



Investment Section

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October 8, 2018

Attn: Mr. Jamie Wayman, Director
 Tennessee Consolidated Retirement System
 Andrew Jackson Building
 Nashville, TN 37243-0230

Re: 2018 CAFR Performance Letter

Dear Jamie:

For the year ended June 30, 2018, TCRS earned a return of 8.19%, beating its policy index (7.76%) and its as-allocated index (7.40%). Strong absolute returns in Private Equity (19.63%), U.S. Equity (14.97%), Real Estate (10.28%), and International Equity (7.66%) were most additive to the portfolio for the fiscal year, whereas, U.S. Fixed Income (-0.47%) detracted from returns. TCRS met or exceeded all of its benchmarks at the asset class level except for Emerging Markets Equity.

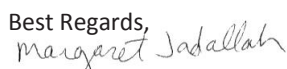
During a fiscal year where equity returns remained strong and risk was rewarded across markets, TCRS' generally conservative positioning and long duration bias in fixed income impacted its near-term peer rankings. Longer term, the Plan remained above median in its peer group (InvestorForce's Public DB > \$1 billion) for the three, five and ten-year periods ended June.

As of June 30, 2018, the System's asset allocation and one-year respective returns were:

Asset Class	% of Assets	One Year Return
Domestic Equity	32.4%	14.97%
Canada Index Fund	2.1%	10.12%
International Developed Market	13.9%	9.70%
International Emerging Market	3.9%	1.00%
Domestic Fixed Income	26.4%	-0.47%
Inflation-Indexed Fixed Income	2.4%	2.29%
Real Estate	8.3%	10.28%
Private Equity	5.0%	19.63%
Strategic Lending	5.0%	7.34%
Cash and Cash Equivalents	0.6%	1.16%
Total	100.0%	8.19%

Important events in the U.S. occurring during fiscal year 2018 included significant corporate tax reform, the beginnings of an unwind of quantitative easing and the initiation of changes to trade policy. International markets, particularly in the second half of the fiscal year, faced a strong U.S. Dollar and more moderate economic and earnings growth. Short-term U.S. Treasury yields rose steadily over the fiscal year, outpacing increases in longer term yields and resulting in a flat yield curve.

TCRS' well-funded, cost-effective Plan incorporates sensible diversification to weather a variety of market environments. Verus anticipates an eventual end to the 9+ year current economic expansion, and we are more closely monitoring the portfolio's ability to withstand a less friendly investment environment.

Best Regards,

 Margaret S. Jadallah
 Managing Director



DAVID H. LILLARD, JR.
STATE TREASURER

STATE OF TENNESSEE

MARYJO PRICE
CHIEF OPERATING OFFICER

MICHAEL BRAKEBILL
CHIEF INVESTMENT OFFICER



JAMIE WAYMAN
DIRECTOR OF TCRS

TREASURY DEPARTMENT
STATE CAPITOL
NASHVILLE, TENNESSEE 37243-0225

November 7, 2018

Dear Members,

I am pleased to present the Investment Section of the TCRS Comprehensive Annual Financial Report for the fiscal year ended June 30, 2018.

The Tennessee Retiree Group Trust (TRGT) was established in 2015 and contained \$49.8 billion in assets as of June 30, 2018. Assets for the TCRS are comingled in the TRGT for investment purposes and TCRS represents \$49.6 billion, or 99.73%, of the TRGT.

TRGT assets are invested to preserve principal value, to achieve a superior rate of return within acceptable risk levels and to provide the liquidity necessary to pay beneficiaries in a timely manner. The portfolio is diversified among domestic and international stocks and bonds, real estate, private equity and short term securities. A diversified portfolio is used to manage risk and to minimize significant exposure to unpredictable events. Staff consults with the TRGT general investment consultant periodically to determine the optimal, long-term mix of assets to best meet the plan's investment objectives. The investment performance for TCRS was computed using a market value based, time-weighted rate of return and is based on it being a sub-component of the TRGT.

The 2018 fiscal year was a good year for investors and the TRGT gained 8.19% for the fiscal year with an annualized gain of 8.35% for the trailing five-year period. The one-year and the five-year returns each exceeded the actuarial required return and the portfolio was managed in a manner to protect capital in an adverse environment.

The experienced investment staff of the Tennessee Treasury is committed to providing superior investment returns in a financially-sound manner with the highest ethical and professional standards. With the leadership of our Board, our Treasurer and our dedicated staff, this goal will be met.

Sincerely,

Michael Brakebill
Chief Investment Officer



Statutory Investment Authority

The investment authority for the Board of Trustees of TCRS is set out in *Tennessee Code Annotated*, Section 8-37-104. Pursuant to this authority and the investment terms, conditions and limitations outlined therein, the Board of Trustees approves the TCRS' investment policy. The Board approved TCRS' revised and restated investment policy on November 18, 2016.

The Tennessee Retiree Group Trust (TRGT) was established in 2015 by a statutory enactment of the Tennessee General Assembly. The provisions of the TRGT are codified in *Tennessee Code Annotated* (TCA) Title 8, Chapters 34-37. Pursuant to this statute the Tennessee Consolidated Retirement System (TCRS) and its Board of Trustees with the State Treasurer (Treasurer) as custodian, authorized by TCA 8-37-104 adopted this group trust for the purpose of pooling funds of TCRS with other assets in the custody of the Treasurer, solely for investment purposes. The Custodian shall be responsible for the managing and directing the investment of the Group Trust Funds in accordance with the investment policies of the TCRS.

TCRS' primary investment objective, as set by the Board, is to establish a stable, diversified investment portfolio that, in the long-term, will meet or exceed the assumed actuarial rate of return, as adopted by the Board, in order to provide sufficient liquidity to pay beneficiaries in a timely manner.

TCRS' policies and the strategies implemented by the Treasury Investment Division staff serve to benefit plan members in several ways. The emphasis on a conservative asset allocation and high quality securities helps to ensure the soundness of the system and the ability to provide the needed funds upon a member's retirement.

Funds in the retirement system are actively managed, primarily by the Treasury Investment Division, through a diversified portfolio of high-quality domestic and international bonds, domestic and international stocks, real estate, private equity, and short-term instruments. Pursuant to *Tennessee Code Annotated*, Section 8-37-114, the Treasury Investment Division engages outside investment managers. In those instances, the Investment Division endeavors to use emerging investment managers to the greatest extent feasible within the bounds of financial and fiduciary prudence, as prescribed under Tennessee

Code Annotated, Section 8-37-113. During fiscal year 2017-2018, no assets were under the control of emerging investment managers.

To assist in the fiduciary responsibility for managing the TRGT portfolio during fiscal year 2018, Verus served as the general investment consultant for TRGT. The Townsend Group served as the real estate investment consultant and Torrey Cove served as the private equity consultant.

State Street Bank and Trust Company was the master bank custodian for TRGT, providing safekeeping and accounting services for the investment portfolio during fiscal year 2018.

Cost of Investment Operation

The cost to operate the investment program for TRGT is about thirteen basis points (0.13%). This cost includes the cost of personnel, operational cost, master bank custodian cost, record keeping, and external manager fees. Commission costs for publicly listed securities and management fees for private equity investments are capitalized, meaning commission costs and management fees are not included in the expenses, but are recorded in the value of the assets. Recent peer comparisons of investment management fees and expenses indicate the investment program is managed very cost effectively.

Performance Measurement

Verus provided performance measurement for the TRGT, which had a total return of 8.19% during the fiscal year. Private Equity and Domestic stocks led the performance for the year with a return of 19.63% and 14.97% respectively. Fixed income returns trailed due to rising interest rates. The Domestic Fixed Income portfolio fell 0.47% while the Inflation Hedged Bond fund rose 2.29%. International equity returns were strong with a return of 10.12% for the Canadian equity portfolio and 7.66% for the International portfolio. International returns did lag domestic returns due to a rising dollar. The Real Estate portfolio gained 10.28% for the year which was considerably better than the 7.13% return for the benchmark. Similarly, the Strategic Lending portfolio gained 7.34% versus 3.64% for the benchmark.



TRGT INVESTMENT PERFORMANCE REVIEW

Periods Ending June 30, 2018

	Annualized Returns		
	Current Year	3-Year	5-Year
Pension Plan Portfolio	8.19%	7.41%	8.35%
Policy Index (1)	7.76%	7.50%	8.37%
As-Allocated Index	7.40%	7.34%	8.14%
Domestic Equity	14.97%	10.42%	12.90%
S & P 1500 Index	14.04%	11.90%	13.40%
Canadian Equity	10.12%	5.93%	5.34%
S & P TSX 60 Index	10.03%	5.79%	5.27%
Domestic Fixed Income	-0.47%	2.98%	3.87%
Citigroup LPF Index	-0.70%	2.69%	3.55%
Inflation Hedge Bonds	2.29%	2.11%	1.87%
Citigroup TIPS Index	2.23%	2.03%	1.79%
International Equity	7.66%	6.48%	7.04%
International Equity Custom Index	6.34%	5.45%	6.11%
Real Estate	10.28%	10.59%	11.07%
NCREIF Index	7.13%	8.73%	10.00%
Private Equity	19.63%	15.80%	17.24%
S & P 500 + 3%	16.99%	13.78%	16.31%
Strategic Lending Portfolio	7.34%	6.68%	
SL Benchmark	3.64%	4.95%	

Verus

Ranking of TCRS Portfolio	<u>Percentile Rankings</u>	<u>Risk Adjusted Basis</u>
	Last three years	37
Last five years	40	30

The percentile ranking is the position of the TRGT portfolio as compared with other public funds with one being the best and 100 being the worst. The investment performance for TRGT was computed using a market, time weighted rate of return by an independent consultant.

(1) Effective 1/1/17, Policy Index is 31% S&P 1500/ 2% S&P TSX 60/ 13% MSCI EAFE IMI net/ 4% MSCI Emerging Markets net/ 25% Citigroup LPF/ 10% NCREIF 1Q Lag/ 7% S&P 500 + 3% 1Q Lag/ / 7% Strategic Lending/ 1% 91 Day T-Bill.



TRGT ASSET ALLOCATION

As of June 30, 2018

Expressed in Thousands

Asset Class	Fair Value	Percentage
Domestic Equity	\$ 15,382,953,801	31%
Domestic Fixed Income	14,558,721,699	29%
International Equity	7,333,130,584	15%
International Fixed Income	33,250,847	0%
Short-Term Securities	2,876,812,549	6%
Real Estate	4,452,048,359	9%
Private Equities & Strategic Lending	4,928,734,870	10%
Totals	<u>\$ 49,565,652,709</u>	<u>100%</u>

This table describes the asset allocation of the entire TRGT investment portfolio. TCRS is comingled with the TRGT portfolio and owns 99.73% of net asset value in TRGT.

This schedule classifies Canadian investments as domestic securities, convertible bonds as fixed income securities and preferred stock as fixed income securities. For investment purposes, convertible bonds and preferred stock are considered equity securities. Accordingly, the asset allocation percentages in this schedule will vary from the investment consultant's asset allocation percentages.



LARGEST HOLDINGS



TRGT LARGEST STOCK HOLDINGS

As of June 30, 2018

by Fair Value

Shares	Security Name	Fair Value
3,346,355	APPLE INC	\$ 619,443,774
247,463	AMAZON.COM INC	420,637,607
4,099,904	MICROSOFT CORP	404,291,533
1,757,676	FACEBOOK INC	341,551,600
2,520,302	JPMORGAN CHASE + CO	262,615,468
402,379	ALPHABET INC	451,480,083
6,350,289	BANK OF AMERICA CORP	179,014,647
915,864	BERKSHIRE HATHAWAY INC	170,946,016
1,324,192	JOHNSON + JOHNSON	160,677,457
475,790	THE BOEING CO	159,632,303

TRGT LARGEST BOND HOLDINGS

As of June 30, 2018

by Fair Value

Par Value	Security Name	Yield	Maturity	Moody's Rating	Fair Value
\$ 314,242,672	United States Treasury Index Linked Note	0.74%	1/15/2028	Aaa	\$ 307,381,906
251,000,000	United States Treasury Note	2.84%	8/15/2027	Aaa	238,822,579
250,975,000	United States Treasury Note	2.99%	8/15/2046	Aaa	215,916,930
236,336,000	United States Treasury Note	2.99%	2/15/2046	Aaa	214,650,326
192,550,000	United States Treasury Note	2.99%	11/15/2045	Aaa	193,038,896
189,590,000	United States Treasury Note	2.99%	5/15/2045	Aaa	190,145,440
188,700,000	United States Treasury Note	2.99%	11/15/2044	Aaa	189,193,864
150,854,000	FED HOME LN DISCOUNT NT	1.75%	7/2/2018	NR	150,854,000
150,000,000	FED HOME LN DISCOUNT NT	1.75%	8/1/2018	NR	149,760,000
130,135,000	United States Treasury Note	2.85%	2/15/2026	Aaa	119,368,361

A complete portfolio listing is available upon request.

Key to Ratings: All ratings presented are from Moody's Investors Service with the exception of some of the government agency securities. Moody's does not rate these securities. Standard & Poor's does provide rating for the securities (AAA is Standard & Poor's highest rating.) Government Securities are not rated per se' but are considered the best quality securities.

Moody's rates securities as follows:

Aaa	Best Quality
Aa	High Quality
A	Upper Medium Quality
Baa	Medium Quality
NR	Not Rated



TRGT INVESTMENT SUMMARY

June 30, 2018

	Domestic		International		Total	
	Fair Value	%		%	Fair Value	%
Fixed Income						
Government Bonds	\$ 5,214,297,453	10.52%	\$ 0	0.00%	\$ 5,214,297,453	10.52%
Corporate Bonds	4,191,604,056	8.46%	0	0.00%	4,191,604,056	8.46%
Municipal/Provincial Bonds	88,513,437	0.18%	0	0.00%	88,513,437	0.18%
Total Bonds	9,494,414,946	19.16%	0	0.00%	9,494,414,946	19.16%
Corporate Asset Backed	662,243,807	1.34%	0	0.00%	662,243,807	1.34%
Commercial Mortgage Backed	409,534,052	0.83%	0	0.00%	409,534,052	0.83%
Government Agencies	399,776,109	0.81%	0	0.00%	399,776,109	0.81%
Government Mortgage Backed Securities	3,544,436,104	7.15%	0	0.00%	3,544,436,104	7.15%
Government Asset Backed	42,160,681	0.09%	0	0.00%	42,160,681	0.09%
Preferred Stock	6,156,000	0.01%	33,250,847	0.07%	39,406,847	0.08%
Total Fixed Income	14,558,721,699	29.39%	33,250,847	0.07%	14,591,972,546	29.46%
Common Stock						
Consumer Discretionary	1,980,211,947	4.00%	933,035,134	1.88%	2,913,247,081	5.88%
Consumer Staples	972,122,343	1.96%	624,267,277	1.26%	1,596,389,620	3.22%
Energy	957,209,342	1.93%	453,590,475	0.92%	1,410,799,817	2.85%
Financials	2,186,822,792	4.41%	1,282,484,664	2.59%	3,469,307,456	7.00%
Healthcare	2,090,732,567	4.22%	820,087,944	1.65%	2,910,820,511	5.87%
Industrials	1,781,586,618	3.59%	1,261,308,985	2.54%	3,042,895,603	6.13%
Information Technology	4,127,767,759	8.33%	688,710,652	1.39%	4,816,478,411	9.72%
Materials	501,755,727	1.01%	609,829,182	1.23%	1,111,584,909	2.24%
Private Placements	0	0.00%	37,083,395	0.07%	37,083,395	0.07%
Rights/Warrants	0	0.00%	1,251,436	0.00%	1,251,436	0.00%
Telecommunication Services	264,052,043	0.53%	253,838,431	0.51%	517,890,474	1.04%
Utilities	466,865,893	0.94%	213,780,710	0.43%	680,646,603	1.37%
Depository Receipts	7,901,622	0.02%	39,874,808	0.08%	47,776,430	0.10%
REITS	45,925,148	0.09%	113,987,491	0.23%	159,912,639	0.32%
Total Common Stock	15,382,953,801	31.03%	7,333,130,584	14.78%	22,716,084,385	45.81%

(continued)



INVESTMENT SUMMARY (CONTINUED)



TRGT INVESTMENT SUMMARY (CONTINUED)

June 30, 2018

	Domestic		International		Total	
	Fair Value	%	Fair Value	%	Fair Value	%
Short-term investments						
Commercial Paper	561,257,129	1.13%	0	0.00%	561,257,129	1.13%
Pooled Funds and Mutual Funds	2,315,511,573	4.67%	43,847	0.00%	2,315,555,420	4.67%
Total Short Term Investments	<u>2,876,768,702</u>	<u>5.80%</u>	<u>43,847</u>	<u>0.00%</u>	<u>2,876,812,549</u>	<u>5.80%</u>
Real Estate	4,391,129,562	8.86%	60,918,797	0.12%	4,452,048,359	8.98%
Private Equities & Strategic Lending	<u>4,598,120,680</u>	<u>9.28%</u>	<u>330,614,190</u>	<u>0.67%</u>	<u>4,928,734,870</u>	<u>9.95%</u>
Total Investments	<u>41,807,694,444</u>	<u>84.36%</u>	<u>7,757,958,265</u>	<u>15.64%</u>	<u>49,565,652,709</u>	<u>100.00%</u>
Derivatives & Options	905,444				905,444	
Short Term Investments Classified as Cash Equivalents	<u>(839,604,028)</u>				<u>(839,604,028)</u>	
Total Investments of the Tennessee Retiree Group Trust	<u>\$ 40,968,995,860</u>		<u>\$ 7,757,958,265</u>		<u>\$ 48,726,954,125</u>	

Note: TCRS owns 99.73% of the net asset value of the Tennessee Retiree Group Trust.



SCHEDULES OF INVESTMENT FEES AND COMMISSIONS
FOR THE YEAR ENDED JUNE 30, 2017



TRGT Schedule of Fees

	Average Assets Under Management	Fees
Asset Management		
External Investment Manager Fees	\$ 7.1 Billion	\$ 31,109,622
Real Estate Asset Management	3.9 Billion	15,862,067
Private Equities & Strategic Lending Asset Management	4.8 Billion	<u>0</u>
Total Asset Management		<u>\$ 46,971,689</u>
Other Investment Services Fees		
Custodian Bank	\$ 48.9 Billion	\$ 2,138,077
General Investment Consultant	48.9 Billion	361,980
Real Estate Investment Consultant	3.9 Billion	245,864
Private Equities & Strategic Lending Investment Consultant	4.8 Billion	<u>970,834</u>
Total Investment Services Fees		<u>\$ 3,716,755</u>

(continued)



SCHEDULES OF INVESTMENT FEES AND COMMISSIONS
FOR THE YEAR ENDED JUNE 30, 2017 (CONTINUED)



TRGT Schedules of Commissions

Domestic Exchange Traded Shares

Broker Name	DOMESTIC		
	Number of Shares Traded	Total Commissions	Commission per Share
Instinet, LLC	73,595,110	\$ 1,471,902	0.0200
Other Brokers-Instinet CCA Balance	12,083,128	241,663	0.0200
Capis	3,825,230	153,009	0.0400
RBC Capital Markets Corporation	10,490,223	145,684	0.0139
Barclays Capital	6,704,535	134,091	0.0200
UBS Securities LLC	6,423,774	128,475	0.0200
RJ Equity Partners	6,398,963	127,979	0.0200
ISI Group INC	5,065,095	101,302	0.0200
OTHER BROKERS*	32,028,813	681,938	0.0213
Totals	156,614,871	\$ 3,186,043	

Program Trades where total commission cost includes trading commission, liquidity fees, and market impact fees.

Broker Name	DOMESTIC		
	Number of Shares Traded	Total Commissions	Commission per Share
Capis	20,227,059	\$ 404,541	0.0200
Barclays Capital	18,668,116	362,478	0.0194
Morgan Stanley & Company, Inc.	40,474,452	303,560	0.0075
Goldman Sachs Group, Inc.	39,209,820	294,075	0.0075
JP Morgan Chase & Company	26,687,985	200,160	0.0075
Instinet, LLC	9,600,062	192,001	0.0200
Bank of America Merrill Lynch	20,923,737	156,929	0.0075
UBS Securities LLC	19,471,821	146,040	0.0075
C S FBCO	6,465,051	129,301	0.0200
OTHER BROKERS*	55,488,187	419,784	0.0076
Totals	257,216,290	\$ 2,608,869	

*LESS THAN \$100,000 TOTAL COMMISSION PER BROKERAGE FIRM

(continued)



SCHEDULES OF INVESTMENT FEES AND COMMISSIONS
FOR THE YEAR ENDED JUNE 30, 2017 (CONTINUED)



International Exchange Traded Shares

Broker Name	INTERNATIONAL		
	Number of Shares Traded	Total Commissions	Commission per Share
Instinet, LLC	109,687,136	\$ 1,789,172	0.0163
Bank of America Merrill Lynch	808,387,043	998,616	0.0012
UBS Securities LLC	4,043,071,181	877,050	0.0002
Goldman Sachs Group, Inc.	2,910,705,334	711,356	0.0002
Morgan Stanley & Company, Inc.	1,029,191,200	612,235	0.0006
Barclays Capital	35,518,039	587,011	0.0165
JP Morgan Chase & Company	58,893,276	568,133	0.0096
Citigroup Global Markets, Inc.	2,576,199,552	547,913	0.0002
Credit Suisse	2,303,636,522	411,956	0.0002
RBC Capital Markets	1,189,107,980	311,258	0.0003
National Financial Services	21,554,844	274,148	0.0127
Deutsche Bank Securities, Inc.	683,385,103	272,927	0.0004
Pershing LLC	2,145,681,249	225,284	0.0001
Macquarie Group Limited	22,151,566	180,565	0.0082
Jefferies International	8,414,448,034	177,702	0.0000
Sanford C Bernstein	25,522,805	175,250	0.0069
Investment Technology Group	17,356,206	136,776	0.0079
Cowan Execution Services	6,239,842	136,724	0.0219
SMBC NIKKO Securities America, Inc.	6,650,468	133,309	0.0200
Raymond James and Associates, Inc.	6,845,917	131,718	0.0192
Exane	12,424,327	107,242	0.0086
Mizuho Securities	6,544,517	103,615	0.0158
OTHER BROKERS*	3,769,309,203	1,129,526	0.0003
TOTALS	30,202,511,344	\$ 10,599,486	

Shares for international stocks are based on the actual foreign shares traded while the commission is expressed in U.S. dollars. Therefore, commissions per share between domestic and international are not comparable.

*LESS THAN \$100,000 TOTAL COMMISSION PER BROKERAGE FIRM