State of Colorado
Office of the State Auditor

Performance Audit of the Colorado Department of the Treasury's Investment Management

October 2019

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October 22, 2019

Members of the Legislative Audit Committee:

This report contains the results of a performance audit of the Colorado Department of the Treasury (Treasury). The audit was conducted pursuant to Section 2-3-103, C.R.S., which authorizes the State Auditor to conduct audits of all departments, institutions, and agencies of state government, and Section 2-7-204(5), C.R.S., which requires the State Auditor to annually conduct performance audits of one or more specific programs or services in at least two departments for purposes of the SMART Government Act. The report presents our findings, conclusions, and recommendations, and the responses of the Treasury.

Respectfully submitted,

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REPORT HIGHLIGHTS

Colorado Department of the Treasury's Investment Management

Performance Audit, October 2019

AUDIT CONCERN

The investment management practices of the Colorado Department of the Treasury (Treasury) were consistent with statutory requirements and generally achieved the Treasury Investment Program's statutory objectives of legality, safety, liquidity, and yield. However, the Treasury's portfolio holdings did not always comply with its Investment Policy Statements, and opportunities exist to improve the manner in which the Treasury reports its investment performance.

KEY FINDINGS

- The Treasury established two performance benchmarks against which it could evaluate and report on its performance, a yield benchmark and a total return benchmark, but it regularly only reported its book yield because its investment strategy is focused on maximizing yield and cash flow. This showed the Treasury outperforming its yield benchmark at nearly every point between Calendar Years 2011 through 2018, but an analysis of total returns reveals a more nuanced perspective in which the Treasury outperformed and underperformed its benchmarks in different years. Measuring total returns accounts for both the yield generated and the change in value experienced due to market conditions, and is therefore an important indicator of the overall value, risk, and return characteristics of a portfolio.
- Some investment holdings were outside the parameters allowed in the Investment Policy Statements.
  - The Treasury allocated assets within the T-Pool in a manner consistent with the Investment Policy Statements, but allocations of the Public School Permanent Fund and the Unclaimed Property Tourism Fund portfolios to Treasury/Agency assets and to corporate bonds and notes were often not compliant, as were allocations from these portfolios to the T-Pool.
  - Some T-Pool investment holdings exceeded maturity limits, including assets with maturities exceeding one year in its T-Pool Cash sub-portfolio and five years in its T-Pool Bond sub-portfolio.
- The Treasury did not always maintain documentation supporting older total return benchmark information or portfolio credit ratings, including information generated by its prior custodian, impeding verification and replication of reported results.

BACKGROUND

The Treasury is part of the executive branch of state government. The State Treasurer, an elected position, is the chief executive of the Treasury and is authorized by statute to maintain custody of and invest state monies. The Treasury manages three primary portfolios:

- Treasury Pool (T-Pool): pools monies held in more than 800 government funds; as of December 31, 2018, it held nearly $8 billion in assets.
- Public School Permanent Fund: holds assets from the sale or use of lands that have been granted by the federal government for educational purposes; as of December 31, 2018, it held approximately $775 million in assets.
- Unclaimed Property Tourism Promotion Trust Fund: holds the proceeds from the sale of securities held as unclaimed property for more than a year; as of December 31, 2018, it held approximately $208 million in assets.

RECOMMENDATIONS

- Enhance measurement and reporting of portfolio performance by including in quarterly reporting both the book yield and total returns of its portfolios versus established benchmarks, and ensuring total return benchmarks are consistent with the Treasury's Investment Policy Statements.
- Specify in the Investment Policy Statements how compliance with key restrictions related to asset allocations, maturity, and credit quality will be measured, and develop a formal procedure requiring investment officers to obtain the pre-approval from the State Treasurer for deviations from Investment Policy Statement provisions.
- Ensure adequate documentation is maintained by Treasury and/or its custodian for all benchmarks used to allow results to be verified and replicated.

The Treasury agreed with these recommendations.

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Overview
Chapter 1

The Colorado Department of the Treasury (Treasury) is part of the executive branch of Colorado state government. The State Treasurer, which is an elected position, is the chief executive officer of the Treasury and is authorized by statute to maintain custody of and invest state monies [Section 24-36-101, et seq., C.R.S].

The Treasury receives state monies collected by or otherwise coming into the hands of any officer, department, institution, or agency of state government, and deposits and disburses the same in the manner prescribed by law [Section 24-36-102, C.R.S]. The Treasury has no tax collection or enforcement responsibilities.

Statute authorizes the State Treasurer to invest any funds that are not immediately required to be disbursed into a variety of investment options, such as bonds, debt obligations, bank deposits, and securities [Sections 24-36-109 through 24-36-113, C.R.S.]. As shown in Exhibit 1.1, between Calendar Years 2011 and 2018, the Treasury managed up to eight different investment portfolios.

Exhibit 1.1: Investment Portfolio Year-End Balances (Calendar Years 2011 through 2018, in millions)

Portfolio Name	2011	2012	2013	2014	2015	2016	2017	2018
Treasury Pool (T-Pool)	$6,117	$6,920	$7,476	$6,932	$7,039	$6,486	$6,795	$7,858
Public School Permanent Fund*	$619.6	$654.3	$664.1	$747.3	$842.8	$902.3	$941.6	$775.1
Unclaimed Property Tourism Promotion Trust Fund*	$122.7	$132.0	$140.0	$164.7	$172.7	$195.2	$189.3	$208.1
Major Medical Insurance Fund	$93.1	$75.8	$53.8	$41.6	$27.8	$17.4	$6.2	$2.4
State Education Fund	$35.3	-	-	-	-	-	-	-
Colorado Prepaid Tuition Fund	$24.8	$22.8	-	-	-	-	-	-
Colorado Department of Labor & Employment	$0.5	$0.8	$0.8	$0.5	$0.8	-	-	-
Colorado Water Conservation Board	$0.4	$0.5	$0.8	$0.5	$0.8	-	-	-

Source: Auditor analysis of the Colorado Department of the Treasury's monthly security holding reports.
Note: * A portion of the assets reflected in the Public School Permanent Fund and the Unclaimed Property Tourism Promotion Trust Fund portfolios are invested in T-Pool, and thus are also reflected in the T-Pool portfolio balances.

Between Calendar Years 2011 and 2018, the Treasury, at the request of State agencies, closed several portfolios and, to the extent it continued to manage the remaining funds, consolidated the monies into the Treasury Pool (T-Pool) portfolio. Specifically, the Treasury drew down and eventually closed the separately managed portfolios for the State Education Fund (2012) and the Colorado Prepaid Tuition Fund (2013), and two portfolios used to track certificates of deposit on behalf of the Colorado Department of Labor & Employment and the Colorado Water

Conservation Board (2016). While the Treasury continued to manage the Major Medical Insurance Fund portfolio through 2018, no securities have been added to the portfolio since 2008. As of the end of 2018, the number of portfolios actively managed by the Treasury had been reduced to three: the T-Pool, the Public School Permanent Fund, and the Unclaimed Property Tourism Promotion Trust Fund. Each is described below.

- ✓ **Treasury Pool (T-Pool)**—This portfolio pools monies held in more than 800 government funds, the pooling of which creates economies of scale that result in administrative efficiency and increased diversification opportunities, which is intended to result in higher earnings. The T-Pool holds liquid assets with maturities of less than one year (formerly referred to as the T-Pool Cash sub-portfolio) and assets with longer maturities that can extend up to five years (formerly referred to as the T-Pool Bond sub-portfolio). As of December 31, 2018, the T-Pool held approximately $7.9 billion in assets.

- ✓ **Public School Permanent Fund—**The State Public School Fund was established in the State Constitution to hold assets from the sale or use of lands that have been granted by the federal government to the State for educational purposes [State Constitution, Article IX, Section 3]. The Colorado Public School Fund Investment Board invests funds in three distinct portfolios: the Public School Permanent Fund, Public School Equity Fund, and Public School Permanent Fund Janus Henderson. The former is managed by the Treasury under the direction of the Colorado Public School Fund Investment Board, while the latter two are managed by external entities, also under the direction of the Colorado Public School Fund Investment Board, but outside of the purview of the Treasury. Interest earned on the fund is credited to the Public School Income Fund and then transferred to the Colorado Department of Education. As of December 31, 2018, the Public School Permanent Fund held approximately $775 million in assets, of which approximately 10 percent was invested in the T-Pool and 90 percent was invested in other assets, such as treasuries, asset-backed securities, corporate notes and bonds, municipal bonds, and mutual equity funds.

- ✓ **Unclaimed Property Tourism Promotion Trust Fund (Unclaimed Property Tourism Fund)**—This portfolio was created in statute to hold in trust the proceeds from the sale of securities held as unclaimed property for more than a year, the principal of which is not to be expended except to pay claims [Section 38-13-116.7, C.R.S]. The interest derived from the investment of the principal is credited to the Colorado State Fair Authority cash fund (25 percent), the Agriculture Management Fund within the Department of Agriculture (65 percent), and Travel and Tourism Promotion

Fund (10 percent). As of December 31, 2018, the Unclaimed Property Tourism Fund held approximately $208 million in assets, of which approximately 10 percent was invested in the T-Pool and the remaining 90 percent was invested in other assets, such as treasuries, asset-backed securities, and corporate bonds and notes.

Investment Policies

Statute requires the State Treasurer to "use prudence and care to preserve the principal and to secure the maximum rate of interest consistent with safety and liquidity", and to create investment policies regarding liquidity, maturity and diversification that are appropriate to each fund, or pool of funds, in the Treasury's custody and available for investment [Section 24-36-113, C.R.S.]. The State Treasurer authorizes Investment Officers, within its Investment Division, to make decisions, execute transactions, and take actions necessary to fulfill the Treasury's investment objectives. Daily operations are managed by the Treasury's Chief Investment Officer.

Additionally, the Treasury has an Investment Advisory Committee (Committee) to help evaluate investments. The Committee is composed of local investment professionals; members of the General Assembly; and representatives from Colorado counties, the Department of Labor & Employment, and the State Land Board (who provide advice on land assets within the Public School Permanent Fund). Service on the Committee is voluntary and members do not have decision-making authority or any fiduciary responsibility for the Treasury's portfolios.

The Treasury's investment policies are outlined in Investment Policy Statements, which are formal documents that define the process used to manage the portfolios of the Treasury Investment Program (Investment Program), outline the appropriate mix of investments and asset holdings, set expectations of risk, and communicate the roles and responsibilities of the State Treasurer, the Investment Officers, and the Advisory Committee with respect to managing the State's investment portfolios. The State Treasurer is responsible for approving all Investment Policy Statements, and the Investment Officers are required to adhere to the terms of the Investment Policy Statements when carrying out their duties in managing the Investment Program portfolios.

Between Calendar Years 2011 and 2018, both statute and the Treasury's Investment Policy Statements experienced modest updates and amendments. Generally, changes to state law were intended to allow the Treasurer to invest in municipal bonds and sovereign, national, or supranational securities, while changes to the Treasury's Investment Policy Statements were designed to reflect changes in statute and the Treasury's investment strategies. Within the parameters of the Investment Policy Statements, the Treasury has adopted two different approaches to managing the Treasury's portfolios. For instance, the Investment Division manages the T-Pool and the Unclaimed Property Tourism Fund portfolios with a strategy designed to maximize yield and cash flow, while it manages the Public School Permanent Fund to maximize total returns pursuant to the Investment Policy Statement approved by the Colorado Public School Fund Investment Board. According to Treasury management, its goal in managing the T-Pool and the Unclaimed Property Tourism Fund portfolios has been to optimize cash flows from interest income and realized capital gains. In doing so, market benchmarks were used primarily to monitor relative asset allocation with an eye on prudent diversification and not to outperform benchmarks for total returns.

The Treasury's requirements related to asset mix, maturity, and credit quality in its Investment Policy Statements, along with our evaluation of the Treasury's holdings with respect to each, are described in Chapter 2.

Cash Management

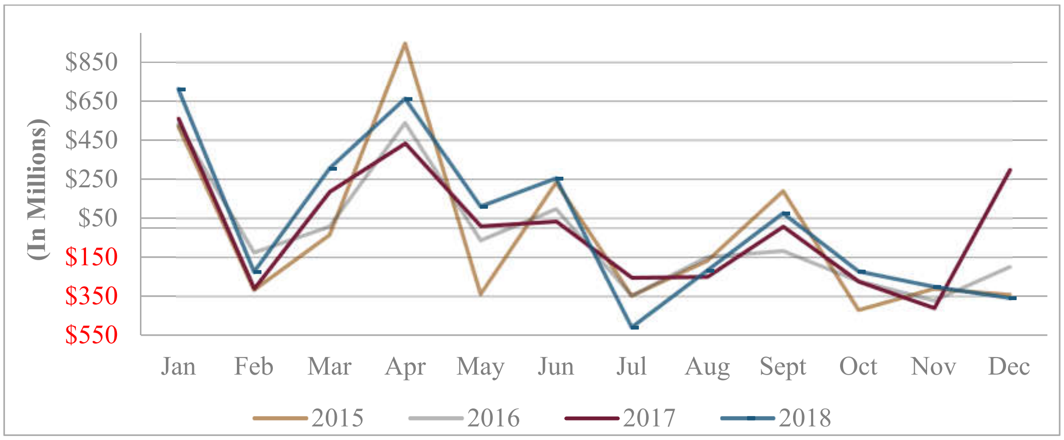
A large portion of the activity of the Treasury concerns short-term transactions, or cash management. The Treasury's Investment Policy Statements require that the Treasury maintain sufficient liquidity to fund anticipated state agency spending needs. Because of this, the Investment Policy Statements require that a portion of the T-Pool, a minimum of $300 million, be highly liquid with maturities of no more than one year. Our evaluation of the ending cash pool balances for every quarter during Calendar Years 2011 through 2018 revealed that the lowest balance of the cash pool was more than $1.6 billion, well above the $300 million minimum required in the Investment Policy Statements. In this manner, the cash pool, or the T-Pool Cash sub-portfolio, functions essentially as an interest-bearing checking account that ensures that all operational cash requirements are met.

Included in this cash pool is, as of December 31, 2018, approximately $350 million in cash held in money market accounts and the Treasury's Wells Fargo bank account, from which all investment disbursements are made and into which all Treasury deposits and investment proceeds are made. The Treasury targets an overnight balance of between $20 and $80 million in the bank account, which enables the Treasury to both issue disbursements with very short notice and facilitate large anticipated disbursements. At the end of each day, Treasury staff evaluate the bank account balance and any anticipated revenues or disbursements, and move monies into or out of money market accounts to maintain the desired balance at the end of the day.

Effective cash management requires (1) adequate information regarding cash flow needs, including expected revenues and disbursements; (2) the maintenance of sufficient liquidity at all times; and (3) the timely investment of monies deposited into the Treasury.

Additionally, the Treasury monitors cash flow, including potential revenues and cash demands over a 45- to 60-day period, on a daily basis, enabling investment staff to anticipate and plan impending investment decisions. Common inflows include tax receipts, miscellaneous fees, investment earnings, federal funding, and funds from revenue generating bodies such as lottery, while common outflows include anticipated payments such as employee payroll, debt service, payments to vendors of goods or services, grant funding such as social service benefits, and Electronic Benefits Transfers (EBT). Exhibit 1.2 illustrates the net flow of cash from the T-Pool for each month of Calendar Years 2015 through 2018, and reveals a predictable flow of funds into and out of the Treasury during the annual cycle, allowing for a stable cash management program. Earlier years were similar in the predictable flow of funds.

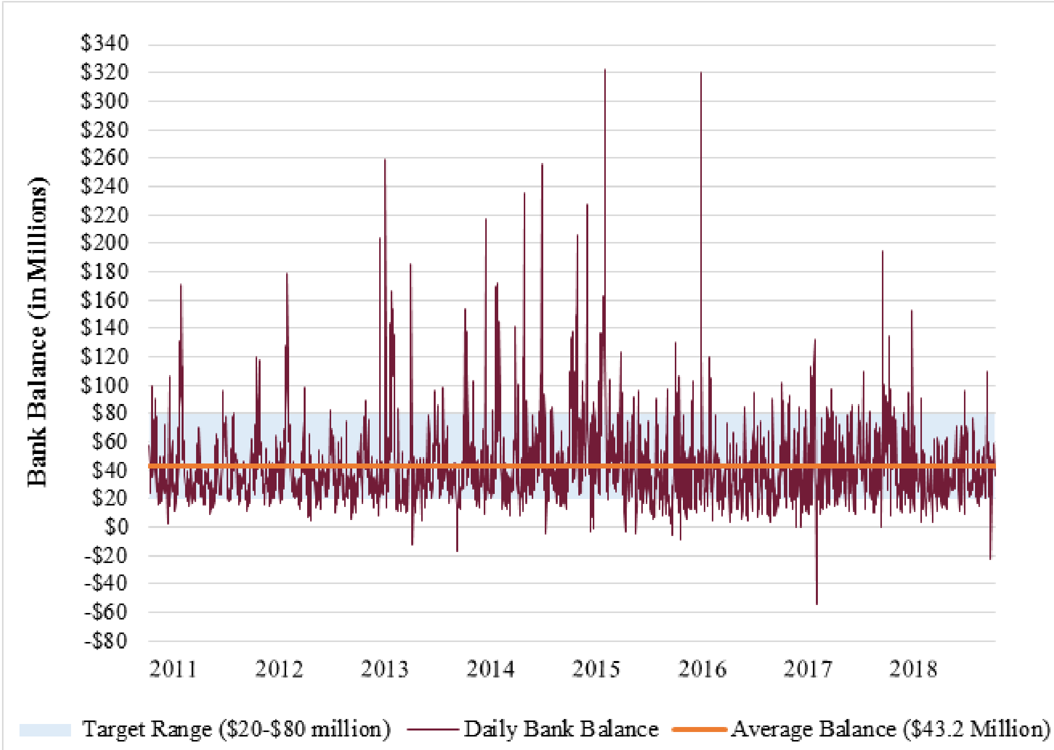
Exhibit 1.2: T-Pool Net Cash Flow (Calendar Years 2015 through 2018)



Source: Colorado Department of the Treasury's net monthly cash flow analysis, Colorado State Treasury Investment Division Overview, January 16, 2019.

Exhibit 1.3 shows that while cash balances fluctuate over time, the Treasury's cash management process effectively ensures daily cash balances generally fall within its target range of $20 to $80 million (as represented by the blue band) and that balances exceeding or falling short of this range are typically short-lived. Between Calendar Years 2011 and 2018, we found that daily bank balances fell within this range more than 75 percent of the time and there were fewer instances in which bank balances significantly deviated from this range after July 2016 than during the prior period.

Exhibit 1.3: Average Bank Balances (Calendar Years 2011 through 2018)



Source: Auditor analysis of the Colorado Department of the Treasury's cash receipt, disbursement, and bank account records.

Audit Scope and Methodology

The Colorado Office of the State Auditor (State Auditor) contracted with Sjoberg Evashenk Consulting, Inc., to conduct this performance audit pursuant to Section 2-3-103, C.R.S., which authorizes the State Auditor to conduct audits of all departments, institutions, and agencies of state government. The Office of the State Auditor typically conducts an evaluation of the Treasury's investments at intervals corresponding to changes in the Office's incumbency. Audit work was performed from May 2019 through August 2019. We appreciate the cooperation provided by the Treasury and its staff during the course of this audit.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on the audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

The objectives of this audit were to analyze the performance of the Treasury's investments for the period between January 1, 2011 to December 31, 2018;

determine whether the Treasury's investment practices, including asset mix, were in compliance with state law, approved investment policies, and prudent industry practice; evaluate the Treasury's cash management strategies, liquidity needs, and associated management practices; and evaluate the effectiveness of internal controls, including electronic and manual systems used to track and report on investments, investment performance, and cash management.

To accomplish the audit objectives, Sjoberg Evashenk Consulting subcontracted with Analysis Group, Inc., a professional services firm specializing in economic, financial, and strategy consulting. Analysis Group provided general consultative services on behalf of the project team; conducted key analyses of the performance of the Treasury's investments for the audit period; and evaluated the Treasury's investment asset mix—including implied risk, diversification and return—in relationship to the Treasury's statutory objectives to use prudence and care to preserve principal and to secure the maximum rate of interest consistent with safety and liquidity [Section 24-36-113, C.R.S.].

The project team performed the following audit work:

- Interviewed key Treasury personnel, including the Chief Investment Officer, Chief Financial Officer, Controller, and other staff.

- Reviewed Colorado Revised Statutes, Treasury Investment Policy Statements (Investment Policy Statement), written procedures and work flows, relevant background information, cash management reports and tools, contracts with investment custodians, and monthly holdings data and investment and performance reports.

- Reviewed business processes related to, and conducted walk-throughs of, investment activities and cash management, including internal controls and electronic and manual information systems used for Treasury investments activities and cash management.

- Obtained and reviewed public quarterly investment reports of the State and other government entities, as well as financial data of various benchmarks used by the State from Bloomberg, Morningstar Direct, Lipper for Investment Management, and Capital IQ.

- Analyzed investment data to evaluate overall investment performance and compliance with the Treasury's Investment Policy Statements.

- Reviewed best practices issued by the National Association of State Auditors, Controllers, and Treasurers (NASACT) and the Government Financial Officers Association (GFOA), as well published information from a dozen public sector treasury agencies, including those of local and state governments in the Mountain State region.

We planned our audit work to evaluate the Treasury's investment activities and its internal controls that were significant to the audit objectives. Our conclusions on the effectiveness of those controls, as well as specific details about the audit work supporting our findings, conclusions, and recommendations, are described in the remainder of this report.

A draft of this report was reviewed by the Treasury. We have incorporated the Treasury's comments into the report where relevant and appropriate. The written responses to the recommendations and the related implementation dates are the sole responsibility of the Treasury.

Audit Findings
Chapter 2

According to statute, the primary objectives of the Colorado Department of the Treasury (Treasury) in managing its investment portfolios are to "use prudence and care to preserve the principal and to secure the maximum rate of interest consistent with safety and liquidity" [Section 24-36-113, C.R.S.]. To guide the investment practices of the Treasury and its staff, the State Treasurer adopts and occasionally modifies formal Investment Policy Statements that meet these objectives and align with Colorado's Uniform Prudent Investor Act. Specifically, the Uniform Prudent Investor Act states that "A trustee shall invest and manage trust assets as a prudent investor would, by considering the purposes, terms, distribution requirements, and other circumstances of the trust. In satisfying this standard, the trustee shall exercise reasonable care, skill, and caution" [Section 15-1.1-101 *et seq*., C.R.S.].

To ensure transparency in public sector investment practices, it is common in the industry to establish quarterly reporting practices that address market conditions, economic developments, investment details, and overall returns on investments. Consistent with this, statute requires the State Treasurer to report to the Governor, on a quarterly basis, the condition of the State Treasury, the amount of money in the Treasury, the amount of securities held in custody, a list of the funds and accounts carried on the records of the Treasury, and such other information deemed appropriate [Section 24-22-107(1), C.R.S.].

These reports to the Governor focus on providing a general statement of financial condition, bank operating balances, and the book value of the Treasury's combined investments. Exhibit 2.1 illustrates the Treasury's quarterly report to the Governor as of December 31, 2018, and reflects nearly $7.9 billion in investments and a bank operating balance of more than $36 million.

Exhibit 2.1: Treasury's Quarterly Report to the Governor (December 31, 2018, in millions)

Account Title	Book Value	Balance
Bank Operating Account		$36.4
Investments		$7,865.0
Miscellaneous Government Guarantee	$10.1	
Reverse Repurchase Agreements	$0	
Agency Collateralized Mortgage Obligations	$0.4	
Commercial Paper	$1,310.8	
Us Treasury Notes	$779.5	
Accrued Interest Purchased	$2.1	
Bankers' Acceptance	$0	
U.S. Treasury Bills	$273.8	
Federal Agencies	$560.4	
Asset-Backed Securities	$978.0	
Money Market	$350.0	
Bank Notes	$503.9	
Corporates	$3,095.9	
Certificates of Deposit	$0	
Total Investments	**$7,865.0**	

Source: Colorado Department of the Treasury's Quarterly Report to the Governor, December 31, 2018.

In addition to submitting quarterly reports to the Governor's Office, the Treasury also prepares and makes available on its website Quarterly Performance Reports that inform its stakeholders and the public of the performance of its investments. These reports present key information designed to demonstrate each portfolio's performance and compliance with respect to the Treasury's Investment Policy Statements. Each includes a snapshot of each portfolio's investment values (market and book value), asset mix (e.g., corporate bonds and notes, treasuries, asset backed securities, etc.), average maturity, overall credit quality of each portfolio, and monthly yield as compared to established benchmarks.

Our review found the Colorado Treasurer's Investment Policy Statements to be consistent with statutory requirements and sound investment practice, and that the Treasury had implemented effective controls over its cash management practices and investment transactions. We also reviewed the performance of each portfolio separately and as a whole, and found that the portfolios have generally achieved the Treasury Investment Program's statutory objectives of legality, safety, liquidity, and yield.

However, this audit found that, when considered individually, the performance of each of the three portfolios actively managed by the Treasury as of the end of 2018 (i.e., the T-Pool, the Public School Permanent Fund, and the Unclaimed Property Tourism Fund) was mixed. There were also some instances in which portfolio holdings did not comply with the Treasury's Investment Policy Statement parameters. In this chapter, we discuss both issues in two findings; the first describes the Treasury's investment performance and the second describes the Treasury's compliance with investment policies. In both findings, this audit also revealed opportunities for the Treasury to improve upon its current methods of reporting investment practices and performance.

Investment Performance

The mission of the Treasury's Investment Division is to provide an Investment Program that is safe, prudent, and appropriate for the public purpose of each fund, with rates of return consistently at or above performance benchmarks.

What audit work was performed and what was the purpose?

To evaluate the performance of Treasury investments, we identified the methods employed by Treasury staff to track and report on investments and investment performance, obtained and reviewed monthly holdings reports, determined annual returns of the Treasury's three actively managed portfolios—the T-Pool, the Public School Permanent Fund, and the Unclaimed Property Tourism Fund—and compared the performance of each portfolio with benchmarks set by the Treasury. We also reviewed the Treasury's published Quarterly Performance Reports, which describe the condition of the State Treasury, the amount of money in the Treasury, the yield generated by each portfolio, and the portfolio's credit quality and average maturity, along with other key characteristics.

The purpose of the audit work was to evaluate the performance of the Treasury's investments and to determine whether the Treasury's investments, consistent with its mission, achieved rates of return at or above performance benchmarks. The Treasury's performance benchmarks include both yield and total return benchmarks.

How were the results of the audit work measured?

We reviewed the Treasury's reported investment performance against the benchmarks specified in the Treasury's Investment Policy Statements. The Statements contain two sets of benchmarks:

- A **yield** benchmark, which measures the percentage increase or decrease a portfolio generates during a given period. Measuring the Treasury's performance with respect to its yield benchmark is a relevant indicator of performance because, as is described in the background section of this report, the Treasury manages the T-Pool and the Unclaimed Property Tourism Fund portfolios with a strategy specifically designed to maximize yield and optimize cash flows from interest income and realized capital gains. Exhibit 2.2 shows the Treasury's yield benchmarks.

Exhibit 2.2: Yield Benchmarks Established by the Treasury (Calendar Years 2010, 2017, 2018)

Portfolio	Benchmark—12 Month Moving Average of the:
T-Pool Bond Sub-Portfolio	Constant Maturity Yield of the 2 year U.S. Treasury
T-Pool Cash Sub-Portfolio	30 day U.S. Treasury
T-Pool Portfolio	Constant Maturity Yield of the 1 year U.S. Treasury
Public School Permanent Fund	Constant Maturity Yield of the 5 year U.S. Treasury (2011-2017) Constant Maturity Yield of the 7 year U.S. Treasury (2018)
Unclaimed Property Tourism Fund	Constant Maturity Yield of the 7 year U.S. Treasury

Source: Auditor analysis of the Colorado Department of the Treasury's Investment Policy Statements and Quarterly Performance Reports.

- A **total return** benchmark, which focuses on the rate of return and measures the percent change in the value of a portfolio over time, accounts for both the yield generated by the investment and the increase or decrease in value experienced as a result of market conditions. Measuring the Treasury's performance with respect to its total return benchmark is also a relevant indicator of performance because, particularly to the extent that investments are liquidated before they reach maturity, it provides an important indicator of the overall value, risk, and return characteristics of a portfolio.

  The Government Finance Officers Association outlines several best practices for the reporting of total return performance in the public sector, including:

  - Evaluating and reporting portfolio rates of return along with comparisons to its established total return benchmarks on a quarterly basis.

  - Using total return benchmarks that have a composition that is similar to the portfolio holdings, and closely resemble the policy constraints described in the Investment Policy Statements and management practices in terms of duration or maturity, security types and allocations, and credit quality.

  - Using total return benchmarks that are transparent, clearly defined, and available—including the names and weights of securities or indices that constitute the benchmark, historical data regarding past returns—and that have published risk characteristics so an investor can compare portfolio risks and potential returns against benchmark risks and potential returns.

  Exhibit 2.3 shows the Treasury's total return benchmarks.

Exhibit 2.3: Total Return Benchmarks Established by the Treasury (Calendar Years 2010, 2017, 2018)

	2010	2017	2018
T-Pool	Does not use a total return benchmark	Does not use a total return benchmark	Bloomberg Barclays US Aggregate 1-3 Year Index
T-Pool Bond Sub-Portfolio	Composite Benchmark that includes the following indices: 70% Treasuries/Agencies, 1-5 Years Index 20% U.S. Corporates A-AAA RATED, 1-5 Years Index 10% Asset-backed Securities, 0-3 Years, Fixed-Rate Index	Bloomberg Barclays US Government/Credit 1-5 Year Index	Bloomberg Barclays US Government/Credit 1-5 Year Index
T-Pool Cash Sub-Portfolio	Does not use a total return benchmark	Does not use a total return benchmark	Bloomberg Barclays Short Term Index 1-3 Months
Public School Permanent Fund	Composite Benchmark that includes the following indices: 37% Merrill Lynch U.S. Treasury, 1-10 Years Index 34% Merrill Lynch Mortgages, 0-10 Years WAL Index 19% Merrill Lynch AAA U.S. Agencies, 1-10 Years Index 10% Merrill Lynch U.S. Corporates, A-AAA Rated, 1-10 Years Index	Composite Benchmark that includes the following indices: 37% Merrill Lynch U.S. Treasury, 1-10 Years Index 34% Merrill Lynch Mortgages, 0-10 Years WAL Index 19% Merrill Lynch AAA U.S. Agencies, 1-10 Years Index 10% Merrill Lynch U.S. Corporates, A-AAA Rated, 1-10 Years Index	Bloomberg Barclays US Aggregate
Unclaimed Property Tourism Fund	Composite Benchmark that includes the following indices, both A-rated and above: 65% Merrill Lynch U.S., Domestic Master 1-10 Years 35% Merrill Lynch U.S., Corporate & Government, 10+ years	Bloomberg Barclays US Aggregate Index	Bloomberg Barclays US Aggregate Total Return Index

Source: Auditor analysis of the Colorado Department of the Treasury's Investment Policy Statements.

In general, yield and total return performance indicators will produce similar results in as much as a portfolio holds investments to maturity; to the extent the portfolio's holdings are subject to market conditions—e.g., the sale or liquidation of an investment before it reaches maturity—yield and total return indicators are more likely to differ. Comparing a portfolio's total return to its benchmark is a way of measuring the potential impact of market conditions, and investment decisions, on the value of the portfolio. We provide the Treasury's investment results compared to both yield and total return benchmarks.

What did the audit work find?

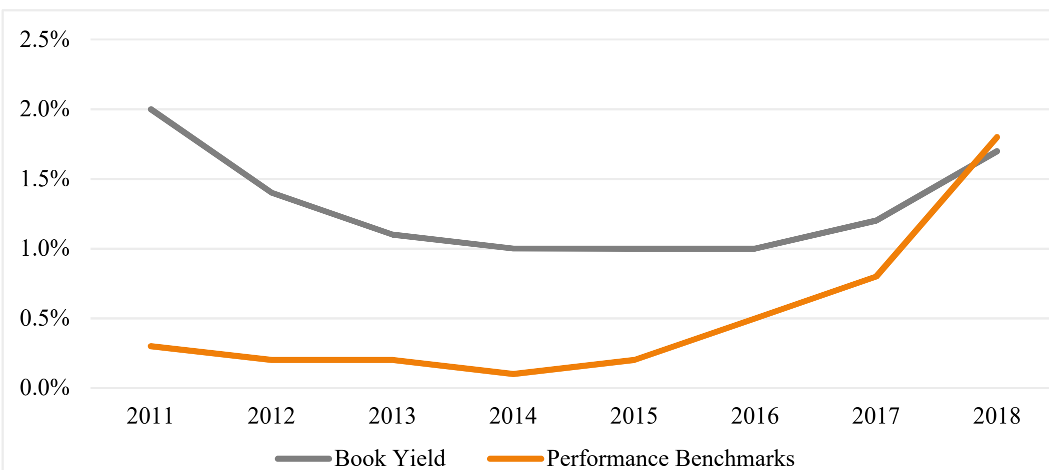
As described earlier, the Treasury's Investment Policy Statements and practices were consistent with statutory requirements and sound investment practice, and generally achieved the Treasury Investment Program's statutory objectives of legality, safety, liquidity, and yield. At the same time, this audit found that the Treasury could improve the manner in which it reports on its investment performance. Our analysis revealed three areas for improvement.

First, the Treasury did not publicly report on its performance using total rates of return. Instead, for all of the quarterly reports issued between Calendar Years 2011 and 2018, the Treasury only reported the portfolio's book yield, which measures the percentage increase or decrease a portfolio generates during a given period, compared to its yield benchmark. For each of the three portfolios, a comparison of the reported book yield to the established benchmarks shows the Treasury outperforming the benchmark at nearly every point over the eight-year period under review. However, our examination of total return presents a more nuanced picture in which the Treasury both outperformed and underperformed established benchmarks in different years.

The following Exhibits illustrate how the Treasury reported its performance based on book yield between Fiscal Years 2011 through 2018 for each of its three key portfolios, followed by Exhibits showing the annual total return for each portfolio.

T-Pool. Exhibit 2.4 illustrates the annual book yield the Treasury reported for the T-Pool between Fiscal Years 2011 and 2018, and shows the Treasury's portfolio exceeding its benchmark (the 12 month moving average of the 1 year U.S. Treasury at the end of period) through most of the eight-year period.

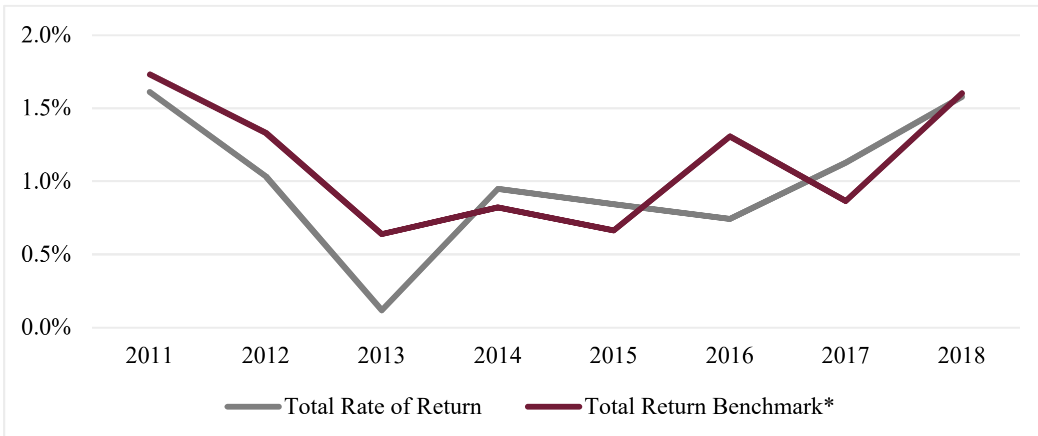
Exhibit 2.4: The Treasury's Reported Book Yield and Benchmark for the T-Pool Portfolio (Fiscal Years 2011 through 2018)



Source: Auditor analysis of the Colorado Department of the Treasury's Quarterly Reports.
Note: * The benchmark used by the Treasury in this comparison is the benchmark in effect at the time, the 12 month moving average of the 1 year U.S. Treasury, as reflected in Exhibit 2.2. The yield benchmark for this portfolio remained constant between Fiscal Years 2011 and 2018.

In comparison, Exhibit 2.5 showing annual total returns reveals generally mixed performance of the T-Pool. Specifically, the T-Pool underperformed total return benchmarks in five years and outperformed in three years during Calendar Years 2011 through 2018.

Exhibit 2.5: Comparison of T-Pool Total Rate of Return vs. the Treasury's Benchmark (Calendar Years 2011 through 2018)

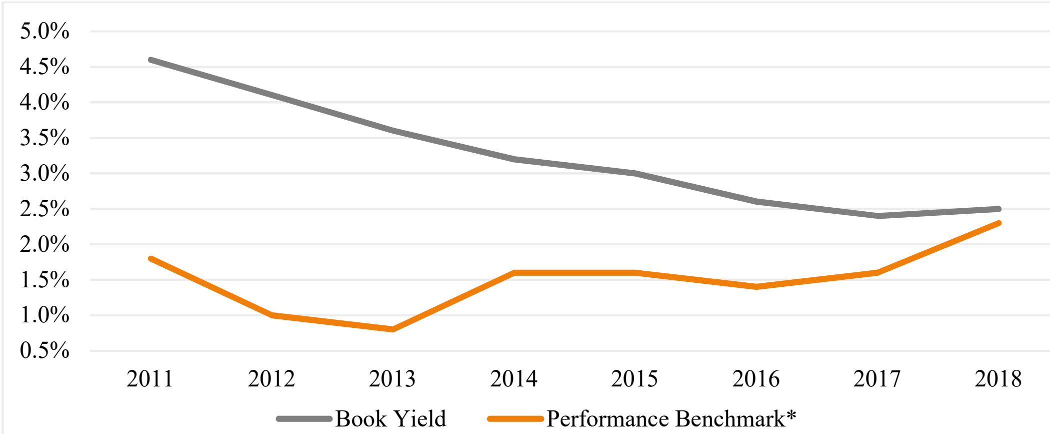


Source: Auditor analysis of the Colorado Department of the Treasury's Annual Returns; Lipper for Investment Management.
Note: * The total return benchmark used by the Treasury in this comparison is reflected in Exhibit 2.3. The Treasury changed its benchmarks between Calendar Years 2011 through 2018.

Another way to evaluate the portfolio is through the compound annual growth rate (CAGR or compound growth rate). The compound growth rate is the mean annual growth rate of an investment over a multi-year period, and can be used to compare the performance of various investments over an extended period. Based on Treasury's records, the compound growth rate of the T-Pool between Calendar Years 2011 and 2018 was 1.00 percent, which was less than the 1.12 percent compound growth rate of its benchmarks, or the mean annual growth rate of the aggregated benchmarks, over the same period. While the Treasury's reported comparisons of book yield to its yield benchmark showed the T-Pool exceeding its benchmark, the compound growth rate shows that, overall, the T-Pool underperformed its benchmarks over the eight-year period.

Public School Permanent Fund. Exhibit 2.6 illustrates the annual book yield reported for the Public School Permanent Fund between Fiscal Years 2011 and 2018, and shows the Treasury's portfolio exceeding its benchmark through the eight-year period.

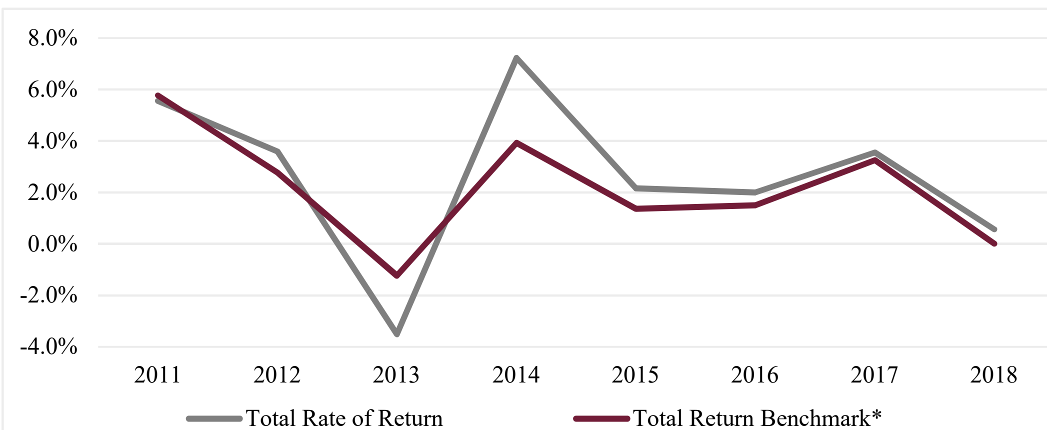
Exhibit 2.6: The Treasury's Reported Book Yield and Benchmark for the Public School Permanent Fund Portfolio (Fiscal Years 2011 through 2018)



Source: Auditor analysis of the Colorado Department of the Treasury's Quarterly Reports. **Note:** * The benchmark used by the Treasury in this comparison is the 12 month moving average of the constant maturity yield of the 5 year U.S. Treasury for the period between Fiscal Years 2011 and 2017, and the constant maturity yield of the 7 year U.S. Treasury for Fiscal Year 2018.

Exhibit 2.7 shows that the annual rate of return for the Public School Permanent Fund portfolio generally outperformed its benchmark over the eight-year period, which is consistent with the book yield comparison above.

Exhibit 2.7: Comparison of Public School Permanent Fund Total Rate of Return vs the Treasury's Benchmark (Calendar Years 2011 through 2018)

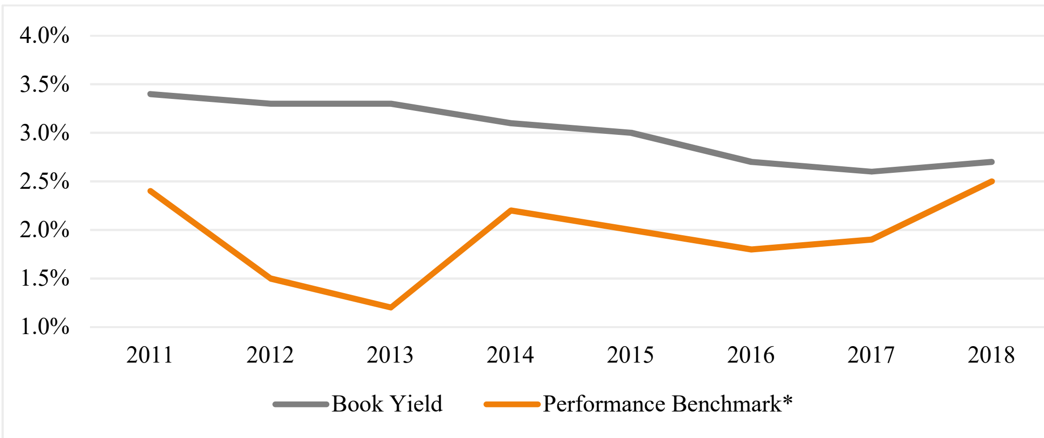


Source: Auditor analysis of the Colorado Department of the Treasury's Annual Returns; Lipper for Investment Management.
Note: * The total return benchmark used by the Treasury in this comparison is the benchmark in effect at the time, as reflected in Exhibit 2.3. The Treasury changed its benchmark in 2018.
** The returns reported by the Treasury do not include assets held in the T-Pool prior to 2018.

The compound growth rate of the Public School Permanent Fund during this period was 2.60 percent, which was greater than the 2.15 percent compound growth rate of its benchmark over the same period. The Public School Permanent Fund portfolio experienced a negative return in 2013, consistent with its performance benchmark, coinciding with a significant increase in U.S. Treasury interest rates that, as a result, negatively impacted the market value of the portfolio's holdings.

Unclaimed Property Tourism Fund. Exhibit 2.8 illustrates the annual book yield reported for the Unclaimed Property Tourism Fund portfolio between Fiscal Years 2011 and 2018, and shows the Treasury's portfolio exceeding its benchmark throughout the eight-year period.

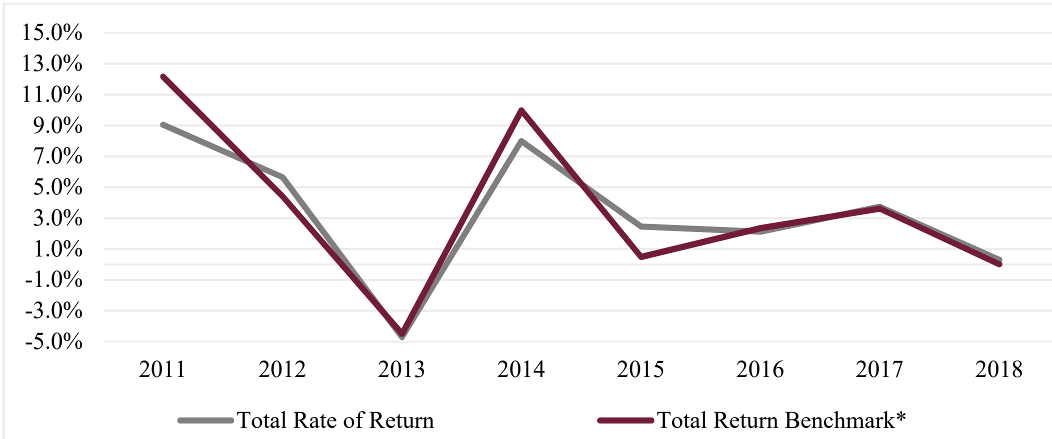
Exhibit 2.8: The Treasury's Reported Book Yield and Benchmark for the Unclaimed Property Tourism Fund Portfolio (Fiscal Years 2011 through 2018)



Source: Auditor analysis of the Colorado Department of the Treasury's Quarterly Reports. **Note:** * The benchmark used by the Treasury in this comparison is the benchmark in effect at the time, the 12 month moving average of the constant maturity yield of the 7 year U.S. Treasury, as reflected in Exhibit 2.2. The Treasury's yield benchmark for this portfolio remained constant between Fiscal Years 2011 and 2018.

Exhibit 2.9 below shows that the Unclaimed Property Tourism Fund slightly underperformed compared to its contemporaneous total return benchmarks in four years and slightly outperformed in the other four years during the Review Period.

Exhibit 2.9: Comparison of Unclaimed Property Tourism Fund Total Rate of Return vs the Treasury's Benchmark (Calendar Years 2011 through 2018)



Source: Auditor analysis of the Colorado Department of the Treasury's Annual Returns; Lipper for Investment Management.
Note: The total return benchmark used by the Treasury in this comparison is the benchmark in effect at the time, as reflected in Exhibit 2.3. The Treasury changed its benchmark in 2017 and 2018. The returns reported by the Treasury do not include assets held in the T-Pool prior to 2018.

The compound growth rate of the Unclaimed Property Tourism Fund during the Review Period was 3.24 percent, which was less than the 3.44 percent compound growth rate of its benchmark over the same period.

Second, the Treasury's 2018 total return benchmarks did not always align with portfolio asset allocations. According to the Investment Policy Statements and Treasury personnel, the total return benchmarks established by the Treasury are used to measure its performance with respect to achieving its mission—maintaining rates of return consistently at or above performance benchmarks—and to monitor the balance of the asset allocation as compared with the benchmarks' allocations within each portfolio. It appears that historic portfolio allocations were generally aligned with the allocations of the Treasury's selected benchmarks. However, by the end of 2018, changes to portfolio allocations and benchmark indices resulted in benchmarks that, while consistent with the asset allocation ranges required in the Investment Policy Statements, did not represent the actual make-up of the Treasury's portfolios. For example, as of December 31, 2018:

- The T-Pool held fewer Treasury/Agency securities and more corporate bonds and notes compared to its established benchmark. Specifically, the Treasury allocated 19 percent of its portfolio to Treasury/Agency securities, while its benchmark allocated 68 percent to this asset class; alternatively, the Treasury allocated 45 percent of its T-Pool portfolio to corporate bonds and notes, while its benchmark allocated 23 percent.

- The Public School Permanent Fund portfolio asset type allocations were generally consistent with its benchmark and Investment Policy asset allocation ranges, with two exceptions. Specifically, the Treasury invested somewhat more assets in corporate bonds and notes and less in asset backed securities, mortgage backed securities, and collateralized mortgage obligations—35 and 8 percent of its portfolio, respectively—than its benchmark, which allocated 24 and 31 percent, respectively, to these asset classes.

- The Unclaimed Property Tourism Fund invested more in corporate bonds and notes and less in mortgage backed securities and collateralized mortgage obligations when compared to its established benchmark. Specifically, the Treasury allocated 46 percent of its portfolio to corporate bonds and notes, while its benchmark allocated 24 percent to this asset class; alternatively, the Treasury allocated 8 percent of its portfolio to asset backed securities and collateralized mortgage obligations, while its benchmark allocated 31 percent.

Because the actual asset allocations differed from those of its portfolios, the Treasury had been comparing its portfolio to benchmarks with unlike asset allocations. For each portfolio, the Treasury tended to invest in some assets that generally increase each portfolio's risk profile over that of its benchmarks, such as asset class and credit rating, as described in the next finding. This approach could contribute to higher, but also more variable, returns.

In July 2019, the Treasury adopted a new benchmark for the T-Pool that it believes is consistent with the policy constraints described in the Investment Policy Statements for asset allocation purposes. Because this benchmark did not go into effect during the scope of this audit, it was not subject to this review.

Third, underlying documentation supporting older total return benchmark information was not available for review. In the past, the Treasury used custom composite benchmarks consisting of several indices for each of the three portfolios in Calendar Years 2011 through 2016, and for the Public School Permanent Fund into 2017. Combined, the composites were intended to provide benchmarks with characteristics that closely represented the Treasury's Investment Policy asset allocation ranges and investment practices with respect to asset mix, maturity, and risk.

We attempted to replicate the composite benchmarks reported by the Treasury using published data for each of the indices included in the benchmark, but we were not able to replicate all of the historical returns reported for the benchmarks. As a result, we could not verify the benchmark returns reported by the Treasury. Maintaining documentation of the benchmarks for Calendar Years 2017 (for T-Pool and Unclaimed Property) and 2018 (for all three funds) was not necessary since the Treasury used published, rather than custom composite, benchmarks.

Why did the finding occur and why does it matter?

Overall, we found that three factors contributed to this finding.

First, the Treasury places priority on maximizing yield and cash flow, not on total returns, leading it to measure its performance primarily in relationship to its yield benchmarks. Investment yield measures the percentage value that a portfolio generates during a given period, regardless of whether the values of the portfolios holdings increase or decrease over time as a result of market conditions. Because the value of an investment may increase or decrease over time, measuring investment yield as a primary metric is most useful to the extent that the investment is held to maturity and to the extent that the State will not need to liquidate investments prior to maturity.

While, in the past, the Treasury had generally held investments to maturity, in recent years the Treasury has not done so, opting to sell investments prior to maturity in an effort to optimize yield and maximize net realized capital gains. For instance, according to the State Auditor's 2011 performance audit of the Colorado State Treasury's investment practices, Treasury management adhered to a buy-and-hold strategy in which it held investments to maturity. However, according to Treasury management, it no longer adheres to such a strategy, but actively manages investment portfolios to maximize cash flows and avoid booking realized net losses. Transaction data maintained by the Treasury shows that between 2017 and 2018 alone, the Treasury executed approximately 1,200 trades, nearly 300 of which consisted of transactions in which it sold holdings.

Despite this shift in practice, the Treasury has maintained its emphasis on yield as a primary performance indicator. Investment yield is limited for assessing the risk and return characteristics of the portfolio—which becomes increasingly important to the extent investments are sold before they reach maturity—because yield does not capture the fluctuations in the market value of the assets and thus, the value of a portfolio. For instance, as illustrated in Exhibit 2.8, the Unclaimed Property Tourism Fund portfolio significantly outperformed its yield benchmark in 2013, with a book yield of over 3 percent compared to the benchmark yield of just over 1 percent. However, total returns were negative on the year, declining approximately 5 percent, because significant increases in U.S. Treasury interest rates in 2013 negatively impacted the market value of the portfolio's existing holdings. The increase in sales trading activity observed in the Treasury's portfolios suggests that reporting total return in addition to yield would be important in evaluating the performance of the portfolios.

By not reporting total rates of return along with comparisons to established benchmarks on a quarterly basis, the Treasury is not making available information relevant to the portfolios' actual total return performance and the true liquidation value of its portfolios. Reporting only the portfolios' book yield suggests the Treasury has consistently outperformed benchmarks when, in fact, it has demonstrated mixed results when compared to established benchmarks. Reporting total return trends in comparison to benchmarks also reflects the broader impact of the Treasury's decisions regarding asset mix, maturity, and credit quality—as described further in the next finding—on each of its portfolios.

Second, as of December 31, 2018, the Treasury had not identified a benchmark that was closely aligned with the characteristics of its portfolios. When the Treasury decided to move away from the composite benchmark it had utilized since it adopted the 2010 Investment Policy Statement, the Treasury elected to utilize a well-recognized and widely used benchmark. In 2016, this benchmark was more closely aligned with the Treasury's investment practices at the time. However, as the Treasury implemented the 2017 and 2018 Investment Policy Statements, and as its asset mix continued to shift to more corporate bonds and notes and less Treasury/Agency securities, the extent to which this benchmark represented the make-up of the T-Pool diminished. As mentioned previously, in July 2019, the Treasury adopted a new composite benchmark that it believes is more closely aligned to its portfolio allocations.

Ensuring that total return benchmarks have a composition similar to portfolio holdings is necessary to ensure the reliability and relevance of benchmarks used and the value of the benchmarks to management and stakeholders. This includes ensuring (a) the Treasury has a sound basis for evaluating investment performance to inform decisions about investing going forward, and (b) stakeholders, the public, and policymakers have a sound basis upon which to evaluate the Treasury's investment performance.

Third, while the Treasury relied on its custodian to calculate total return benchmarks based on publicly available indices, the benchmarks could not be verified when the indices were no longer publicly available. During the period the Treasury had historically used a custom composite benchmark, it relied fully on its custodian to calculate and report the benchmark return for the Treasury's use. It is the Treasury's belief that a custodian bank, an independent third party, should be relied upon to calculate the benchmark returns, and that it sought reasonable assurances as to the accuracy and reliability of the benchmark calculations by requiring its custodian to complete independent audits of its systems of internal controls.

When the Treasury first established its custom composite benchmark, the three separate indices were publicly available via Bloomberg and, assuming the custodian's methodology was known, could have been used to replicate the custodian's calculations. During the audit period, however, the indices were purchased by a third party and were only available through a separate subscription.

This lack of some historical benchmark data has impeded third-party evaluation of the Treasury's performance with respect to past established benchmarks.

As mentioned previously, the Treasury established a new custom composite benchmark in July 2019; according to the Treasury, the indices upon which its new benchmark is based is publicly available. Moving forward, maintaining a record of the publicly available indices, and the custodian's approach for calculating the total return benchmark results, is critical to ensuring reported results can be verified and replicated. The availability and transparency of key performance and benchmark data is important to ensuring stakeholder confidence in the reported performance of the portfolios.

Recommendation No. 1:

The Colorado Department of the Treasury (Treasury) should enhance its measurement and reporting of portfolio performance by:

a. Including in its quarterly reporting for each portfolio the total returns versus established benchmarks in addition to book yield versus benchmarks.

b. Ensuring total return benchmarks are consistent with the policy constraints described in the Investment Policy Statements and management practices.

c. Ensuring adequate documentation is maintained by Treasury and/or its custodian for all benchmarks used to allow results to be verified and replicated.

Treasury Response:

a. Agree. Implementation date: December 31, 2019

   We are now in the process, based on the auditor's recommendation, of determining the best way to present information related to total return, but we want to do it in a way that is clear, and does not confuse those about Treasury's mandate, which is managing for safety, liquidity, and yield. We will continue to present book yield information, in line with our unchanged statutory mandate, once we add in the presentation of total return. We currently use total return as one of several methods to evaluate portfolio holdings and while we did not publish total return numbers in the past, that information has always been available for those interested.

b. Agree. Implementation date: December 31, 2019

Treasury believes that the benchmarks it used in the past adequately represented the policy constraints of its Investment Policy Statements. However, as the audit notes, Treasury's investment management style has evolved over the past eight years, with a greater emphasis on active management than in the past. After a lengthy discussion that began under the prior administration, in July of 2019 (while the audit was ongoing), Treasury adopted a new customized benchmark for the T-Pool, the Bloomberg Barclays US Aggregate Total Return Index (50% weight) and the Bloomberg Barclays US Treasury Bill 1-3 Months Total Return Index (50% weight), that we believe is consistent with the policy constraints described in the Investment Policy Statements for asset allocation purposes.

The benchmark for the Public School Permanent Fund is set by its investment board as directed by a separate Investment Policy Statement, and is no longer set by Treasury as it was during the majority of the audit period. At this point in time, the benchmark for the Unclaimed Property Tourism Trust Fund is not set to be adjusted. Treasury, as it implements Recommendation 1.a., will determine the best way to present its total return benchmarks to clearly identify significant variances, if any, in holdings between the indices and the Treasury's portfolios.

c. Agree. Implementation date: December 31, 2019

Treasury has consistently relied on its custodian to maintain benchmark records and the calculations associated with those benchmarks. In doing so, Treasury believed that having a separate party calculate the benchmark removed any possible concerns that the benchmark numbers could be suspect. Because of this, Treasury has always relied on the custodian to maintain the records related to calculating the benchmark.

The prior composite benchmark that Treasury used was composed of three separate indices. These indices had been publically available on Bloomberg, but were purchased by a vendor who made the underlying calculations for those indices proprietary, and thus only available through a purchased subscription. This was one of many reasons why Treasury determined that a new customized benchmark would be necessary.

Treasury's new customized benchmark, referenced in response to comment b above is publicly available, and thus should resolve any issues related to verification or replication. Additionally, for audit purposes, Treasury will maintain underlying data from the benchmark indices it uses for replication purposes.

Compliance with Investment Policies

Diversification in investment portfolios is an important factor in managing risk. Because of this, statute requires the Treasury to formulate investment policies regarding liquidity, maturity, and diversification appropriate to each fund or pool of funds in the State Treasurer's custody available for investment. Diversification requirements generally set upper and lower bounds within which a portfolio's asset mix, at any given time, must fall. The Treasury's Investment Policy Statements set such limitations with respect to asset type, maturity, and credit rating.

To ensure compliance with its Investment Policy Statements and the Treasury's diversification requirements, the Treasury requires a daily evaluation of all holdings in each portfolio, including asset mix, asset maturity, and credit quality.

What audit work was performed and what was the purpose?

We evaluated the Treasury's compliance with its investment policies by reviewing its investments, monthly portfolio holdings data, and quarterly investment reports; assessing the appropriateness of the asset mix of each of the Treasury's portfolios; and ascertaining what each portfolio's asset mix indicates in terms of risk, maturity, return, and other portfolio characteristics. These analyses were performed using the monthly holdings data, which show security-level detail for each State portfolio as of the end of each month between Calendar Years 2011 and 2018. These analyses were performed for the following State portfolios: the T-Pool, the T-Pool Cash sub-portfolio, the T-Pool Bond sub-portfolio, the Public School Permanent Fund, and the Unclaimed Property Tourism Fund.

The purpose of the audit work was to determine whether the Treasury's investment practices, including asset mix, complied with state law, Investment Policy Statements, prudent industry practice, and other applicable criteria.

How were the results of the audit work measured?

Our examination of the Treasury's portfolios included evaluating the assets of each portfolio broken down by asset type, maturity, and credit rating. We measured the Treasury's compliance against the following requirements in its Investment Policy Statements.

Asset Mix. The Investment Policy Statements require each portfolio to maintain sufficient diversity with respect to the different types of assets held. Exhibits 2.10 through 2.12 illustrate the diversification requirements and show that there were changes in the requirements for the T-Pool (Exhibit 2.10), Unclaimed Property Tourism Fund (Exhibit 2.11), and Public School Permanent Fund (Exhibit 2.12) between Calendar Years 2011 and 2018. Note that the Investment Policy Statements for both the Public School Permanent Fund and the Unclaimed Property Tourism Fund allow assets to be invested in the T-Pool, as indicated by the highlighted rows in Exhibits 2.11 and 2.12.

Exhibit 2.10: Summary of T-Pool Investment Policy Statements (Effective Calendar Years 2010, 2017, and 2018)*

T-Pool Bonds			
	2010	2017	2018
Treasury/Agency/Government Guaranteed/Supranational	10% to 100%	10% to 100%; Target 50%	0% to 100%;Target 50%
Agency	0% to 90%	10% to 100%; Target 50%**	10% to 100%; Target 50%**
Agency Collateralized Mortgage Obligations (CMO)	0% to 15%	0% to 30%; Target 0%	0% to 30%; Target 0%
Misc. Government Guaranteed	0% to 50%	10% to 100%; Target 50%**	10% to 100%; Target 50%**
Certificates of Deposit	0% to 5%	0% to 5%; Target 0%	Not addressed in policy
Asset-Backed	0% to 25%	0% to 30%; Target 15%	0% to 30%; Target 15%
Repurchase Agreements	0% to 50%	Not addressed in policy	Not addressed in policy
Corporate Notes/Bankers Acceptances (BA) and Bank Notes/Commercial Paper/Yankee	0% to 65%	0% to 80%; Target 40%	0% to 80%; Target 40%
Money Market Funds	0% to 35%	Not addressed in policy	Not addressed in policy
Yankees, foreign corporations	Not included in policy	0% to 10%; Target 0%**	0% to 80%; Target 40%
Taxable Municipals	Not included in policy	0% to 10%; Target 0%	0% to 10%; Target 0%
T-Pool Cash			
	2010	2017	2018
Treasury	10% to 100%	10% to 100%; Target 50%**	10% to 100%; Target 50%**
Agency	0% to 90%	10% to 100%; Target 50%**	10% to 100%; Target 50%**
Agency/CMO	0% to 15%	Not addressed in policy	Not addressed in policy
Misc. Government Guaranteed	0% to 50%	10% to 100%; Target 50**	0% to 100%; Target 50%**
Certificates of Deposit	0% to 5%	0% to 5%; Target 0%	0% to 5%; Target 0%
Asset-Backed	0% to 25%	Not addressed in policy	Not addressed in policy
Repurchase Agreements	0% to 50%	Not addressed in policy	Not addressed in policy
Corporate Notes/BA and Bank Notes/Commercial Paper/Yankees	0% to 65%	0% to 40%	0% to 70%; Target 20%
Money Market Funds	0% to 35%	0% to 70% Target 10%	0% to 70%; Target 10%

Source: Auditor analysis of the Colorado Department of the Treasury's Investment Policy Statements.
Note: * Effective Dates of December 30, 2010, May 25, 2017, and September 28, 2018 are shown to highlight how the policy changed over time. Some asset classes were combined in the table due to groupings presented in the Investment Policy Statements, and figures may apply to one or all of the stated asset classes in each line.
** Treasury/Agency/Government Guaranteed are combined in the state policy limits for 2017 and 2018. Yankees were reported as a separate asset class in 2017 for the T-Pool Bond sub-portfolio.

Exhibit 2.11: Summary of Unclaimed Property Tourism Fund Portfolio Investment Policy Statements (Effective Calendar Years 2010, 2017, and 2018)*

Unclaimed Property Tourism Fund			
	2010	2017	2018
Treasury/Agency	20% to 100%	20% to 100%; Target 20%**	20% to 100%; Target 20%**
Misc. Government Guaranteed	0% to 50%	20% to 100%; Target 20%**	20% to 100%; Target 20%**
Mortgage	0% to 50%	0% to 50%; Target 10%	0% to 50%; Target 10%
Domestic Corporate	0% to 50%	0% to 50%; Target 50%	0% to 60%; Target 50%
Asset-Backed	0% to 30%	0% to 30%; Target 15%	0% to 30%; Target 15%
Repurchase Agreements	0% to 50%	Not addressed in policy	Not addressed in policy
T-Pool	0% to 30%	0% to 30%; Target 5%	0% to 30%; Target 5%
BAs and Bank Notes	0% to 20%	Not addressed in policy	Not addressed in policy
Yankees, issued by foreign corporations	Not included in policy	0% to 10%; Target 0%	0% to 10%; Target 0%
Taxable Municipals	Not included in policy	0% to 10%; Target 0%	0% to 10%; Target 0%

Source: Auditor analysis of the Colorado Department of the Treasury's Investment Policy Statements.
Note: * Effective Dates of December 30, 2010, May 25, 2017, and September 28, 2018 are shown to highlight how the current policy varies from that in place at the beginning of the period we reviewed.
** Treasury/Agency/Government/ Guaranteed are combined for Investment Policy Statement limits for 2017 and 2018.

Exhibit 2.12: Summary of Public School Permanent Fund Portfolio Investment Policy Statements (Effective Calendar Years 2010, 2017, and 2018)*

Public School Permanent Fund			
	2010	2017	2018
Treasury/Agency	20% to 100% (max 75% in agency)	20% to 100% (max 75% in agency)	0% to 100%; Target 40%**
Misc. Government Guaranteed	0% to 50%	0% to 50%	0% to 100%; Target 40%**
Mortgage	0% to 50%	0% to 50%	0% to 50%; Target 30%**
Domestic Corporate	0% to 20%	0% to 20%	0% to 50%; Target 30%
Asset-Backed	0% to 30%	0% to 30%	0% to 50%; Target 30%**
Municipal	0% to 15%	0% to 15%	0% to 10%; Target 0%
Repurchase Agreements	0% to 50%	0% to 50%	Not included in policy
T-Pool/Cash	0% to 20%	0% to 20%	0% to 30%
BAs and Bank Notes	0% to 20%	0% to 20%	Not included in policy

Source: Auditor analysis of the Colorado Department of the Treasury's Investment Policy Statements.
Note: * Effective Dates of December 30, 2010 and November 13, 2017 are shown to highlight how the current policy varies from that in place at the beginning of the period we reviewed.
** Treasury/Agency/Government Guaranteed are combined for the 2018 Investment Policy Statement limits. Mortgaged backed securities and asset backed securities are combined for the 2018 Investment Policy Statement limits.

Asset Maturity. The Investment Policy Statements limit the length of time until a security reaches maturity, for example, by setting a percentage of assets in a portfolio that may be in securities that mature 3 to 5 years in the future, 5 to 7 years in the future, and so forth. Maturity is measured in one of two key ways. First, the stated final maturity is the length of time from the beginning of the period in which the security was held until the maturity date of the security. For certain investments, however, it is reasonable to expect that the investment will reach maturity—after which it will no longer yield returns—prior to the final stated maturity. Collateralized Mortgage Obligations or Asset Backed Securities, for instance, may have a final stated maturity of 30 years, but an investor may reasonably expect that the underlying obligations, such as a mortgage, may be fully paid well before the 30-year maturity. In such cases, the asset will be assigned an "expected maturity"—for instance, of 10 years. This is the second method of measuring the maturity of an asset. Longer maturity timespans generally result in a longer time period before invested principal is repaid. Setting maturity limits helps to facilitate liquidity.

Exhibit 2.13: Summary of Maturity Requirements by Portfolio (Effective Dates 2010, 2017, 2018)*

	2010	2017	2018
T-Pool Cash	Less than 1 year	Less than 1 year	Less than 1 year
T-Pool Bonds	Maximum not to exceed 5 years; CMOs: Average life not to exceed 5 years** ABS: Expected maturity not to exceed 5 years	Maximum not to exceed 5 years; CMOs: Average life not to exceed 5 years** ABS: Expected maturity not to exceed 5 years	Maximum not to exceed 5 years; CMOs: Average life not to exceed 5 years** ABS: Expected maturity not to exceed 5 years
Public School Permanent Fund	Average life is between 4-6 years**	Average life is between 4-6 years**	Maximum not to exceed 30 years
Unclaimed Property Tourism Fund	Average life is between 5-10 years**	Maximum not to exceed 30 years	Maximum not to exceed 30 years

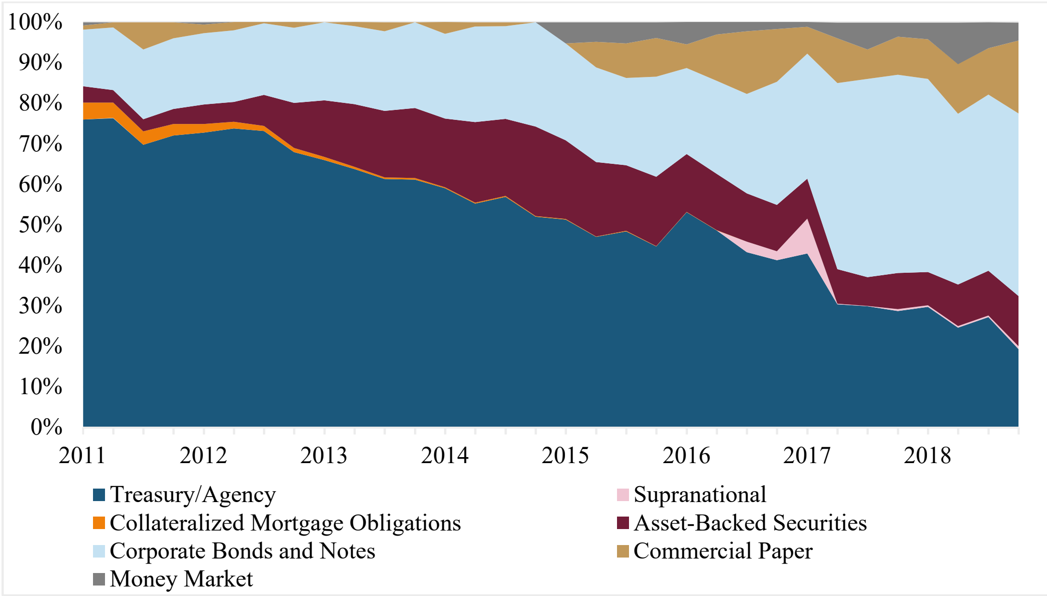
Source: Auditor analysis of the Colorado Department of the Treasury's Investment Policy Statements.
Note: * Effective Dates of December 30, 2010, May 25, 2017, and September 28, 2018 are shown to highlight how the current policy varies from that in place at the beginning of the period we reviewed.
** "Average Life" refers to the entire portfolio, not individual investments.

Credit Quality. According to the Investment Policy Statements, eligible securities must have two minimum acceptable debt ratings. One primary rating must be from Moody's or Standard & Poor's; a secondary rating may be from Fitch or another nationally recognized rating agency. For each portfolio and each asset class, investments must be rated at least investment grade by a nationally recognized rating organization, which is generally reflected as a "Baa3" or "BBB-" rating or higher, depending on the agency. According to a legal opinion the Treasury obtained from the Colorado Attorney General's office in July 2000, while bonds rated below investment grade may not be purchased, bonds whose ratings are downgraded subsequent to their purchase may be retained at the Treasurer's discretion.

What did the audit work find and why does this matter?

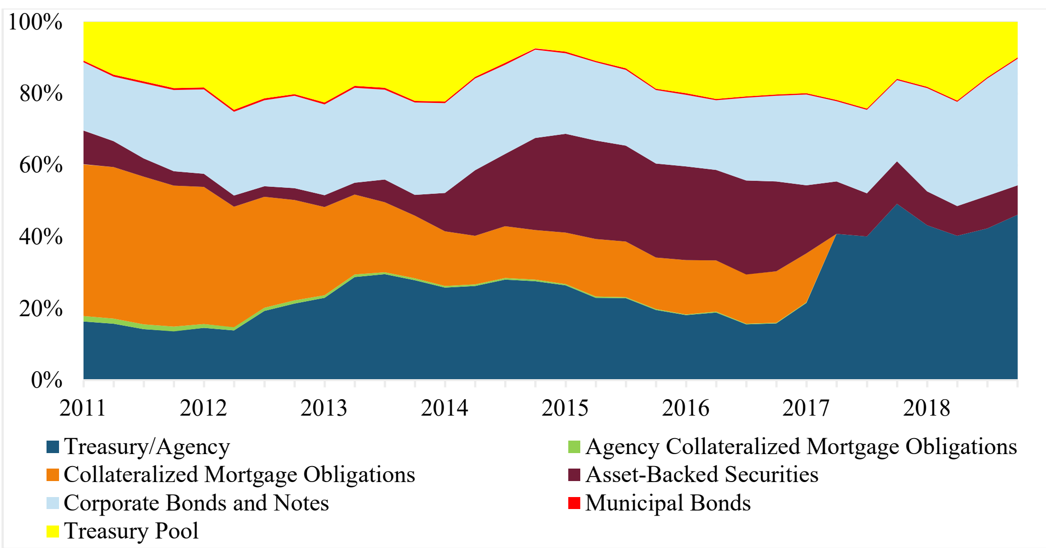
Investment holdings generally complied with Investment Policy Statements related to asset mix. Changes in asset mix for the T-Pool, Unclaimed Property Tourism Fund, and Public School Permanent Fund portfolios are shown in Exhibits 2.14 through 2.16.

Exhibit 2.14: T-Pool Portfolio Market Value by Asset Type (Calendar Years 2011 through 2018)



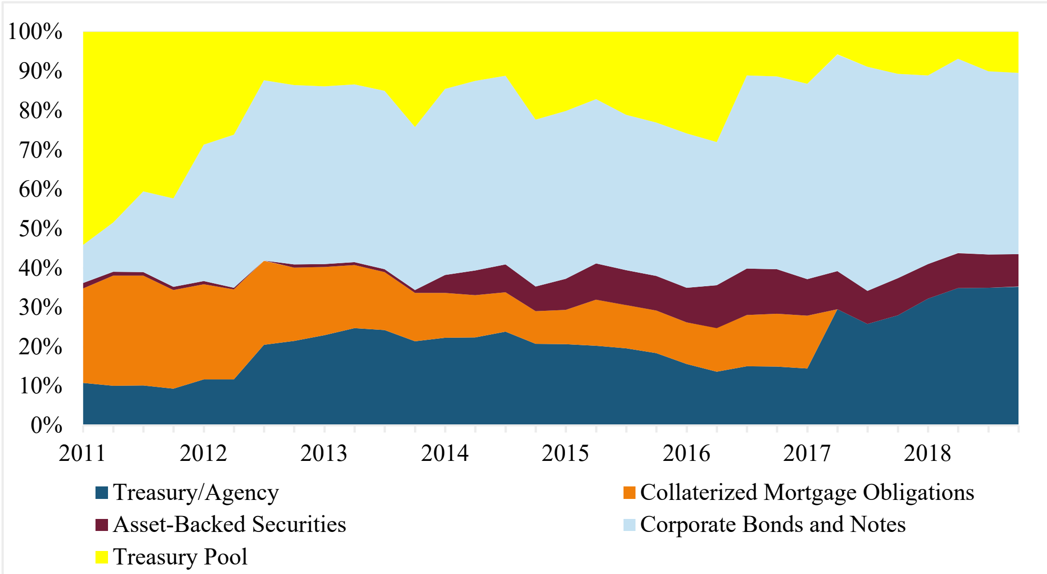
Source: Auditor analysis of the Colorado Department of the Treasury's monthly portfolio holdings reports and published Quarterly Performance Reports.

Exhibit 2.15: Public School Permanent Fund Portfolio by Market Value by Asset Type (Calendar Years 2011 through 2018)



Source: Auditor analysis of the Colorado Department of the Treasury's monthly portfolio holdings reports and published Quarterly Performance Reports.

Exhibit 2.16: Unclaimed Property Tourism Fund Portfolio Market Value by Asset Type (Calendar Years 2011 through 2018)



Source: Auditor analysis of the Colorado Department of the Treasury's monthly portfolio holdings reports and published Quarterly Performance Reports.

Some investment holdings were outside the asset mix bounds in the Investment Policy Statements. We found instances of asset allocations that were not consistent with the Investment Policy Statements for all three portfolios, as discussed below. We reviewed the Treasury's Quarterly Performance Reports to identify each instance in which asset allocations fell outside the bounds set forth in the Investment Policy Statements, and we independently calculated the asset allocations using monthly holdings data from the Treasury's investment custodian. While our calculations resulted in some variances from what the Treasury reported in its Quarterly Performance Reports, both revealed similar instances in which certain asset allocations did not comply with the Investment Policy Statements. As shown in Exhibit 2.17, the Treasury allocated assets within the T-Pool in a manner consistent with the Investment Policy Statements, but allocations of the Public School Permanent Fund and the Unclaimed Property Tourism Fund portfolios to Treasury/Agency assets and to corporate bonds and notes were often not compliant, as were allocations from these portfolios to the T-Pool.

In addition to this analysis, we also examined the total exposure of the Public School Permanent Fund and the Unclaimed Property Tourism Fund to each of the asset types for which the Investment Policy Statements placed restrictions; this was of particular importance because both portfolios allow for the allocation of funds to the T-Pool, which also allows for the allocation of its assets to other asset types. When accounting for the total exposure of the Public School Permanent Fund and the Unclaimed Property Tourism Fund to each asset type, allocations to Treasury/Agency assets were more in line with the Investment Policy Statement requirements, while allocations to corporate bonds and notes were further out of compliance.

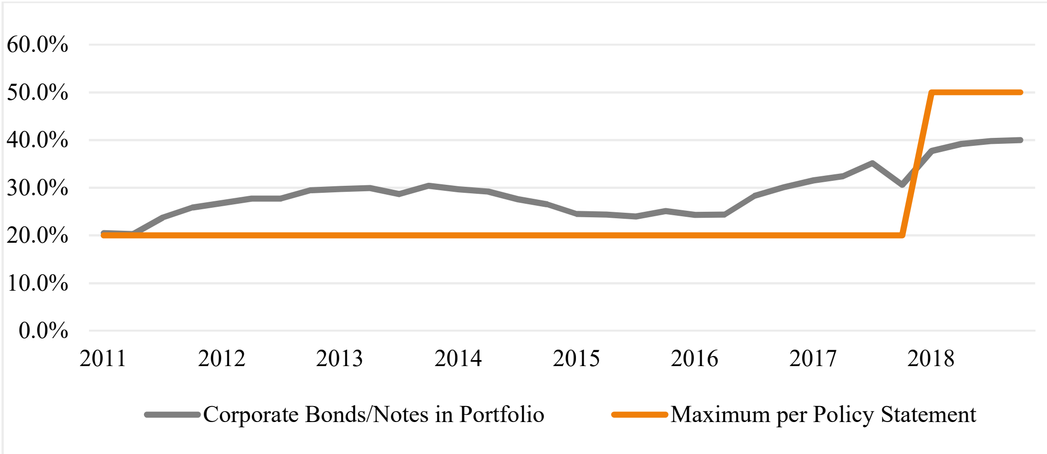
Exhibit 2.17: Number of Quarters Asset Allocations Fell Outside the Bounds Set Forth in the Investment Policy Statements (Calendar Years 2011 through 2018)

Asset Class	T-Pool Portfolio		Public School Permanent Portfolio			Unclaimed Property Portfolio		
	Quarterly Performance Reports	Auditor-Calculated	Quarterly Performance Reports	Auditor-Calculated	Total Exposure	Quarterly Performance Reports	Auditor-Calculated	Total Exposure
Treasury/Agency	1	-	8	12	-	14	13	2
Supranational	-	-	-	-	-	-	-	-
Collateralized Mortgage Obligations	-	-	-	-	-	-	-	-
Asset Backed Securities	-	-	-	-	-	-	-	-
Corporate Bonds and Notes	-	-	15	25	28	2	3	9
Commercial Paper	-	-	-	-	-	-	-	-
Municipal Bonds	-	-	-	-	-	-	-	-
Certificates of Deposit	-	-	-	-	-	-	-	-
Money Market	-	-	-	-	-	-	-	-
Mutual Equity Funds	-	-	-	-	-	-	-	-
T-Pool	N/A	N/A	12	11	N/A	5	4	N/A

Source: Auditor Analysis of the Colorado Department of the Treasury's Quarterly Performance Reports, monthly holdings data, and Investment Policy Statements.

<u>Public School Permanent Fund.</u> Investment Policy Statements for the Public School Permanent Fund limited asset allocations of domestic corporate securities to a maximum of 20 percent between Calendar Years 2011 through 2017, but investment records from the Treasury's custodian showed allocations that exceeded this threshold, from just over 20 percent to 35 percent of the portfolio's assets, for 28 quarters between 2011 and 2017. This is illustrated in Exhibit 2.18.

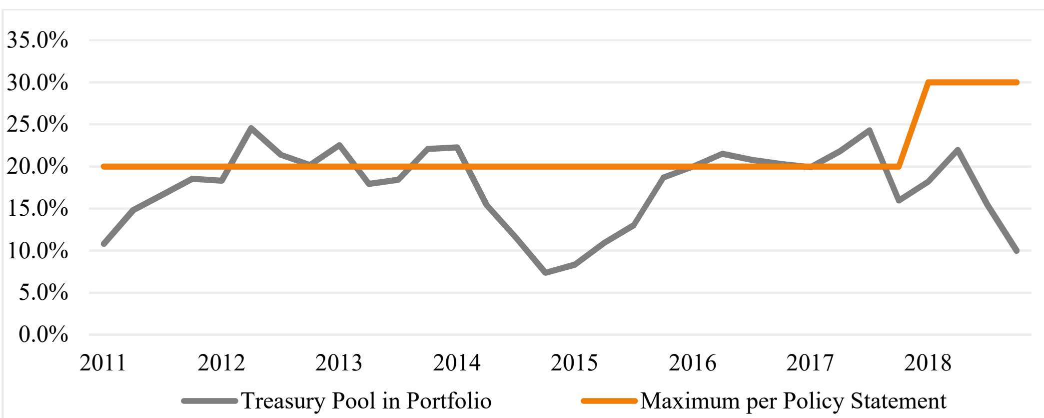
Exhibit 2.18: Public School Permanent Fund Asset Allocation—Corporate Securities, including T-Pool Allocations (Calendar Years 2011 through 2018)



Source: Auditor analysis of the Colorado Department of the Treasury's monthly portfolio holdings reports and published Quarterly Performance Reports.
Note: Figure includes underlying T-Pool holdings.

The Investment Policy Statements (which allow assets in the Public School Permanent Fund to be allocated to the T-Pool) limited such allocations to a maximum of 20 percent until 2017, but investment records from the Treasury's custodian showed allocations that exceeded this threshold in 11 of 28 quarters between Calendar Years 2011 and 2017, ranging from 20 percent to 25 percent. This is illustrated in Exhibit 2.19.

Exhibit 2.19: Public School Permanent Fund Asset Allocation—T-Pool (Calendar Years 2011 through 2018)

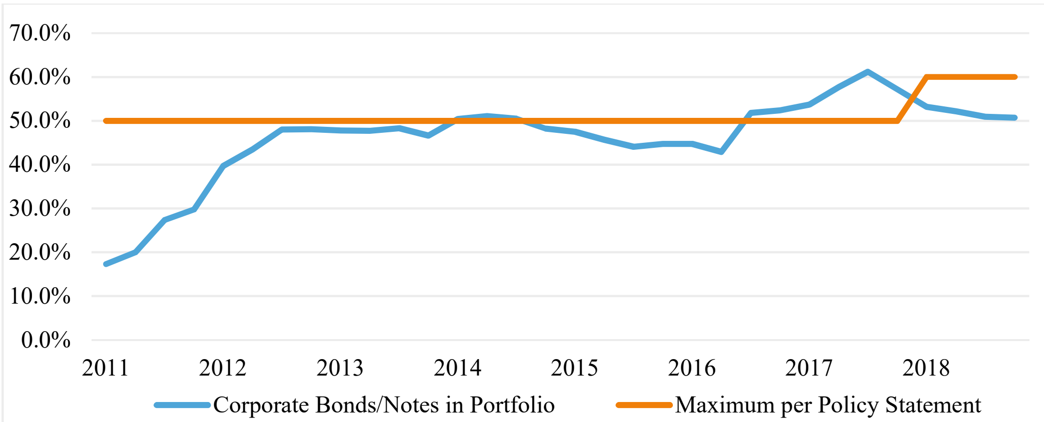


Source: Auditor analysis of the Colorado Department of the Treasury's monthly portfolio holdings reports and published Quarterly Performance Reports.
Note: In 2018, the Investment Policy Statement no longer specified specific asset class restrictions for the T-Pool, and instead included the asset class "cash."

<u>Unclaimed Property Tourism Fund.</u> The Investment Policy Statements for the Unclaimed Property Tourism Fund limited asset allocations of corporate bonds and

notes to a maximum of 50 percent between Calendar Years 2011 and 2017, and increased this maximum to 60 percent in 2018; however, as illustrated in Exhibit 2.20, investment records from the Treasury's custodian showed allocations between 50 and 61 percent in 9 of the 32 quarters between Calendar Years 2011 and 2018.

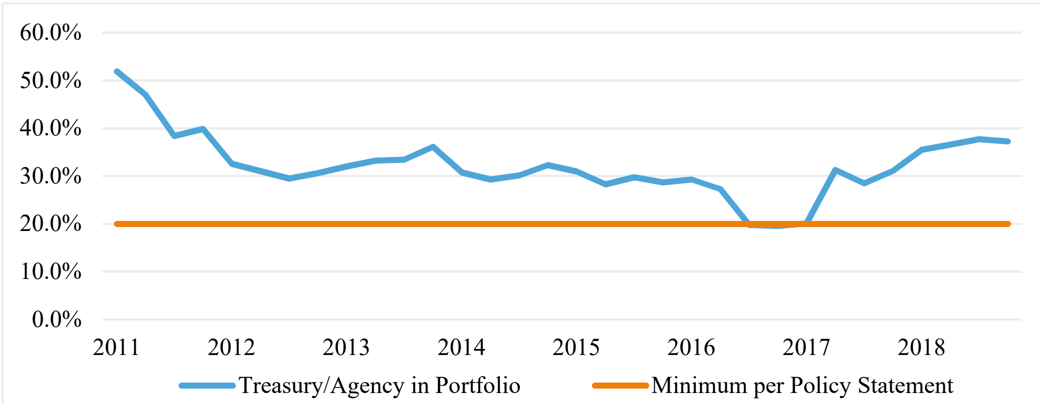
Exhibit 2.20: Unclaimed Property Tourism Fund Asset Allocation—Corporate Bonds and Notes, Including T-Pool Allocations (Calendar Years 2011 through 2018)



Source: Auditor analysis of the Colorado Department of the Treasury's monthly portfolio holdings reports and published Quarterly Performance Reports.
Note: Figure includes underlying T-Pool holdings.

The Investment Policy Statements also required a minimum of 20 percent of this portfolio's assets be invested in Treasury/Agency securities, but investment records from the Treasury's custodian showed allocations to these securities were below 20 percent in two quarters during 2016. This is illustrated in Exhibit 2.21.

Exhibit 2.21: Unclaimed Property Tourism Fund Asset Allocation—Treasury/Agency Assets, Including T-Pool Allocations (Calendar Years 2011 through 2018)

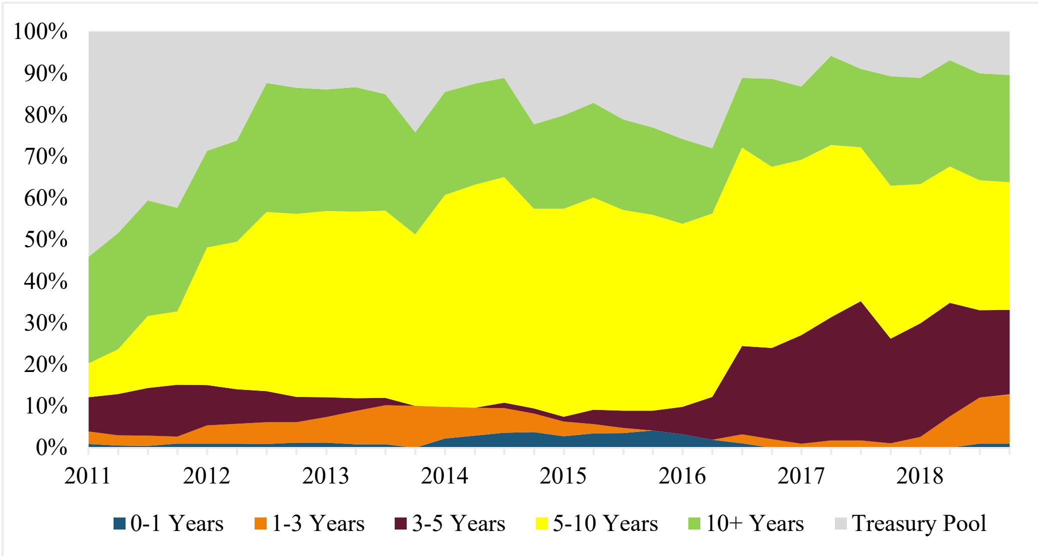


Source: Auditor analysis of the Colorado Department of the Treasury's monthly portfolio holdings reports and published Quarterly Performance Reports.
Note: Figure includes underlying T-Pool holdings.

Overall, the asset mix trends we observed for each of the Treasury's portfolios, particularly the increasing investments in corporate bonds and notes that exceed the limits outlined in the Investment Policy Statement, were consistent with the Treasury investing in riskier assets and possibly reaching for yield in a market environment with low interest rates. This trend itself is not surprising given the current market conditions. However, the instances in which actual asset mixes were not in line with parameters in the Investment Policy Statements indicate that the Treasury may be taking on more investment risk than intended. Further, without policies on how allocations to the T-Pool from the Public School Permanent Fund and Unclaimed Property Tourism Fund should be evaluated relative to the asset mix limits (e.g., a policy to include the asset mix of funds that have been allocated to the T-Pool from the Public School Permanent Fund and the Unclaimed Property Tourism Fund when assessing compliance), the Treasury, as well as the public and policy makers, may receive inconsistent and unclear information about how assets are actually allocated.

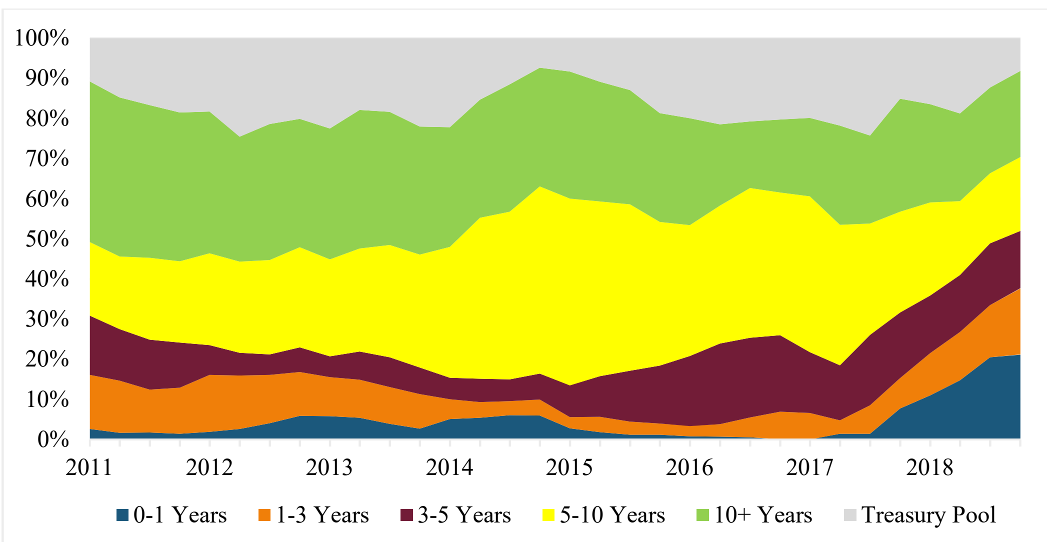
Investment holdings generally complied with Investment Policy Statements related to asset maturity for the Unclaimed Property Tourism Fund and Public School Permanent Fund portfolios. The maturities of the assets in these portfolios are shown in Exhibits 2.22 and 2.23.

Exhibit 2.22: Unclaimed Property Tourism Fund Market Value as a Percent of the Portfolio by Years to Maturity (Calendar Years 2011 through 2018)



Source: Auditor analysis of the Colorado Department of the Treasury's monthly portfolio holdings reports and published Quarterly Performance Reports.

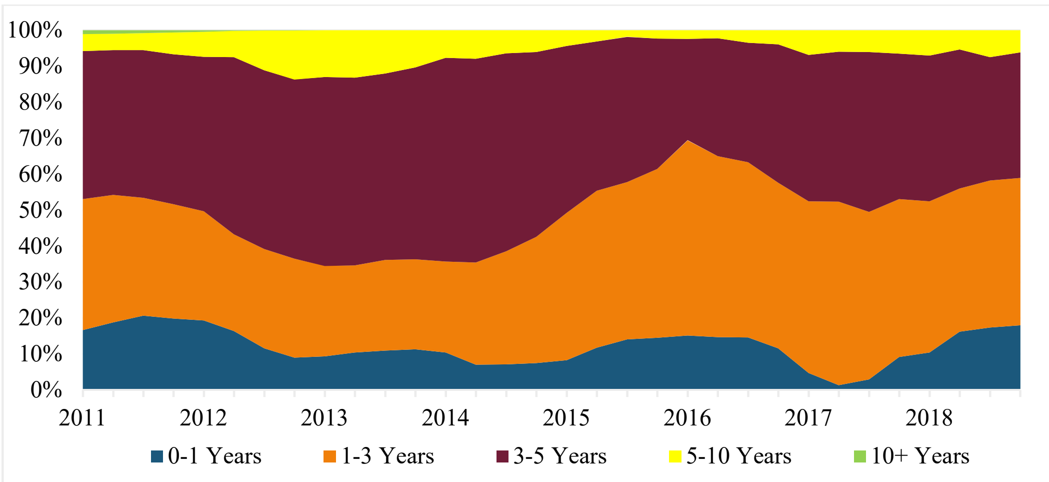
Exhibit 2.23: Public School Permanent Fund Market Value as a Percent of the Portfolio by Years to Maturity (Calendar Years 2011 through 2018)



Source: Auditor analysis of the Colorado Department of the Treasury's monthly portfolio holdings reports and published Quarterly Performance Reports.

Some investment holdings were outside the maturity limits in the Investment Policy Statements. We found instances of holdings in the T-Pool Bond and T-Pool Cash sub-portfolios that were not consistent with the Investment Policy Statements. First, although the Investment Policy Statements specified that only securities with a maximum maturity of five years were allowed to be held by the T-Pool Bond sub-portfolio, there were holdings with longer maturities. According to the Treasury, some of these differences in maturities were due to measurements based on the trade date and settlement date basis. As shown in Exhibit 2.24, securities with maturity of 5 to 10 years represented 1.8 to 13.6 percent of the T-Pool Bond portfolio's market value over the 8 years of review and securities with maturity of greater than 10 years represented 0.1 percent to 1.0 percent of the portfolio's market value from Q1 2011 through Q4 2012, but were not represented in the portfolio thereafter.

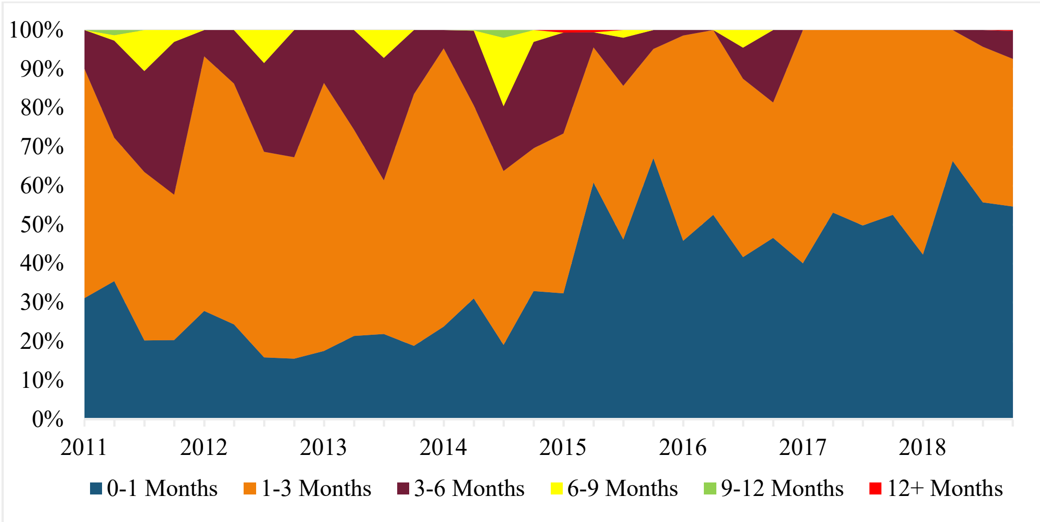
Exhibit 2.24: Treasury Pool Bond Market Value as a Percent of the Portfolio by Years to Maturity (Calendar Years 2011 through 2018)



Source: Auditor analysis of the Colorado Department of the Treasury's monthly portfolio holdings reports and published Quarterly Performance Reports.

Second, for the T-Pool Cash sub-portfolio, the Investment Policy Statements permit only securities with a maximum maturity of one year, but the Treasury held some securities with a maturity of greater than one year in Q1 2015, Q2 2015, and Q4 2018. This is shown in Exhibit 2.25.

Exhibit 2.25: Treasury Pool Cash Market Value by Months to Maturity (Calendar Years 2011 through 2018)

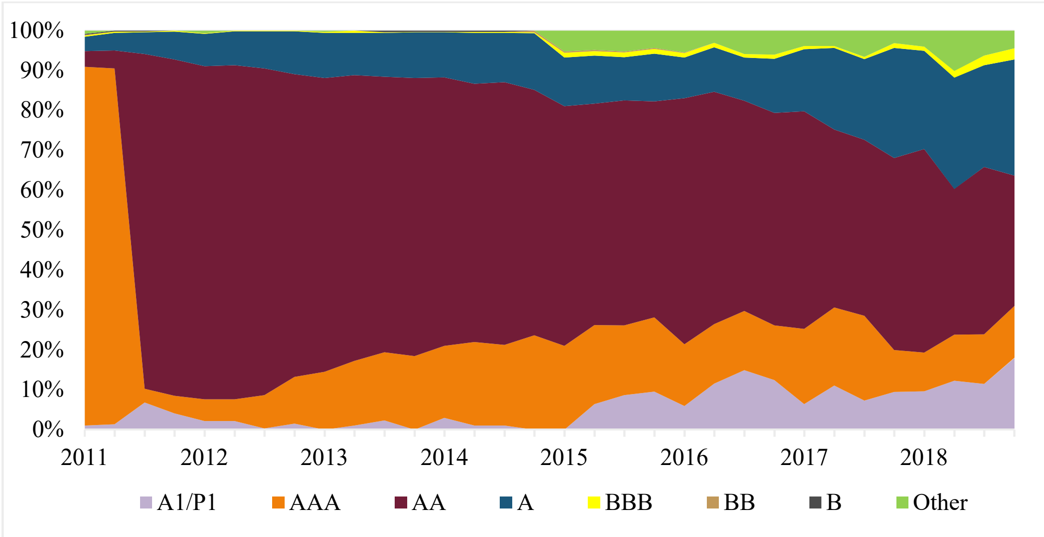


Source: Auditor analysis of the Colorado Department of the Treasury's monthly portfolio holdings reports and published Quarterly Performance Reports.

The instances we found of the Treasury holding some investments with maturities that exceed the thresholds outlined in the Investment Policy Statements are indicative of the Treasury's move toward investments that carry higher risk and associated yield. However, these instances also indicate the Treasury may be taking on more investment risk than intended by incurring increased interest rate risk—the risk that over a long-enough period of time interest rates in the market will increase above those generated by the Treasury's existing securities, causing the value of those securities to diminish and reducing the Treasury's ability to generate higher yields on its investments. Further, without policies on how to account for differences in maturity dates (i.e., stated final maturity v. expected or average maturity) when assessing compliance with policies, the Treasury, as well as the public and policy makers, may receive inconsistent and unclear information about actual asset maturity.

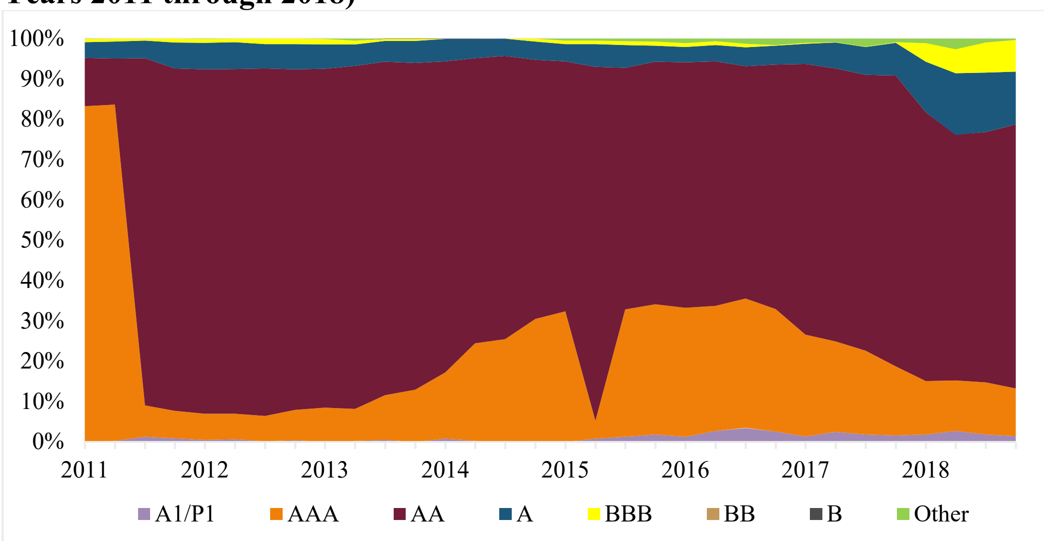
Investment holdings generally complied with Investment Policy Statements related to credit quality. According to the quarterly reports published by the Treasury, the credit quality distribution of the Treasury Pool, the Public School Permanent Fund, and the Unclaimed Property Tourism Fund portfolios remained fairly consistent between Calendar Years 2011 and 2018. A notable change occurred in August 2011, when S&P downgraded the credit rating of the United States government from "AAA" to "AA+," after which the portfolio's allocation to "AAA" securities decreased. The credit ratings for each portfolio are shown in Exhibits 2.26 through 2.28.

Exhibit 2.26: T-Pool Combined Quarterly Ratings (Calendar Years 2011 through 2018)



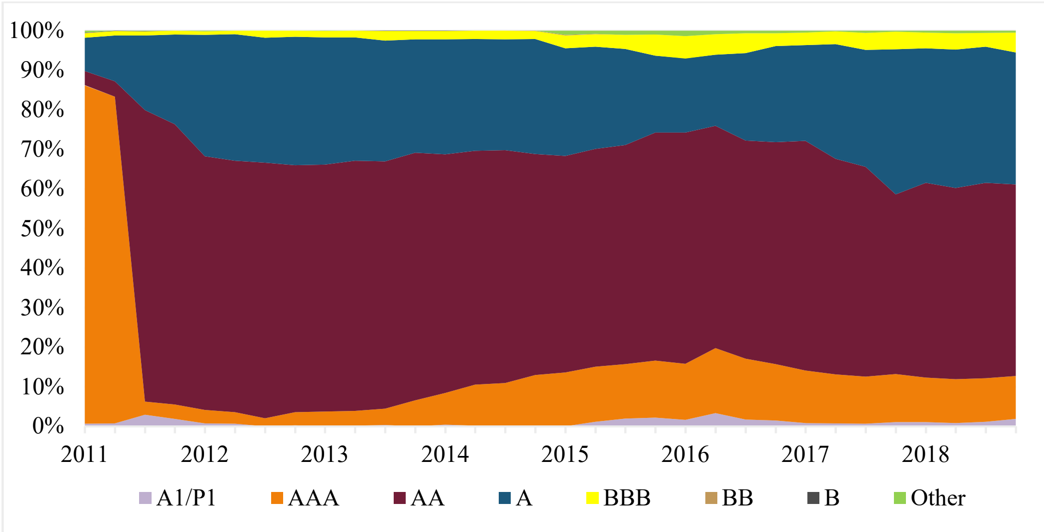
Source: Auditor analysis of the Colorado Department of the Treasury's published Quarterly Performance Reports.

Exhibit 2.27: Public School Permanent Fund Quarterly Ratings (Calendar Years 2011 through 2018)



Source: Auditor analysis of the Colorado Department of the Treasury's published Quarterly Performance Reports.

Exhibit 2.28: Unclaimed Property Tourism Fund Quarterly Ratings (Calendar Years 2011 through 2018)



Source: Auditor analysis of the Colorado Department of the Treasury's published Quarterly Performance Reports.

Overall, trends for each portfolio show a shift in credit rating distribution, with the Treasury decreasing its "AAA" and "AA" holdings and increasing holdings in securities rated at "A" and "BBB," particularly between 2017 and 2018. Consistent with other characteristics of the Treasury's portfolios—asset mix and maturity—this demonstrates that the Treasury's portfolios have been taking on increased risk and reaching for yield in a market environment with low interest rates.

The Treasury lacked documentation of some credit rating information prior to December 2017. We were unable to verify the credit rating information in some of the Treasury's quarterly reports because the Treasury did not record or retain credit rating information for purchase transactions between January 2011 and November 2017. Credit ratings assigned by Moody's were available in the monthly portfolio holdings data starting in December 2017. The lack of historical investment information, including credit ratings at the time of purchase or historical credit monitoring records, reduces the transparency of the Treasury's actions related to credit ratings by impeding the ability of an independent party to validate the credit quality of the Treasury's investments.

While the Treasury currently relies on its custodian and Bloomberg for providing all credit quality data to monitor its holdings on a daily and monthly basis, it did not always retain credit rating records for its investments prior to 2017. Since 2017, the Treasury has been receiving standard Portfolio Holdings Characteristic reports that show Moody's, S&P, and Fitch credit ratings for each holding, and a "Composite Quality Rating" that converts different agencies' ratings into an S&P-equivalent rating. These reports allow the Treasury to easily monitor and report on credit quality and, to date, have been retained to document historical credit rating information. The Treasury has stated that it will continue to maintain these records to support its internal reporting of credit quality and to demonstrate compliance with its Investment Policy Statements.

Why did the finding occur?

Investment Holdings Outside Asset Mix Bounds. Our analysis revealed three factors that contributed to the instances in which asset allocations fell outside the bounds established in the Investment Policy Statements.

First, the Treasury characterized investments differently than its investment custodians. When staff initiate purchases of securities, staff complete a Trade Order Form that requires the documentation of various security characteristics, one of which is the security type; the signature of the Chief Investment Officer; and, for the purposes of internal control, the signature of a second Treasury official not involved in trade decisions. When completing this form, staff do not always know how its investment custodian (JP Morgan Chase and Wells Fargo maintained the Treasury's investment system of record at differing periods between Calendar Years 2011 and 2018) will categorize the investment. We analyzed the asset allocations as defined by the custodian, as the system of record, and found that some of our calculations showing the portfolio's holdings as outside of the asset mix bounds differed from figures in the Treasury's quarterly investment reports.

Exhibit 2.29 illustrates examples of the variations between the asset allocations reported by Treasury and the allocations we calculated based on the definitions of the custodians. The darker colored cells show where the asset allocation was outside the bounds of the Policy according to our calculations.

Exhibit 2.29: Comparison of Treasury Reported Asset Mix to Calculated Asset Mix (Calendar years 2016 through 2018)

Q4	Unclaimed Property Tourism Fund					
	Corporate			Treasury/Agency		
	Policy	Reported	Calculated	Policy	Reported	Calculated
2016	0 – 50%	46.3%	49.0%	20 – 100%	17.7%	14.9%
2017	0 – 50%	49.1%	51.9%	20 – 100%	14.8%	28.0%
2018	0 – 60%	44.1%	46.0%	20 – 100%	24.4%	35.3%
Q4	Public School Permanent Fund					
	Corporate			Treasury/Agency		
	Policy	Reported	Calculated	Policy	Reported	Calculated
2016	0 – 20%	20.3%	23.9%	20 – 100%	19.1%	15.8%
2017	0 – 20%	19.6%	22.6%	20 – 100%	39.0%	49.2%
2018	0 – 50%	31.3%	35.3%	0 – 100%	37.0%	46.1%

Source: Auditor analysis of the Colorado Department of the Treasury's monthly portfolio holdings reports and published Quarterly Performance Reports.
Note: Calculated percentages do not include underlying T-Pool holdings.

While we were able to assess some of the differing classifications made by the Treasury, we were unable to validate all of the internal classifications of securities purchased by the Treasury. Those we did review, occurring in 2018, generally appeared to be reasonable. For instance, while Wells Fargo classified a certain security as a corporate bond or note, Treasury staff classified the same as a supranational security. It is, therefore, possible that a single security could be classified differently by different institutions. In the interest of accountability and transparency, it is a matter of best practice to rely on an independent, third-party assessment of an asset's classification rather than on one's own classification when determining compliance with investment policies.

With respect to the Public School Permanent Fund and the Unclaimed Property Tourism Fund portfolios, we identified a limited number of cases where this difference in classification accounted for much of the variance between the Treasury's asset allocations and the boundaries set forth in the Investment Policy Statements. However, the lack of historical data regarding all of the Treasury's internal classifications, at the point of purchase, prevented an analysis of its classification practices during the full audit period.

Second, the Investment Policy Statements for the Public School Permanent Fund and the Unclaimed Property Tourism Fund portfolios each allow uninvested cash allocations to the T-Pool. Both of these Funds have some assets in the T-Pool. However, as the T-Pool also holds investments in multiple asset classes, such as corporate bonds and notes, these asset allocations are not accounted or calculated into the asset mixes when the Treasury determines and reports the composition of the two portfolios. The Investment Policy Statements do not require that such allocations be accounted for in calculated asset mixes to ensure compliance with policies. As a result, the actual asset mixes may be different than reported or than permitted in the Investment Policy Statements. Exhibit 2.30 shows an example of how including the T-Pool's asset allocations in the calculation of the actual asset mixes for the Public School Permanent Fund and the Unclaimed Property Tourism Fund portfolios result in differences from what was reported.

Exhibit 2.30: Comparison of Treasury Reported Asset Mix to Calculated Asset Mix, including T-Pool Allocations (Calendar years 2016 through 2018)

Q4	Unclaimed Property Tourism Fund					
	Corporate			Treasury/Agency		
	Policy	Reported	Calculated	Policy	Reported	Calculated
2016	0 – 50%	46.3%	52.4%	20 – 100%	17.7%	19.6%
2017	0 – 50%	49.1%	57.1%	20 – 100%	14.8%	31.1%
2018	0 – 60%	44.1%	50.7%	20 – 100%	24.4%	37.3%
Q4	Public School Permanent Fund					
	Corporate			Treasury/Agency		
	Policy	Reported	Calculated	Policy	Reported	Calculated
2016	0 – 20%	20.3%	30.0%	20 – 100%	19.1%	24.2%
2017	0 – 20%	19.6%	30.6%	20 – 100%	39.0%	54.1%
2018	0 – 50%	31.3%	40.0%	0 – 100%	37.0%	48.3%

Source: Auditor analysis of the Colorado Department of the Treasury's monthly portfolio holdings reports and published Quarterly Performance Reports.
Note: Calculated percentages include underlying T-Pool holdings.

Third, the Treasury has not implemented a policy requiring investment officers, who have responsibility for day-to-day investment decisions, to obtain approval from the State Treasurer for deviations from Investment Policy Statement provisions. In response to a recommendation in the State Auditor's 2011 Performance Review of Treasury Investments, the Treasury agreed to begin requiring investment officers to obtain written approval from the State Treasurer for departures from the Investment Policy Statements lasting more than three months. Such a process serves as a control to help ensure that investment activities comply with statutes and achieve Investment Program objectives. We did not find evidence of such a practice being carried out for the instances we found of deviations from the Investment Policy Statements.

Investment Holdings With Maturities Exceeding the Investment Policy Statements. The Investment Policy Statements contain conflicting language when stipulating maturity requirements. For instance, the 2010 Investment Policy Statement states that the maximum maturity for any security held within the T-Pool Bond sub-portfolio must be less than five years, with the exception of collateralized mortgage obligations and asset backed securities, which allow maturities with expected maturities or an average life not to exceed five years. However, our analysis revealed that over the eight-year period, the Treasury purchased 34 securities, with an aggregate purchase value of nearly $380 million that exceeded the five-year maturity limit, in every case by less than 30 days.

Further, similar to deviations found in portfolio asset allocations as compared to Investment Policy Statement requirements, the Treasury has not implemented a formal procedure requiring investment officers to obtain the pre-approval from the State Treasurer for deviations from Investment Policy Statement provisions, including those related to duration and maturity.

Recommendation No. 2:

The Colorado Department of the Treasury (Treasury) should enhance its controls over investment activities by:

a. Specifying in the Investment Policy Statements how compliance with key restrictions related to asset allocations, maturity, and credit quality will be measured. This should include portfolio allocations to the T-Pool, such as those from the Public School Permanent Fund and the Unclaimed Property Tourism Fund portfolios. In doing so, the Treasury should, to the extent possible, verify security characteristics with third-party data (such as its custodian's characteristics of its asset classes, and average life or expected maturity).

b. Develop a formal procedure requiring investment officers to obtain the pre-approval from the State Treasurer for deviations from Investment Policy Statement provisions when such deviations last, or are expected to last, more than three months, and document this review and approval process in order to memorialize the decision and rationale to deviate from the established Investment Policy Statement.

Treasury Response:

a. Agree. Implementation date: December 31, 2019

   Treasury's current Investment Statement Policy adopted in July 2019, details how compliance with those policies is to be measured, including references to all of the portfolios it manages.

   Treasury will continue to work with its custodian to ensure that proper classification of securities occurs. On rare occasions, the custodian maintains a different appellation of the same security, though this does not change or alter the underlying characteristics of that security. That said, Treasury will increase its efforts through stronger communication and review to ensure a proper classification occurs each time a security is purchased.

b. Agree. Implementation date: December 31, 2019

   Treasury is in the process of adopting a formal procedure that will require the State Treasurer to pre-approve deviation from Investment Policy for the limited occasions when such a deviation is determined to be necessary. Such deviations will be memorialized as the findings above recommend.