

Correctional Plan

Fair value of assets available for benefits (a)				**$680,395**
Calculation of unrecognized return	**Original Amount**	**% Not Recognized**	**Unrecognized Return**	
Year ended June 30, 2018	$14,166	80%	$11,333	
Year ended June 30, 2017	37,088	60%	22,253	
Year ended June 30, 2016	(39,723)	40%	(15,889)	
Year ended June 30, 2015	(16,571)	20%	(3,314)	
Total unrecognized return (b)				**$ 14,383**
Actuarial Value of Assets (a-b)				**$666,012**

Schedule of Changes in Unfunded Actuarial Accrued Liabilities (UAAL)

For the Fiscal Year Ended June 30, 2018 (in thousands)

	General Employees Plan	Police and Fire Plan	Correctional Plan
A. UAAL at Beginning of Year (7/1/17)	**$5,699,400**	**$1,358,659**	**$34,504**
B. Change Due to Interest Requirements and Current Rate of Funding			
1. Normal Cost and Expenses	501,917	205,218	28,939
2. Contributions	(914,242)	(285,260)	(29,827)
3. Interest on A, B1 and B2	439,459	105,491	2,725
C. Expected UAAL at End of Year (A+B)	**$5,726,534**	**$1,384,108**	**$36,341**
D. Increase (Decrease) Due to Actuarial Losses (Gains) Because of Experience Deviations from Expected*			
1. Age and Service Retirements	$27,441	$(1,089)	$(73)
2. Disability Retirements	(586)	(1,253)	(1,272)
3. Death-in-Service Benefits	(10,198)	(978)	(367)
4. Withdrawals	(53,195)	(317)	(1,791)
5. Salary Increases	(6,380)	(3,344)	(1,094)
6. Investment Income	(242,867)	(107,215)	(7,126)
7. Mortality of Annuitants	(42,575)	9,281	(810)
8. Other Items	53,639	11,092	3,496
E. UAAL at End of Year Before Plan Amendments and Changes in Actuarial Assumption (C+D)	**$5,451,813**	**$1,290,285**	**$27,304**
F. Change in UAAL Due to Change in Plan Provisions	(631,888)	(514,295)	(41,459)
G. Change in UAAL Due to Change in Actuarial Assumptions and Methods	1,151,396	456,720	44,985
H. Change in UAAL Due to Change in Decrement Timing and Methodology	0	0	0
I. UAAL at End of Year 6/30/18 (E+F+G+H)	**$5,971,321**	**$1,232,710**	**$30,830**

* Explanatory Notes:

1. If members retire earlier than assumed, there is a loss; if later, a gain.
2. If more members take a disability than assumed, there is a loss; if fewer, a gain.
3. If fewer active members die than assumed, there is a loss; if more, a gain.
4. If fewer members terminate employment than assumed, there is a loss; if more, a gain.
5. If there are larger salary increases than assumed, there is a loss; if smaller, a gain.
6. If there is a smaller investment return than assumed, there is a loss; if larger, a gain.
7. If benefit recipients live longer than assumed, there is a loss; if less, a gain.
8. Miscellaneous gains and losses.

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TOP STATE FOR FAMILIES

Minnesota is the #2 Best State to Raise a Family, according to a report from WalletHub. The study looked at family salaries, education opportunities, family fun, health and safety, affordability, unemployment rates, and more.

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Introduction

November 20, 2018

The Statistical Section provides additional historical perspective, context, and detail in order to promote a more comprehensive understanding of PERA's financial statements, note disclosures, and supplemental information. In addition, multi-year trend financial and operating information provided in this section is intended to facilitate understanding of how the agency's financial position and performance has changed over time.

Financial trend information includes a ten-year Schedule of Changes in Fiduciary Net Position. This schedule provides the history of additions and deductions for each fund and allows the reader to see the rate of growth for each addition and deduction type. The Benefits and Refunds by Type schedule shows the types of benefit payments and refunds paid out over the last ten years. These two schedules show the changes to the fund balances and the reasons for those changes over the past ten years.

Membership information includes statistics about our active, deferred, and retired members. The section includes a Summary of Membership for each fund including the ten-year counts of active and non-active members. The Schedule of New Retirees and Initial Benefits Paid for our defined benefit plans, followed by a Schedule of Benefit Recipients by Type give more detailed information about the starting benefit payment and the type of benefit selected. In addition, the schedule includes information about how many annuitants chose a joint and survivor option.

The final schedule, Principal Participating Employers, shows the top ten participating employers in each plan compared to the top ten employers from ten years ago in 2009. In addition, information is displayed on how to view the full-listing of all participating employers and the contributions submitted to PERA.

The information contained in this section was produced by PERA's actuary and from internal data sources.

David Andrews

David Andrews
Accounting Director

Schedule of Changes in Fiduciary Net Position

Last 10 Fiscal Years (in thousands)

General Employees Fund*

Additions	2018	2017	2016	2015
Employer Contributions	$488,819	$477,888	$459,978	$435,265
State Contributions	16,000	6,000	6,000	21,575
Member Contributions	409,423	400,204	375,291	353,765
Investment Income (net of expense)	2,063,582	2,682,901	(20,851)	777,621
Other	56	411	431	281
Total Additions to Fiduciary Net Position	$2,977,880	$3,567,404	$820,849	$1,588,507
Deductions				
Benefits	$1,470,450	$1,413,448	$1,359,176	$1,301,396
Refunds	42,589	37,234	37,209	35,706
Administrative Expenses	11,943	11,292	11,110	10,377
Other	0	0	0	0
Total Deductions from Fiduciary Net Position	$1,524,982	$1,461,974	$1,407,495	$1,347,479
Change in Fiduciary Net Position	**$1,452,898**	**$2,105,430**	**($586,646)**	**$241,028**

*The Minneapolis Employees Retirement Fund merged into the General Employees Retirement Fund on January 1, 2015. The General Fund has been restated to include Minneapolis Employees Retirement Fund for the ten-year schedule.

Police and Fire Fund

Additions	2018	2017	2016	2015
Employer Contributions	$170,781	$166,329	$156,065	$144,317
State Contribution	9,000	9,000	9,000	9,000
Member Contributions	105,479	101,984	95,172	88,733
Investment Income (net of expense)	813,966	1,058,942	(8,949)	317,556
Other	58	24	3	84
Total Additions to Fiduciary Net Position	$1,099,284	$1,336,279	$251,291	$559,690
Deductions				
Benefits	$528,468	$512,379	$498,608	$481,330
Refunds	1,902	2,119	2,391	1,953
Administrative Expenses	886	992	906	803
Other	0	0	0	0
Total Deductions from Fiduciary Net Position	$531,256	$515,490	$501,905	$484,086
Change in Fiduciary Net Position	**$568,028**	**$820,789**	**$(250,614)**	**$75,604**

Correctional Fund

Addition	2018	2017	2016	2015
Employer Contributions	$17,871	$17,489	$16,490	$15,736
Member Contributions	11,956	11,666	11,008	10,472
Investment Income (net of expense)	62,962	78,363	209	20,373
Other	1	0	0	0
Total Additions to Fiduciary Net Position	$92,790	$107,518	$27,707	$46,581
Deductions				
Benefits	$13,183	$11,033	$9,381	$7,777
Refunds	1,364	1,478	982	1,057
Administrative Expenses	308	330	292	247
Other	0	0	0	0
Total Deductions from Fiduciary Net Position	$14,855	$12,841	$10,655	$9,081
Change in Fiduciary Net Position	**$77,935**	**$94,677**	**$17,052**	**$37,500**

2014	2013	2012	2011	2010	2009
$413,677	$404,099	$399,660	$362,701	$347,476	$335,249
24,000	24,000	22,750	22,750	9,000	9,000
334,865	328,359	321,976	311,882	304,652	299,453
2,906,811	2,011,862	338,616	2,790,228	1,645,496	(2,604,829)
644	8	771	479	241	3,725
$3,679,997	$2,768,328	$1,083,773	$3,488,040	$2,306,865	$(1,957,402)
$1,244,332	$1,189,398	$1,141,353	$1,094,669	$1,053,399	$1,012,655
38,311	35,922	39,743	38,396	28,797	26,975
10,007	10,028	9,822	9,981	10,711	10,467
0	23	0	0	1,571	3,777
$1,292,650	$1,235,371	$1,190,918	$1,143,046	$1,094,478	$1,053,874
$2,387,347	**$1,532,957**	**$(107,145)**	**$2,344,994**	**$1,212,387**	**$(3,011,276)**

2014	2013	2012	2011	2010	2009
$132,632	$125,995	$121,891	$109,604	$107,065	$101,548
9,000	0	0	0	0	0
81,213	76,434	76,264	73,702	71,736	67,701
1,158,389	806,742	156,926	1,024,981	602,177	(967,445)
18	24	488,521	1	0	701
$1,381,252	$1,009,195	$843,602	$1,208,288	$780,978	$(797,495)
$452,462	$431,726	$386,208	$342,219	$326,041	$310,100
1,633	2,020	1,524	2,012	1,493	1,237
798	755	855	762	753	747
0	0	0	0	0	199
$454,893	$434,501	$388,587	$344,993	$328,287	$312,283
$926,359	**$574,694**	**$455,015**	**$863,295**	**$452,691**	**$(1,109,778)**

2014	2013	2012	2011	2010	2009
$15,054	$14,498	$14,320	$14,289	$14,170	$14,123
10,030	9,609	9,581	9,624	9,442	9,409
69,451	44,378	7,846	50,343	24,745	(36,201)
0	0	0	0	0	35
$94,535	$68,485	$31,747	$74,256	$48,357	($12,634)
$6,711	$5,757	$4,809	$4,026	$3,353	$2,836
1,105	1,177	1,332	1,338	714	810
236	209	229	229	222	219
1	0	0	0	0	17
$8,053	$7,143	$6,370	$5,593	$4,289	$3,882
$86,482	**$61,342**	**$25,377**	**$68,663**	**$44,068**	**$(16,516)**

Continued

Schedule of Changes in Fiduciary Net Position

Last 10 Fiscal Years (in thousands) (continued from previous page)

Volunteer Firefighter Fund**

Additions	2018	2017	2016	2015
Employer Contributions	$938	$716	$332	$226
State Contributions	3,522	2,659	1,811	1,430
Investment Income (net of expense)	4,681	6,409	1,325	880
Other (mainly initial transfer of assets)	8,048	14,206	20,401	4,667
Total Additions to Plan Net Position	$17,189	$23,990	$23,869	$7,203
Deductions				
Benefits and Refunds	$4,161	$2,700	$1,644	$1,221
Administrative Expenses	70	61	132	86
Total Deductions from Fiduciary Net Position	$4,231	$2,761	$1,776	$1,307
Change in Fiduciary Net Position	**$12,958**	**$21,229**	**$22,093**	**$5,896**

**The first Fire Departments joined the Volunteer Firefighter Fund on January 1, 2010.

Defined Contribution Fund

Additions	2018	2017	2016	2015
Employer Contributions	$2,036	$1,822	$1,965	$1,850
Member Contributions	1,911	1,739	1,779	1,698
Investment Income	6,490	7,274	999	2,681
Other	0	7	2	0
Total Additions to Plan Net Position	$10,437	$10,842	$4,745	$6,229
Deductions				
Refunds	$4,326	$5,233	$3,755	$3,489
Administrative Expenses	211	137	189	186
Total Deductions from Fiduciary Net Position	$4,537	$5,370	$3,944	$3,675
Change in Fiduciary Net Position	**$5,900**	**$5,472**	**$801**	**$2,554**

2014	2013	2012	2011	2010	2009
$414	$291	$118	$150	$7	$0
900	361	153	41		0
2,623	1,082	254	242	(8)	0
7,953	7,984	3,076	2,450	791	0
$11,890	$9,718	$3,601	$2,883	$790	$0
$1,096	$838	$279	$119	$25	$0
71	38	21	8	1	0
$1,167	$876	$300	$127	$26	$0
$10,723	**$8,842**	**$3,301**	**$2,756**	**$764**	**$0**

2014	2013	2012	2011	2010	2009
$1,755	$1,734	$1,674	$1,622	$1,582	$1,583
1,628	1,612	1,547	1,496	1,480	1,462
8,004	5,625	1,263	6,726	3,710	(5,146)
0	0	0	0	1	0
$11,387	$8,971	$4,484	$9,844	$6,773	$(2,101)
$2,800	$3,399	$2,128	$2,596	$1,817	$1,398
171	152	144	129	211	112
$2,971	$3,551	$2,272	$2,725	$2,028	$1,510
$8,416	**$5,420**	**$2,212**	**$7,119**	**$4,745**	**$(3,611)**

Benefits and Refunds by Type

Defined Benefit Plans — Last 10 Fiscal Years (in thousands)

General Employees Fund*

	2018	2017	2016	2015
Benefits by Type:				
Retirement	$1,307,364	$1,250,427	$1,195,640	$1,137,897
Survivor	141,781	141,449	140,630	141,178
Disability	21,305	21,572	22,906	22,321
Total	$1,470,450	$1,413,448	$1,359,176	$1,301,396
Refunds by Type:				
Separation	$30,981	$27,513	$27,601	$26,179
Death	582	508	505	731
Interest/Employer	11,026	9,213	9,103	8,796
Total	$42,589	$37,234	$37,209	$35,706

*The Minneapolis Employees Retirement Fund merged into the General Employees Retirement Fund on January 1, 2015. The General Fund has been restated to include Minneapolis Employees Retirement Fund for the ten-year schedule.

Police and Fire Fund

	2018	2017	2016	2015
Benefits by Type:				
Retirement	$416,652	$403,053	$391,952	$379,068
Survivor	59,438	58,568	58,119	56,523
Disability	52,378	50,758	48,537	45,739
Total	$528,468	$512,379	$498,608	$481,330
Refunds by Type:				
Separation	$1,444	$1,599	$1,540	$1,423
Death	0	52	0	0
Interest/Employer	458	468	851	530
Total	$1,902	$2,119	$2,391	$1,953

Correctional Fund

	2018	2017	2016	2015
Benefits by Type:				
Retirement	$10,357	$8,555	$6,954	$5,528
Survivor	529	437	372	278
Disability	2,297	2,041	2,055	1,971
Total	$13,183	$11,033	$9,381	$7,777
Refunds by Type:				
Separation	$1,049	$1,129	$792	$821
Death	35	45	0	29
Interest/Employer	280	304	190	207
Total	$1,364	$1,478	$982	$1,057

Volunteer Firefighter Fund**

	2018	2017	2016	2015
Benefits by Type:				
Retirement	$607	$554	$279	$0
Survivor	49	51	23	0
Lump Sum Benefit	3,505	2,095	1,342	1,221
Total	$4,161	$2,700	$1,644	$1,221

**The first Fire Departments joined the Volunteer Firefighter Fund in January 1, 2010.

2014	2013	2012	2011	2010	2009
$1,081,088	$1,027,325	$1,083,809	$1,034,793	$1,010,376	$950,689
140,423	138,485	33,342	33,871	14,609	29,603
22,821	23,588	24,202	26,005	28,414	28,221
$1,244,332	$1,189,398	$1,141,353	$1,094,669	$1,053,399	$1,008,513
$27,962	$25,885	$27,723	$25,350	$19,288	$18,418
551	727	752	504	378	4,583
9,798	9,310	11,268	12,542	9,131	8,116
$38,311	$35,922	$39,743	$38,396	$28,797	$31,117

2014	2013	2012	2011	2010	2009
$353,620	$336,220	$327,956	$289,796	$274,751	$260,312
54,462	52,827	18,268	14,518	14,120	13,746
44,380	42,679	39,984	37,905	37,170	36,042
$452,462	$431,726	$386,208	$342,219	$326,041	$310,100
$1,179	$1,243	$1,079	$1,275	$955	$735
0	31	6	2	0	0
454	746	439	735	538	502
$1,633	$2,020	$1,524	$2,012	$1,493	$1,237

2014	2013	2012	2011	2010	2009
$4,427	$3,518	$2,790	$2,081	$1,627	$1,209
240	180	23	23	19	14
2,044	2,059	1,996	1,922	1,707	1,613
$6,711	$5,757	$4,809	$4,026	$3,353	$2,836
$844	$857	$1,060	$997	$572	$650
0	48	10	0	5	0
261	272	262	341	137	160
$1,105	$1,177	$1,332	$1,338	$714	$810

2014	2013	2012	2011	2010	2009
$0	$0	$0	$0	$0	$0
0	0	0	0	0	0
1,096	838	279	119	25	0
$1,096	$838	$279	$119	$25	$0

Summary of Membership

Defined Benefit Plans — Last 10 Years

General Employees Plans

Fiscal Year	Active	Benefit Recipients	Terminated Vested	Terminated Non-Vested	Total
2018	153,059	101,772	61,066	138,768	454,665
2017	152,867	98,201	52,274	138,335	441,677
2016	148,745	94,288	52,516	132,416	427,965
2015	145,650	90,592	51,605	125,366	413,213
2014	143,434	83,134	48,505	121,018	396,091
2013	139,763	79,083	45,946	119,509	384,301
2012	139,330	75,535	44,354	115,287	374,506
2011	139,952	71,821	45,325	109,630	366,728
2010	140,389	68,474	45,151	126,027	380,041
2009	143,353	66,059	43,133	121,690	374,235

Police and Fire Plan

Fiscal Year	Active	Benefit Recipients	Terminated Vested	Terminated Non-Vested	Total
2018	11,673	10,756	1,580	1,188	25,197
2017	11,522	10,579	1,506	1,134	24,741
2016	11,398	10,352	1,490	1,059	24,299
2015	11,157	10,209	1,560	995	23,921
2014	10,879	10,039	1,481	975	23,374
2013	10,940	9,579	1,388	988	22,895
2012	10,865	9,406	1,303	971	22,545
2011	10,880	7,848	1,335	870	20,933
2010	11,002	7,541	1,315	930	20,788
2009	11,035	7,362	1,280	911	20,588

Correctional Plan

Fiscal Year	Active	Benefit Recipients	Terminated Vested	Terminated Non-Vested	Total
2018	3,981	1,193	3,165	2,811	11,150
2017	3,842	1,085	2,933	2,624	10,484
2016	3,827	967	2,755	2,359	9,908
2015	3,692	864	2,620	2,139	9,315
2014	3,603	769	2,380	1,936	8,688
2013	3,493	690	2,232	1,816	8,231
2012	3,460	607	2,091	1,727	7,885
2011	3,510	528	1,981	1,624	7,643
2010	3,521	441	1,895	1,605	7,462
2009	3,715	386	1,683	1,525	7,309

Volunteer Firefighter Plan*

Fiscal Year	Active	Benefit Recipients	Terminated Vested	Terminated Non-Vested	Total
2018	3,256	86	751	0	4,093
2017	2,753	75	560	0	3,388
2016*	1,639	79	928	0	2,646

*The first monthly benefit division participant joined the Volunteer Firefighter Plan on January 1, 2016

Schedule of New Retirees and Initial Benefit Paid

Defined Benefit Plans – Last 10 Years

General Employees Plans

	Years of Credited Service						
	0-4	5-9	10-14	15-19	20-24	25-29	30+
2018							
Average monthly benefit	$164	$331	$599	$921	$1,213	$1,804	$3,018
Average high five salary	$4,145	$2,755	$3,008	$3,435	$3,600	$4,222	$5,304
Number of retirees	691	867	846	880	806	788	1,224
2017							
Average monthly benefit	$154	$333	$614	$866	$1,195	$1,761	$2,956
Average high five salary	$4,170	$2,719	$3,076	$3,283	$3,586	$4,130	$5,190
Number of retirees	630	795	836	841	718	758	1,125
2016							
Average monthly benefit	$142	$317	$576	$864	$1,193	$1,802	$2,877
Average high five salary	$3,772	$2,731	$2,896	$3,189	$3,496	$4,171	$5,080
Number of retirees	619	875	821	776	793	810	1,187
2015							
Average monthly benefit	$139	$309	$571	$866	$1,134	$1,781	$2,771
Average high five salary	$3,714	$2,500	$2,830	$3,236	$3,422	$4,109	$4,911
Number of retirees	579	901	864	808	814	813	1,174
2014							
Average monthly benefit	$139	$308	$588	$808	$1,199	$1,750	$2,809
Average high five salary	$3,716	$2,563	$2,953	$3,027	$3,534	$4,009	$4,963
Number of retirees	628	853	848	791	807	758	1,218
2013							
Average monthly benefit	$145	$303	$546	$823	$1,188	$1,677	$2,737
Average high five salary	$3,499	$2,529	$2,777	$3,074	$3,456	$3,914	$4,895
Number of retirees	581	791	758	726	778	675	1,088
2012							
Average monthly benefit	$133	$290	$535	$795	$1,116	$1,710	$2,608
Average high five salary	$3,545	$2,427	$2,713	$2,992	$3,270	$3,953	$4,712
Number of retirees	645	807	812	657	778	615	1,070
2011							
Average monthly benefit	$123	$273	$507	$758	$1,143	$1,625	$2,550
Average high five salary	$3,348	$2,290	$2,553	$2,845	$3,365	$3,873	$4,686
Number of retirees	563	763	698	626	664	508	1,074
2010							
Average monthly benefit	$116	$266	$498	$748	$1,110	$1,608	$2,432
Average high five salary	$3,371	$2,263	$2,573	$2,891	$3,280	$3,743	$4,466
Number of retirees	405	585	583	521	593	436	853
2009							
Average monthly benefit	$119	$234	$464	$724	$1,023	$1,553	$2,423
Average high five salary	$3,348	$2,115	$2,519	$2,830	$3,093	$3,624	$4,458
Number of retirees	429	571	483	563	511	400	657

Police and Fire Plan

	Years of Credited Service						
	0-4	5-9	10-14	15-19	20-24	25-29	30+
2018							
Average monthly benefit	$838	$1,654	$2,418	$3,188	$4,726	$6,239	$7,705
Average high five salary	$4,969	$5,272	$5,798	$6,380	$7,170	$7,857	$8,149
Number of retirees	15	14	32	30	69	84	64
2017							
Average monthly benefit	$583	$1,370	$2,133	$3,512	$4,321	$5,990	$8,096
Average high five salary	$5,387	$4,615	$5,277	$6,523	$6,772	$7,575	$8,426
Number of retirees	18	25	24	34	59	98	74
2016							
Average monthly benefit	$565	$1,363	$2,130	$3,152	$4,403	$5,649	$7,322
Average high five salary	$6,026	$5,244	$5,110	$6,023	$6,821	$7,171	$7,613
Number of retirees	20	17	18	30	59	91	44
2015							
Average monthly benefit	$278	$1,559	$2,202	$3,290	$4,232	$5,791	$7,394
Average high five salary	$5,703	$5,563	$5,631	$6,172	$6,553	$7,299	$7,401
Number of retirees	16	16	27	33	56	81	47
2014							
Average monthly benefit	$375	$1,358	$2,081	$3,070	$4,479	$5,611	$6,952
Average high five salary	$4,290	$4,612	$5,379	$5,815	$6,730	$7,018	$7,233
Number of retirees	17	33	37	63	93	205	135
2013							
Average monthly benefit	$639	$1,322	$1,949	$2,941	$4,299	$5,407	$7,163
Average high five salary	$6,439	$4,978	$4,830	$5,533	$6,274	$6,741	$7,350
Number of retirees	8	18	19	23	47	96	60
2012							
Average monthly benefit	$565	$1,028	$1,980	$3,201	$4,110	$5,244	$6,670
Average high five salary	$5,666	$3,733	$5,307	$5,986	$6,136	$6,517	$6,987
Number of retirees	22	20	21	31	56	95	84
2011							
Average monthly benefit	$406	$1,340	$2,019	$2,837	$4,117	$5,189	$6,590
Average high five salary	$4,976	$5,685	$5,189	$5,288	$6,101	$6,489	$6,885
Number of retirees	11	13	23	22	76	74	109
2010							
Average monthly benefit	$342	$760	$1,709	$2,869	$3,829	$5,261	$6,214
Average high five salary	$4,262	$3,685	$4,378	$5,326	$5,709	$6,499	$6,598
Number of retirees	9	12	15	26	49	71	70
2009							
Average monthly benefit	$293	$1,071	$1,531	$2,514	$3,716	$4,932	$5,977
Average high five salary	$4,376	$5,036	$3,810	$4,817	$5,619	$6,071	$6,227
Number of retirees	12	15	11	20	30	85	67

Continued

Schedule of New Retirees and Initial Benefit Paid

Defined Benefit Plans – Last 10 Years (continued from previous page)

Correctional Plan*

	Years of Credited Service						
	0-4	5-9	10-14	15-19	20-24	25-29	30+
2018							
Average monthly benefit	$287	$644	$1,112	$1,963			
Average high five salary	$4,176	$3,799	$4,860	$5,823			
Number of retirees	15	12	27	61			
2017							
Average monthly benefit	$340	$703	$1,088	$1,749			
Average high five salary	$4,463	$4,099	$4,601	$5,524			
Number of retirees	15	17	29	58			
2016							
Average monthly benefit	$201	$552	$1,107	$1,513			
Average high five salary	$3,930	$3,655	$4,713	$4,928			
Number of retirees	13	21	20	48			
2015							
Average monthly beneift	$501	$758	$1,106	$1,510			
Average high five salary	$4,436	$3,924	$4,364	$5,218			
Number of retirees	15	21	30	37			
2014							
Average monthly benefit	$668	$706	$1,200				
Average high five salary	$3,938	$3,960	$4,797				
Number of retirees	17	23	43				
2013							
Average monthly benefit	$254	$686	$1,193				
Average high five salary	$3,296	$3,904	$4,891				
Number of retirees	17	16	54				
2012							
Average monthly beneift	$295	$683	$1,079				
Average high five salary	$2,930	$3,629	$4,697				
Number of retirees	12	15	52				
2011							
Average monthly beneift	$369	$580	$976				
Average high five salary	$3,436	$3,548	$4,572				
Number of retirees	18	12	40				
2010							
Average monthly beneift	$476	$508	$835				
Average high five salary	$3,571	$3,847	$4,215				
Number of retirees	9	14	27				
2009							
Average monthly beneift	$413	$677					
Average high five salary	$3,621	$4,041					
Number of retirees	16	43					

*The Correctional Plan was established July 1, 1999.

Volunteer Firefighter Plan**

	Years of Credited Service						
	0-4	5-9	10-14	15-19	20-24	25-29	30+
2018							
Average monthly benefit			447		156		1,260
Average high five salary***							
Number of retirees			1		10		1
2017							
Average monthly benefit					722		
Average high five salary***							
Number of retirees					3		
2016*							
Average monthly benefit		166	357	561	771	975	
Average high five salary***							
Number of retirees		1	10	13	48	3	

** The first monthly benefit division participant joined the Volunteer Firefighter Plan January 1, 2016.
*** The monthly benefit is based on years of service, not salary.

Schedule of Benefit Recipients by Type

As of June 30, 2018

General Employees Plans

Amount of Monthly Benefit	Number of Benefit Recipients	Type of Benefit A	B	C	D	Option Selected 1	2	3	4	5	6
$1- $250	21,841	20,073	412	1,149	207	14,454	5,600	316	857	419	195
251- 500	16,287	14,706	269	1,061	251	10,377	3,762	326	1,080	559	183
501 - 750	11,997	10,663	215	873	246	7,319	2,740	278	988	486	186
751 - 1000	9,034	8,064	141	626	203	5,329	2,042	286	846	427	104
1001 - 1250	7,282	6,446	131	534	171	3,960	1,772	280	733	451	86
1251 - 1500	5,746	5,082	84	439	141	2,952	1,414	268	686	350	76
1501 - 1750	4,773	4,235	86	350	102	2,321	1,183	285	617	307	60
1751 - 2000	3,950	3,555	55	267	73	1,869	964	260	552	247	58
2001 - 2250	3,469	3,119	45	248	57	1,505	879	234	535	269	47
2251 - 2500	2,921	2,589	43	238	51	1,194	772	187	475	232	61
2501 - 2750	2,470	2,231	37	176	26	966	695	153	408	186	62
2751 - 3000	2,092	1,896	27	148	21	841	548	155	319	163	66
3001 - 3250	1,727	1,554	27	128	18	676	497	120	242	125	67
3251 - 3500	1,467	1,306	32	120	9	539	418	99	247	108	56
3501 - 3750	1,162	1,040	19	99	4	406	351	74	195	92	44
3751 - 4000	955	856	15	81	3	317	294	56	189	53	46
4001 - 4250	821	734	9	75	3	274	238	54	155	68	32
4251 - 4500	636	574	6	56	0	196	209	31	124	43	33
4501 - 4750	581	524	6	48	3	197	187	41	97	34	25
4751 - 5000	441	388	4	48	1	131	122	37	87	39	25
5001 - 5250	380	331	6	43	0	121	127	26	61	34	11
5251 - 5500	307	266	2	39	0	103	93	25	58	15	13
5501 - 5750	264	232	1	30	1	95	67	25	49	19	9
5751 - 6000	218	194	1	23	0	61	61	20	53	15	8
6001 - 6250	169	149	1	19	0	48	48	11	39	12	11
6251 - 6500	131	113	1	17	0	36	41	11	29	8	6
6501 - 6750	96	86	2	8	0	34	24	8	21	6	3
6751 - 7000	84	74	0	10	0	27	23	10	17	5	2
Over 7000	471	405	3	63	0	130	134	41	116	34	16
Totals	101,772	91,485	1,680	7,016	1,591	56,478	25,305	3,717	9,875	4,806	1,591

Type of Benefit	Option Selected
A Retirement	**1** Single Life
B Survivor of Active Member	**2** 100% Joint & Survivor
C Survivor of Benefit Recipient	**3** 75% Joint & Survivor
D Disability	**4** 50% Joint & Survivor
	5 25% Joint & Survivor
	6 Other (Death, Term-certain, Children's Benefits, etc.)

Police and Fire Plan

Amount of Monthly Benefit	Number of Benefit Recipients	Type of Benefit A	B	C	D	E	Option Selected 1	2	3	4	5	6
$1 - $250	162	135	8	18	1	0	63	69	6	10	6	8
251- 500	155	130	4	20	1	0	62	60	1	17	7	8
501 - 750	140	108	13	17	0	2	55	48	7	13	5	12
751 - 1000	157	118	5	31	3	0	63	40	5	25	15	9
1001 - 1250	157	97	7	48	4	1	48	47	4	25	19	14
1251 - 1500	187	104	13	64	5	1	54	42	11	22	19	39
1501 - 1750	226	109	24	81	7	5	55	44	17	28	7	75
1751 - 2000	266	119	27	97	14	9	67	49	8	48	11	83
2001 - 2250	281	143	25	72	32	9	85	64	9	52	11	60
2251 - 2500	303	135	41	80	28	19	68	82	17	41	10	85
2501 - 2750	410	193	47	102	22	46	111	85	27	65	15	107
2751 - 3000	666	183	133	286	18	46	100	85	25	62	13	381
3001 - 3250	430	272	19	59	13	67	126	119	36	67	21	61
3251 - 3500	458	294	16	37	9	102	157	118	49	59	20	55
3501 - 3750	491	336	22	45	14	74	152	138	36	70	33	62
3751 - 4000	544	376	16	52	13	87	174	144	53	66	29	78
4001 - 4250	491	376	7	22	19	67	155	124	51	78	31	52
4251 - 4500	579	450	12	35	22	60	149	127	70	96	32	105
4501 - 4750	536	448	9	32	13	34	146	124	67	85	35	79
4751 - 5000	514	441	7	21	11	34	123	128	61	115	33	54
5001 - 5250	614	514	7	18	48	27	145	93	77	103	39	157
5251 - 5500	849	800	2	11	13	23	130	85	67	95	22	450
5501 - 5750	364	330	4	6	10	14	95	73	48	100	33	15
5751 - 6000	279	253	3	10	4	9	85	58	44	57	30	5
6001 - 6250	272	245	4	5	7	11	70	59	45	71	24	3
6251 - 6500	219	206	1	2	2	8	63	61	29	50	15	1
6501 - 6750	200	182	0	6	4	8	62	50	28	47	13	0
6751 - 7000	162	157	0	3	2	0	56	34	21	37	14	0
Over 7000	644	618	1	9	9	7	191	122	99	168	62	2
Totals	10,756	7,872	477	1,289	348	770	2,910	2,372	1,018	1,772	624	2,060

Type of Benefit	Option Selected
A Retirement	**1** Single Life
B Survivor of Active Member	**2** 100% Joint & Survivor
C Survivor of Benefit Recipient	**3** 75% Joint & Survivor
D Non-Duty Disability	**4** 50% Joint & Survivor
E Line-of-Duty Disability	**5** 25% Joint & Survivor
	6 Other

Statistical Section

Continued

Schedule of Benefit Recipients by Type

As of June 30, 2018 (continued from previous page)

Correctional Plan

Amount of Monthly Benefit	Number of Benefit Recipients	Type of Benefit					Option Selected					
		A	B	C	D	E	1	2	3	4	5	6
$1 - $250	277	262	5	7	3	0	213	42	5	11	6	0
251 - 500	148	138	2	6	2	0	86	38	1	16	7	0
501 - 750	164	130	6	9	19	0	80	54	11	12	6	1
751 - 1000	167	141	2	5	19	0	73	60	10	18	5	1
1001 - 1250	151	132	2	0	12	5	75	44	8	10	12	2
1251 - 1500	105	88	2	1	7	7	55	27	5	12	5	1
1501 - 1750	70	60	1	1	0	8	33	24	4	4	4	1
1751 - 2000	43	34	2	1	1	5	19	14	1	5	3	1
2001 - 2250	27	14	1	0	0	12	15	7	1	3	0	1
2251 - 2500	21	6	0	0	0	15	14	5	0	2	0	0
2501 - 2750	12	5	0	0	0	7	8	2	0	1	1	0
2751 - 3000	4	3	0	0	0	1	2	2	0	0	0	0
3001 - 3250	1	1	0	0	0	0	1	0	0	0	0	0
3251 - 3500	2	1	0	0	0	1	0	0	1	0	1	0
3501 - 3750	1	1	0	0	0	0	1	0	0	0	0	0
Totals	1,193	1,016	23	30	63	61	675	319	47	94	50	8

Type of Benefit	Option Selected
A Retirement	**1** Single Life
B Survivor of Active Member	**2** 100% Joint & Survivor
C Survivor of Benefit Recipient	**3** 75% Joint & Survivor
D Non-Duty Disability	**4** 50% Joint & Survivor
E Line-of-Duty Disability	**5** 25% Joint & Survivor
	6 Other

Volunteer Firefighter Plan

Amount of Monthly Benefit	Number of Benefit Recipients	Type of Benefit			Option Selected		
		A	B	C	1	2	3
$1 -$250	12	11	1	1	10	2	0
251 - 500	9	8	1	1	2	7	0
501 - 750	18	12	6	6	6	12	0
751 - 1000	46	46	0	0	6	40	0
Over 1000	1	1	0	0	0	1	0
Totals	86	78	8	8	24	62	0

Type of Benefit	Option Selected
A Retirement	**1** Single Life
B Survivor of Active Member	**2** 75% Joint & Survivor
C Survivor of Benefit Recipient	**3** Other

Principal Participating Employers

Defined Benefit Plans – Top 10 Listing

General Employees Plans*

FY2018

Employer	Active Members	% of Total Active Members
Hennepin County	8,056	5.16%
Hennepin Healthcare System	5,485	3.51%
Minneapolis Special ISD - 1	4,819	3.09%
City of Minneapolis	3,609	2.31%
Ramsey County	3,450	2.21%
St. Paul ISD - 625	2,913	1.87%
Anoka-Hennepin ISD - 11	2,774	1.78%
City of St. Paul	2,302	1.47%
Rosemount ISD - 196	1,938	1.24%
Osseo ISD-279	1,811	1.16%

FY2009

Employer	Active Members	% of Total Active Members
Hennepin County	7,165	4.90%
Minneapolis School District	4,679	3.20%
Hennepin Healthcare System	4,252	2.91%
Ramsey County	3,483	2.38%
City of Minneapolis	3,378	2.31%
St. Paul School District	2,776	1.90%
Anoka-Hennepin School District	2,773	1.90%
City of St. Paul	2,158	1.48%
Rosemount School District	1,888	1.29%
Osseo School District	1,852	1.27%

Police and Fire Plan*

FY2018

Employer	Active Members	% of Total Active Members
City of Minneapolis	1,294	10.70%
City of St. Paul	1,042	8.62%
Hennepin County	300	2.48%
City of Duluth	290	2.40%
City of Rochester	240	1.98%
Ramsey County	222	1.84%
Hennepin Healthcare System	194	1.60%
Metropolitan Council	173	1.43%
City of St. Cloud	168	1.39%
Wright County	144	1.19%

FY2009

Employer	Active Members	% of Total Active Members
City of Minneapolis	1,325	11.67%
City of St. Paul	1,009	8.88%
Hennepin County	339	2.98%
City of Duluth	281	2.47%
Ramsey County	229	2.02%
City of Rochester	229	2.02%
City of St. Cloud	176	1.55%
Wright County	141	1.24%
Hennepin Heathcare System	137	1.21%
Metropolitan Airports Commission	136	1.20%

*A complete listing or participating employers can be found at: http://bit.ly/2yB4iUv

Continued

Principal Participating Employers

Defined Benefit Plans – Top 10 Listing (continued from previous page)

Correctional Plan*

FY2018

Employer	Active Members	% of Total Active Members
Ramsey County	550	13.68%
Hennepin County	504	12.54%
Anoka County	243	6.04%
Sherburne County	150	3.73%
Olmsted County	127	3.16%
Dakota County	113	2.81%
Prairie Lakes Detention Center	88	2.19%
Clay County	83	2.06%
Stearns County	83	2.06%
Washington County	83	2.06%

FY2009

Employer	Active Members	% of Total Active Members
Hennepin County	567	15.09%
Ramsey County	470	12.51%
Anoka County	236	6.28%
Sherburne County	136	3.62%
Olmsted County	130	3.46%
Dakota County	97	2.58%
Sterns County	87	2.32%
Prairie Lakes Detention Center	86	2.29%
Washington County	82	2.18%
Scott County	80	2.13%

Volunteer Firefighter Plan**

FY2018

Employer	Active Members	% of Total Active Members
City of Cottage Grove	74	2.27%
City of Willmar	65	2.00%
Spring Lake Park	64	1.97%
City of Victoria	58	1.78%
City of Oak Grove	56	1.72%
City of Vadnais Heights Volunteer Fire Department	55	1.69%
City of Oakdale	52	1.60%
Isanti Area Joint Fire District	51	1.57%
City of Norwood Young America	44	1.35%
Township of Carsonville	43	1.32%

FY2010

Employer	Active Members	% of Total Active Members
Ottertail City	27	23.68%
Alborn Township	23	20.18%
Twin Valley City	21	18.42%
Manchester City	16	14.04%
North Star Township	16	14.04%
DeGraff City	11	9.65%

*A complete listing or participating employers can be found at: http://bit.ly/2yB4iUv
**A complete listing or participating employers can be found at: http://bit.ly/2lMFGkV

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Statistical Section

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