CITY OF AUSTIN POLICE RETIREMENT SYSTEM

2018 Annual Report

"To serve the APRS membership and protect the retirement benefits for the past, present and future members of the System"

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INTRODUCTORY SECTION

Letter to Members

Dear Members,

The Board of Trustees and staff of the Austin Police Retirement System are pleased to present the Annual Report for the fiscal year ended December 31, 2018.

The annual report is intended to provide complete and reliable information regarding the financial performance of the System and measure the responsible stewardship of the System's assets.

The annual report is divided into the following sections:

- The Introductory Section provides basic information about the organization.
- The Financial Section includes an investment overview provided by the System's consultants, the independent auditor's report, Management's Discussion and Analysis (MD&A), basic financial statements, notes to the basic financial statements and required supplemental information.
- The Actuarial Section contains the consulting actuary's Certification Letter and the full actuarial valuation report.
- The Historical Information & Benefits Sections contain highlights of historical benefit changes, a comparative statement of membership over the last two years and the membership benefit guide.

Montemayor Britton Bender PC, the System's independent auditor, issued an unqualified opinion on the System's financial statements. The report indicates that the financial statements are in accordance with Governmental Accounting Standards Board rulings and that the System's financial condition and operations are fairly presented. It is the best report an independent auditor may issue.

The 2018 actuarial valuation was performed by Gabriel, Roeder, Smith & Company (GRS). The Actuarial Valuation Report indicates that the funding ratio (assets compared to liabilities) is 58.1 percent, and the funding period to amortize liabilities is Never.

The System's management staff is responsible for maintaining internal controls. These controls are designed to provide reasonable assurance that the assets are protected and that financial transactions are executed in accordance with Board policy and federal, state, and local laws and regulations. Additionally, the controls provide assurance regarding Management's responsibility to the System and facilitate the timely preparation of financial statements in accordance with generally accepted accounting principles.

As always, the Board of Trustees and staff welcome your comments. We appreciate your support and the opportunity to serve you. Trustees and staff are dedicated to maintaining the System's financial strength through diversification of fund assets and sound management of the System.

Sincerely,

Jim Beck, Chairman	Pattie Featherston
Board of Trustees	Executive Director

PPCC

Public Pension Coordinating Council

Recognition Award for Administration 2018

Presented to

City of Austin Police Retirement System

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

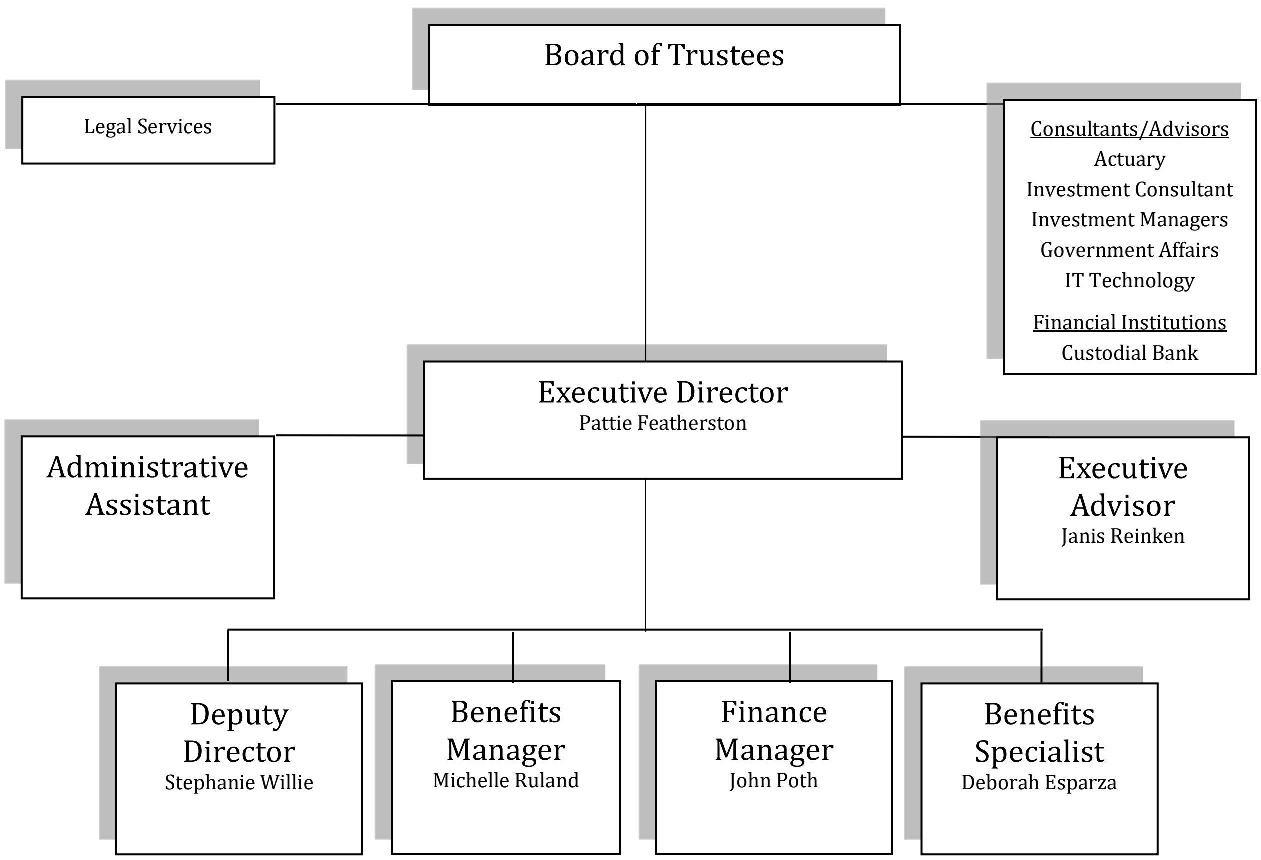
Presented by the Public Pension Coordinating Council, a confederation of

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

Alan H. Winkle
Program Administrator

Board of Trustees

Organizational Chart



Key Professional Service Providers

Custodian Bank

The Northern Trust Company, Chicago, Illinois

Investment Consultant & Performance Evaluator

AndCo Consulting, Orlando, Florida

Actuary

Gabriel, Roeder, Smith & Company, Dallas, Texas

Auditor

Montemayor Britton Bender PC, Austin, Texas

Legal Counsel

Chuck Campbell, Jackson Walker, L.L.C., Austin, Texas

Investment Managers

Domestic Equity

Baird Investment Management, Milwaukee, Wisconsin
Kennedy Capital Management, Inc., St. Louis, Missouri
Northern Trust (NTGI Russell 3000 Index Fund), Chicago, Illinois
Seizert Capital Partners, Birmingham, Michigan

International Equity

Dreihaus International Securities, LLC, Chicago, Illinois
Lee Munder Capital Group, LLC, Boston, Massachusetts
Thompson Siegel & Walmsley, LLC, Richmond, Virginia

Other Equity

Excelsior Investors, LTD, Dallas, Texas
Sail Capital Partners, LLC, Irvine, California
WR Huff Energy Fund, LP, Morristown, New Jersey
Franklin Park Associates, LLC, Bala Cynwyd, Pennsylvania

U.S./Non-U.S. Fixed Income

Orleans Capital, Mandeville, Louisiana
Franklin Templeton Global CIT, Miami, Florida

Other Fixed Income (Private Lending)

Capital Point Partners, Houston, Texas
LBC Credit Partners, Inc., Philadelphia, Pennsylvania
Providence Debt Fund III GP LP, New York, New York
Franchise Capital Partners (Capital Springs), Boca Raton, Florida

Multi Asset Class

Double Eagle Capital Management, Irving, Texas
BlackRock, Inc. New York, New York

Real Estate

AEW Capital Management, LP., Boston, Massachusetts
Apollo Global Management (India Property Fund), LLC, New York, New York
ARES Management, LLC (VEF Advisors), Los Angeles, California
Gainesville Vision (Gainesville Property), Gainesville, Georgia
Edison Investments, Inc., Wichita, Kansas
GreenOak Real Estate Advisors, LP, New York, New York
Invesco Reality Advisors (IREF II REIT, LLC), Dallas, Texas
Morgan Stanley & Co. Inc. (Prime Property Fund), New York, New York
Rocksprings Capital Land (JM Texas Land Funds), Houston, Texas

Timber

BTG Pactual Timberland Group, Atlanta, Georgia
Timberland Investment Resources (Capital Timberland Investments), Atlanta, Georgia
Domain Capital Group (Domain Timber Advisors), Atlanta, Georgia

FINANCIAL SECTION

Investment Overview

Prepared by: AndCo Consulting, Investment Consultant to the Board

After a strong year of equity market returns in 2017, investors entered 2018 optimistic for continued gains amidst what was being labeled a "synchronized global recovery" in the media. The year started with strong earnings that were boosted by the impact of the new tax cuts enacted by the U.S. government in 2017. January's strong start faded amidst an increase in volatility in February as investors began questioning the strength of growth in Europe and China and the potential negative impact that it could have in U.S. markets. The positive late Q1 volatility was followed by relatively calm markets in Q2 and Q3 before a dramatic market pullback in the fourth quarter took markets into negative territory.

The fourth quarter market downturn generated losses across all equity markets. Questions about trade with China, a lingering government shutdown, and a partial inversion of the yield curve caused investors to question the sustainability of the current bull market, now the longest on record. While U.S. equities finished in the negative territory, they continued to outperform relative to their developed market peers. Robust corporate earnings, boosted by tax cuts, provided fundamental support for U.S. stocks. U.S. equity markets produced losses across the market cap spectrum with U.S. large cap stocks (S&P 500) returning -4.4%, while mid-caps were -9.1% and small caps were the worst performers at -11.0% due to the strong risk aversion in Q4. Large cap performance continues to be driven by growth-oriented issues. Growth performed the best in 2018 with names like Amazon and Microsoft generating substantial returns amidst the broad market declines. International Equity Markets delivered returns behind those of U.S. markets for the year, returning -14.2% (MSCI ACWIxUS). Developed markets, as represented by the MSCI EAFE Index, returned -13.8%, while Emerging Markets (MSCI EME Index) were the worst performing equity asset class in producing a return of -14.6%. The underperformance for emerging markets comes after the asset class producing the strongest global returns in 2017. EM was weighed down by tighter global liquidity (stemming from higher U.S. interest rates and U.S. dollar appreciation) and signs of moderation in global economic growth. The threat of a U.S. and China trade war weighed on sentiment across EM, most notably in Asia, with concerns the current standoff could escalate further and destabilize the global trading order.

The enthusiasm around European growth quickly faded in 2018 as the situation in Europe remained cloudy throughout 2018. Europe's three traditional powerhouses, Germany, France and Britain, all faced political challenges that weighed on European equity markets. Germany's Angela Merkel lost key political support while French president Emmanuel Macron was confronted with protests as he struggled to follow through on his reform program. The situation did not get any easier in the UK as British Prime Minister Theresa May, continued to be unable to garner a consensus on a European exit plan by the March

2019 deadline. Against this backdrop, along with some softening economic growth in the region, European equities finished down double digits for the year.

The bond market saw a year of continued yield curve flattening as the short end of the yield curve rose amidst four more interest rate hikes of 0.25% by the Federal Reserve and the long end of the curve saw rates decline on continued low inflation expectations. The investment grade bond market saw negative returns through the first three quarters of the year offset by positive returns in Q4 as investors reacted to stock market volatility by moving into U.S. government bonds. High yield bonds and corporate bonds gave back early year gains as they sold off in the flight to safety during Q4.

The Austin Police Retirement System investment portfolio returned -6.18% for the full year of 2018. The portfolio generated a net loss on investment income of $43.6 million which brought the total portfolio value to $718.5 million at year end.

The Equity allocation, which represents 60% of the total fund, was the main driver of portfolio returns with a loss of -9.8%. U.S. equities (46% of the total fund) generated a loss of -7.2%, while the international equity allocation (14% of the total fund) generated a loss of -16.3% as slowing global growth and a rising U.S. dollar both worked to dampen returns in non-U.S. equities for the year. The U.S. equity allocation continues to be strongly biased to the use of passive management with passive investments representing 60% of the U.S. allocation.

The Fixed Income allocation (15% of the Fund) posted a return of 0.9% which significantly outperformed the 0.0% return of the broad US bond market for the year. The APRS portfolio's U.S. bond manager and private credit managers generated strong gains and performance for the year, while global bonds generated a small loss of -0.1% for the year. Given the low return outlook for bonds the allocation remains low. Managers entered 2018 positioned defensively for further U.S. interest rate increases, with the volatility of Q4 and the Fed signaling a likely pause in 2019, managers have taken off some of that defensive positioning in 2019.

The Real Estate allocation (10% of the Fund) generated a gain of 4.9% provided mostly from its open-end core commingled fund investment made a couple years ago along with several older investments in the final stages of liquidating their portfolios. The Timber allocation (3% of the Fund) posted a small loss of -0.1% in 2018 and that portfolio continues to be reduced through property sales. The Private Equity allocation (2% of the Fund) declined 20% in 2018 as the System endured further write downs of underperforming investments that will likely not generate performance moving forward. Hedge Fund/Multi Asset allocation (9% of the Fund) lost -2.7% for the year. The multi asset portfolios had generated small gains in the year leading into Q4, but the negative environment for equities led to Q4 losses and brought the full year returns negative. The System will complete its exit from hedge fund investments in 2019.

The Board of Trustees remains committed to investing for the long haul using a well-diversified mix of investments among various asset classes managed by professional money managers who have demonstrated their professionalism over time, with a goal of generating a return that equals or exceeds the actuarial return assumption.

Montemayor Britton Bender PC
CERTIFIED PUBLIC ACCOUNTANTS

INDEPENDENT AUDITOR'S REPORT

Board of Trustees
City of Austin Police Retirement System

Report on the Financial Statements

We have audited the accompanying financial statements of City of Austin Police Retirement System (System), which comprise the statements of fiduciary net position as of 31 December 2018 and 2017, and the related statements of changes in fiduciary net position for the years then ended, and the related notes to the financial statements.

Management's Responsibility for the Financial Statements

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

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in 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 from material misstatement.

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

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

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Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial status of the System as of 31 December 2018 and 2017, and the changes in its financial status for the years then ended in accordance 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 the management's discussion and analysis and supplemental schedules on pages 16–20 and 52-53 be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, and historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Montemayor Britton Bender PC

28 July 2019
Austin, Texas

Management Discussion and Analysis

This section of the City of Austin Police Retirement System's (the System) financial report presents our discussion and analysis of the System's financial performance during calendar years 2018 and 2017. We encourage readers to consider the information presented here in conjunction with our financial statements that follow.

Financial Highlights

- Fiduciary net assets held in trust by the System decreased by $51.0 million in 2018, and increased by $83.5 million in 2017. The decrease in 2018 was primarily due to negative market and economic indicators at year end. The increase in 2017 was the result of a strengthening U.S. economic market, strong employment, and overall increased consumer confidence in the economy.
- Contributions decreased in 2018 by $1.65 million and increased by $3.40 million in 2017. The decrease in 2018 is primarily due to a decrease in service credit purchases. The increase in 2017 is primarily due to an increase in total payroll and service credit purchases related to an increase in retirements.
- The amount of benefits paid to retired members and beneficiaries, including refunds to terminating employees, increased by $7,434,819 in 2018 and increased $5,720,503 in 2017. The increases in 2018 and 2017 are due to an increase in retirements and refunds.
- The System's rate of return on investments for the year ended December 31, 2018 was -5.95 percent gross of fees and -6.18 percent net of fees, on a time-weighted basis, as compared to 12.17 percent gross of fees and 11.89 percent net of fees for the year ended December 31, 2017.
- The funding objective of the System is to meet long-term benefit obligations through contributions and investment income. As of December 31, 2018, the date of the most recent actuarial valuation, the System's funded ratio of actuarial assets as a percentage of actuarial liabilities is 58.1 percent, as compared to 65.8 percent at December 31, 2017.

Overview of the Financial Statements

This discussion and analysis is intended to serve as an introduction to the Systems' financial statements, which are comprised of the following:

- **Statement of Fiduciary Net Position** - presents the Systems' assets and liabilities and the resulting Net Position for pension benefits. This statement reflects a year-end snapshot of the Plan's assets at fair market value, along with cash and short-term investments, receivables and other assets and liabilities.

See independent auditor's report.

- **Statement of Changes in Fiduciary Net Position** - provides a view of the current year additions to and deductions from the plan. These two statements report the system's Net Position, the difference between assets and liabilities, which is one way to measure the Systems' financial position.
- **Notes to the Financial Statements** - provide additional information that is essential to a full understanding of the data provided in the financial statements.

Collectively, this information presents the Fiduciary Net Position as of the end of each of the last three years, and summarizes the changes in Fiduciary Net Position for the year.

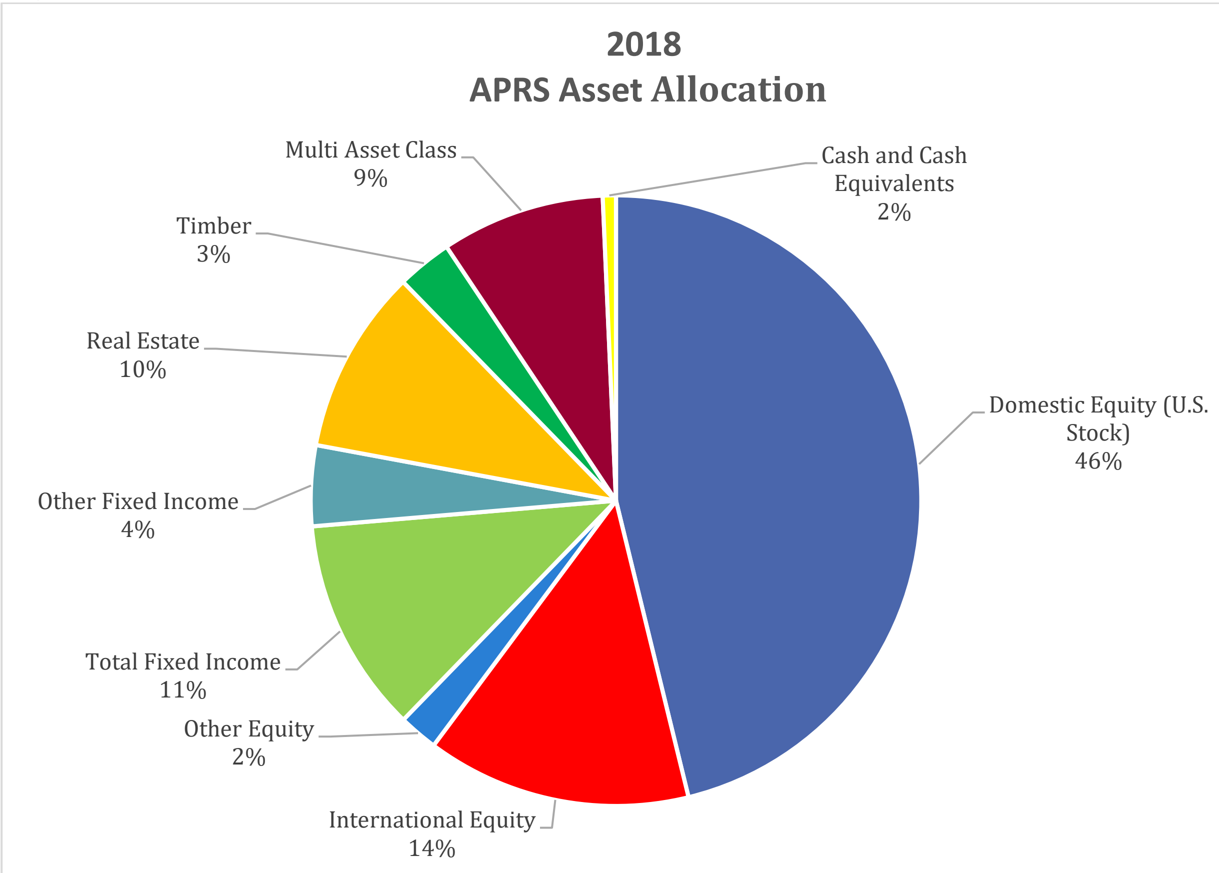
Summary of Fiduciary Net Position
December 31, 2018, 2017 and 2016

Assets	**2018**	**2017**	**2016**
Receivables	$2,022,287	$1,363,953	$1,279,327
Investments	716,410,042	771,506,987	687,472,332
Fixed assets, net	660,211	726,034	740,037
Other	2,305,996	7,665	7,665
Total assets	$721,398,536	$773,604,639	$689,499,361
Liabilities			
Total Liabilities	2,878,895	4,129,896	3,479,099
Fiduciary net position for pension benefits	$718,519,641	$769,474,743	$686,020,262

The total Fiduciary Net Position decreased by $51.0 million, or 7.1 percent, to $718.5 million at the end of 2018, compared to $769.5 million at the end of 2017 which was an increase of $83.5 million, or 12.2 percent from the prior year. The decrease of $51.0 million in 2018 is primarily the result of slower economic growth indicators, and rising interest rates at the end of 2018.

See independent auditor’s report.

Below is a chart of the System's asset allocation percentages for the year ending December 31, 2018:

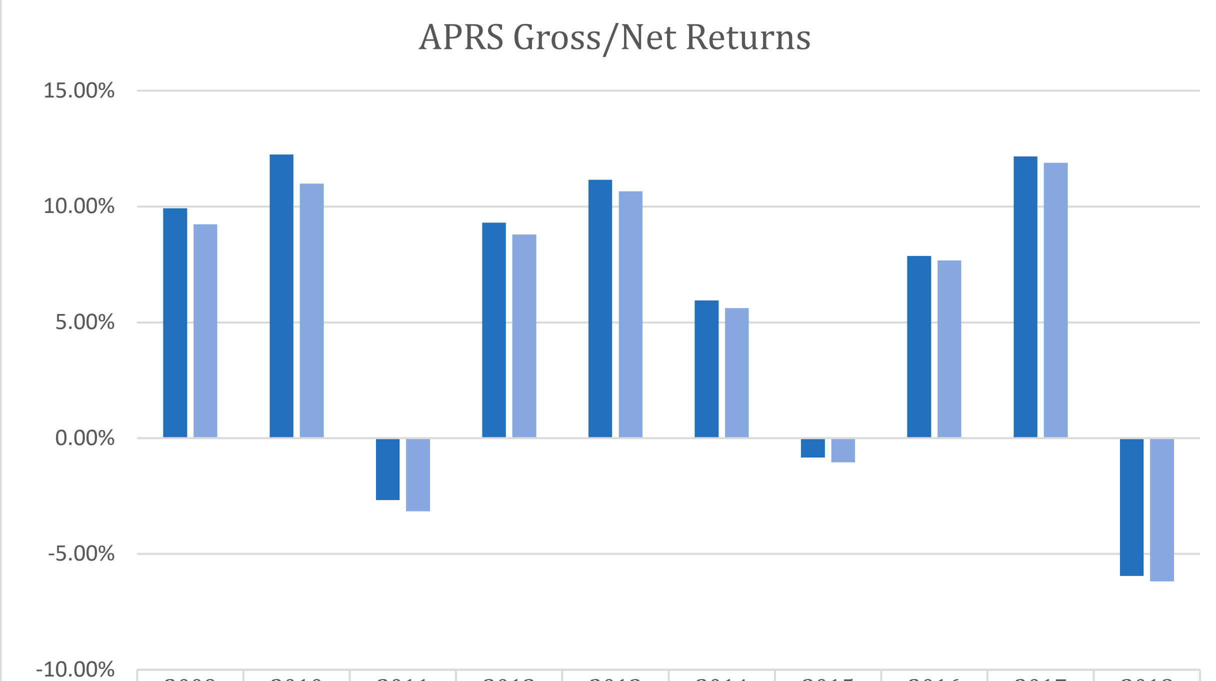


See independent auditor’s report.

Investment Returns and Assumptions. The Systems' rate of return in 2018 is -6.18 percent net of expenses. The following chart exhibits the short- and long-term gains and losses.

Note: Historical returns for 2000-2015 have been adjusted from previous annual reports to align with the calculations of the current investment consultant using time-weighted annualized returns.

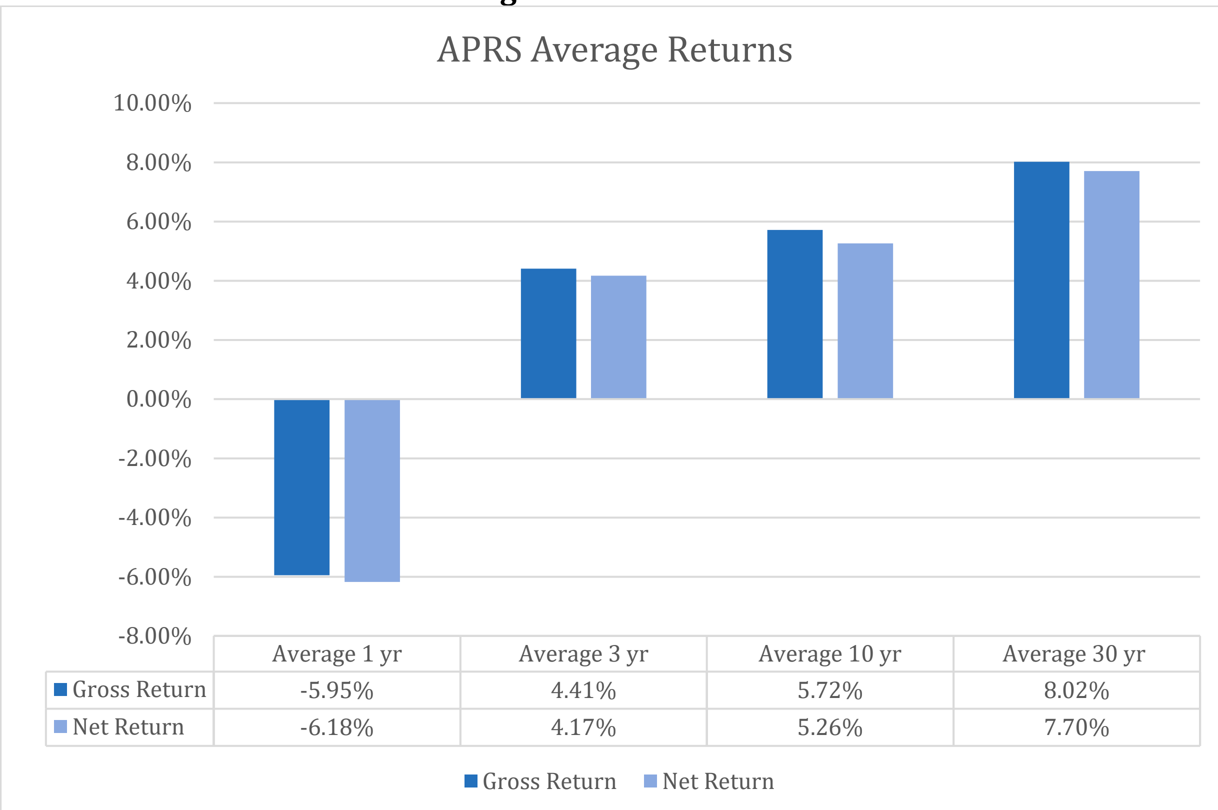
10 Fiscal Year Returns



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Gross	9.92%	12.25%	-2.68%	9.31%	11.16%	5.94%	-0.83%	7.87%	12.17%	-5.95%
Net	9.24%	10.99%	-3.16%	8.79%	10.66%	5.61%	-1.05%	7.67%	11.89%	-6.18%

See independent auditor's report.

Annualized Rolling Gross & Net Investment Returns



	Average 1 yr	Average 3 yr	Average 10 yr	Average 30 yr
Gross Return	-5.95%	4.41%	5.72%	8.02%
Net Return	-6.18%	4.17%	5.26%	7.70%

See independent auditor’s report.

Summary of Changes in Fiduciary Net Positions

Years Ended December 31, 2018, 2017 and 2016

Additions. Funds to pay benefits are accumulated through contributions and returns on invested funds.

Additions	**2018**	**2017**	**2016**
Contributions[1]	$57,847,631	$59,493,168	$56,105,481
Investment income	(41,734,039)	83,133,910	39,618,214
Investment expense	(1,832,986)	(1,819,122)	(1,881,521)
Net investment income	(43,567,025)	81,914,788	37,736,693
Other income	168,308	157,214	103,139
Total additions	$14,448,914	$141,565,170	$93,945,313
Deductions			
Benefit payments & contributions refunded[2]	$63,982,824	$56,548,004	$50,827,501
General and administrative expenses	1,421,192	1,562,685	1,271,687
Total deductions	$65,404,016	$58,110,689	$52,099,188
Net increase/decrease	$(50,955,102)	$83,454,481	$41,846,125
Fiduciary Net position beginning of year	$769,474,743	$686,020,262	$644,174,137
Fiduciary Net position end of year	$718,519,641	$769,474,743	$686,020,262

[1] Includes COA Contributions, Member Contributions, Contributions Applied to Death Benefit Fund, Contributions Applied to Proportional Retirement, Service Credit Purchases and APRS & Staff Contributions

[2] Includes Retirement Annuities, PROP, DROP, Death Benefit and Refund payments

Member and City of Austin contributions for 2018 and 2017 totaled $57.8 million and $59.5 million, respectively. The 2018 contributions represent a decrease of $1.7 million, or 2.8 percent, below 2017. The 2017 contributions represent an increase of $3.4 million, or 6.0 percent, above 2016. The 2016 contributions represent a decrease of $1.8 million, or 3.2 percent, below 2015.

The total rate of return for the System's investment portfolio in 2018 (net of investment expenses) was -6.18 percent as compared to 11.89 percent for 2017 on a time-weighted basis.

Deductions. The expenses paid by the System encompass benefit payments and administrative costs. Benefit payments, comprising the vast majority of the System's expenses, include payments to retirees, beneficiaries and alternate payees, as well as refunds of member contributions. Administrative expenses support the direct operations of the System, and include employee salaries and benefits, rent, utilities, and office expenses.

In 2018, benefits paid to retirees, beneficiaries and alternate payees plus contribution refunds to terminating members were $63.9 million, an increase of $7.4 million over the $56.5 million paid in 2017. The total number of retirees, beneficiaries and alternate payees increased to 906 in 2018 compared to 867 in 2017.

Refunds to terminating employees in 2018 increased by 51 percent to $3.02 million compared to $1.53 million in 2017. General and administrative expenses decreased to 1.42 million in 2018 down from $1.56 million in 2017.

The System's directly billed investment manager fees remained roughly the same in 2018 and decreased by $62 thousand in 2017 from 2016. The decrease 2017 is largely due to the diligent replacement of managers with higher fees and asset allocation changes.

Overall Analysis. As of December 31, 2018, the System's Fiduciary Net Position decreased by $51.0 million from the prior year. Over the three-year period ending December 31, 2018 the System's Fiduciary Net Position has increased by $32.5 million.

Request for Information. This financial report is designed to provide a general overview of the finances of the City of Austin Police Retirement System for all parties with an interest. Questions concerning any of the information provided in this report or requests for additional financial information should be addressed to the Executive Director, City of Austin Police Retirement System, 2520 South IH-35 Suite 100, Austin, Texas 78704.

Statement of Fiduciary Net Position

December 31, 2018 and 2017

ASSETS	**2018**	**2017**
Investments, at fair value:		
Domestic Equity (U.S. Stock)	$331,901,591	$352,635,641
International Equity	100,707,860	122,447,653
Other Equity	14,873,133	12,563,438
U.S./Non-U.S. Fixed Income	81,895,563	114,958,695
Other Fixed Income (Private Lending)	30,654,229	31,298,165
Real Estate	70,397,549	69,572,389
Timber	20,973,997	22,349,839
Multi Asset Class	62,306,919	31,444,001
Cash & Cash Equivalents	5,005,197	14,237,166
Total Investments	718,716,038	771,506,987
Interest and dividends receivable	599,058	100,695
City of Austin retirement contributions receivable	865,913	745,914
City of Austin death benefit contributions receivable	5,127	5,379
Member contributions receivable	539,212	475,503
Proportionate retirement program contributions receivable	12,977	11,449
Fixed assets, net	660,211	726,034
Other	-	32,678
Total assets	721,398,536	773,604,639
LIABILITIES		
Accounts payable and accrued liabilities	2,878,895	4,129,896
Total liabilities	2,878,895	4,129,896
FIDUCIARY NET POSITION	$718,519,641	$769,474,743

The accompanying notes are an integral part of this financial statement presentation.

Statement of Changes in Fiduciary Net Position

December 31, 2018 and 2017

ADDITIONS TO PLAN NET POSITION:	2018	2017
Contributions:		
City of Austin Retirement Contributions	$34,399,844	$34,285,790
City of Austin Contributions applied to the Death Benefit Fund	228,017	244,003
City of Austin Contributions applied to Proportional Ret. Prog.	512,692	514,855
Member (Police) Contributions	21,398,236	21,385,970
Service Credit Purchases	1,141,907	2,914,966
APRS Employer Contributions	103,689	96,556
APRS Employee Contributions	63,246	51,028
Total contributions	57,847,631	59,493,168
Investment income:		
Net increase (decrease) in the fair value of investments	(52,537,911)	79,743,640
Interest and dividends	10,803,872	3,990,270
Rental and other income	168,308	157,214
Total investment gain (loss) before expenses	(41,565,731)	83,891,124
Investment expenses:	(1,832,986)	(1,819,122)
Net gain (loss) from investments	(43,398,717)	82,072,002
Total additions (deletions) to Fiduciary Net Position	14,448,914	141,565,170
DEDUCTIONS FROM FIDUCIARY NET POSITION:		
Retirement benefit payments	60,885,286	54,909,433
Death benefit payments	82,500	109,203
Contributions refunded to terminating employees	3,015,038	1,529,368
General and administrative expenses	1,421,192	1,562,685
Total deductions from Fiduciary Net Position	65,404,016	58,110,689
NET INCREASE (DECREASE) IN FIDUCIARY NET POSITION	(50,955,102)	83,454,481
Beginning fiduciary Net Position	769,474,743	686,020,262
ENDING FIDUCIARY NET POSITION	$718,519,641	$769,474,743

The accompanying notes are an integral part of this financial statement presentation.

Notes to Financial Statements

Note 1: Organization and System Description

The Board of Trustees (Board) of the City of Austin Police Retirement System (System) is the administrator of a single-employer defined benefit pension plan. The System is considered part of the City of Austin's (City) financial reporting entity and is included in the City's financial reports as a pension trust fund.

The System was originally established in 1979 by a City Council ordinance. However, in 1991, the System became governed by state law. The System provides retirement, death, disability and withdrawal benefits to plan members and their beneficiaries. Benefits vest after 10 years of credited service. Participants may retire at 23 years of service excluding any purchased military service credit regardless of age, or at age 55 with 20 years of service excluding any purchased military service or at age 62. In 2009, the System and the City began participating in the Texas Proportionate Retirement Program (PRP). Service in other participating public employment retirement systems can be combined with service in the System to satisfy the System's eligibility requirements. Other participating systems include the Texas statewide systems, the City of Austin Employees' Retirement System, and the systems for the City of El Paso employees.

The monthly benefit is equal to 3.2 percent of the highest 36-month average salary multiplied by years and months of service.

The Retroactive Deferred Retirement Option Plan (Retro DROP) provisions require that a participant must have 23 years of creditable service with the retirement system excluding any purchased military service credit on the date the participant elects the Retro DROP benefit computation date. As of Board action on February 18, 2015, the Retro DROP option is open only to members with 23 years of creditable service as of March 31, 2015. Further, the Retro DROP provisions may be changed in the future by Board rule with approval by the System's actuary.

Note 1: Organization and System Description

The Forward Deferred Retirement Option Plan (Forward DROP) provisions require that a participant must have 23 years of creditable service with the retirement system excluding any purchased military service credit on the date the participant elects to enter the Forward DROP. There are two Forward DROP plans; (1) the Five-Year Forward DROP which is only open to members with 23 years of creditable service as of February 17, 2016 and (2) the Seven-Year Forward DROP which is open to members with 23 years of credible service after February 17, 2016. Forward DROP provisions may be changed in the future by Board rule with approval by the System's actuary.

The Post Retirement Option Plan (PROP) is a program allowing retiring members to transfer a DROP lump sum amount or defer a portion of the monthly annuity payments to an interest-bearing PROP account. Interest will be paid on the participant's PROP account until the entire lump sum is distributed. Interest is payable on PROP accounts on an annual rate determined by the Board.

Members with 20 years of creditable service (including Proportionate Retirement) may purchase Permissive Service credit (PSC) up to a maximum of five years in order to become retirement eligible and/or increase the final benefit amount. The purchase constitutes an immediate retirement. In addition, PSC deferred retirement is an option allowing a member with at least 20 years of creditable service to purchase service credit necessary to become eligible to retire at a more reasonable cost due to a delay in payment of the retirement benefit.

A $10,000 post-retirement lump sum death benefit is payable from a separate Retiree Death Benefit Fund administered by the System. As of December 31, 2018, and 2017, the assets of the Retiree Death Benefit Fund were $1,399,568 and $1,226,556, respectively, which are included in the System's total market value of Net Assets Held in Trust Available for Pension Benefits of $718,519,641 and $769,474,743, respectively.

Note 1: Organization and System Description

Distributions to members or their beneficiaries are also available in the event of total and permanent disability, provided the member has completed 10 years of service or the injury was sustained during the performance of employment duties, or upon death. The terms of benefit payments are determined by certain elections made by the member, their level of earnings and length of service. Payments to members or their beneficiaries may be increased annually on an ad hoc basis, limited to 6 percent per year, and subject to the approval of the Board and the actuary.

Participating members in the System include full-time police officers and cadets employed by the police department of the City and employees of the System. The following membership status of the System was reflected in the actuarial valuation as of December 31, 2018 and 2017:

	2018
Retirees and beneficiaries currently receiving benefits	**1,017**
(906) and terminated employees entitled to future monthly benefits (111)	
Current participating members	1,892
2018 Total	**2,909**

	2017
Retirees and beneficiaries currently receiving benefits	965
(867) and terminated employees entitled to future monthly benefits (98)	
Current participating members	1,866
2017 Total	**2,831**

Note 2: Summary of Significant Accounting Policies

BASIS OF ACCOUNTING

The System's financial statements are prepared using the accrual basis of accounting under which expenses are recorded when the liability is incurred. Revenues are recorded in the accounting period in which they are earned and become measurable.

Investment purchases and sales are recorded as of their settlement date. Contributions are recognized as revenues in the period in which the related employees' payroll is earned. Benefits and refunds are recognized when due and payable in accordance with the terms of the plan.

CONTRIBUTIONS RECEIVABLE

The final biweekly payroll contributions of employees for the years ended December 31, 2018 and 2017, and the City's related contributions were not deposited in the System by year end and are shown as contributions receivable in both years.

ESTIMATES

The preparation of financial statements in conformity with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of additions and deductions to net position held in trust available for pensions benefit during the reporting period. Actual results could differ from those estimates.

METHOD USED TO VALUE INVESTMENTS

The System's investments are reported at fair value. Securities traded on a national or international exchange are valued at the last reported sales price at current exchange rates. Investments that do not have an established market are reported at estimated fair value. The System's real estate investments are appraised periodically and the System receives audited financial statements from the real estate investment managers, which are used to estimate fair value. For other types of investments, the System uses financial statements submitted by investment managers, reviewed for alignment with values held by the external investment consultant and custodial bank.

Note 2: Summary of Significant Accounting Policies

Investment income is recognized in the period earned, and purchases and sales of investments are recorded on a settlement-date basis.

SYSTEM EXPENSES

All System administrative costs are the responsibility of the System.

SUBSEQUENT EVENTS

Management has evaluated subsequent events for disclosure through the date of the Independent Auditor's Report, the date the financial statements were available to be issued.

Note 3: Fixed Assets

Fixed assets are recorded at cost. Depreciation is computed using the straight-line method over the asset's estimated useful life of 30 years for the building and five to seven years for furniture and equipment. Fixed asset activity for the year ended December 31, 2018 consisted of:

	Beginning Balance	Additions	Deletions	Ending Balance
Assets not being depreciated				
Land	$ 150,000	$ -	$ -	$ 150,000
Assets being depreciated				
Building and improvements	1,213,715			1,213,715
Furniture and equipment	502,982	4,434		507,416
Leasehold improvements	116,986	8,727		125,713
Accumulated depreciation	(1,257,648)	(78,984)		(1,336,632)
Net Fixed Assets	$ 726,034	$ (65,823)	$ -	$ 660,211

Note 4: Federal Income Taxes

The System is a public employee retirement system and is exempt from federal income taxes. Favorable determination letters from the Internal Revenue Service were issued in September 1996, April 2007, July 2009, and August 2014.

Note 5: Deposit and Investment Risk

The System is authorized as an independent, defined benefit retirement plan in Article 6243n-1, Vernon's Annotated Texas Civil Statutes, which was signed into law on June 11, 1991. The Board is the trustee of System funds and has the power to invest and reinvest such funds in instruments or investments the Board considers prudent in accordance with the System's investment policy and state and federal law.

The Board has adopted an Investment Policy Statement (IPS) to set forth the factors involved in the management of investment assets for the System and the IPS is included with every investment manager's agreement. The fair values of the System's investments at December 31, 2018 and 2017 are presented, by type, as follows:

Total Investments by Asset Class[1]	2018	2017
Domestic Equity (U.S. Equity)	$331,901,591	$352,635,641
International Equity	100,707,860	122,447,653
Other Equity	14,873,133	12,563,438
U.S./Non-U.S. Fixed Income	81,895,563	114,958,695
Other Fixed Income (Private Lending)	30,654,229	31,298,165
Real Estate	70,397,549	69,572,389
Timber	20,973,997	22,349,839
Multi Asset Class	62,306,919	31,444,001
Cash & Cash Equivalents	5,005,197	14,237,166
Total Investments	$718,716,038	$771,506,987

[1] Asset classes revised November 13, 2017

Note 5: Deposit and Investment Risk

CUSTODIAL CREDIT RISK

Custodial credit risk for deposits is the risk that, in the event of the failure of a depository financial institution, the System will not be able to recover its deposits or will not be able to recover collateral securities that are in the possession of an outside party. Deposits are exposed to custodial credit risk if they are uninsured and uncollateralized.

Custodial credit risk for investments is the risk that, in the event of the failure of the counterparty to a transaction, a government will not be able to recover the value of the investment or collateral securities that are in the possession of an outside party. Investment securities are exposed to custodial credit risk if the securities are uninsured, are not registered in the name of the System and are held by either the counterparty or the counterparty's trust department or agent but not in the System's name. As of December 31, 2018, and 2017, the System's investment securities are not exposed to custodial credit risk because all securities are held by the System's custodial bank in the System's name.

CONCENTRATION OF CREDIT RISK

Concentration of credit risk is the risk of loss attributed to the magnitude of the System's investment in a single issuer. Investments issued or explicitly guaranteed by the U.S. government and investments in mutual funds, external investment pools and other pooled investments are excluded from this requirement. As of December 31, 2018 and December 31, 2017, there is no security issued by a single issuer that holds more than 5 percent of the System’s fund.

The Board and Investment Policy Statement (IPS) adopts the philosophy that the most effective risk control procedure is to adequately diversify the investments of the Fund among different asset classes with differing risk profiles. Diversification is achieved through providing a wide variety of investment classes in which to invest the System’s Funds.

Note 5: Deposit and Investment Risk

As of December 31, 2018, the System had the following investment asset allocations:

Asset Class	Target	Allowable Range
Domestic Equity (U.S. Equity)	42.5%	30%-50%
International Equity	15.0%	5%-25%
Other Equity	7.5%	0%-10%
U.S./Non-U.S. Fixed Income	10.0%	5%-30%
Other Fixed Income (Private Lending)	5.0%	0%-10%
Real Estate	15.0%	0%-30%
Timber	0.0%	0%-5%
Multi Asset Class	5.0%	0%-10%
Cash & Cash Equivalents	0.0%	0%-5%

The Board has adopted an Investment Policy Statement (IPS) with a general investment objective to obtain a total rate of return commensurate with the Prudent Investor Rule and any other applicable statutes. Reasonable consistency of return and protection of assets against the inroads of inflation is paramount. Performance results will be compared over the long-term in the context of five years or more given interest rate fluctuations and volatility of securities markets.

The Board will employ investment professionals to oversee and invest the assets within the parameters allowed by the IPS and the agreements. The investment managers will have investment discretion over their mandates, including security selection, sector weightings and investment style, subject to certain constraints of the IPS.

In conjunction with these goals and guidelines are responsibilities of the investment committee, third party consultants, custodians and money managers. The IPS also outlines the review and control procedures that the Board will monitor for compliance.

Note 5: Deposit and Investment Risk

INTEREST RATE RISK

Interest rate risk is the risk that measures whether changes in interest rates will adversely affect the fair value of an investment. The System does not have a formal policy that limits investment maturities as a means of managing its exposure to fair value losses arising from increasing interest rates.

As of December 31, 2018, the System had the following investments:

Investment Type[1]	Fair Value	Less Than 1 Year	1 to 6 Years	6 to 10 Years	Over 10 Years
Bonds	$40,791,457	$997,146	$11,276,412	$5,715,859	$22,802,040

As of December 31, 2017, the System had the following investments:

Investment Type[1]	Fair Value	Less Than 1 Year	1 to 6 Years	6 to 10 Years	Over 10 Years
Bonds	$73,387,670	$3,998,642	$22,693,784	$15,373,047	$31,322,197

[1] Source: 2018 & 2017 GASB 40 Reports

Note 5: Deposit and Investment Risk

CREDIT RISK

Credit risk is the risk associated with an issuer or other counterparty to an investment that does not fulfill its obligations to the System. While the System has no formal investment policy regarding credit quality rating guidelines, the IPS allows investment managers full discretion in adopting investment strategies to deal with these risks and the portfolios are monitored quarterly by the investment committee.

The quality ratings of investments in fixed income securities as described by nationally recognized statistical rating organizations at December 31, 2018, are as follows:

Quality Rating[1]	**Total Fair Value**	**International Securities**	**Corporate Bonds**	**Government Bonds**
Aaa / AAA				
Aa1 / AA+	$965,079		$965,079	
Aa2 / AA				
Aa3 / AA-	2,288,413		2,288,413	
A1 / A+				
A2 / A	3,880,110		3,880,110	
A3 / A-	6,655,209		6,655,209	
Baa1 / BBB+	1,799,543		1,799,543	
Baa2 / BBB	7,363,793		7,363,793	
Baa3 / BBB-				
Ba1 / BB+				
Ba2 / BB				
Ba3 / BB-				
B1 / B+				
B2 / B				
B3 / B-				
Caa / CCC				
Ca / CC				
C and below				
Not Rated	100,739,389	$100,739,389		
U.S. Gov't Guaranteed	17,839,310			$17,839,310
Cash & Equivalent	9,230,206	9,230,206		
Total	$150,761,052	$109,969,595	$22,952,147	$17,839,310

[1] Source: 2018 GASB 40 Report

Note 5: Deposit and Investment Risk

The quality ratings of investments in fixed income securities as described by nationally recognized statistical rating organizations at December 31, 2017, are as follows:

Quality Rating[1]	Total Fair Value	International Securities	Corporate Bonds	Government Bonds
Aaa / AAA				
Aa1 / AA+	$2,025,400		$2,025,400	
Aa2 / AA				
Aa3 / AA-	3,428,368		3,428,368	
A1 / A+				
A2 / A	11,166,118		11,166,118	
A3 / A-	11,502,080		11,502,080	
Baa1 / BBB+	8,662,154		8,662,154	
Baa2 / BBB	12,916,402		12,916,402	
Baa3 / BBB-	2,046,518		2,046,518	
Ba1 / BB+				
Ba2 / BB				
Ba3 / BB-				
B1 / B+				
B2 / B				
B3 / B-				
Caa / CCC				
Ca / CC				
C and below				
Not Rated	69,735,252	$69,735,252		
U.S. Gov't Guaranteed	21,640,630			$21,640,630
Cash & Equivalent	18,405,243	18,405,243		
Total	$161,528,165	$88,140,495	$51,747,040	$21,640,630

[1] Source: 2017 GASB 40 Report

Note 5: Deposit and Investment Risk

FOREIGN CURRENCY RISK

Foreign currency risk is the risk that occurs when changes in exchange rates adversely affect the fair value of an investment or a deposit. Although the System does not have a formal investment policy governing foreign currency risk, the System does manage its exposure to fair value loss by requiring international investment managers to maintain diversified portfolios to limit foreign currency risk.

The System holds investments in ADRs (American Depository Receipts) which are not included in the schedule below since they are denominated in U.S. dollars and accounted for at fair market value.

The System's exposure to foreign currency risk as of December 31, 2018, is as follows:

2018 Foreign Currency Risk[1]

Country	Non-Securities	International Equities	Other[2]
Belgium, Euro			951,784
France, Euro		95,770	
Ireland, Euro		931,280	
India, Rupee		157,489	
Israel, Shekel		1,894,658	
Taiwan, Dollar		236,183	
United Kingdom, Pound		31,643	
	$	$ 3,347,023	$ 951,784

[1] Source: 2018 GASB 40 Report

[2] Represents corporate bonds

Note 5: Deposit and Investment Risk

The System's exposure to foreign currency risk as of December 31, 2017, is as follows:

2017 Foreign Currency Risk[1]

Country	Non-Securities	International Equities	Other[2]
Belgium, Euro			$1,992,860
Canada, Dollar		$61,975	
France, Euro		23,098	
India, Rupee		250,211	
Ireland, Euro		887,667	
Israel, Shekel		220,269	
Netherlands, Euro		142,597	
Norway, Krone		155,817	
Taiwan, Dollar		205,074	
UK, Pound		31,363	
	$	$1,978,071	$1,992,860

1 Source: 2017 GASB 40 Report

2 Represents corporate bonds

Note 6: Fair Market Measurement

In accordance with GASB 72, the System categorizes the fair measurement of its investments within a fair value hierarchy as established by generally accepted accounting principles. Fair value measurements are classified as Level 1, Level 2 or Level 3, based on inputs utilized to establish fair values:

> Level-1 inputs are based on quoted prices (unadjusted) in active markets for identical assets or liabilities in active markets that an entity can access at the measurement date.
>
> Level-2 inputs (other than quoted prices included within Level 1) are observable for similar assets or liabilities.
>
> Level-3 inputs are developed by the reporting entity based on unobservable inputs for an asset or liability.

The categorization of investments described below is based solely on the objectivity of the inputs used, to reflect relative reliability in the measurement of an investment's fair value, and does not reflect the level of risk associated with the investment.

Note 6: Fair Value Measurement

APRS investments have the following fair value measurements as of December 31, 2018.

2018 GASB 72 Fair Value Measurement

Investments by fair value level:	Total	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Observable Inputs (Level 3)
Short-Term Securities				
Cash - STIF Account	5,005,197		5,005,197	
Total	**$5,005,197**		**$5,005,197**	
Debt Securities (1)				
Debt Securities	44,089,737		44,089,737	
Total	**$44,089,737**		**$44,089,737**	
Equity Securities				
U.S. Denominated Equities	128,320,506	128,320,506		
Total	**$128,320,506**	**$128,320,506**		
Pooled Funds				
Domestic equity collective trust	203,581,085	203,581,085		
International equity collective trust	70,752,231	70,752,231		
Global bond collective trust	37,805,826		37,805,826	
Emerging markets collective trust	18,600,416	18,600,416		
International equity mutual fund	11,355,213	11,355,213		
Total	**$342,094,771**	**$304,288,945**	**$37,805,826**	
Total investments by fair value level	**$519,510,211**	**$475,083,294**	**$129,200,838**	
Investments Measured at Level 3				
Timber	20,973,997	a, b, c,		20,973,997
Real Estate	70,397,549	d, e, f, g, h, i, j, k, l, m, n		70,397,549
Other Fixed Income (Private Lending)	30,654,229	o, p, q, r, s		30,654,229
Other Equity (Private Equity)	14,873,133	t, u, v, w, x, y		14,873,133
Multi Asset Class	62,306,919	z, aa		62,306,919
Total	**$199,205,827**			**$199,205,827**
Total investments measured at fair value	**$718,716,038**			

(1) **Includes**: Commercial mortgage-backed securities, Corporate Bonds, Government mortgage-backed securities, Government agencies and Government Bonds. All held by one manager.

2018 Financial Notes and Security Descriptions Footnotes:		**Liquidity**	**Notice**
a) BTG Pactual I	Actively managed diversified timber holdings located in the USA. The investment is in liquidation.	Illiquid	N/A
b) Capital Timberland Investments	Actively managed diversified timber holdings located in Texas, USA.	Illiquid	N/A
c) Domain Environmental (Domain Capital Group)	Actively managed real estate portfolio of environmental preservation and restoration projects located in the USA. This fund is near the end of its expected term.	Illiquid	N/A
d) RockSpring Funds	Actively manage portfolio of real estate investments located in Texas, USA.	Illiquid	N/A
e) GreenOak US III	Actively manage value-added real estate portfolio of primarily equity real estate investments located in the USA.	Illiquid	N/A
f) ARES (VEF Advisors Funds)	Actively manage value-added real estate portfolio of primarily equity real estate investments located in the USA. This fund is near the end of its expected term.	Illiquid	N/A
g) Invesco Real Estate Funds	Actively manage value-added real estate portfolio of primarily equity real estate investments located in the USA. This fund is near the end of its expected term.	Illiquid	N/A
h) Edison Investments (Jayhawk & Sycamore)	Actively managed opportunistic and value-added real estate portfolio of primarily equity real estate investments located in the USA. The investment is in liquidation.	Illiquid	N/A
i) India Property Fund (Apollo)	Actively managed opportunistic and value-added real estate portfolio of equity real estate investments located in India. This fund is near the end of its expected term.	Illiquid	N/A
j) Gainesville Property (formerly Vision Capital)	Actively managed portfolio of real estate property located in the Georgia, USA.	Illiquid	N/A
k) AEW Partners	Actively managed portfolio of real estate investments located in the USA.	Illiquid	N/A
l) Morgan Stanley Prime Property Fund	Actively managed core portfolio of primarily equity real estate investments located in the USA.	Quarterly	90 days
m) AEW Partners Fund VIII	Actively managed core portfolio of primarily equity real estate investments located in the USA.	Illiquid	N/A
n) Green Oak US III	Actively managed core portfolio of primarily equity real estate investments located in the USA.	Illiquid	N/A
o) LBC Credit Partners III	Actively managed private investment fund of private loan investments located in the USA.	Illiquid	N/A
p) LBC Credit Partners IV	Actively managed private investment fund of private loan investments located in the USA.	Illiquid	N/A
q) Providence Debt Fund III	Actively managed private investment fund of private loan investments located in the USA.	Illiquid	N/A
r) Capital Point Partners	Actively managed private investment fund of private loan investments located in the USA. This investment is in liquidation.	Illiquid	N/A
s) Franchise Equity Capital Partners II (Capital Springs)	Actively managed private investment fund of private loan investments located in the USA. This investment is in liquidation.	Illiquid	N/A
t) Huff Energy	Actively managed portfolio of private energy investments located in the USA. The fund is nearing the end of its expected term.	Illiquid	N/A
u) Sail Venture I	Actively managed private equity portfolio of venture capital investments located in the USA.	Illiquid	N/A
v) Sail Ventures II	Actively managed private equity portfolio of venture capital investments located in the USA.	Illiquid	N/A
w) Sail Pre-Exit Acceleration Fund	Actively managed private equity portfolio of venture capital investments located in the USA.	Illiquid	N/A
x) Excelsior Investors	Actively managed private equity portfolio of private finance oriented investments located in the USA.	Illiquid	N/A
y) Franklin Park Private Equity Fund	Actively managed portfolio of private finance oriented investments located in the USA.	Illiquid	N/A
z) Double Eagle Capital Ace Fund	Diversified fund of hedge funds with blending global macro, long/short equity and diversified credit strategies.	Quarterly	95 days
aa) BlackRock Multi Asset Fund	Diversified fund of hedge funds with blending global macro, long/short equity and diversified credit strategies.	Daily	None

Note 6: Fair Value Measurement

APRS investments have the following fair value measurements as of December 31, 2017.

2017 GASB 72 Fair Value Measurement

Investments by fair value level:	Total	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Observable Inputs (Level 3)
Short-Term Securities				
Cash - STIF Account	14,237,166		14,237,167	
Total	**$14,237,166**		**$14,237,167**	
Debt Securities (1)				
Debt Securities	77,295,521		77,295,521	
Total	**$77,295,521**		**$77,295,521**	
Equity Securities				
U.S. Denominated Equities	141,868,719	141,868,719		
Total	**$141,868,719**	**$141,868,719**		
Pooled Funds				
Domestic equity collective trust	210,766,922	210,766,922		
International equity collective trust	84,157,697	84,157,697		
Global bond collective trust	37,668,150		37,668,150	
Emerging markets collective trust	22,381,484	22,381,484		
International equity mutual fund	15,908,472	15,908,472		
Total	**$370,882,725**	**$333,214,575**	**$37,668,150**	
Total investments by fair value level	**$604,284,131**	**$475,083,294**	**$129,200,838**	
Investments Measured at Level 3				
Timber	22,349,839	a, b, c,		22,349,839
Real Estate	69,572,389	d, e, f, g, h, i, j, k, l, m, n		69,572,389
Other Fixed Income (Private Lending)	31,293,189	o, p, q, r, s		31,293,189
Other Equity	12,563,438	t, u, v, w, x, y		12,563,438
Multi Asset Class	31,444,001	z		31,444,001
Total	**$167,222,856**			**$167,222,857**
Total investments measured at fair value	**$771,506,987**			

(1) Includes: Commercial mortgage-backed securities, Corporate Bonds, Government mortgage-backed securities, Government agencies and Government Bonds. All held by one manager.

2017 Financial Notes and Security Descriptions Footnotes:		Liquidity	Notice
a) BTG Pactual I	Actively managed diversified timber holdings located in the USA. The investment is in liquidation.	Illiquid	N/A
b) Capital Timberland Investments	Actively managed diversified timber holdings located in Texas, USA.	Illiquid	N/A
c) Domain Environmental (Domain Capital Group)	Actively managed real estate portfolio of environmental preservation and restoration projects located in the USA. This fund is near the end of its expected term.	Illiquid	N/A
d) Rocksprings Funds	Actively manage portfolio of real estate investments located in Texas, USA.	Illiquid	N/A
e) CBRE Special Situation Fund	Actively manage value-added real estate portfolio of primarily equity real estate investments located in the USA. This fund is near the end of its expected term.	Illiquid	N/A
f) ARES (VEF Advisors Funds)	Actively manage value-added real estate portfolio of primarily equity real estate investments located in the USA. This fund is near the end of its expected term.	Illiquid	N/A
g) Invesco Real Estate Funds	Actively manage value-added real estate portfolio of primarily equity real estate investments located in the USA. This fund is near the end of its expected term.	Illiquid	N/A
h) Edison Investments (Jayhawk & Sycamore)	Actively managed opportunistic and value-added real estate portfolio of primarily equity real estate investments located in the USA. The investment is in liquidation.	Illiquid	N/A
i) JP Morgan India Property Fund	Actively managed opportunistic and value-added real estate portfolio of equity real estate investments located in India. This fund is near the end of its expected term.	Illiquid	N/A
j) Gainesville Property (formerly Vision Capital)	Actively managed portfolio of real estate investments located in the Georgia, USA.	Illiquid	N/A
k) FWAR Investments	Actively managed portfolio of real estate investments located in the Arizona, USA. The investment is in liquidation.	Illiquid	N/A
l) Morgan Stanley Prime Property Fund	Actively managed core portfolio of primarily equity real estate investments located in the USA.	Quarterly	90 days
m) AEW Partners Fund VIII	Actively managed core portfolio of primarily equity real estate investments located in the United States.	Illiquid	N/A
n) Green Oak U.S. III	Actively managed core portfolio of primarily equity real estate investments located in the United States. Contracted. Waiting to fund.	Illiquid	N/A
o) LBC Credit Partners III	Actively managed private investment fund of private loan investments located in the USA.	Illiquid	N/A
p) LBC Credit Partners IV	Actively managed private investment fund of private loan investments located in the USA.	Illiquid	N/A
q) Providence Debt Fund III	Actively managed private investment fund of private loan investments located in the USA.	Illiquid	N/A
r) Capital Point Partners	Actively managed private investment fund of private loan investments located in the USA. This investment is in liquidation.	Illiquid	N/A
s) Franchise Equity Capital Partners II (Capital Springs)	Actively managed private investment fund of private loan investments located in the USA. This investment is in liquidation.	Illiquid	N/A
t) Huff Energy	Actively managed portfolio of private energy investments located in the USA. The fund is nearing the end of its expected term.	Illiquid	N/A
u) Sail Venture I	Actively managed private equity portfolio of venture capital investments located in the USA.	Illiquid	N/A
v) Sail Ventures II	Actively managed private equity portfolio of venture capital investments located in the USA.	Illiquid	N/A
w) Sail Pre-Exit Acceleration Fund	Actively managed private equity portfolio of venture capital investments located in the USA.	Illiquid	N/A
x) Excelsior Investors	Actively managed private equity portfolio of private finance-oriented investments located in the USA.	Illiquid	N/A
y) Franklin Park Private Equity Fund	Actively managed portfolio of private finance-oriented investments located in the United States.	Illiquid	N/A
z) Double Eagle Capital Ace Fund	Diversified fund of hedge funds with blending global macro, long/short equity and diversified credit strategies.	Quarterly	95 days

Note 7: Schedule of Investment Returns

For the year ended December 31, 2018 and 2017 the annual money-weighted rate of return on investments, net of investment expense, was -5.67% percent and 11.95 percent, respectively, as calculated by the System actuary.

Note 8: Contributions

The System is funded by biweekly contributions from both employees and the City based on employee compensation, consisting of base pay and longevity pay. Under the provisions that were in effect during December 2018 and 2017, participants are required to contribute 13 percent of their compensation.

The City's required contribution rate for fiscal year 2018 and 2017 was 21.313 percent.

Since September 1, 2003, a portion of the City's total contribution has been allocated to the Retiree Death Benefit Fund. The allocation rate for fiscal year 2018 was 0.121 percent. In fiscal year 2017 the rate was 0.145 percent.

The City contribution rate is required by the state law governing the System and may be changed by amendment made by the Legislature of the State of Texas. The member contribution rate must be at least 13 percent in accordance with state law. The member contribution rate may be changed by the Legislature of the State of Texas or by appropriate actions of the Board and the participating members in accordance with state law.

Note 8: Contributions

While contribution rates are not actuarially determined, state law requires that each plan of benefits adopted by the System must be approved by a qualified actuary. The actuary certifies that the contribution commitment by the police officers and the City provides an adequate financing arrangement at the time any change is made. Using the entry age actuarial cost method, the System's normal cost is determined as a percentage of payroll. The excess of the total contribution rate over the normal cost rate is used to amortize the System's unfunded actuarial accrued liability. The amortization period is determined using the open, level percentage of payroll method. Based on the actuarial valuation as of December 31, 2018 and the plan provisions recognized in the valuation, the normal cost is 24.986 percent of pay and the amortization period is Never. Based on the actuarial valuation as of December 31, 2017 as conducted by the prior actuary, the normal cost was 22.291 percent of pay and the amortization period was 35 years.

Note 9: Commitments and Contingencies

The System's investments in real assets (real estate and timber) are included in the table appearing in Note 5. In connection with those investments, the System has remaining commitments as of December 31, 2018 and 2017 of approximately $91,371,546 million and $91,922,228 million, respectively, pursuant to the terms of the respective interests.

At December 31, 2018 and 2017, the total accumulated lump sum benefit due to forward DROP participants was $13,690,391 and $10,662,425 respectively.

At December 31, 2018 and 2017, the total accumulated lump sum benefit due to PROP participants was $28,667,294 and $30,173,974 respectively.

Note 10: Net Pension Liability of the Sponsor

The components of the Net Pension Liability of the Sponsor on December 31, 2018 were as follows:

Total Pension Liability	$1,904,954,056
Plan Fiduciary Net Position	$ (718,519,641)
Net Pension Liability	$ 1,186,434,415
Plan Fiduciary Net Position as a percentage of Total Pension Liability	37.72%

Actuarial Assumptions:

The Total Pension Liability was determined by an actuarial valuation as of December 31, 2018 using the following actuarial assumptions:

Inflation	2.5%
Salary Increases	Services Based
Discount Rate	4.7%
Investment Rate of Return	7.25%

Mortality rates were based on the PubS-2010 with projected improvements.

A single discount rate of 4.70% was used to measure the total pension liability for the plan year ending December 31, 2018. This single discount rate was based on an expected rate of return on pension plan investments of 7.25% and a municipal bond rate of 3.71%. Based on the stated assumptions and the projection of cash flows, the pension plan's fiduciary net position and future contributions were sufficient to finance the projected benefit payments through the year 2041. As a result, the long-term expected rate of return on pension plan investments was applied to projected benefit payments through the 2041 fiscal year, and the municipal bond rate was applied to all benefit payments after that date, with the resulting Single Discount Rate being 4.70%.

Note 10: Net Pension Liability of the Sponsor

The source of the municipal bond rate is the rate for Fixed Income Market Data/Yield Curve/Data Municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's "20-Year Municipal GO AA Index." In describing this index, Fidelity notes that the municipal curves are constructed using option adjusted analytics of a diverse population of over 10,000 tax exempt securities. The rate shown is as of the last date available on or before the measurement date.

The projection of cash flows used to determine this single discount rate assumed that plan member and employer contributions will be made at the current rates and remain a level percentage of payroll.

Note 10: Net Pension Liability of the Sponsor

The components of the Net Pension Liability of the Sponsor on December 31, 2017 were as follows:

Total Pension Liability	$1,189,590,940
Plan Fiduciary Net Position	$ (769,474,743)
Net Pension Liability	$ 420,116,197
Plan Fiduciary Net Position as a percentage of Total Pension Liability	64.68%

Actuarial Assumptions:

The Total Pension Liability was determined by an actuarial valuation as of December 31, 2017 using the following actuarial assumptions:

Inflation	3.0%
Salary Increases	Services Based
Discount Rate	7.70%
Investment Rate of Return	7.70%

Mortality rates (all lives) were based on the RP-2000 Combined Healthy without projection- Sex Distinct. Based on a study of over 650 public safety funds, this table reflects a 10 percent, margin for future mortality improvements.

The Long-Term Expected Rate of Return on Pension Plan investments was determined using a building block method in which best-estimate ranges of expected future real rates of return (expected returns, net of Pension Plan investment expenses and inflation) are developed for each major asset class.

These ranges are combined to produce the Long-Term Expected Rate of Return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation.

Note 10: Net Pension Liability of the Sponsor

Best estimates of arithmetic real rates of return for each major asset class included in the Pension Plan's target asset allocation as of December 31, 2018 are summarized in the following table:

Asset Class	Long Term Expected Real Rate of Return
Domestic Equity	7.50%
International Equity	8.50%
Other Equity	7.50%
U.S./Non-U.S. Fixed Income	3.00%
Other Fixed Income (Private Lending)	3.50%
Real Estate	4.50%
Timber	2.50%
Multi Asset Class	5.00%
Cash & Cash Equivalents	0.00%

Discount Rate:

A single discount rate of 4.70% was used to measure the total pension liability for the plan year ending December 31, 2018. This single discount rate was based on an expected rate of return on pension plan investments of 7.25% and a municipal bond rate of 3.71%. Based on the stated assumptions and the projection of cash flows, the pension plan's fiduciary net position and future contributions were sufficient to finance the projected benefit payments through the year 2041. As a result, the long-term expected rate of return on pension plan investments was applied to projected benefit payments through the 2041 fiscal year, and the municipal bond rate was applied to all benefit payments after that date, with the resulting Single Discount Rate being 4.70%.

The source of the municipal bond rate is the rate for Fixed Income Market Data/Yield Curve/Data Municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's "20-Year Municipal GO AA Index." In describing this index, Fidelity notes that the municipal curves are constructed using option adjusted analytics of a diverse population of over 10,000 tax exempt securities. The rate shown is as of the last date available on or before the measurement date.

Note 10: Net Pension Liability of the Sponsor

The projection of cash flows used to determine this single discount rate assumed that plan member and employer contributions will be made at the current rates and remain a level percentage of payroll.

	1% Decrease	Current Discount Rate	1% Increase
	3.70%	4.70%	5.70%
Sponsor's Net Pension Liability	$ 1,475,726,995	$ 1,186,434,415	$ 952,514,979

Note 10: Net Pension Liability of the Sponsor

Best estimates of arithmetic real rates of return for each major asset class included in the Pension Plan's target asset allocation as of December 31, 2017 are summarized in the following table:

Asset Class[1]	Long Term Expected Real Rate of Return
Domestic Equity	7.50%
International Equity	8.50%
Other Equity	7.50%
U.S./Non-U.S. Fixed Income	3.00%
Other Fixed Income (Private Lending)	3.50%
Real Estate	4.50%
Timber	2.50%
Multi Asset Class	5.00%
Cash & Cash Equivalents	0.00%

[1] Asset classes revised November 13, 2017

Discount Rate:

The Discount Rate used to measure the Total Pension Liability was 7.7 percent. The projection of cash flows used to determine the discount rate assumed that plan member contributions will be made at the current contribution rate of 13.00 percent of compensation and that plan sponsor contributions will be made at the current contribution rate of 21.313 percent of total payroll. Based on those assumptions, the pension plan's Fiduciary Net Position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

	1% Decrease	Current Discount Rate	1% Increase
	6.70%	7.70%	8.70%
Sponsor's Net Pension Liability	$ 553,553,243	$ 420,116,197	$ 307,088,678

DISCLOSURES IN ACCORDANCE WITH GASB STATEMENT NO. 67 REQUIRED SUPPLEMENTARY INFORMATION

Schedules of Required Supplementary Information

Schedule of Employer Contributions

Plan year ending December 31,	2018	2017	2016	2015	2014	2013
Total pension liability						
Service Cost	$ 33,757,344	$ 35,322,361	$ 32,989,949	$ 32,138,760	$ 30,253,628	$ 28,769,060
Interest on the Total Pension Liability	90,478,785	84,471,608	80,845,879	76,999,651	72,442,934	68,919,471
Benefit Changes	0	0	0	(4,079,852)	(11,015,618)	0
Difference between expected and actual experience of the Total Pension Liability	(12,904,876)	17,240,801	7,454,959	(6,318,435)	0	0
Assumption Changes	666,872,780	-	5,148,318	3,903,538	14,137,496	0
Contributions - Buy Back	1,141,907	2,914,966	1,668,174	4,648,271	2,207,398	0
Benefit Payments and Refunds	(63,982,824)	(56,548,004)	(50,827,501)	(50,005,439)	(45,403,126)	(42,825,265)
Net Change in Total Pension Liability	715,363,116	83,401,732	77,279,778	57,286,494	62,622,712	54,863,266
Total Pension Liability - Beginning	1,189,590,940	1,106,189,208	1,028,909,430	971,622,936	909,000,224	854,136,958
Total Pension Liability - Ending	$ 1,904,954,056	$ 1,189,590,940	$ 1,106,189,208	$ 1,028,909,430	$ 971,622,936	$909,000,224
Plan Fiduciary Net Position						
Contributions - Employer	$ 35,244,242	$ 35,141,204	$ 33,814,182	$ 33,239,271	$ 32,399,740	$ 31,160,764
Contributions - Member	21,461,482	21,436,998	20,623,125	20,060,610	19,457,407	19,467,960
Contributions - Buy Back	1,141,907	2,914,966	1,668,174	4,648,271	2,207,398	0
Pension Plan Net Investment Income	(43,398,717)	82,072,002	37,964,881	(321,704)	35,574,317	49,524,150
Benefit Payments and Refunds	(63,982,824)	(56,548,004)	(50,827,501)	(50,005,439)	(45,403,126)	(42,825,265)
Pension Plan Administrative Expense	(1,421,192)	(1,562,685)	(1,396,736)	(1,465,939)	(1,327,071)	(1,114,856)
Other	0	0	0	0	0	0
Net Change in Plan Fiduciary Net Position	(50,955,102)	83,454,481	41,846,125	6,155,070	42,908,665	56,212,753
Plan Fiduciary Net Position - Beginning	769,474,743	686,020,262	644,174,137	638,019,067	595,110,402	538,897,649
Plan Fiduciary Net Position - Ending	$ 718,519,641	$ 769,474,743	$ 686,020,262	$ 644,174,137	$ 638,019,067	$595,110,402
Net Pension Liability - Ending	1,186,434,415	420,116,197	420,168,946	384,735,293	333,603,869	313,889,822
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	37.72 %	64.68 %	62.02 %	62.61 %	65.67 %	65.47 %
Covered Employee Payroll	$ 165,088,323	$ 164,899,985	$ 158,655,196	$ 154,243,493	$ 149,790,754	$144,089,468
Net Pension Liability as a Percentage of Covered Employee Payroll	718.67 %	254.77 %	264.83 %	249.43 %	222.71 %	217.84 %

Notes to Schedule:

For FYE 2017 and later, the covered payroll was determined by imputing the pay based on actual member contributions.

Prior to FYE 2017, the covered payroll was determined by the prior actuary.

See independent auditor’s report.

Schedules of Required Supplementary Information

Schedule of Employer Contributions

PY Ending December 31,	Actuarially Determined Contribution	Actual Contribution	Contribution Deficiency (Excess)	Covered Payroll	Actual Contribution as a % of Covered Payroll
2013	N/A	N/A	N/A	$ 144,089,468	21.63%
2014	N/A	N/A	N/A	149,790,754	21.63%
2015	N/A	N/A	N/A	154,243,493	21.55%
2016	N/A	N/A	N/A	158,655,196	21.313%
2017	N/A	N/A	N/A	164,899,985	21.313%
2018	N/A	N/A	N/A	165,088,323	21.313%

Schedule of Investment Returns

The returns for the Plan's fiscal years shown below were determined as annual money-weighted rates of returns net of investment expenses.

Last 10 Fiscal Years (which may be built prospectively)

Fiscal Year Ending December 31,	Annual Return
2018	-5.67%
2017	11.95%
2016	5.88%
2015	-0.05%
2014	5.71%
2013	8.90%

See independent auditor's report.

ACTUARIAL SECTION

Austin Police Retirement System

Annual Actuarial Valuation - Funding

As of December 31, 2018

GRS Retirement Consulting
P: 469.524.0000 | F: 469.524.0003 | www.grsconsulting.com

July 17, 2019

Board of Trustees
Austin Police Retirement System
2520 South IH 35, Suite 100
Austin, TX 78704

Re: Actuarial Valuation for Funding Purposes as of December 31, 2018

Members of the Board:

We certify that the information contained in this report is accurate and fairly presents the actuarial position of the Austin Police Retirement System (APRS) as of December 31, 2018. This report was prepared at the request of the Board and is intended for use by APRS staff and those designated or approved by the Board. This report may be provided to parties other than APRS only in its entirety and only with the permission of the Board.

Actuarial Valuation

The primary purposes of the actuarial valuation report are to determine the adequacy of the current City contribution rate, describe the current financial condition of APRS, analyze changes in the condition of APRS, and provide various summaries of the data.

Plan Provisions

There were no changes to the plan provisions during the past year. The current plan provisions are outlined in Section E of this report.

Actuarial Assumptions and Methods

The assumptions and methods applied in this actuarial valuation were adopted by the Board of Trustees effective with the December 31, 2018 actuarial valuation. The actuarial assumptions used for the December 31, 2018, actuarial valuation are based on an experience review for the five-year period from January 1, 2013 through December 31, 2017. All actuarial assumptions used in this report are reasonable for the purposes of this actuarial valuation. The current actuarial assumptions and methods are outlined in Section F of this report.

Data

The valuation was based upon information as of December 31, 2018 furnished by APRS staff, concerning system benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. We checked for internal and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by APRS staff.

5605 North MacArthur Boulevard | Suite 870 | Irving, Texas 75038-2631

Certification

All of our work conforms with generally accepted actuarial principles and practices, and to the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of, where applicable, the Internal Revenue Code and ERISA.

The signing actuaries are independent of the plan sponsor. Ryan Falls is an Enrolled Actuary, a Fellow of the Society of Actuaries, and a Member of the American Academy of Actuaries, and meets the Qualification Standards of the American Academy of Actuaries. Finally, each of the undersigned is experienced in performing valuations for public retirement systems.

Respectfully submitted,
Gabriel, Roeder, Smith & Company

R. Ryan Falls
Lewis Ward

R. Ryan Falls, FSA, EA, MAAA	Lewis Ward
Senior Consultant & Actuary	Consultant

Table of Contents

SECTION A

EXECUTIVE SUMMARY

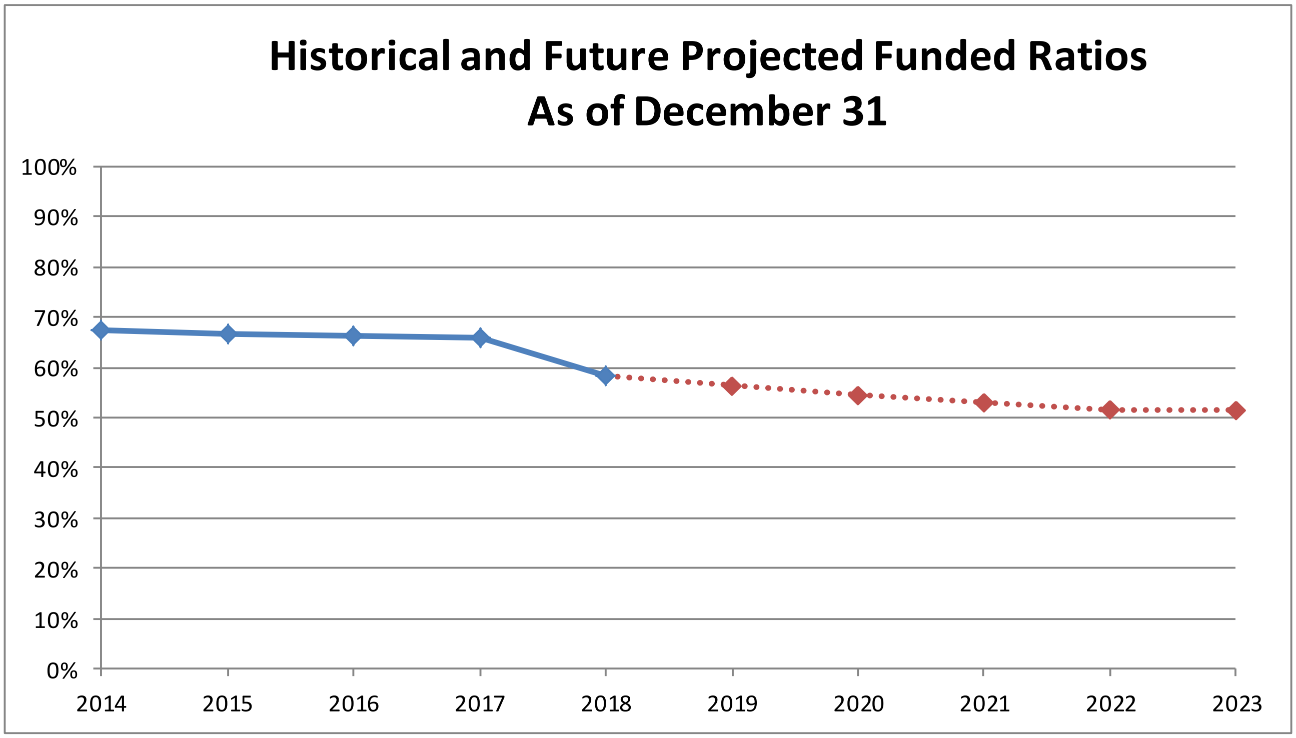
Executive Summary

Item	December 31, 2018	December 31, 2017
Membership		
• Number of		
- Active members	1,892	1,866
- Inactive, vested	39	45
- Inactive, nonvested	72	53
- Annuitants	906	867
- Total	2,909	2,831
• Annualized Payroll on Valuation Date	$ 166,564,996	$ 162,490,560
Statutory contribution rates		
• Members	13.000%	13.000%
• City	21.313%	21.313%
Contribution to be Allocated to Retiree Death Benefit Fund	0.120%	0.121%
Actuarially Determined Contribution Rates		
Estimated Years until UAAL is Eliminated:		
• 20 Years	37.302%	26.052%
• 30 Years	31.965%	22.269%
• 40 Years	29.500%	20.488%
Assets		
• Market value (MVA)	$ 718,519,641	$ 769,474,743
• Actuarial value (AVA)	$ 807,978,988	$ 779,484,342
• Return on market value	-5.8%	11.7%
• Return on actuarial value	4.5%	5.9%
Actuarial Information on AVA (smoothed)		
• Normal cost %[1]	24.986%	22.291%
• Total normal cost	$ 42,486,437	$ 38,228,170
• Actuarial accrued liability	$ 1,389,660,616	$ 1,185,017,294
• Unfunded actuarial accrued liability (UAAL)	$ 581,681,628	$ 405,532,952
• Funded ratio	58.1%	65.8%
• Funding period (years)	Never	35
Actuarial Information on MVA		
• Unfunded actuarial accrued liability (UAAL)	$ 671,140,975	$ 415,542,551
• Funded ratio	51.7%	64.9%
• Funding period (years)	N/A	37

Notes:

[1] Includes normal cost associated with the Retiree Death Benefit Fund and a load for assumed administrative expenses of the System. 2017 administrative expense load only includes expenses associated with the PRP.

The following chart illustrates the recent history and outlook of the funded status of APRS over the next five years:



December 31,	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Funded Ratio	67.3%	66.5%	66.1%	65.8%	58.1%	56.3%	54.4%	53.0%	51.6%	51.4%
UAAL (millions)	$317	$349	$377	$406	$582	$640	$699	$758	$819	$861

The projections beyond 2018 are based on the same assumptions, methods and provisions used for the December 31, 2018 valuation. Additionally, the market value of assets is assumed to earn 7.25% per year.

Based on current contribution patterns, benefit provisions and actuarial assumptions, APRS's UAAL is projected to continue to increase. The APRS's funded ratio is expected to continue to decrease until it reaches zero when the assets of the System are depleted.

SECTION B

DISCUSSION

Discussion

Introduction

The results of the December 31, 2018 actuarial valuation of the Austin Police Retirement System (APRS) are presented in this report.

The primary purposes of this actuarial valuation report are to determine the adequacy of the current City contribution rate, describe the current financial condition of APRS, analyze the changes in the condition of APRS, and provide various summaries of the data.

The total contribution rate for the current fiscal year exceeds the normal cost by 9.327% of payroll, which, on an actuarial value of assets basis, is not expected to amortize the unfunded liability over any amortization period. In the prior valuation, the total contribution rate was expected to amortize the unfunded liability in approximately 35 years. There was an increase in the unfunded actuarial liabilities of approximately $153 million due to a change in the actuarial assumptions (see discussion below). APRS also had an experience loss on the actuarial value of assets and an experience gain on the actuarial liabilities.

The Retiree Death Benefit Fund was established in 2003 as a separate account within the system to advance fund and to pay the $10,000 post-retirement lump sum death benefits for retirees. Table 12 outlines the portion of the City contribution rate that should be allocated to the Retiree Death Benefit Fund such that the Retiree Death Benefit Plan will be fully funded 17 years following December 31, 2018. With the exception of Table 12, the amounts outlined in this report represent the total assets and liabilities of APRS, inclusive of the Retiree Death Benefit Plan.

Assessment of Risk

Section D of this report, titled "Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions," outlines a series of risk measures that are intended to aid in the understanding of the effects of future experience differing from the assumptions used in the course of the actuarial valuation.

Plan Provisions

There were no changes to the plan provisions during the past year. The current plan provisions are outlined in Section E of this report.

Actuarial Assumptions and Methods

The assumptions and methods applied in this actuarial valuation were adopted by the Board of Trustees effective with the December 31, 2018 actuarial valuation. The actuarial assumptions used for the December 31, 2018 valuation are based on an experience review for the five-year period from January 1, 2013 through December 31, 2017, dated May 15, 2019. All actuarial assumptions used in this report are reasonable for the purposes of this valuation. The current actuarial assumptions and methods are outlined in Section F of this report. In particular, the following significant assumptions were changed:

- The investment return assumption was decreased from 7.70% to 7.25%
- The inflation assumption was decreased from 3.00% to 2.50%

- Individual salary increase rates were modified to better reflect the current expectation for inflation and the current step schedule
- The payroll growth rate was decreased from 4.00% to 3.00%
- An explicit administrative expense load of 0.90% of payroll was added to the normal cost
- Mortality rates from PubS-2010 were adopted with fully generational mortality improvement using the ultimate mortality improvement rates in the MP tables
- Termination rates were modified to better reflect APRS experience
- Retirement rates were modified to better reflect APRS experience

The reader is encouraged to review our experience study report dated May 15, 2019 for a more detailed description of the analysis and justification for the adopted assumptions.

All of the tables referenced in the following discussion appear in Section C of this report.

Funding Adequacy

The City currently contributes 21.313% of payroll and members contribute 13.000% of payroll.

The unfunded actuarial accrued liability (UAAL) of APRS increased from $406 million as of December 31, 2017 to $582 million as of December 31, 2018. Additionally, the funded ratio of APRS—actuarial value of assets divided by the actuarial accrued liability—decreased from 65.8% to 58.1% as of December 31, 2018. The funded status is one of many metrics used to show trends and develop future expectations about the health of a retirement system. The funded status measure itself is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations or assessing the need for or the amount of future contributions since it does not reflect normal cost contributions, the timing of amortization payments, or future experience other than expected.

The valuation shows that the total normal cost for funding purposes is 24.986% of payroll. The total contribution rate is currently 34.313% of payroll. Thus, the total contribution rate for the current fiscal year exceeds the normal cost by 9.327% of payroll which will be available to amortize the unfunded liability. On an actuarial value of assets basis, the current contribution rate is not expected to amortize the unfunded liability over any amortization period. Based on open group projections with a constant active membership and assuming the current contribution rates and benefit provisions remain in place and that all of the actuarial assumptions are exactly met the System is expected to deplete the assets within the next fifty years.

The Texas Pension Review Board adopted their Pension Funding Guidelines on January 26, 2017. These Guidelines state that "actual contributions made to the plan should be sufficient to cover the normal cost and to amortize the unfunded actuarial accrued liability over as brief a period as possible, but not to exceed 30 years, with 10-25 years being a more the preferable target range." The City's current contribution rate of 21.313% is not expected to amortize the unfunded liability over any amortization period. For informational purposes, this report provides an actuarially determined City contribution rate required to amortize the unfunded actuarial accrued liability over a 20-year, 30-year, and a 40-year period, which are 37.302%, 31.965%, and 29.500%, respectively.

System Assets

This report contains several tables that summarize key information with respect to the APRS assets.

The total market value of assets decreased from $769 million as of December 31, 2017 to $719 million as of December 31, 2018. Table 5 reconciles the changes in the fund during the year. Total contributions decreased from $59.5 million to $57.8 million.

Table 6 shows the development of the actuarial value of assets. The actuarial value of asset method generally recognizes the difference between the actual and expected market value of assets over a five-year period. The total actuarial value of assets is $808 million, which is greater than the market value of assets of $719 million. This indicates that there are currently deferred losses to be recognized in the future.

When measured on a market value, the approximate investment return net of administrative and investment-related expenses for the fiscal year ending December 31, 2018 was -5.8%. When measured on an actuarial value, the net investment return was 4.5%, which is lower than the assumed return of 7.25%. APRS experienced a $25 million actuarial asset loss over the past year. Table 7 shows a history of investment return rates. The APRS five-year average market return is 3.2% and the five-year average actuarial return is 5.3%.

Table 8 provides a history of the contributions paid into APRS and the administrative expenses and benefit payments that have been paid out of APRS. This table shows that APRS received less contributions than it paid out in administrative expenses and benefit payments, or -$7.6 million (or -1.1% of assets) for the year ending December 31, 2018. Prior to 2018, APRS was in positive cash flow positions but the ratio of outflows to inflows has been increased gradually. Fiscal year ending December 31, 2018 is the first year APRS experienced a negative cashflow position. Negative cashflow is expected for a pre-funded pension program. The entire reason for setting aside assets is to have the ability to use investment earnings to pay for benefits. If the cashflow was always going to be positive there would be no reason to pre-fund the system. Table 11 provides a history of contribution rates, as a percent of payroll, paid into the trust by the City and members.

Data

The valuation was based upon information as of December 31, 2018 furnished by APRS staff, concerning system benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. We checked for internal and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by APRS staff. The tables in Section F show key census statistics for the various groups included in the valuation.

Sustainability

As discussed above, the current contribution rates are not sufficient to support the benefit structure of the System. In addition, the System is currently deferring $89 million in investment losses not yet recognized in the funded status of the System. We strongly encourage the System to open a dialogue with the City about what steps should be taken to put the System back on a path of sustainability. These steps could include increased contributions (member and/or City), changes to the benefits structure or a combination of both. There is no immediate danger of the System not being able to meet its benefit payment obligations. However, the dialogue with the City should begin sooner rather than later in order to ensure that any necessary changes are incorporated during the 2021 legislative session.

SECTION C

TABLES

Table 1
Development of Employer Cost
(Inclusive of the Retiree Death Benefit Fund)

	December 31, 2018	December 31, 2017
1. Payroll		
a. Annualized Payroll on Valuation Date	$ 166,564,996	$ 162,490,560
b. Projected Contributory Payroll	170,040,973	171,495,984
2. Total Normal Cost Rate		
a. Gross normal cost rate	24.086%	22.274%
b. Administrative expenses (PRP only in 2017)	0.900%	0.017%
c. Total (Item 2a + Item 2b)	24.986%	22.291%
3. Actuarial Accrued Liability for Active and Active DROP Members		
a. Present value of future benefits for active members	$ 1,082,883,703	$ 915,492,433
b. Less: present value of future normal costs	(370,312,303)	(327,352,075)
c. Actuarial accrued liability	$ 712,571,400	$ 588,140,358
4. Total Actuarial Accrued Liability for:		
a. Retirees and beneficiaries	$ 666,427,331	$ 578,971,295
b. Inactive members	10,661,885	17,905,641
c. Active and Active DROP members (Item 3c)	712,571,400	588,140,358
d. Total	$ 1,389,660,616	$ 1,185,017,294
5. Actuarial Value of Assets	$ 807,978,988	$ 779,484,342
6. Unfunded Actuarial Accrued Liability (UAAL) (Item 4d - Item 5)	$ 581,681,628	$ 405,532,952
7. City Contribution Rate Needed to Fund Normal Cost and Amortize the UAAL:		
a. Over 20 Years	37.302%	26.052%
b. Over 30 Years	31.965%	22.269%
c. Over 40 Years	29.500%	20.488%
8. Allocation of Contribution Rate		
a. City contribution rate	21.313%	21.313%
b. Member contribution rate	13.000%	13.000%
c. Total contribution rate	34.313%	34.313%
d. Total normal cost rate	24.986%	22.291%
e. Available contribution rate to amortize UAAL	9.327%	12.022%
f. Total contribution rate	34.313%	34.313%
9. Funding period based on statutory contribution rates and Actuarial Value of Assets (years)	Never	35

Table 2
Actuarial Present Value of Future Benefits
(Inclusive of the Retiree Death Benefit Fund)

		December 31, 2018
1.	Active Members (not in DROP at the valuation date)	
	a. Service Retirement	$ 977,094,313
	b. Disability Benefits	5,780,488
	c. Death Before Retirement	6,432,194
	d. Termination	18,555,786
	e. Total	$ 1,007,862,781
2.	Active DROP Members	$ 75,020,922
3.	Inactive Members	
	a. Vested Terminated	$ 10,068,567
	b. Non-Vested Terminated	593,318
	c. Total	$ 10,661,885
4.	Annuitants	
	a. Service Retirement	$ 632,293,287
	b. Disability Retirement	784,202
	c. Beneficiaries and QDROs	33,349,842
	d. Total	$ 666,427,331
5.	Total Actuarial Present Value of Future Benefits	$ 1,759,972,919

Table 3
Analysis of Normal Cost
(Inclusive of the Retiree Death Benefit Fund)

		December 31, 2018	December 31, 2017
1.	Gross Normal Cost Rate		
	a. Service Retirement	22.490%	20.792%
	b. Disability Benefits	0.286%	0.350%
	c. Death Before Retirement	0.204%	0.435%
	d. Termination	1.106%	0.697%
	e. Total	24.086%	22.274%
2.	Administrative Expenses[1]	0.900%	0.017%
3.	Total Normal Cost	24.986%	22.291%
4.	Less: Member Rate	13.000%	13.000%
5.	Employer Normal Cost Rate	11.986%	9.291%

[1] Includes normal cost associated with the Retiree Death Benefit Fund and a load for assumed administrative expenses of the System. 2017 administrative expense load only includes expenses associated with the PRP.

Table 4
Historical Summary of Active Member Data

Valuation as of December 31[1],	Active Members		Covered Payroll		Average Salary		Average Age	Average Service
	Number[2]	Percent Increase	$ Amount (thousands)	Percent Increase	$ Amount	Percent Increase		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2011	1,679		133,709		79,636		39.7	11.7
2012	1,709	1.8%	140,273	4.9%	82,079	3.1%	39.6	11.5
2013	1,732	1.3%	145,871	4.0%	84,221	2.6%	39.9	11.6
2014	1,777	2.6%	150,860	3.4%	84,896	0.8%	40.0	11.7
2015	1,761	-0.9%	151,855	0.7%	86,232	1.6%	40.1	11.1
2016	1,837	4.3%	158,761	4.5%	86,424	0.2%	39.8	10.8
2017	1,866	1.6%	162,491	2.3%	87,080	0.8%	40.3	11.7
2018	1,892	1.4%	166,565	2.5%	88,036	1.1%	40.5	12.0

Notes:

[1] Information prior to December 31, 2017 is based on the information provided in the prior actuary's actuarial valuation reports

[2] Information for December 31, 2017 and later includes all active and active DROP members
Information prior to December 31, 2017 includes only active members not in DROP at the valuation date

Table 5
Reconciliation of Plan Net Assets

		Total	Pension	RDBF
1.	Market value of assets at beginning of year	$ 769,474,743	$ 768,248,187	$ 1,226,556
2.	Revenue for the year			
	a. Contributions for the year			
	i. Member Contributions - Payroll	$ 21,461,482	$ 21,461,482	$ 0
	ii. Member Contributions - Service Credit Purchases	1,141,907	1,141,907	0
	iii. City Contributions - Pension	34,503,533	34,503,533	0
	iv. City Contributions - Retiree Death Benefit	228,017	0	228,017
	v. City Contributions - Proportionate Retirement	512,692	512,692	0
	vi. Total	$ 57,847,631	$ 57,619,614	$ 228,017
	b. Net Investment income for the year	$ (43,398,717)	$ (43,426,212)	$ 27,495
	c. Total revenue	$ 14,448,914	$ 14,193,402	$ 255,512
3.	Disbursements for the year			
	a. Retirement and disability benefits	$ 53,393,809	$ 53,393,809	$ 0
	b. Lump Sum DROP Distributions	2,009,126	2,009,126	0
	c. Lump Sum PROP Distributions	5,482,351	5,482,351	0
	d. Retiree Death Benefits	82,500	0	82,500
	e. Refund of Member Contributions	3,015,038	3,015,038	0
	f. Administrative expenses	1,421,192	1,421,192	0
	g. Total disbursements	$ 65,404,016	$ 65,321,516	$ 82,500
4.	Increase in net assets (Item 2c - Item 3g)	$ (50,955,102)	$ (51,128,114)	$ 173,012
5.	Market value of assets at end of year (Item 1 + Item 4)	$ 718,519,641	$ 717,120,073	$ 1,399,568
6.	Actual net investment income (Item 2b - Item 3f)	$ (44,819,909)	$ (44,847,404)	$ 27,495
7.	Expected net income at 7.70%			
	a. Market value of assets at beginning of year	$ 59,249,555		
	b. Contributions for the year	2,227,134		
	c. Disbursements (excluding admin)	(2,463,339)		
	d. Total	$ 59,013,350		
8.	Excess investment income (Item 6 - Item 7d)	$ (103,833,259)		
9.	Estimated dollar weighted market yield	-5.8%	-5.9%	2.1%
10.	Actuarial Value of Assets			
	a. Actuarial value of assets at the beginning of year	$ 779,484,342	$ 778,257,786	$ 1,226,556
	b. Actuarial value of assets at the end of year	$ 807,978,988	$ 806,579,420	$ 1,399,568
	c. Investment income for the year	$ 36,051,031	$ 36,023,536	$ 27,495
	d. Estimated dollar weighted actuarial yield	4.6%	4.7%	2.1%
	e. Expected return on the actuarial value of assets	$ 59,784,089		
	f. Asset gain/(loss) (Item 10c - Item 10e)	$ (23,733,058)		

Table 6
Development of Actuarial Value of Assets

	Year Ending December 31, 2018
1. Excess/(Shortfall) of investment income for 2018 (Table 5, Item 8)	$ (103,833,259)

2. Development of amounts to be recognized as of December 31, 2018:

Fiscal Year End	Remaining Deferrals of Excess (Shortfall) of Investment Income	Offsetting of Gains/(Losses)	Net Deferrals Remaining	Years Remaining	Recognized for This Valuation	Remaining after This Valuation
	(1)	(2)	(3) = (1) + (2)	(4)	(5) = (3) / (4)	(6) = (3) - (5)
2014	$ (2,740,276)	$ 2,740,276	$ 0	1	$ 0	$ 0
2015	(20,999,569)	19,317,618	(1,681,951)	2	(840,976)	(840,975)
2016	(8,327,648)	0	(8,327,648)	3	(2,775,883)	(5,551,765)
2017	22,057,894	(22,057,894)	0	4	0	0
2018	(103,833,259)	0	(103,833,259)	5	(20,766,652)	(83,066,607)
Total	$ (113,842,858)	$ 0	$ (113,842,858)		$ (24,383,511)	$ (89,459,347)

3. Market value of assets including RDFB assets	
a. Including RDFB assets	$ 718,519,641
b. Excluding RDFB assets	$ 717,120,073
4. Actuarial value of assets	
a. Including RDFB assets (Item 3.a. - Item 2, Column 6)	$ 807,978,988
b. Excluding RDFB assets	$ 806,579,420
5. Ratio of actuarial value to market value	112.5%

Notes: Remaining deferrals in Column (1) for prior years are from Table 6 of the prior year's report. Column 2 is a direct offset of the current year's excess/(shortfall) return against prior years' excess/(shortfall) of the opposite type (offset against oldest base first).

Table 7
History of Investment Return Rates

Year Ending December 31,[1]	Market Returns[2]	Actuarial
(1)	(3)	(4)
2008	-26.3%	
2009	8.8%	
2010	11.8%	
2011	-3.5%	
2012	9.7%	-0.4%
2013	8.9%	6.9%
2014	5.7%	6.5%
2015	-0.3%	4.4%
2016	5.7%	5.4%
2017	11.7%	5.9%
2018	-5.8%	4.5%
Average Returns		
Last Five Years:	3.2%	5.3%
Last Ten Years:	5.1%	N/A

Notes:

[1] Results prior to December 31, 2017 are based on the information provided in the prior actuary's actuarial valuation reports

[2] Net of Administrative Expenses through December 31, 2018

Table 8
History of Cash Flow
(thousands $)

Year Ending December 31[1],	Contributions	Distributions and Expenditures: Benefit Payments and Refunds	Distributions and Expenditures: Administrative Expenses[2]	Distributions and Expenditures: Total	External Cash Flow for the Year	Market Value of Assets	External Cash Flow as Percent of Market Value
(1)	(2)	(3)	(5)	(6)	(7)	(8)	(9)
2008	$ 34,943	$ (26,118)		$ (26,118)	$ 8,825	$ 387,120	2.3%
2009	38,448	(28,173)		(28,173)	10,275	432,028	2.4%
2010	40,081	(30,876)		(30,876)	9,205	492,545	1.9%
2011	43,641	(34,863)		(34,863)	8,778	484,089	1.8%
2012	47,302	(40,009)	(1,163)	(41,172)	6,130	538,898	1.1%
2013	50,629	(42,825)	(1,115)	(43,940)	6,689	595,110	1.1%
2014	54,065	(45,403)	(1,327)	(46,730)	7,335	638,019	1.1%
2015	57,948	(50,005)	(1,466)	(51,471)	6,477	644,174	1.0%
2016	56,105	(50,828)	(1,397)	(52,225)	3,880	686,020	0.6%
2017	59,493	(56,548)	(1,563)	(58,111)	1,382	769,475	0.2%
2018	57,848	(63,983)	(1,421)	(65,404)	(7,556)	718,520	-1.1%

Notes:

[1] Results prior to December 31, 2017 are based on the information provided in the prior actuary's actuarial valuation reports

[2] Information was not provided in the prior actuary's valuation reports

Table 9
Total Experience Gain or Loss
(Inclusive of the Retiree Death Benefit Fund)

Item			Year Ending December 31, 2018
(1)			(2)
A. Calculation of total actuarial gain or loss			
1. Unfunded actuarial accrued liability (UAAL), previous year		$	405,532,952
2. Normal cost for the year			37,913,680
3. Contributions for the year			(57,847,631)
4. Interest at 7.70%			
a. On UAAL		$	31,226,037
b. On normal cost			1,459,677
c. On contributions			(2,227,134)
d. Total		$	30,458,580
5. Changes due to assumptions			152,746,502
6. Expected UAAL, end of year (Sum of Items 1 through 5)			568,804,083
7. Actual UAAL, end of year			581,681,628
8. Total (gain)/loss for the year (Item 6 - Item 5)		$	12,877,545
B. Source of gains and losses	% of AAL		
1. Asset (Gain)/Loss	1.79%	$	25,154,250
2. Demographic (Gains)/Losses	0.88%		(12,276,705)
3. Total	0.92%	$	12,877,545

Table 10
Funding History
(Inclusive of the Retiree Death Benefit Fund)

Valuation Date December 31[1], (1)	Actuarial Value of Assets (AVA) (2)	Actuarial Accrued Liability (AAL) (3)	Accrued Liability (UAAL) (3) - (2) (4)	Funded Ratio (2)/(3) (5)	Annual Covered Payroll (6)	UAAL as % of Payroll (4)/(6) (7)
2009	$ 518,433,065	$ 735,334,345	$ 216,901,280	70.5%	$ 122,928,285	176.4%
2010	547,364,486	778,005,374	230,640,888	70.4%	127,731,696	180.6%
2011	554,190,027	826,366,581	272,176,554	67.1%	135,264,530	201.2%
2012	559,077,407	858,949,998	299,872,591	65.1%	141,561,047	211.8%
2013	605,530,903	913,591,470	308,060,567	66.3%	147,138,718	209.4%
2014	653,980,764	971,213,766	317,233,002	67.3%	152,544,227	208.0%
2015	690,696,986	1,039,229,249	348,532,263	66.5%	155,832,755	223.7%
2016	733,105,429	1,109,862,137	376,756,708	66.1%	163,894,324	229.9%
2017	779,484,342	1,185,017,294	405,532,952	65.8%	162,490,560	249.6%
2018	807,978,988	1,389,660,616	581,681,628	58.1%	166,564,996	349.2%

Notes:

[1] Results prior to December 31, 2017 are based on the information provided in the prior actuary's actuarial valuation reports

Table 11
Historical Contribution Rates

Valuation as of December 31[1],	Contributions from: City[2]	Members	Total	Total Normal Cost Rate[3]	20-Year Actuarially Determined Contribution[4]	30-Year Actuarially Determined Contribution[5]
2009	18.630%	13.000%	31.630%	22.372%		
2010	19.630%	13.000%	32.630%	22.472%		
2011	20.630%	13.000%	33.630%	23.277%		
2012	21.630%	13.000%	34.630%	21.774%		
2013	21.630%	13.000%	34.630%	21.806%		
2014	21.630%	13.000%	34.630%	21.647%		
2015	21.313%	13.000%	34.313%	22.473%		
2016	21.313%	13.000%	34.313%	21.767%	24.407%	20.566%
2017	21.313%	13.000%	34.313%	22.291%	26.052%	22.269%
2018	21.313%	13.000%	34.313%	24.986%	37.302%	31.965%

Notes:

[1] Results prior to December 31, 2017 are based on the information provided in the prior actuary's actuarial valuation reports

[2] City contribution rates were 18.000% prior to 1/1/2009; 18.250% effective 1/1/2009; 18.630% effective 10/1/2009; 19.630% effective 10/1/2010; 20.630% effective 10/1/2011; 21.630% effective 10/1/2012; 21.313% effective 10/1/2015

[3] Includes normal cost associated with the death benefit fund and load for assumed administrative expenses

[4] Employer contribution rate needed to fund normal cost plus amortize the unfunded accrued liability over 20 years

[5] Employer contribution rate needed to fund normal cost plus amortize the unfunded accrued liability over 30 years

Table 12
Retiree Death Benefit Fund

The Retiree Death Benefit Fund was established effective September 1, 2003. The Fund operates as a separate account within the system that is used to advance fund and to pay the $10,000 post-retirement lump sum death benefits for retirees. The following table illustrates the allocation of the total plan assets and liabilities between the primary pension fund and the Retiree Death Benefit Fund.

	Pension Fund	Retiree Death Benefit Fund
1. Total Actuarial Present Value of Future Benefits		
a. Active Members	$ 1,081,722,506	$ 1,161,197
b. Inactive Members	10,620,069	41,816
c. Annuitants	664,003,850	2,423,481
d. Total	$ 1,756,346,425	3,626,494
2. Present Value of Future Normal Costs	$ 369,950,997	$ 361,306
3. Actuarial Accrued Liability (item 1 - item 2)	$ 1,386,395,428	$ 3,265,188
4. Valuation Assets	$ 806,579,420	$ 1,399,568
5. Unfunded Actuarial Accrued Liability (UAAL) (item 3 - item 4)	$ 579,816,008	$ 1,865,620
6. City Contribution Rate to be Allocated to the Retiree Death Benefit Fund		
a. Normal Cost Rate		0.029%
b. Payment Required to Amortize UAAL over 17 years (as of 12/31/2018)		0.091%
c. Total Allocated Rate		0.120%

SECTION D

ASSESSMENT AND DISCLOSURE OF RISK ASSOCIATED WITH MEASURING PENSION OBLIGATIONS AND DETERMINING PENSION PLAN CONTRIBUTIONS

Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions

The determination of the accrued liability and an actuarially determined contribution (or funding period) requires the use of assumptions regarding future economic and demographic experience. Risk measures, as illustrated in this report, are intended to aid in the understanding of the effects of future experience differing from the assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in the accrued liability and an actuarially determined contribution (or funding period) that result from the differences between actual experience and the actuarial assumptions.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions due to changing conditions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period, or additional cost or contribution requirements based on the Plan's funded status); and changes in plan provisions or applicable law. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

Examples of risk that may reasonably be anticipated to significantly affect the plan's future financial condition include:

1. Investment risk – actual investment returns may differ from the expected returns;
2. Asset/Liability mismatch – changes in asset values may not match changes in liabilities, thereby altering the gap between the accrued liability and assets and consequently altering the funded status and contribution requirements;
3. Contribution risk – actual contributions may differ from expected future contributions. For example, actual contributions may not be made in accordance with the plan's funding policy or material changes may occur in the anticipated number of covered employees, covered payroll, or other relevant contribution base;
4. Salary and Payroll risk – actual salaries and total payroll may differ from expected, resulting in actual future accrued liability and contributions differing from expected;
5. Longevity risk – members may live longer or shorter than expected and receive pensions for a period of time other than assumed;
6. Other demographic risks – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future accrued liability and contributions differing from expected.

The effects of certain trends in experience can generally be anticipated. For example if the investment return since the most recent actuarial valuation is less (or more) than the assumed rate, the cost of the plan can be expected to increase (or decrease). Likewise if longevity is improving (or worsening), increases (or decreases) in cost can be anticipated.

The actuarially determined employer contribution rates shown on the Executive Summary provide a guide for the adequacy of the current statutory contribution rates received from the membership and the City. As shown on the exhibit the current contribution rates are not sufficient to ensure the sustainability of the System. The timely receipt of the actuarially determined contributions is critical to support the financial health of the System. Users of this report should be aware that contributions made at the actuarially determined rate do not necessarily guarantee benefit security.

PLAN MATURITY MEASURES

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant trust may be much more exposed to investment risk. Generally accepted plan maturity measures include the following (please see a description of the measures following the table):

Valuation as of December 31st	2018	2017
Ratio of market value of assets to payroll	4.31	4.74
Ratio of actuarial accrued liability to payroll	8.34	7.29
Ratio of actives to retirees and beneficiaries	2.09	2.15
Ratio of net cash flows to market value of assets	-1.1%	0.2%
Duration of actuarial accrued liability*	15.1	N/A

*Duration measurement not available prior to 2018

RATIO OF MARKET VALUE OF ASSETS TO PAYROLL

The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. For example, if the market value of assets is 2.0 times the payroll, a return on assets 5% different than assumed would equal 10% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in plan sponsor contributions as a percentage of payroll.

RATIO OF ACTUARIAL ACCRUED LIABILITY TO PAYROLL

The relationship between actuarial accrued liability and payroll is a useful indicator of the potential volatility of contributions for a fully funded plan. A funding policy that targets a funded ratio of 100% is expected to result in the ratio of assets to payroll and the ratio of liability to payroll converging over time.

The ratio of liability to payroll may also be used as a measure of sensitivity of the liability itself. For example, if the actuarial accrued liability is 2.5 times the payroll (5 to 2 ratio), a change in liability 2% other than assumed would equal 5% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in liability (and also plan sponsor contributions) as a percentage of payroll.

RATIO OF ACTIVES TO RETIREES AND BENEFICIARIES

A young plan with many active members and few retirees will have a high ratio of active to retirees. A mature open plan may have close to the same number of actives to retirees resulting in a ratio near 1.0. A super-mature or closed plan may have significantly more retirees than actives resulting in a ratio below 1.0.

RATIO OF NET CASH FLOW TO MARKET VALUE OF ASSETS

A positive net cash flow means contributions exceed benefits and expenses. A negative cash flow means existing funds are being used to make payments. A certain amount of negative net cash flow is generally expected to occur when benefits are prefunded through a qualified trust. Large negative net cash flows as a percent of assets may indicate a super-mature plan or a need for additional contributions.

DURATION OF ACTUARIAL ACCRUED LIABILITY

The duration of the actuarial accrued liability may be used to approximate the sensitivity to a 1% change in the assumed rate of return. For example, duration of 10 indicates that the liability would increase approximately 10% if the assumed rate of return were lowered 1%.

ADDITIONAL RISK ASSESSMENT

Additional assessment may include scenario tests, sensitivity tests, stochastic modeling, stress tests, and a comparison of the present value of accrued benefits at low-risk discount rates with the actuarial accrued liability. A robust measurement of additional risk assessment is outside the scope of the annual actuarial valuation. However, we recommend that some scenario testing and sensitivity testing be included in any sustainability study conducted in the future.

SECTION E

SUMMARY OF PLAN PROVISIONS

Summary of Plan Provisions for Austin Police Retirement System

Creditable Service (APRS Service)

Total years and completed months (excluding a month in which service amount to fewer than 15 days) during which a Member makes contributions to the System.

Earnings

Base pay plus longevity pay. Overtime or special pay is not included.

Average Final Compensation

Average Earnings for the highest 36 months over the last 120 months of service.

Member Contributions

13.000% of Earnings.

City Contributions

21.313% effective October 1, 2015.

Normal Retirement

Date:

Earlier of age 62, age 55 and 20 years of Creditable Service, or 23 years of Creditable Service, regardless of age (including Proportionate Service Credit and excluding pre-membership military service).

Benefit:

3.20% of Average Final Compensation times Creditable Service (including pre-membership military service).

Form of Benefit:

Life Annuity. At the death of the member the excess, if any, of the member's accumulated contributions over the amount of payments made to the member will be paid in a lump sum to the member's beneficiary. (Other benefit options available).

Vesting

Schedule:

100% after 10 years of Creditable Service, including Proportionate Service Credit.

Benefit Amount:

Members will receive his (her) accrued benefit payable at the Normal Retirement Date based upon actual Creditable Service prior to termination.

Non-vested members receive a refund of accumulated contributions.

Disability

Eligibility:

10 years of Creditable Service (service requirement is waived if the disability is a direct or proximate result of the performance of the member's employment). Members who are eligible for normal retirement may not apply for disability benefits.

Benefit:

Monthly benefit is calculated in the same manner as the member's normal retirement benefit. Benefit will be calculated with a minimum of 20 years of creditable service if the disability is a direct or proximate result of the performance of the member's employment.

Death Benefits

Before Retirement Eligibility:

Lump sum payment equal to twice the amount of the Member's accumulated contributions subject to a minimum of $10,000.

After Retirement Eligibility (member is married at the time of death):

In lieu of the lump sum benefit described above, the surviving spouse may select a retirement option in the same manner as if the member had retired immediately prior to his death. When monthly benefits are payable in lieu of the lump sum, a $10,000 death benefit will be paid to the surviving spouse.

After Retirement Eligibility (member is not married at the time of death):

In lieu of the lump sum benefit described above, the member's beneficiary may select a Fifteen Year Certain benefit calculated in the same manner as if the member had retired immediately prior to his death. When monthly benefits are payable in lieu of the lump sum, a $10,000 death benefit will be paid to the beneficiary.

Retiree Death Benefit Fund

Effective September 1, 2003, a separate fund (funded as a portion of the City's contribution rate) was established to pay post-retirement lump sum death benefits. Effective September 1, 2007, the amount of these benefits was increased to $10,000.

Proportionate Retirement Program

Effective September 1, 2009, the System and the City began participating in the statewide Proportionate Retirement Program (PRP). Service in other participating public employee retirement systems can be combined with service in the System to satisfy the System's requirements for service retirement eligibility and for eligibility for vested benefits of a terminated Member. The participating systems, in addition to the System, are the six statewide systems, the City of Austin Employees' Retirement System, and the systems for the City of El Paso employees.

Forward DROP

Eligibility:

Completion of 23 years of Creditable Service (including Proportionate Service Credit and excluding pre-membership military service).

Participation Period:

Not to exceed 60 months. For members with less than 23 years of APRS Service as of February 17, 2016, the maximum participation period was extended to 84 months.

Rate of Return:

Effective August 1, 2015, equal to the PROP interest rate (currently 2.25%). Members with 23 years of APRS service as of July 31, 2015 will receive 5.00% interest credit per year. Additionally, members with less than 23 years of APRS Service as of February 17, 2016 will not receive interest crediting while in DROP.

DROP Fee/Charge:

For members with less than 23 years of APRS Service as of February 17, 2016, a charge for DROP participation will be applied as shown below. The charge will only apply during the period of DROP participation.

Year of DROP Participation	Fee/Charge
1	25%
2	20
3	15
4	10
5	5
6	5
7	5

Form of Distribution:

Cash lump sum (or rollover to PROP account) at termination of employment.

Miscellaneous:

For members with less than 23 years of APRS Service as of February 17, 2016, member contributions will continue to be required during the DROP participation period, but these contributions will be retained by the System.

Retro DROP

Eligibility:

Completion of 23 years of Creditable Service (included Proportionate Service Credit and excluding pre-membership military service). Members with less than 23 years on April 1, 2015 will not be eligible to participate in Retro DROP.

Participation Period:

Not to exceed 36 months.

Rate of Return:

5.0%

Form of Distribution:

Cash lump sum (or rollover to PROP account) at termination of employment.

Post-Retirement Option Plan (PROP)

Retiring members who have participated in DROP may transfer all or a portion of their DROP lump sum into their PROP account for later disbursement.

Retired members may defer receipt of a minimum of $250 of their monthly annuity. These deferred benefits will be accumulated and available for later disbursement. Participants may change their deferral amount twice per calendar year. The interest crediting rate on a member's PROP deferrals is set by the Board. The current crediting rate is 2.25%.

Cost of Living Adjustment

Eligibility:

Normal Retirement.

Amount:

Determined by the actuary if providing a COLA (not to exceed 6.0% per year) will not impair financial stability of the System. Post-Retirement benefit increases will automatically be provided when the System's benefit accrual rate is increased.

SECTION F

ACTUARIAL ASSUMPTIONS AND METHODS

Summary of Actuarial Assumptions and Methods

The assumptions and methods applied in this actuarial valuation were adopted by the Board of Trustees effective with the December 31, 2018 actuarial valuation. The actuarial assumptions used for the December 31, 2018 actuarial valuation are based on an experience review for the five-year period from January 1, 2013 through December 31, 2017, dated May 15, 2019. Please see this report for a discussion of the analysis and rationale for the recommended assumptions.

I. Valuation Date

The valuation date is December 31 of each plan year. This is the date as of which the actuarial present value of future benefits and the actuarial value of assets are determined.

II. Actuarial Cost Method

The actuarial valuation is used to determine the adequacy of the current City contribution rate, describe the current financial condition of APRS, analyze changes in the condition of APRS, and provide various summaries of the data.

The actuarial valuation uses the Entry Age Normal (EAN) actuarial cost method. Under this method, the first step is to determine the contribution rate (level as a percentage of pay) required to provide the benefits to each member, or the normal cost rate. The normal cost rate consists of two pieces: (i) the member's contribution rate, and (ii) the remaining portion of the normal cost rate which is the employer's normal cost rate. The total normal cost rate is based on the benefits payable to each individual active member.

The Unfunded Actuarial Accrued Liability (UAAL) is the liability for future benefits which is in excess of (i) the actuarial value of assets, and (ii) the present value of future normal costs. The employer contribution provided in excess of the employer normal cost is applied to amortize the UAAL.

The funding period is calculated as the number of years required to fully amortize the UAAL, and is calculated assuming: (a) future earnings on actuarial value of assets, net of investment-related expenses, will equal 7.25% per year, (b) there will be no changes in assumptions, (c) the number of active members will remain unchanged, (d) payroll for covered employees will grow at 3.00% each year, and (e) City contributions will remain the same percentage of payroll as described in Section E of the valuation report.

The Entry Age actuarial cost method is an "immediate gain" method (i.e., experience gains and losses are separately identified as part of the UAAL). However, they are amortized over the same period applied to all other components of the UAAL.

III. Actuarial Value of Assets

The actuarial value of assets is based on the market value of assets with a five-year phase-in of actual investment returns in excess of (less than) expected investment income. Offsetting unrecognized gains and losses are immediately recognized, with the shortest remaining bases recognized first and the net remaining bases continuing to be recognized on their original timeframe. Expected investment income is determined using the assumed investment return rate and the market value of assets (adjusted for receipts and disbursements during the year).

IV. Actuarial Assumptions

Investment Return: 7.25% per year, net of investment-related expenses (composed of an assumed 2.50% inflation rate and a 4.75% real rate of return)

Mortality Decrements:

Pre-retirement

PubS-2010 Employee Mortality Table for males and females. Generational mortality improvements projected from the year 2010 using the ultimate mortality improvement rates in the MP tables.

Healthy Annuitants

PubS-2010 Healthy Retiree Mortality Table for males and females. Generational mortality improvements projected from the year 2010 using the ultimate mortality improvement rates in the MP tables.

Disabled Annuitants

PubS-2010 Disability Mortality Table for males and females. Generational mortality improvements projected from the year 2010 using the ultimate mortality improvement rates in the MP tables.

Service Retirement Decrements:

Members Who Have 23 Years of Service by Age 55

The following rates reflect the members expected departure from active service and are applied based on years of service:

Years of Service	Probability of Retirement
23	28%
24	18
25	18
26	18
27	25
28	25
29	25
30+	35

Years of Service includes APRS Service and Proportionate Service Credit.
100% probability of retirement at age 62.

Members Who Do Not Have 23 Years of Service by Age 55

The following rates reflect the members expected departure from active service and are applied based on the member's age:

Age	Probability of Retirement
55	50%
56	25
57	25
58	25
59	25
60	25
61	25
62+	100

Deferred Retirement Option Program (DROP)

Members eligible for either the Back DROP or 5-year Forward DROP (or both) are assumed to select the most valuable option based on their individual situation at each possible retirement age. Members eligible for only the 7-year Forward DROP are assumed to not participate in DROP.

Post-Retirement Option Plan (PROP) Investment Accounts

75% of members with a PROP account at the valuation date will elect to leave their lump sum in APRS until age 60 and 25% of members will elect to receive their PROP balance at the valuation date. No future PROP deferrals are assumed and current active members are not assumed to enter PROP. Average annual rate credited to the PROP accounts will be 2.25%.

Withdrawal of Employee Contributions

Members that terminate with a vested benefit are assumed to choose the most valuable option available to them at the time of termination: withdrawal of contributions or deferred annuity. Non-vested members are assumed to receive an immediate refund of accumulated contributions.

Disability Retirement Decrements:

Disability Rates

Rates for males and females at selected ages are shown below:

Age	Rate
20	0.0004%
25	0.0025
30	0.0099
35	0.0259
40	0.0494
45	0.0804
50	0.1188
55	0.1647
60	0.2180

Disability rates are set to zero when members become eligible for retirement

In Line of Duty Disability

55% of disability retirements assumed to be in the line of duty.

Termination Decrements for Reasons Other Than Death or Retirement:

Withdrawal Rates

The following service-based rates apply:

Years of Service	Probability of Termination
0	12.00%
1	6.00
2-5	2.00
6-22	0.75
23+	0.00

Years of Service includes APRS Service and Proportionate Service Credit.
Termination rates are set to zero when members become eligible for retirement

Salary Increases: Increases are assumed to vary by years of APRS Service. Salary increases include an underlying inflation component of 2.50% and a productivity component of 0.50%.

Anniversary of Academy Graduation	Percentage Increase
1*	15.20%
2	3.00
3	3.00
4	3.00
5	3.00
6	10.00
7	3.00
8	3.00
9	3.00
10	10.00
11	3.00
12	3.00
13	3.00
14	10.00
15	3.00
16	10.00
17+	3.00

*Rate of Increase for 1st Anniversary of Graduation is for an Officer Position. If member is still a cadet on the valuation date then the increase in the upcoming year will be, either: (1) 46.70% for a regular Academy graduate, or (2) 17.40% plus the 15.20% Step Rate for a Modified Academy graduate.

Cost-of-Living Adjustments (COLA): Cost of living adjustments are granted on an ad hoc basis. No future COLAs are assumed.

Administrative Expenses: 0.90% of payroll. Included in this assumption would be any administrative expenses associated with the proportionate retirement program, which is currently assumed to be 0.017% of payroll.

Payroll Growth: Member Payroll is assumed to grow at 3.00% per year.

Marital Assumptions: 85% of active members are assumed to be married. Male spouses are assumed to be three years older than female spouses.

Decrement Timing: All decrements – mortality, service retirement, disability retirement, and termination of employment for reasons other than death or retirement – are assumed to occur at the middle of the valuation year.

Census Data and Assets

- The valuation was based on members of APRS as of December 31, 2018 and does not take into account future members.
- All census data was supplied by APRS and was subject to reasonable consistency checks.
- There were data elements that were modified for some members as part of the valuation in order to make the data complete. However, the number of missing data items was immaterial.
- Asset data was supplied by APRS.

Other Actuarial Valuation Procedures

- No provision was made in this actuarial valuation for the limitations of Internal Revenue Code Sections 415 or 401(a)17.
- Annualized Payroll on Valuation Date is the annualized payroll of active members on the valuation date. Projected Contributory Payroll for the upcoming fiscal year (used in determining the amortization period) is the estimated pensionable earnings received by all plan members for the just completed calendar year (including earnings for members who are no longer active employees on the valuation date) increased by the assumed payroll growth rate.

Changes in Assumptions since Prior Year

A comprehensive experience study was conducted since the prior valuation and the assumptions used in this valuation reflect the recommendations from that study. In particular the following significant assumptions were modified;

- The investment return assumption was decreased from 7.70% to 7.25%
- The inflation assumption was decreased from 3.00% to 2.50%
- Individual salary increase rates were modified to better reflect the current expectation for inflation and the current step schedule
- The payroll growth rate was decreased from 4.00% to 3.00%
- An explicit administrative expense load of 0.90% of payroll was added to the normal cost
- Mortality rates from PubS-2010 were adopted with fully generational mortality improvement using the ultimate mortality improvement rates in the MP tables
- Termination rates were modified to better reflect APRS experience
- Retirement rates were modified to better reflect APRS experience

Please see the full experience study report dated May 15, 2019 for a complete description of all of the assumption changes.

SECTION G

DETAILED SUMMARIES OF MEMBERSHIP DATA

Detailed Summaries of Membership Data

Table A

Summary of Active Membership Data

			December 31, 2018
Active members			
a.	Number		1,834
b.	Total payroll at the valuation date	$	160,121,633
c.	Average salary	$	87,307
d.	Average age		40.1
e.	Average benefit service		11.5
Active members currently in DROP			
a.	Number		58
b.	Total payroll at the valuation date	$	6,443,363
c.	Average salary	$	111,092
d.	Average age		54.5
e.	Average benefit service		27.8
f.	Total annual benefits	$	4,891,436
g.	Average annual benefit	$	84,335
h.	Total DROP Balance	$	13,690,391
Vested inactive members			
a.	Number		39
b.	Total annual deferred benefits	$	1,367,934
c.	Average annual deferred benefit	$	35,075
d.	Average age		48.2
Nonvested inactive members			
a.	Number		72
b.	Member contributions due	$	593,318
c.	Average refund due	$	8,241

Table B

Summary of Annitant Membership Data

			December 31, 2018
Service Retirees			
a.	Number		792
b.	Total annual benefits	$	53,009,664
c.	Average annual benefit	$	66,931
d.	Average age		63.1
e.	Total PROP Balance	$	28,413,665
Disability Retirees			
a.	Number		2
b.	Total annual benefits	$	63,581
c.	Average annual benefit	$	31,791
d.	Average age		53.9
e.	Total PROP Balance	$	0
Beneficiaries			
a.	Number		62
b.	Total annual benefits	$	2,750,972
c.	Average annual benefit	$	44,371
d.	Average age		72.3
e.	Total PROP Balance	$	253,629
QDROs			
a.	Number		50
b.	Total annual benefits	$	720,529
c.	Average annual benefit	$	14,411
d.	Average age		58.8
e.	Total PROP Balance	$	0
Total Members in Payment			
a.	Number		906
b.	Total annual benefits	$	56,544,746
c.	Average annual benefit	$	62,411
d.	Average age		63.5
e.	Total PROP Balance	$	28,667,294

Table C

Status Reconciliation

	Active	Active DROP	Vested Terminated	Non-vested Terminated	Retiree	Disability Retiree	Beneficiary	QDRO
Beginning of Year	**1,811**	**55**	**45**	**53**	**758**	**2**	**60**	**47**
Re-hired	-	-	-	-	-	-	-	-
Termination, non-vested	50	-	1	-	-	-	-	-
Termination, vested	9	-	-	-	1	-	-	-
Entered DROP	11	-	-	-	-	-	-	-
Retirement	17	8	15	-	-	-	-	-
Disability retirement	-	-	-	-	-	-	-	-
Contribution refund	-	-	-	17	-	-	-	-
Death	1	-	-	-	6	-	3	-
Total Out	**88**	**8**	**16**	**17**	**7**	**0**	**3**	**0**
Continuing	**1,723**	**47**	**29**	**36**	**751**	**2**	**57**	**47**
Total In	**111**	**11**	**10**	**36**	**41**	**0**	**5**	**3**
End of Year	**1,834**	**58**	**39**	**72**	**792**	**2**	**62**	**50**

Table D

Active Members – Distribution by Age and Service

Age	Years of Service									Total
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	
Under 25	52	1								53
	$ 56,244	$ 73,136								$ 56,563
25 - 29	170	15								185
	$ 63,163	$ 75,460								$ 64,160
30 - 34	131	135	33	1						300
	$ 67,194	$ 76,912	$ 84,265	$ 73,078						$ 73,465
35 - 39	55	113	163	32	3					366
	$ 68,847	$ 77,373	$ 86,394	$ 96,752	$ 96,244					$ 81,958
40 - 44	24	49	72	164	47					356
	$ 67,003	$ 78,261	$ 85,567	$ 102,848	$ 110,370					$ 94,545
45 - 49	11	22	42	101	157	33				366
	$ 69,544	$ 79,417	$ 86,368	$ 101,436	$ 111,274	$ 112,775				$ 102,667
50 - 54		7	17	43	60	50	6	1		184
		$ 92,533	$ 85,120	$ 99,820	$ 114,736	$ 114,674	$ 112,501	$ 103,874		$ 107,520
55 - 59			4	15	13	21	11	2		66
			$ 83,633	$ 100,982	$ 107,186	$ 108,221	$ 108,323	$ 98,126		$ 104,593
60 - 64	1		1	2	5	5	2			16
	$ 149,417		$ 96,618	$ 106,113	$ 96,533	$ 117,875	$ 104,995			$ 108,768
Over 64										
Total	444	342	332	358	285	109	19	3		1,892
	$ 64,806	$ 77,664	$ 85,932	$ 101,398	$ 111,250	$ 113,002	$ 109,292	$ 100,042		$ 88,036

Table E

Annuitants – Distribution by Age and Category

Age	Number	Annual Benefit	Average Annual Benefit
Under 60	345	24,400,935	70,727
60 - 64	199	12,639,619	63,516
65 - 69	179	10,283,845	57,452
70 - 74	91	4,799,729	52,744
75 - 80	40	1,979,343	49,484
Over 80	52	2,441,274	46,948
Total	906	56,544,746	62,411

SECTION H

GLOSSARY

Glossary

Actuarial Accrued Liability (AAL): That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of Future Plan Benefits which is not provided for by future Normal Costs. It is equal to the Actuarial Present Value of Future Plan Benefits minus the actuarial present value of future Normal Costs.

Actuarial Assumptions: Assumptions as to future experience under the Fund. These include assumptions about the occurrence of future events affecting costs or liabilities, such as:

- mortality, withdrawal, disablement, and retirement;
- future increases in salary;
- future rates of investment earnings and future investment and administrative expenses;
- characteristics of members not specified in the data, such as marital status;
- characteristics of future members;
- future elections made by members; and
- other relevant items.

Actuarial Cost Method or ***Funding Method:*** A procedure for allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability. These items are used to determine the ADC.

Actuarial Gain or ***Actuarial Loss:*** A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., the Fund's assets earn more than projected, salaries do not increase as fast as assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results that produce actuarial liabilities which are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period.

Actuarially Equivalent: Of equal actuarial present value, determined as of a given date and based on a given set of Actuarial Assumptions.

Actuarial Present Value (APV): The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. For purposes of this standard, each such amount or series of amounts is:

a. adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.),
b. multiplied by the probability of the occurrence of an event (such as survival, death, disability, termination of employment, etc.) on which the payment is conditioned, and
c. discounted according to an assumed rate (or rates) of return to reflect the time value of money.

Actuarial Present Value of Future Plan Benefits: The Actuarial Present Value of those benefit amounts which are expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and past and anticipated future compensation and service credits. The Actuarial Present Value of Future Plan Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive, nonretired members either entitled to a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would be provide sufficient assets to pay all projected benefits and expenses when due.

Actuarial Valuation: The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial valuation for a governmental retirement system typically also includes calculations of items needed for compliance with GASB.

Actuarial Value of Assets or ***Valuation Assets:*** The value of the Fund's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly actuaries use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the ADC.

Actuarially Determined: Values which have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.

Amortization Method: A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.

Amortization Payment: That portion of the pension plan contribution or ADC which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

Actuarially Determined Contribution (ADC) or ***Annual Required Contribution (ARC):*** A calculated contribution for a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically the calculated contribution has a normal cost payment and an amortization payment.

Closed Amortization Period: A specific number of years that is counted down by one each year and therefore declines to zero with the passage of time. For example if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Funding Period and Open Amortization Period.

Decrements: Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or termination.

Defined Benefit Plan: An employer-sponsored retirement benefit that provides workers, upon attainment of designated age and service thresholds, with a monthly benefit based on the employee's salary and length of service. The value of a benefit from a defined benefit plan is generally not affected by the return on the assets that are invested to fund the benefit.

Defined Contribution Plan: A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, and the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.

Employer Normal Cost: The portion of the Normal Cost to be paid by the employers. This is equal to the Normal Cost less expected member contributions.

Experience Study: A periodic review and analysis of the actual experience of the Fund which may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.

Funded Ratio: The ratio of the actuarial value of assets (AVA) to the actuarial accrued liability (AAL). Plans sometimes calculate a market funded ratio, using the market value of assets (MVA), rather than the AVA.

Funding Period or ***Amortization Period:*** The term "Funding Period" is used it two ways. In the first sense, it is the period used in calculating the Amortization Payment as a component of the ADC. This funding period is chosen by the Board of Trustees. In the second sense, it is a calculated item: the number of years in the future that will theoretically be required to amortize (i.e., pay off or eliminate) the Unfunded Actuarial Accrued Liability, based on the statutory employer contribution rate, and assuming no future actuarial gains or losses.

GASB: The Governmental Accounting Standards Board is an organization that exists in order to promulgate accounting standards for governmental entities.

Normal Cost: That portion of the Actuarial Present Value of pension plan benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method. Any payment in respect of an Unfunded Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits which are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated. Under the entry age normal cost method, the Normal Cost is intended to be the level cost (when expressed as a percentage of pay) needed to fund the benefits of a member from hire until ultimate termination, death, disability or retirement.

Open Amortization Period: An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. In other words, if the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never completely disappear, but will become smaller each year, either as a dollar amount or in relation to covered payroll.

Unfunded Actuarial Accrued Liability: The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus.

Valuation Date or ***Actuarial Valuation Date:*** The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.

HISTORICAL INFORMATION AND BENEFITS SECTION

Changes in Plan Provisions

September 1999

Board Membership changed to allow for greater membership participation by adding one active officer and one retired officer position to the Board of Trustees.

July 2000

Benefit formula multiplier was increased from 2.88 percent to 3.0 percent with an equivalent special ad hoc increase granted to retirees.

September 2001

Provision added for retirement eligibility with unreduced benefits to include members who have 23 years of creditable service excluding pre-membership military service.

Post Retirement Option Plan (PROP) provision added for members who select the Retroactive Deferred Retirement Option Plan (DROP) and instead of receiving a single lump-sum payment, elect to receive partial payments from the member's DROP account for each calendar year, in an amount elected by the member.

September 2003

IRS Code adopted to allow the retiree death benefit amount of $7,500 to be distributed to beneficiary of retired member as a tax-free lump sum amount.

Permissive Service Credit provision added, which allows members with 20 years of service to purchase additional time at actuarially neutral cost to the System.

April 2006

The PROP Monthly Annuity Deferral Option was added for retiree members.

October 2006

Member contribution rate was increased from 9 percent to 11 percent.

April 2007

Forward Deferred Retirement Option Plan (Forward DROP) provision added for a one-time benefit whereby active police officers can choose to retire, continue working for and receiving a paycheck from APD, while their retirement annuity is deferred into a DROP account on their behalf at the retirement System.

September 2007

Permissive service credit was changed to: (1) allow the purchase by a deceased member's designated beneficiary if there is no surviving spouse; and (2) allow the purchase to be based on deferring the actual date when retirement benefits would begin in order to reduce the member's cost (Deferred Permissive Service).

The retiree death benefit was increased from $7,500 to $10,000.

October 2007

Member contribution rate was increased from 11 percent to 13 percent.

December 2007

Benefit formula multiplier was increased from 3.0 percent to 3.2 percent with an equivalent special ad hoc increase granted to retirees.

January 2009

The City's contribution rate was increased from 18 percent to 18.25 percent to fund APRS participation in Texas Proportionate Retirement System.

March 2009

APRS joined the Texas Proportionate Retirement System, which allows members with service credit in more than one participating retirement system to be eligible to combine their service credits in order to satisfy the length of service requirements used to determine eligibility for service retirement.

September 2009

The City's contribution rate was increased from 18.25 percent to 18.63 percent to fund APRS participation in Texas Proportionate Retirement Program.

October 2010

The City's contribution rate was increased from 18.63 percent to 19.63 percent.

October 2011

The City’s contribution rate was increased from 19.63 percent to 20.63 percent.

October 2012

The City’s contribution rate was increased from 20.63 percent to 21.63 percent.

February 20I5

Effective February 18, 2015, the opportunity to purchase permissive service in conjunction with utilizing the Forward or Retro DROP was eliminated.

Effective February 18, 2015, permissive service credit factors shall be determined based on an interest rate that is 50 basis points lower than the valuation assumption and generational mortality.

Effective April 1, 2015, Retro DROP was eliminated for members with less than 23 years of APRS service.

Effective August 1, 20I5, the Forward DROP interest rate will be set annually in the same manner as the PROP interest rate, except for those with 23 years of APRS service as of July 3 I, 2015 who will not be affected.

New hires beginning February 1, 2016 will be required to pay the full actuarial cost to purchase military service. All others will continue to pay 25 percent of the actuarial cost, which will be based on an interest rate that is 50 basis points lower than the valuation assumption and generational mortality.

October 2015

The City’s contribution rate was decreased from 21.63 percent to 21.313 percent on October 1, 2015. The change was due to an actuarial study conducted to assess the cost of participation in the Proportionate Retirement Program.

February 2016

A new Forward DROP program was created. Modifications included elimination of interest paid to the account, elimination of member contributions being credited to the account, a graduated fee in each year of the Forward DROP period, and an option to elect up to seven years in the new Forward DROP.

Changes would not apply to members with 23 years of creditable service as of February 17, 2016. Grandfathered members could choose either the old Five Year Forward DROP or the new Seven Year Forward DROP.

Interest Paid on Member Accounts

YEAR	INTEREST PAID
2018	0.0%
2017	0.0%
2016	0.0%
2015	0.0%
2014	0.0%
2013	0.0%
2012	0.0%
2011	0.0%
2010	0.0%
2009	0.0%
2008	0.0%
2007*	5.0%
2006	0.0%
2005	0.0%
2004	2.0%
2003	2.0%

*Beginning in 2007, interest (if granted) is only paid on vested members accounts

Interest Paid on Retirement Contributions.

The Board of Trustees annually determines the amount of interest paid on vested members' accumulated deposits, taking into consideration the performance of the Fund's investments and the actuary's recommendations.

Retirement interest is paid only to vested members' (10 years of service) accounts at the end of the calendar year based on the amount in the member account on the first day of that calendar year.

COLA's Paid to Retirees and Beneficiaries

YEAR	COLA PAID
2018	0.0%
2017	0.0%
2016	0.0%
2015	0.0%
2014	0.0%
2013	0.0%
2012	0.0%
2011	0.0%
2010	0.0%
2009	0.0%
2008	0.0%
2007	1.0%
2006	0.0%
2005	0.0%
2004	1.75%
2003	3.0%

Cost of Living Adjustments for retirees.

On January 1 of each year the Board may approve a cost-of-living adjustment for those retirees who retired on or before December 31 of the previous year. The amount of the adjustment is set by the Board upon recommendation by the System's actuary that such an adjustment will not make the Fund financially unsound, and the adjustment is not inconsistent with the Plan provisions. The adjustment is prorated for any benefit which has been in effect for less than a year, with the proration being 1/12 for each monthly payment received during the prior year.

Comparative Statement of Membership

Active Members	**2018**	**2017**
Total Number of Active Members, January 1	1,866	1,883
Add: New Members	122	114
Deduct: Members Terminated/Refunded	(59)	(56)
Deceased Members	(1)	(3)
Members Transferred to Retiree/DROP System	(36)	(72)
TOTAL ACTIVE MEMBERS, DECEMBER 31	1,892	1,866
Vested Terminated		
TOTAL VESTED TERMINATED MEMBERS, DECEMBER 31	39	45
Non-Vested Terminated		
TOTAL NONVESTED TERMINATED MEMBERS, DECEMBER 31	72	53
Retired Members		
Total Number of Retired Members, January 1	867	803
Add: New Retired Members	48	54
Deduct: Retired Members Deceased	(9)	(7)
TOTAL RETIRED MEMBERS, DECEMBER 31	906	867
TOTAL APRS MEMBERS, DECEMBER 31	**2,909**	**2,831**

Summary of Plan Benefits

Introduction

This is a general overview of the Austin Police Retirement System (APRS or System) membership and benefits. In the event of any inconsistency between this general overview and state or federal law as modified, interpreted, and applied from time to time, the state or federal law will govern and control.

APRS is an IRS tax-qualified 401(a) defined benefit plan governed by Texas state law.

Membership Requirements

All cadets upon enrollment in the Austin Police Academy, and commissioned law enforcement officers employed by the City of Austin Police Department, as well as full time employees of the City of Austin Police Retirement System (after serving a 6-month probationary period); become members of the Police Retirement System at the date of employment.

Contributions

Each member of the system contributes 13 percent of base pay bi-weekly and annual longevity pay through payroll deduction. Overtime or special pay is not included. Contributions continue unless a member is on leave of absence, or withdraws by terminating and/or retiring.
The City of Austin contributes 21.313 percent of every member's base pay bi-weekly and 21.313 percent of member’s longevity pay annually.

Creditable Service

Creditable service is service that is used in computing retirement benefits. There are seven types of creditable service:

- Membership Service
- Probationary Service
- Pre-Membership Military Service
- Uniformed Leave of Absence Service
- Reinstated Forfeited Service
- Cadet Service
- Permissive Service Credit
- Deferred Retirement Permissive Service Credit

Proportionate Retirement Program

Participating systems recognize service from other participating systems. A member with service credit in more than one participating retirement system may be eligible to combine that service in order to satisfy the length of service requirements used to determine eligibility for service retirement. Please note that proportionate service counts for eligibility purposes only and does not add to additional service credit years for pension calculation purposes. Participating systems include:

- Austin Police Retirement System
- City of Austin Employees' Retirement System (COAERS)
- The El Paso City Employees' Pension Fund
- El Paso Firemen and Policemen's Pension Fund
- Employees Retirement System of Texas (ERS)
- Judicial Retirement System of Texas I & II
- Teacher Retirement System of Texas (TRS)
- Texas Municipal Retirement System of Texas (TMRS)
- Texas County and District Retirement System (TCDRS)
- Other Texas retirement systems covering municipal employees who have qualified plans and have elected to participate in the Proportionate Retirement Program.

Vesting

When a member reaches ten (10) years of creditable service, which may include approved Proportionate Service Credit if applicable, they become a vested member of the retirement system.

Retirement

Members are eligible for normal, unreduced retirement when they meet one of the following age and service requirements, excluding pre-membership military service:

- Age 62
- Age 55 with 20 years of creditable service
- Any age with 23 years creditable service

Retirement Benefit Calculation

The basic retirement benefit Life Annuity is calculated by using the following formula: 3.2 percent times the years of creditable service times the average monthly salary for the highest 36 months of the last ten years of contributing service. The monthly annuity benefit payment begins the month following the member's retirement from the System.

Retirement Benefit Options

The Police Retirement System provides several options under which monthly benefits may be paid. The options below require verifiable information to be submitted to the System for calculation. The options that include benefits to a survivor are figured according to the ages of both member and survivor included in the plan. A member's benefit is permanently reduced if an option is chosen that provides survivor benefits. Please note: A member may not change their chosen option or survivor after they have already retired.

- Life Annuity
- 100% Joint and Survivor Annuity
- 50% Joint and Survivor Annuity
- 66-2/3% Joint and Survivor Annuity
- Joint and 66-2/3% Last Survivor Annuity
- Fifteen Year Certain and Life Annuity

Retroactive Deferred Retirement Option (Retro DROP)

The retroactive deferred retirement option plan, referred to as Retro DROP, is a one-time benefit paid at retirement to a member with a subsequent associated reduced monthly annuity. To be eligible a member must qualify with a normal service retirement of 23 years at any age, excluding pre-membership military or permissive service credit. The maximum amount of service to be used in computation of the Retro DROP after normal service retirement of 23 years is 36 months. Effective April 1, 2015, the Retro DROP program will only apply to members with 23 years of creditable service as of that date.

Forward Deferred Retirement Option (Forward DROP)

The Forward DROP allows active police officers to freeze their retirement benefit calculation, but continue working and drawing a paycheck from APD, while their retirement annuity is deferred into a DROP account on their behalf at the retirement system. To be eligible a member must qualify with a normal service retirement of 23 years at any age, as of the date of his or her election to participate in the Forward DROP.

- Five-Year Forward DROP for members with 23 years of creditable service as of February 17, 2016:

The maximum amount of service to be used in computation of the Forward DROP after normal service retirement of 23 years, excluding pre-membership service credit and permissive service credit, is sixty (60) months. During the period that a member participates in Forward DROP, retirement contributions shall be made to the member’s Forward DROP account. The Forward DROP benefit balance will include the accumulated monthly benefits during Forward DROP participation, member contributions and a simple interest calculation on December 31st for balances on deposit as of January 1st of the same calendar year. Effective August 1, 2015, the interest rate for new DROP members will be the same as PROP, which was 2.25 percent in fiscal year 2018. Members with 23 years of service by July 31, 2015 earn interest at 5.0 percent.

- Seven-Year Forward DROP for members with 23 years of creditable service after February 17, 2016:

The maximum amount of service to be used in computation of the Forward DROP after normal service retirement of 23 years, excluding pre-membership service credit and permissive service credit, is eighty-four (84) months. During the period that a member participates in Forward DROP, employee contributions will be collected but not credited to the member's Forward DROP account. There will be no interest applied to the member's Forward DROP account. In addition, a fee is applied to the participant's monthly Forward DROP amount.

Post Retirement Option Plan (PROP)

Instead of receiving a single lump-sum payment, a member may elect to receive partial payments from the member's RETRO or Forward DROP account by transferring the funds into a PROP account, in an amount elected by the member.

Post Retirement Option Plan (PROP) Monthly Annuity Deferral Program

The PROP Monthly Annuity Deferral plan allows retired members to defer receipt of a minimum of $250 of their monthly annuity in order to defer the taxation of the deferred payments and to have the monthly benefits accumulate for later disbursement and later taxation in a Post Retirement Option Plan account.

Disability Retirement Benefits

To be eligible for disability retirement, the applicant must be unable to perform employment duties due to becoming physically or mentally incapacitated. The disability must be considered a permanent job performance disability. The disability must also be subsequent to the member's effective date of membership AND,

- If the member has less than 10 years of creditable service, the disability must have been a direct or proximate result of the performance of the member's employment duties with the City or the System. The disability will be calculated at 20 years of service.
- If the member has 10 years or more of creditable service, the disability does not have to be a direct or proximate result of the performance of the member's employment duties with the City or the System. On-duty disabilities will be calculated at 20 years of service and Off-duty disabilities will be calculated using the actual number of years of service the member has once the disability is granted.
- If the member is retirement eligible, they cannot apply for disability retirement; however, they can apply for normal retirement.

Death and Survivor Benefits

- At the death of an active or vested member, the designated beneficiary(ies) are entitled to a lump sum benefit of twice the members accumulated contributions with a $10,000 minimum payment.
- At the death of an active or vested member who is eligible to retire, the designated survivor will be entitled to receive monthly payments under a retirement option in lieu of a lump sum death benefit. In the event a member who is eligible for service retirement dies without making a written option selection, and the member leaves a surviving spouse, the surviving spouse may select a retirement option in the same manner as the member would have made or may select a lump sum payment equal to twice the members accumulated deposits. If there is no surviving spouse, the deceased member's designated beneficiary may elect to receive payment under Option V, a Fifteen Year Certain and Life Annuity, which will pay monthly benefits for a period of fifteen years, or a lump sum payment equal to twice the member’s accumulated deposits. When monthly benefits are payable in lieu of a lump sum, a $10,000 taxable death benefit will be paid to the beneficiary(ies).
- At the death of a retiree, a tax-free death benefit of $10,000 (or a proportionate amount if the member retired under the Proportionate Retirement Program) is paid to the designated beneficiary(ies) or estate. If the member has a PROP or DROP account at the time of their death, those funds are paid to the designated beneficiary(ies) for those programs. If a survivor option was chosen, the elected survivor begins to receive the elected portion of the annuity. If the Life Annuity was chosen, the monthly benefits cease.