

Investment Section

Report by Investment Consultant

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September 9, 2019

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

Re: 2019 CAFR Performance Letter

Dear Jamie:

For the year ended June 30, 2019, TCRS earned a return of 7.54%, underperforming its policy index (7.60%) but beating its as-allocated index (7.40%). Strong absolute returns in Private Equity (17.51%) and U.S Fixed Income (11.01%) were most additive to the portfolio during a period where all asset classes posted positive returns. International Equity was the weakest asset class with a 1.09% return. TCRS met or exceeded all of its benchmarks at the asset class level except for U.S. Equity.

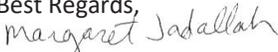
TCRS ranked in the top decile of its peer group (Investment Metric’s Public DB > \$1 billion) for the fiscal year ended June 30, 2019. The Plan’s relative to overweight to U.S. equities versus its peers and its long duration bias in fixed income both contributed to the Plan’s strong peer ranking. Longer term, the Plan remained above median in its peer group for the three, five and ten-year periods ended June.

As of June 30, 2019, the System’s asset allocation and one-year respective returns were:

Asset Class	% of Assets	One Year Return
Domestic Equity	31.0%	7.20%
Canada Index Fund	2.0%	5.12%
International Developed Market	13.5%	0.40%
International Emerging Market	3.9%	3.34%
Domestic Fixed Income	26.0%	11.01%
Inflation-Indexed Fixed Income	0.9%	5.03%
Real Estate	8.8%	7.82%
Private Equity	6.3%	17.51%
Strategic Lending	5.6%	6.04%
Cash and Cash Equivalents	1.9%	1.41%
Total	100.0%	8.19%

Important events in the U.S. during fiscal year 2019 included a change to a more accommodative monetary policy and the ongoing uncertainty surrounding trade policy. The U.S. economy stood out globally, and the U.S. dollar was strong. Yields fell with increased concerns about an inverted yield curve. Global negative-yielding debt rose from \$8.16 trillion to \$12.92 trillion.

TCRS’ well-funded, cost-effective Plan incorporates sensible diversification to weather a variety of market environments. We believe that positioning in the TCRS portfolio is conducive to withstanding more volatile markets in the event of an eventual end to the economic expansion.

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, 2019

Dear Members,

I am pleased to present the Investment Section of the TCRS Comprehensive Annual Financial Report for the fiscal year ended June 30, 2019.

The Tennessee Retiree Group Trust (TRGT) was established in 2015 and contained \$52.2 billion in assets as of June 30, 2019. Assets for the TCRS are comingled in the TRGT for investment purposes and TCRS represents \$52.0 billion, or 99.6%, 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 2019 fiscal year was a modest year for investors and the TRGT gained 7.54% for the fiscal year with an annualized gain of 9.41% for the trailing ten-year period. The one-year and the ten-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 2018-2019, no assets were under the control of emerging investment managers.

To assist in the fiduciary responsibility for managing the TRGT portfolio during fiscal year 2019, 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 2019.

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 delivered a return of 7.54% during the fiscal year. Strong absolute returns in Private Equity (17.51%) and U.S. Fixed Income (11.01%) were the most additive to the portfolio and all asset classes produced positive returns for the year. Other notable contributors were Real Estate (7.82%), Domestic Equities (7.20%) and Strategic Lending (6.04%). International markets produced relatively modest returns led by investments in Canada (5.12%) followed by Emerging Markets (3.34%) and International Developed Stocks (0.4%).



TRGT INVESTMENT PERFORMANCE REVIEW

Periods Ending June 30, 2019

	Annualized Returns		
	Current Year	3-Year	5-Year
Pension Plan Portfolio	7.54%	9.02%	6.60%
Policy Index (1)	7.60%	8.90%	6.59%
As-Allocated Index	7.40%	8.64%	6.39%
Domestic Equity	7.20%	13.33%	9.45%
S & P 1500 Index	9.32%	13.91%	10.45%
Canadian Equity	5.12%	9.26%	1.42%
S & P TSX 60 Index	5.55%	9.28%	1.43%
Domestic Fixed Income	11.01%	3.11%	4.49%
Citigroup LPF Index	10.72%	2.65%	4.30%
Inflation Hedge Bonds	5.03%	2.19%	1.94%
Citigroup TIPS Index	4.93%	2.12%	1.85%
International Equity	1.09%	9.56%	3.35%
International Equity Custom Index	0.75%	8.99%	2.20%
Real Estate	7.82%	9.00%	10.50%
NCREIF Index	6.82%	7.07%	9.12%
Private Equity	17.51%	17.96%	16.83%
Private Equity Custom Index	2.79%	13.06%	11.87%
Strategic Lending Portfolio	6.04%	8.21%	5.36%
SL Benchmark	5.82%	6.48%	4.30%

Verus

Ranking of TCRS Portfolio	<u>Percentile Rankings</u>	<u>Risk Adjusted Basis</u>
	Last three years	39
Last five years	16	21

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 1/1/2019, 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% Cambridge Associates, Custom Private Equity Benchmark/ 7% Strategic Lending/ 1% 91 Day T-Bill.



TRGT ASSET ALLOCATION

As of June 30, 2019

Asset Class	Fair Value	Percentage
Domestic Equity	\$ 16,105,685,761	31%
Domestic Fixed Income	14,915,567,685	29%
International Equity	7,599,004,152	15%
International Fixed Income	46,062,659	0%
Short-Term Securities	3,267,230,004	6%
Real Estate	4,252,118,306	8%
Private Equities & Strategic Lending	5,965,828,854	11%
Totals	<u>\$ 52,151,497,421</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 99.6% 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.

**TRGT LARGEST STOCK HOLDINGS***As of June 30, 2019**by Fair Value*

Shares	Security Name	Fair Value
4,230,869	MICROSOFT CORP	\$ 566,767,211
257,169	AMAZON.COM INC	486,982,933
2,432,614	APPLE INC	481,462,963
1,460,773	FACEBOOK INC CLASS A	281,929,189
2,430,956	JPMORGAN CHASE + CO	271,780,881
213,211	ALPHABET INC CL C	230,461,902
986,234	BERKSHIRE HATHAWAY INC CL B	210,235,502
1,364,350	JOHNSON + JOHNSON	190,026,668
1,522,747	CHEVRON CORP	189,490,637
1,328,652	WALT DISNEY CO/THE	185,532,965

TRGT LARGEST BOND HOLDINGS*As of June 30, 2019**by Fair Value*

Par Value	Security Name	Yield	Maturity	Moody's Rating	Fair Value
\$ 239,550,000	United States Treasury Note	2.51%	11/15/2045	Aaa	\$ 262,157,531
236,336,000	United States Treasury Note	2.59%	2/15/2046	Aaa	235,098,928
189,590,000	United States Treasury Note	2.51%	5/15/2045	Aaa	207,327,034
205,975,000	United States Treasury Note	2.54%	8/15/2046	Aaa	194,598,099
152,365,000	United States Treasury Note	2.01%	2/15/2029	Aaa	160,673,654
136,500,000	United States Treasury Note	2.54%	8/15/2047	Aaa	142,461,212
123,700,000	United States Treasury Note	2.51%	11/15/2044	Aaa	135,142,250
134,446,000	FED HOME LN DISCOUNT NT	2.00%	7/1/2019	Aaa	134,446,000
120,285,000	United States Treasury Note	1.93%	8/15/2027	Aaa	123,202,851
119,075,000	United States Treasury Note	1.88%	5/15/2026	Aaa	117,195,848

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, 2019

	Domestic		International		Total	
	Fair Value	%		%	Fair Value	%
Fixed Income						
Government Bonds	\$ 4,370,903,748	8.38%	\$ 0	0.00%	\$ 4,370,903,748	8.38%
Corporate Bonds	4,550,660,660	8.73%	0	0.00%	4,550,660,660	8.73%
Municipal/Provincial Bonds	59,168,162	0.11%	0	0.00%	59,168,162	0.11%
Total Bonds	8,980,732,570	17.22%	0	0.00%	8,980,732,570	17.22%
Corporate Asset Backed	876,571,075	1.68%	0	0.00%	876,571,075	1.68%
Commercial Mortgage Backed	629,265,624	1.21%	0	0.00%	629,265,624	1.21%
Government Agencies	299,712,965	0.57%	0	0.00%	299,712,965	0.57%
Government Mortgage Backed Securities	4,017,764,912	7.70%	0	0.00%	4,017,764,912	7.70%
Government Asset Backed	105,370,539	0.20%	0	0.00%	105,370,539	0.20%
Preferred Stock	6,150,000	0.02%	46,062,659	0.09%	52,212,659	0.11%
Total Fixed Income	14,915,567,685	28.60%	46,062,659	0.09%	14,961,630,344	28.69%
Common Stock						
Consumer Discretionary	1,638,840,674	3.14%	926,971,758	1.78%	2,565,812,432	4.92%
Consumer Staples	1,068,541,291	2.05%	693,698,550	1.33%	1,762,239,841	3.38%
Energy	713,616,823	1.37%	513,338,446	0.98%	1,226,955,269	2.35%
Financials	2,185,177,518	4.19%	1,301,809,671	2.50%	3,486,987,189	6.69%
Healthcare	2,134,918,804	4.09%	774,321,686	1.48%	2,909,240,490	5.57%
Industrials	1,716,084,769	3.29%	1,382,070,656	2.65%	3,098,155,425	5.94%
Information Technology	3,417,059,207	6.55%	600,707,110	1.15%	4,017,766,317	7.70%
Materials	498,321,122	0.96%	504,087,759	0.97%	1,002,408,881	1.93%
Private Placements	186,167	0.00%	12,290,219	0.02%	12,476,386	0.02%
Real Estate	29,829,673	0.06%	141,082,465	0.27%	170,912,138	0.33%
Rights/Warrants	0	0.00%	72,527	0.00%	72,527	0.00%
Telecommunication Services	1,356,301,882	2.60%	408,162,185	0.78%	1,764,464,067	3.38%
Utilities	508,358,752	0.97%	233,131,866	0.45%	741,490,618	1.42%
Corporate Equities	816,947,211	1.57%	58,036,836	0.12%	874,984,047	1.69%
Depository Receipts	21,423,169	0.04%	49,222,418	0.09%	70,645,587	0.13%
Shares Beneficial	78,699	0.00%	0	0.00%	78,699	0.00%
Total Equities	16,105,685,761	30.88%	7,599,004,152	14.57%	23,704,689,913	45.45%

(continued)



INVESTMENT SUMMARY (CONTINUED)



TRGT INVESTMENT SUMMARY (CONTINUED)

June 30, 2019

	Domestic		International		Total	
	Fair Value	%	Fair Value	%	Fair Value	%
Short-Term Investments						
Commercial Paper	752,745,668	1.45%	0	0.00%	752,745,668	1.45%
Pooled Funds and Mutual Funds	2,514,484,336	4.82%	0	0.00%	2,514,484,336	4.82%
Total Short Term Investments	<u>3,267,230,004</u>	<u>6.27%</u>	<u>0</u>	<u>0.00%</u>	<u>3,267,230,004</u>	<u>6.27%</u>
Real Estate	4,252,118,306	8.15%	0	0.00%	4,252,118,306	8.15%
Private Equities & Strategic Lending	<u>5,457,629,657</u>	<u>10.47%</u>	<u>508,199,197</u>	<u>0.97%</u>	<u>5,965,828,854</u>	<u>11.44%</u>
Total Investments	<u>43,998,231,413</u>	<u>84.37%</u>	<u>8,153,266,008</u>	<u>15.63%</u>	<u>52,151,497,421</u>	<u>100.00%</u>
Derivatives	789,404		0		789,404	
Short Term Investments Classified as Cash Equivalents	<u>(1,139,962,673)</u>		0		<u>(1,139,962,673)</u>	
Total Investments of the Tennessee Retiree Group Trust	<u>\$ 42,859,058,144</u>		<u>\$ 8,153,266,008</u>		<u>\$ 51,012,324,152</u>	

Note: TCRS owns 99.6% of the net asset value of the Tennessee Retiree Group Trust.



TRGT Schedule of Fees

	Average Assets Under Management	Fees
Asset Management		
External Investment Manager Fees	\$ 7.2 Billion	\$ 28,062,762
Real Estate Asset Management	4.3 Billion	14,256,672
Private Equities & Strategic Lending Asset Management	6.0 Billion	-
Total Asset Management		<u>\$ 42,319,434</u>
Other Investment Services Fees		
Custodian Bank	\$ 51.2 Billion	\$ 2,136,865
General Investment Consultant	51.2 Billion	472,599
Real Estate Investment Consultant	4.3 Billion	253,239
Private Equities & Strategic Lending Investment Consultant	6.0 Billion	922,913
Total Investment Services Fees		<u>\$ 3,785,616</u>

(continued)



SCHEDULES OF INVESTMENT FEES AND COMMISSIONS
FOR THE YEAR ENDED JUNE 30, 2019 (CONTINUED)



TRGT Schedules of Commissions

Domestic Exchange Traded Shares

Broker Name	DOMESTIC		
	Number of Shares Traded	Total Commissions	Commission per Share
Instinet, LLC	80,630,759	\$ 1,612,615	0.0200
RBC Capital Markets Corporation	14,019,018	280,380	0.0200
RJ Equity Partners	10,839,031	216,781	0.0200
Barclays Capital	10,119,727	202,394	0.0200
JP Morgan	5,953,634	119,072	0.0200
Capis	4,612,668	184,507	0.0400
UBS Securities LLC	5,879,279	117,586	0.0200
ISI Group INC	5,127,212	101,435	0.0198
OTHER BROKERS*	19,692,789	409,236	0.0208
Totals	156,874,117	\$ 3,244,006	

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
Morgan Stanley & Company, Inc.	59,870,592	\$ 449,030	0.0075
Barclays Capital	21,362,055	427,241	0.0200
UBS Securities LLC	43,132,839	323,501	0.0075
Merrill Lynch	30,555,146	229,166	0.0075
Goldman Sachs Group, Inc.	41,504,815	311,289	0.0075
C S FBCO	10,265,528	205,311	0.0200
Capis	9,307,692	186,154	0.0200
RBC Capital Markets	18,812,555	131,354	0.0070
Wells Fargo	17,247,957	129,363	0.0075
OTHER BROKERS*	30,981,333	232,362	0.0075
Totals	283,040,512	\$ 2,624,771	

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

(continued)



**SCHEDULES OF INVESTMENT FEES AND COMMISSIONS
FOR THE YEAR ENDED JUNE 30, 2019 (CONTINUED)**



International Exchange Traded Shares

Broker Name	INTERNATIONAL		
	Number of Shares Traded	Total Commissions	Commission per Share
UBS Securities LLC	82,982,745	\$ 383,466	0.0046
HSBC Bank	69,817,695	350,209	0.0050
JP Morgan Chase & Company	22,811,840	320,990	0.0141
Jefferies International	22,861,437	312,385	0.0137
Goldman Sachs Group, Inc.	46,842,052	256,193	0.0055
Citigroup Global Markets, Inc.	31,120,802	235,280	0.0076
Macquarie Group Limited	8,665,832	215,993	0.0249
Investment Technology Group	18,199,701	186,437	0.0102
Bank of America Merrill Lynch	31,062,708	160,204	0.0052
Deutsche Bank Securities, Inc.	12,846,094	153,753	0.0120
SMBC NIKKO Securities America, Inc.	5,920,375	149,170	0.0252
Morgan Stanley & Company, Inc.	14,834,711	132,712	0.0089
RBC Capital Markets	14,980,035	116,039	0.0077
Credit Suisse	10,337,022	113,770	0.0110
Societe Generale	16,757,281	101,287	0.0060
OTHER BROKERS*	174,266,016	1,187,613	0.0068
TOTALS	<u>584,306,346</u>	<u>\$ 4,375,501</u>	

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