KPMG

COMMONWEALTH OF PENNSYLVANIA
DEFERRED COMPENSATION PROGRAM

Financial Statements
with Required Supplementary Information

December 31, 2016 and 2015

(With Independent Auditors’ Report Thereon)

COMMONWEALTH OF PENNSYLVANIA
DEFERRED COMPENSATION PROGRAM

Table of Contents

KPMG LLP
Suite 1000
30 North Third Street
PO Box 1190
Harrisburg, PA 17108-1190

Independent Auditors' Report

The Members of the Board
Commonwealth of Pennsylvania
Deferred Compensation Program:

We have audited the accompanying financial statements of the Commonwealth of Pennsylvania Deferred Compensation Program (DCP) as of and for the years ended December 31, 2016 and 2015, and the related notes to the financial statements, which collectively comprise DCP's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

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

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

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

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

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the net position available for benefits of DCP as of December 31, 2016 and 2015, and the changes in its net position available for benefits for the years then ended, in accordance with U.S. generally accepted accounting principles.

Emphasis of Matter

As discussed in Note 2 to the financial statements, DCP adopted the provisions of Governmental Accounting Standards Board (GASB) Statement No. 72, *Fair Value Measurement and Application*. Our opinion is not modified with respect to this matter.

KPMG

Other Matters

Required Supplemental Information

U.S. generally accepted accounting principles require that the management's discussion and analysis on pages 3-6 be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

KPMG LLP

Harrisburg, Pennsylvania
July 28, 2017

This section presents management's discussion and analysis of the Commonwealth of Pennsylvania Deferred Compensation Program's (DCP) financial statements and the significant events and conditions that affected the operations and performance of the DCP during the years ended December 31, 2016, 2015, and 2014.

Overview of the Basic Financial Statements

1. **Basic Financial Statements**. The DCP presents Statements of Net Position Available for Benefits as of December 31, 2016 and 2015 and Statements of Changes in Net Position Available for Benefits for the years then ended. These statements reflect resources available for the payment of benefits as of year-end, and the sources and uses of those funds during the year.

2. **Notes to Basic Financial Statements**. The notes to basic financial statements are an integral part of the financial statements and provide additional detailed information to provide a better understanding of the financial statements. The notes discuss, among other things, DCP organization, contributions, and how asset values are determined.

Background

The Pennsylvania State Employees' Retirement Board (SERB) is the trustee for the DCP, an Internal Revenue Code (IRC) Section 457(b) retirement plan for eligible government employees and officers. The DCP is a voluntary tax-deferred supplemental retirement plan. The participants may direct their deferrals among 11 investment options. A Third Party Administrator (TPA) maintains individual participant records. Investment advisors selected by the SERB manage the DCP investment options. The DCP began accepting initial deferrals in 1988.

The investments are composed of primarily three core equity index funds—Stock Index Fund that is a Standard & Poor's (S&P) 500 index of large-cap companies, an Extended Market Fund that is an index of domestic mid- and small-cap companies, and an European; Australian; and Far East markets (EAFE) Equity Index Fund. The DCP also offers an Aggregate Bond Index Fund, a Stable Value Fund (actively managed bond fund with an insurance contract that, through a crediting formula, smoothes the portfolio returns by providing a 'stable' quarterly rate), a Short Term Money Market Fund, and Self-Directed Brokerage Accounts. Three "Profile Funds" are also available to the participants. These funds are composed of a mix of the equity, cash, and bond core index funds, tailored to a participant's risk profile that allows them to invest in a conservative, moderate, or aggressive portfolio. The DCP also offers a 60/40 Balanced Fund, which uses a mix of the Stock Index and the Aggregate Bond Index Funds. These portfolios are automatically rebalanced each quarter by the TPA.

Adoption of Accounting Standard

The Governmental Accounting Standards Board (GASB) issued GASB Statement No. 72, *Fair Value Measurement and Application* (GASB 72), the provisions of which are reflected in these financial statements. Since the requirements of GASB 72 were effective for financial statements for fiscal years beginning after June 15, 2015, the first year that GASB 72 was applicable to DCP was 2016. The adoption of GASB 72 did not impact the fiduciary net position of DCP; however, certain changes to note disclosures for both years presented have been incorporated to comply with this new statement. Key changes in the notes to basic financial statements include additional information about the methods used to value investments. GASB 72 requires the use of valuation techniques, which are appropriate under the circumstances, and are either a market, cost, or income approach. For investments measured at fair value, GASB 72 establishes a hierarchy of inputs used to measure fair value consisting of three levels.

Net Position Available for Benefits

Plan net position was $3.17 billion and $2.98 billion as of December 31, 2016 and 2015, respectively, which was an increase of approximately $182.0 million. In 2014, plan net position was $2.96 billion. Of the three asset classes of equities, bonds, and cash, 49.0% of the net plan position was invested in the three core equity funds (large-cap; mid- and small-cap; and international equities) at year-end 2016. At the end of 2015, those same investment funds accounted for 48.6% of the plan net position available for benefits. The fixed income portfolios, Aggregate Bond Index and Stable Value Fund, accounted for 45.4% and 46.0% of plan net position in 2016 and 2015, respectively. The Short Term Money Market Fund accounted for 2.1% and 1.9% of the plan net position available for benefits in 2016 and 2015, respectively.

Contributions and Investment Income

Contributions experienced an increase to $135.8 million in 2016 from $135.3 million in 2015. Contributions were $129.5 million in 2014.

Net investment income in 2016 was $188.6 million compared to $11.2 million in 2015. Net investment income was $188.2 million in 2014. The increase in net investment income in 2016 was attributed primarily to the higher broad market equity returns as the S&P 500 Index and the Dow Jones U.S. Completion Stock Market Index returned 12.0% and 15.8%, respectively, versus returns of 1.4% and -3.4%, respectively, in 2015. The S&P index and the Dow Jones U.S. Completion Stock Market Index returned 13.7% and 7.6%, respectively, in 2014.

Program Benefits and Expenses

Benefits paid to participants increased to $91.0 million in 2016 from $82.4 million in 2015. Benefits paid to participants in 2014 were $74.5 million. The election to select a payment is voluntary up to age 70½ and is typically dependent upon the participant's separation from service. The DCP offers a variety of payout methods. A vast majority of participants select a periodic payment either annually, semiannually, quarterly, or monthly. The number of participants receiving payments increased to 7,734 for 2016 from 7,287 for 2015. The number of participants receiving payments in 2014 was 6,920. A 457(b) plan is permitted to accept rollovers from other retirement plans, and to permit rollovers out of the DCP into Individual Retirement Accounts (IRAs), 401(k) plans, or other qualified plans. Net rollovers out of the DCP increased to $47.4 million in 2016 from $35.9 million in 2015. In 2014, net rollovers out of the DCP were $42.8 million.

Plan participants are responsible for all DCP fees. The TPA expenses were $3.7 million in 2016 and $3.8 million in 2015. In 2014, these expenses were $3.5 million. A large portion of the fee is based on a percentage of plan assets, as the plan asset base changes, a corresponding change to the fees occurs.

Roth 457(b) Provision

The Small Business Jobs Act of 2010 includes a provision to allow those participating in 457(b) plans to contribute through a Roth option. Those who contribute using the Roth option do not receive a reduction of their current taxable income for a contribution to the plan, but they do earn returns within the plan tax-free and the withdrawals from the plan are tax-free. The SERB adopted a motion in 2010 to allow the DCP to implement a Roth 457(b) provision. The DCP began accepting Roth contributions in 2012. In 2014, the SERB adopted a motion to allow for in-plan Roth conversions while a participant is still actively employed by the Commonwealth of Pennsylvania. This allows participants to convert their traditional pre-tax contributions to Roth contributions. The participant is responsible for paying the taxes on the converted funds with monies outside of the plan. This provision became effective starting in 2015.

(Continued)

COMMONWEALTH OF PENNSYLVANIA
DEFERRED COMPENSATION PROGRAM

Management's Discussion and Analysis

December 31, 2016 and 2015

(Unaudited)

Condensed Financial Information

($millions)

Net Position

Assets	**2016**	**Increase (Decrease)**	**2015**	**Increase (Decrease)**	**2014**
Total receivables	$ 5	$ (2)	$ 7	$ 1	$ 6
Total investments	3,163	184	2,979	23	2,956
Securities lending collateral pool	2	(1)	3	3	—
Total assets	3,170	181	2,989	27	2,962
Liabilities					
Total payables	2	—	2	—	2
Obligations under securities lending	2	(1)	3	3	—
Total liabilities	4	(1)	5	3	2
Total net position	$ 3,166	$ 182	$ 2,984	$ 24	$ 2,960

Changes in Net Position

Additions	**2016**	**Increase (Decrease)**	**2015**	**Increase (Decrease)**	**2014**
Net investment income	$ 188	$ 177	$ 11	$ (177)	$ 188
Contributions	136	1	135	6	129
Total additions	324	178	146	(171)	317
Deductions					
Benefit payments	91	9	82	7	75
Plan transfers	47	11	36	(7)	43
Third party and administrative expenses	4	—	4	1	3
Total deductions	142	20	122	1	121
Increase in net position	$ 182	$ 158	$ 24	$ (172)	$ 196

BASIC FINANCIAL STATEMENTS

COMMONWEALTH OF PENNSYLVANIA
DEFERRED COMPENSATION PROGRAM

Statements of Net Position Available for Benefits

December 31, 2016 and 2015

($ thousands)

	2016	2015
Assets:		
Receivables:		
Contributions receivable	$ 5,452	$ 6,859
Accrued investment income receivables	66	27
Other receivables	4	431
Total receivables	5,522	7,317
Investments:		
Cash and temporary investments	5,610	5,390
Short term money market fund	67,093	57,973
Aggregate bond index fund	332,518	306,175
Stock index fund	1,039,233	973,524
Extended market fund	356,408	323,324
EAFE equity index fund	155,533	154,713
Stable value fund	1,106,438	1,068,012
Group annuity contract	1,247	1,337
Self-directed brokerage accounts	98,597	88,574
Total investments	3,162,677	2,979,022
Securities lending collateral pool	2,005	2,512
Total assets	3,170,204	2,988,851
Liabilities:		
Payables:		
Participant payables	181	228
Fees payable and accrued expenses	1,462	1,624
Other payables	234	136
Total payables	1,877	1,988
Obligations under securities lending	2,005	2,512
Total liabilities	3,882	4,500
Net position available for benefits	$ 3,166,322	$ 2,984,351

See accompanying notes to basic financial statements.

COMMONWEALTH OF PENNSYLVANIA
DEFERRED COMPENSATION PROGRAM

Statements of Changes in Net Position Available for Benefits

Years Ended December 31, 2016 and 2015

($ thousands)

	2016	2015
Additions:		
Investment income:		
From investing activities:		
Net appreciation/(depreciation) in fair value of investments	$ 168,577	$ (10,562)
Interest	23,741	25,421
Total investing activities income	192,318	14,859
Less investment expenses	3,701	3,659
Net income from investing activities	188,617	11,200
From securities lending activities:		
Securities lending income	18	38
Securities lending expense	(2)	(2)
Net income from securities lending activities	16	36
Net investment income	188,633	11,236
Contributions from participants	135,829	135,272
Total additions	324,462	146,508
Deductions:		
Benefits and refunds to participants	90,976	82,390
Transfers to other plans	47,393	35,869
Third party expenses	3,714	3,753
Administrative expenses	408	276
Total deductions	142,491	122,288
Increase in net position	181,971	24,220
Net position available for benefits, beginning of year	2,984,351	2,960,131
Net position available for benefits, end of year	$ 3,166,322	$ 2,984,351

See accompanying notes to basic financial statements.

(1) Organization and Description of the Plan

(a) Program Summary

The following description of the Commonwealth of Pennsylvania (commonwealth) Deferred Compensation Program (DCP) provides only general information. Participants should refer to the Plan Document for a more complete description of the DCP provisions.

The DCP was established by the Commonwealth of Pennsylvania General Assembly on November 6, 1987, through Act 81 and in accordance with Section 457(b) of the Internal Revenue Code (IRC) of 1986, as amended. Under the DCP provisions, eligible employees of the commonwealth may voluntarily elect to contribute a portion of their compensation into the DCP through payroll deductions. The commonwealth does not make any contributions to the DCP. The DCP is included in the commonwealth's financial reports as a pension trust fund.

(b) Contributions

Under the DCP provisions, eligible employees may contribute to the DCP through payroll deductions. In accordance with Section 457(b) of the IRC, the amount of an individual's annual contributions for 2016 and 2015 were limited to an amount not to exceed the lesser of $18,000 or 100% of the individual's gross compensation. Individuals age 50 or over may make an additional "catch-up" contribution. In 2016 and 2015, the additional "catch-up" contribution was $6,000. Special catch-up is allowed for previously missed contributions for participants within three years of normal retirement age. In 2016 and 2015, the deferral limit for special catch-up was $36,000. Contributions can be made to the DCP using either the before-tax method in which amounts are deferred for federal income tax purposes or the Roth option in which contributions are made on an after-tax basis.

Contributions receivable represent amounts withheld from employees' pay but not remitted to the investment managers at December 31. Contributions are credited by the applicable investment managers upon receipt from the commonwealth.

(c) Participant Accounts

Participants electing to contribute to the DCP have the option of investing their contributions in any of the following core investments:

- *Short Term Money Market Fund*, which invests in a variety of securities including those issued by the U.S. Treasury, agency securities, short-term corporate debt instruments such as commercial paper, repurchase agreements, and certificates of deposit, is managed by the Commonwealth of Pennsylvania Treasury Department (Treasury Department).
- *Aggregate Bond Index Fund*, which is a collective investment fund that invests in investment grade corporate and government issues, mortgage-backed securities, asset-backed securities, and commercial mortgage-backed securities, is managed by Mellon Capital Management Corporation (MCM).
- *Stock Index Fund*, which is a collective investment fund that invests in publicly traded common stocks included in the S&P 500 Index, is managed by MCM.

(Continued)

- *Extended Market Fund*, which is a collective investment fund that invests in medium and small capitalization components of the U.S. equity market (primarily the portion not covered by the S&P 500 Index), is managed by MCM.
- *EAFE Equity Index Fund*, which is a collective investment fund that invests in international stocks in the European, Australian, and Far East markets, is managed by MCM.
- *Stable Value Fund*, which comprises two investment accounts, is managed by separate investment advisors. An active bond account is managed by Weaver C. Barksdale & Associates. The return on the active bond account is insured through a contract with Monumental Life Insurance Company. This contract insures a crediting rate on the active bond account as determined by a formula established by the insurer. This crediting rate is adjusted quarterly, based on the actual returns of the active bond account. A temporary investment account is managed by the Treasury Department and contains short-term securities, which are purchased when payments or pay downs are received for the active bond account investments.

In addition to the core investments, the DCP also offers the following:

- *Aggressive Portfolio Fund*, which is a blend of the core investments, consists of 48% in the Stock Index Fund, 20% in the Aggregate Bond Index Fund, 20% in the EAFE Equity Index Fund, and 12% in the Extended Market Fund.
- *Moderate Portfolio Fund*, which is a blend of the core investments, consists of 40% in the Aggregate Bond Index Fund, 36% in the Stock Index Fund, 15% in the EAFE Equity Index Fund, and 9% in the Extended Market Fund.
- *Conservative Portfolio Fund*, which is a blend of the core investments, consists of 50% in the Aggregate Bond Index Fund, 20% in the Short Term Money Market Fund, 17% in the Stock Index Fund, 8% in the EAFE Equity Index Fund, and 5% in the Extended Market Fund.
- *60/40 Balanced Fund*, which is a blend of the core investments, consists of 60% in the Stock Index Fund and 40% in the Aggregate Bond Index Fund.
- *Self-Directed Brokerage Accounts*, which is a mutual fund window whereby a participant may choose to invest in a variety of mutual funds offered through the Charles Schwab Corporation.

Investment income includes the realized and unrealized gains/losses and interest for each of the funds. These funds do not distribute dividends to shareholders. Earnings and dividends on securities held are reinvested. Purchases and sales of securities are recorded on a trade-date basis.

The Pennsylvania State Employees' Retirement System provides certain management and administrative services to the DCP on an ongoing basis. During 2016 and 2015, the DCP paid approximately $408,000 and approximately $276,000 for those services, respectively. The DCP receives $275,000 annually from the TPA to cover these costs, which is a reduction of third party expenses.

(Continued)

(d) Payment of Benefits

Participants may withdraw the current value of funds contributed to the DCP upon termination of employment, death, disability, retirement, or approved unforeseeable emergencies within DCP guidelines. Accounts that have no activity in a two-year period and a balance under $5,000 may also be voluntarily distributed.

Upon retirement or termination of service, participants may elect various payout options including lump-sum, equal annual payments, or elect to defer receipt of funds until some future date. Minimum distributions as required by Internal Revenue Service guidelines must commence no later than age 70½ including the Roth option. Rollovers to other qualified retirement plans or IRAs are permitted. All investments are for the exclusive benefit of participants and their beneficiaries.

Upon a participant’s death, with certain exceptions, any amount due under the participant’s account is paid to the beneficiary or the estate. Distributions to participants are recorded at the time withdrawals are made from participant accounts.

(2) Summary of Significant Accounting Policies

(a) Basis of Accounting in Preparing Financial Statements

The financial statements of the DCP are prepared on the accrual basis of accounting under which deductions are recorded when the liability is incurred, additions are recorded in the accounting period in which they are earned and become measurable, and investment purchases and sales are recorded as of their trade date.

(b) Use of Estimates

Management of the DCP has made certain estimates and assumptions relating to the reporting of assets and liabilities and the disclosure of contingent assets and liabilities to prepare these financial statements in conformity with accounting principles generally accepted in the United States of America. Actual results could differ from those estimates.

(c) Valuation of Investments

The Short Term Money Market Fund and temporary investment portion of the Stable Value Fund are valued at cost, which approximates fair value. The Aggregate Bond Index, Stock Index, Extended Market, EAFE Equity Index, Stable Value Fund – Active Bond Account, and Self-Directed Brokerage Accounts are valued based on quoted redemption values, which represent fair value, on the last business day of the calendar year.

The group annuity contract, which is no longer offered to participants as an investment option, is valued at contract value, which approximates fair value. Contract value for the group annuity contract represents contributions made under the contract, plus earnings, less payments made to retirees and terminated participants.

(Continued)

(d) Adopted Accounting Pronouncement

The DCP has adopted Governmental Accounting Standards Board (GASB) Statement No. 72, *Fair Value Measurement and Application* (GASB 72), which addresses accounting and financial reporting issues related to fair value measurements. GASB 72 requires funds to use valuation techniques, which are appropriate under the circumstances, and are either a market, cost, or income approach. GASB 72 establishes a hierarchy of inputs used to measure fair value consisting of three levels. Level 1 inputs are investments reflecting prices quoted in active markets. Level 2 inputs are investments reflecting prices that are based on a similar observable asset either directly or indirectly, which may include inputs in markets that are not considered to be active. Level 3 inputs are investments with unobservable inputs, and typically reflect management's estimates of assumptions that market participants would use in pricing the assets or liability. Adoption of GASB 72 did not impact the fiduciary net position of DCP; however, there were changes to disclosures in note 4 regarding the hierarchy of valuation inputs and valuation techniques that were used for fair value measurements. The requirements of GASB 72 were effective for financial statements for fiscal years beginning after June 15, 2015 and have been applied to all periods presented.

(3) Agreement with Program Administrator

Effective with the agreement dated July 1, 2013, the SERB reappointed Great-West Life & Annuity Insurance Company (Great-West) as the DCP TPA for a term of four years. The agreement also provided the option to renew for one year, which was exercised. Today, Empower Retirement is the brand name for the company's retirement services division, and Great-West Financial is the brand for its insurance, annuity, and investment businesses. Great-West receives the following compensation for program administration services:

- Program administration charge – A $24.00 annual fee is charged to each participant in the DCP for record-keeping services. The full fee is due to Great-West. This charge is assessed monthly.
- Program asset fee – This charge is assessed monthly on the value of all accounts in the DCP. The fee varies depending on the type of investment. The fee ranges from 0.07% to 0.375%. This includes 0.07% payable to Great-West for TPA services and manager fees ranging from 0.00% to 0.305%. The program asset fee is assessed against the account of each participant proportionately according to the value of each individual account.
- Investment advice fee – Great-West, through a subsidiary Advised Assets Group LLC, provides participants with online advisory tools and services based upon the level of involvement desired in managing their accounts. Guidance is offered at no additional cost. Advice is offered for an annual fee of $25.00. All advice fees are assessed quarterly. Managed accounts provide ongoing professional asset management at the individual participant level. Plan participants receive a personalized and strategically designed retirement portfolio that is automatically managed quarterly. The managed account fee structure is asset based and ranges from 0.30% to 0.60% based on the participant account balance.

(4) Investments

Program Overview

The DCP core investments are managed by three fund managers. At December 31, 2016 and 2015, one fund manager, MCM, managed approximately 59.6% and 59.0%, respectively, of the DCP total investment portfolio. The fixed income portfolios, which consist of the Aggregate Bond Index Fund managed by MCM and the fixed income investments managed by Weaver C. Barksdale as part of the Stable Value Fund, were 45.5% and 46.1% of the DCP total investment portfolio in 2016 and 2015, respectively. These concentrations are solely determined by the participants' elections to invest in the available investment options selected by the SERB.

Fair Value Hierarchy

The fair value hierarchy, which contains three levels, is based on the valuation inputs used to measure an asset's fair value. Level 1 inputs are quoted prices in active markets for identical assets or liabilities. Level 2 inputs are quoted prices for similar assets or liabilities in active markets, quoted prices for identical or similar assets or liabilities in markets that are not active, or other than quoted prices that are observable. Level 3 inputs are unobservable inputs used to measure fair value if relevant observable inputs are not available for the asset or liability at the reporting date.

Collective investment funds and self-directed brokerage accounts are reported at fair value based on DCP's ownership percentage of underlying investments as of the last business day of the calendar year, and are categorized as Level 1. The collective investment funds comprise two U.S. equity funds, one international equity fund, and one bond fund. Using a mix of these funds, the DCP offers a balanced fund and three profile funds, which are aggressive, moderate, and conservative.

Debt securities are valued using a matrix pricing technique, and categorized as Level 2. Matrix pricing is used to value securities based on the securities' relationship to benchmark quoted prices.

The DCP also has investments that are not measured at fair value and are excluded from the following fair value hierarchy tables. These investments include cash, Short Term Money Market Fund, Treasury Department's short-term investment fund (STIF), and a group annuity contract totaling $85 million and $74 million for December 31, 2016 and 2015, respectively. The Short Term Money Market Fund and STIF are valued at cost plus accrued interest, which approximates fair value. The group annuity contract, which is no longer offered to participants, is valued at contract value, which approximates fair value. Contract value for the group annuity contract represents contributions made under the contract, plus earnings, less payments made to retirees and terminated participants.

(Continued)

The DCP has the following recurring fair value measurements as of December 31, 2016 and 2015:

Investments Measured at Fair Value (2016)
($ thousands)

	Fair Value	Level 1	Level 2	Level 3
Fixed income securities:				
Government	$ 507,912	$ —	$ 507,912	$ —
Mortgaged-backed securities	225,942	—	225,942	—
Corporate	189,085	—	189,085	—
Asset-backed securities	131,470	—	131,470	—
Agencies	40,105	—	40,105	
Sovereign debt	1,058	—	1,058	—
Self-directed brokerage accounts	98,597	98,597	—	—
Collective investment funds:				
Stock index fund	1,039,233	1,039,233	—	—
Extended market fund	356,408	356,408	—	—
Aggregate bond index fund	332,218	332,218	—	—
EAFE equity index fund	155,533	155,533	—	—
Total	$ 3,077,561	$ 1,981,989	$ 1,095,572	$ —

Investments Measured at Fair Value (2015)
($ thousands)

	Fair Value	Level 1	Level 2	Level 3
Fixed income securities				
Government	$ 545,594	$ —	$ 545,594	$ —
Mortgaged-backed securities	243,569	—	243,569	—
Corporate	183,463	—	183,463	—
Asset-backed securities	55,768	—	55,768	—
Agencies	11,033	—	11,033	
Private placements	10,457	—	10,457	—
Sovereign debt	10,299	—	10,299	—
Self-directed brokerage accounts	88,574	88,574	—	—
Collective investment funds				
Stock index fund	973,524	973,524	—	—
Extended market fund	323,324	323,324	—	—
Aggregate bond index fund	304,752	304,752	—	—
EAFE equity index fund	154,713	154,713	—	—
Total	$ 2,905,070	$ 1,844,887	$ 1,060,183	$ —

Concentration of Credit, Custodial Credit, Credit, Interest Rate, and Foreign Currency Risk

The DCP cash and temporary investments, Short Term Money Market Fund, Stable Value Fund, and Aggregate Bond Index Fund are subject to various risks. Among these risks are: concentration of credit, custodial credit, credit, interest rate, and foreign currency risk. Each of these risks are discussed below.

Concentration of credit risk is the risk of loss attributed to the magnitude of investment in a single issuer. As of December 31, 2016 and 2015, SERS had no single issuer that exceeded 5% of total investments. Investments issued or explicitly guaranteed by the U.S. government and investments in mutual funds, external investment pools, and other pooled investments were excluded.

Custodial credit risk is the risk that, in the event of the failure of the counterparty to a transaction, the DCP would be unable to recover the value of investment or collateral securities that are in the possession of an outside party. In accordance with the contractual relationship between the Treasury Department and its custodial agent, where securities are used as evidence of the investment, these securities are held by the custodian in book-entry form. These securities are defined as insured or registered investments for which the securities are held by the agent in the DCP name, and therefore have a minimal level of custodial credit risk losses. All remaining investments do not have securities that are used as evidence of the investments.

Credit risk is the risk that an issuer or the counterparty to an investment will not fulfill its obligations. The credit risk of a debt instrument is measured by nationally recognized statistical rating agencies such as Moody's Investor Services (Moody's), S&P, and Fitch Ratings (Fitch). The DCP manages the overall credit risk of the active bond account by requiring the manager to invest in accordance with the SERB approved Investment Strategy Statement specifically designed for the Stable Value Fund. This statement lists the primary goal of the fund to maintain safety of principal, while recognizing that liquidity is an important element due to participant market expectations and/or investment selection. A secondary goal is to provide the participants with a steady, long-term growth of principal. The manager is expected to exercise due care and diligence in making investment decisions.

The DCP proportionate share of the underlying investments of the Aggregate Bond Index Fund, which is a collective investment fund, are included in the credit and interest rate risk tables below. The DCP interest in the Aggregate Bond Index Fund was 24.9% representing $332.5 million and 24.4% representing $306.2 million at December 31, 2016 and 2015, respectively.

For securities exposed to credit risk in the fixed income investments of the DCP, the following tables disclose aggregate fair value, by the least favorable credit rating issued using Moody's, S&P, and Fitch credit ratings at December 31, 2016 and 2015:

Debt Securities Exposed to Credit Risk (2016)
($ thousands)

	AAA	AA	A	BAA	BA and below	Short-Term Investments[1/]	Total Exposed to Credit Risk[2/]
Mortgage-backed securities	$ 4,464	$ 227,012	$ —	$ —	$ —	$ —	$ 231,476
Corporates	4,537	14,055	127,497	60,484	3,227	—	209,800
Asset-backed securities	116,868	16,167	—	—	—	—	133,035
Short-term investments[1/]	—	—	—	—	—	83,869	83,869
Agencies	262	49,226	1,361	261	31	—	51,141
Sovereign debt	7,808	1,099	2,296	3,490	—	—	14,693
Total	$ 133,939	$ 307,559	$ 131,154	$ 64,235	$ 3,258	$ 83,869	$ 724,014

[1/]Represents investments in the PA Treasury Department's STIF and Short Term Money Market fund. This comprises short-term, investment grade securities, which are mainly U.S. Treasuries, agencies, or repurchase agreements. It also comprises short term assets in the Aggregate Bond Index Fund and Stable Value Fund from the Statements of Net Position Available for Benefits.

[2/]Debt securities exposed to credit risk and U.S. government guaranteed securities, as noted in the subsequent paragraph, comprises cash and temporary investments, the Short Term Money Market Fund, the Aggregate Bond Index Fund, and the Stable Value Fund from the Statements of Net Position Available for Benefits.

Debt Securities Exposed to Credit Risk (2015)
($ thousands)

	AAA	AA	A	BAA	BA and below	Short-Term Investments[1/]	Total Exposed to Credit Risk[2/]
Mortgage-backed securities	$ 3,722	$ 243,171	$ 250	$ 129	$ —	$ —	$ 247,272
Corporates	5,191	21,648	119,532	55,671	1,316	—	203,358
Short-term investments[1/]	—	—	—	—	—	72,614	72,614
Asset-backed securities	35,249	21,824	52	—	—	—	57,125
Agencies	335	12,530	1,698	225	31	—	14,819
Sovereign debt	6,723	1,697	1,772	2,713	751	—	13,656
Private placements[3/]	—	—	10,042	—	—	—	10,042
Total	$ 51,220	$ 300,870	$ 133,346	$ 58,738	$ 2,098	$ 72,614	$ 618,886

[1/]Represents investments in the PA Treasury Department's STIF and Short Term Money Market fund. This comprises short-term, investment grade securities, which are mainly U.S. Treasuries, agencies, or repurchase agreements. It also comprises short-term assets in the Aggregate Bond Index Fund and Stable Value Fund from the Statements of Net Position Available for Benefits.

[2/]Debt securities exposed to credit risk and U.S. government guaranteed securities, as noted in the subsequent paragraph, comprise cash and temporary investments, the Short-Term Money Market Fund, the Aggregate Bond Index Fund, and the Stable Value Fund from the Statements of Net Position Available for Benefits.

[3/]Private placements raise capital via offerings directly to qualified investors rather than through public offerings. Private placements do not have to register with the Securities and Exchange Commission (SEC) if the securities are purchased for investment as opposed to resale. These private placements are corporate debt purchased pursuant to SEC Rule 144A and have registration rights with the SEC.

Obligations explicitly guaranteed by the U.S. government (treasuries and Government National Mortgage Association securities) with a fair value of $788 million and $819 million as of December 31, 2016 and 2015, respectively, are not included in the preceding tables because they are not considered to have credit risk.

Interest rate risk is the risk that will adversely affect the fair value of an investment, should market interest rates rise or fall. Option-adjusted duration is the measure of the portfolio's exposure to changes in interest rates. The following table discloses the interest rate types and durations of the fixed income investments of the DCP as of December 31, 2016 and 2015:

Debt Option-Adjusted Durations
($ thousands)

	2016		2015	
	Fair Value	**Option-Adjusted Duration**	**Fair Value**	**Option-Adjusted Duration**
Collective investment funds	$ 332,218	5.9	$ 304,752	5.7
Mortgaged-backed securities	225,942	4.7	243,569	3.2
Government	507,912	3.5	545,594	2.7
Asset-backed securities	131,470	3.5	55,768	1.8
Corporates	189,085	3.2	183,463	3.8
Agencies	40,105	0.9	11,033	2.9
Short-term investments[1/]	83,869	0.1	72,615	0.1
Sovereign debt	1,058	—	10,299	4.4
Private placements[2/]	—	—	10,457	0.4
Total[3/]	$ 1,511,659		$ 1,437,550	

[1/]Represents investments in the PA Treasury Department's STIF and Short Term Money Market fund. This comprises short-term, investment grade securities, which are mainly U.S. Treasuries, agencies, or repurchase agreements, and also includes insignificant investments in cash, receivables, and payables. The investments are pooled together by utilization of the Treasury Department's STIF, and the DCP recognizes its respective allocation.

[2/]Private placements raise capital via offerings directly to qualified investors rather than through public offerings. Private placements do not have to register with the SEC if the securities are purchased for investment as opposed to resale. These private placements are corporate debt purchased pursuant to SEC Rule 144A and have registration rights with the SEC.

[3/]Total fair values of the fixed income sector comprises cash and temporary investments, the Short Term Money Market Fund, the Aggregate Bond Index Fund, and the Stable Value Fund from the Statements of Net Position Available for Benefits.

The DCP prohibits investments by the manager in the active bond portfolio in the following categories: real estate, Real Estate Investment Trust issues, mortgages (mortgage pass-throughs are exempt), secured term loans, oil and gas production properties, convertible or preferred stock, private placements (other than corporate debt purchased pursuant to SEC Rule 144A that has registration rights with the SEC), loaning of money or securities, hypothecating of any assets in the portfolio, interest and principal only strips, inverse floaters, and inverse interest-only securities.

Foreign currency risk is the risk that changes in the exchange rates will adversely affect the fair value of an investment. The EAFE Equity Index Fund seeks to track more than 1,000 foreign stocks representing established companies in 21 countries located in Western Europe and the Pacific Rim. Since EAFE Equity Index Fund is a collective investment fund, the DCP is indirectly exposed to foreign currency risk through those underlying securities.

(5) Derivative Financial Instruments

The DCP, through investments in collective investment funds trusteed by The Bank of New York Mellon (BNY Mellon) and managed by employees of MCM (in their capacities as dual officers of BNY Mellon), indirectly holds certain derivative financial instruments. A derivative is a risk-shifting agreement, the value of which is derived from the value of an underlying asset. The underlying asset could be a physical commodity, an interest rate, a company’s stock, a stock index, a currency, or virtually any other tradable instrument upon which two parties can agree. The derivatives most commonly used by MCM include currency forwards, futures, options, and swaps. The DCP exposure to these instruments was not significant as of December 31, 2016 and 2015. The collective investment funds that the DCP is invested in currently utilize the following derivative instruments:

- Stock Index Fund – stock index futures
- Extended Market Fund – stock index futures
- EAFE Equity Index Fund – stock index futures, currency forwards

These instruments are used in the investment management of the collective funds to the extent that their use is consistent with the specific collective fund’s objective. Derivatives are viewed within the context of the collective fund’s total portfolio. MCM has instituted policies and procedures designed to ensure that derivative transactions are in keeping with the overall strategy and that such transactions are properly reviewed and monitored.

MCM may take long or short positions in derivative instruments for, but not limited to, the following purposes: to create or hedge required exposure; to create or hedge model-driven recommended exposure; as an adjustment to asset exposures within the parameters set in the collective fund’s investment instructions and guidelines; to achieve transactional efficiency; to adjust the duration of a fixed income portfolio; if applicable, to achieve the appropriate degree of leverage, as stated in the collective fund’s investment instructions and guidelines; and to facilitate meeting the collective fund’s objectives.

Some of the risks associated with the use of derivatives include the following:

Market Risk: Market risk represents the risk of adverse movements in markets (including asset prices, volatility, changes in yield curve, implied volatility, or other market variables) for the derivatives or the underlying assets, reference rate or index to which the derivative instrument relates. Such risk is created by holding any security, physical, or derivative, which creates exposure to movements in process of a security or market. Additionally, some derivatives involve economic leverage, which could increase the volatility of these investments as they may fluctuate in value more than the underlying instrument. MCM assesses the risk associated with derivatives in the context of the collective fund's total portfolio, taking into account the effective exposure of derivative instruments.

Liquidity Risk: Two types of liquidity risk are generally faced in derivative activities. The first is market liquidity risk, which applies to all investments. This is the risk that positions cannot easily be sold or unwound due to inadequate market depth or disruptions in the marketplace. The second is portfolio liquidity risk, which is the risk that there are insufficient funds in the portfolio to meet margin calls and other financial obligations resulting from derivative activities. MCM has established restrictions and processes to assist with minimizing the impact of liquidity risk on the collective fund's portfolio.

Counterparty Risk: Counterparty risk is the risk that a counterparty (the party with whom a derivative contract is made) will fail to perform contractual obligations under a contract. This is also sometimes referred to as credit risk. MCM has established guidelines and procedures designed to limit the impact of counterparty risk. The creditworthiness of counterparties is evaluated prior to approval and counterparty exposure and creditworthiness is reviewed regularly.

Operational Risk: Operational risk is the risk that deficiencies in the effectiveness and accuracy of the information systems or internal controls will result in a material loss. This risk is associated with human error, systems failures, inadequate procedures, and internal management controls. For example, there is risk that the valuation system incorrectly calculates a price for a derivative or its equivalent exposure.

The DCP offers participants the ability to invest in a Stable Value Fund, which is a Synthetic Guaranteed Investment Contract (SGIC). The SGIC provides a guaranteed crediting rate based on the underlying bond portfolio and is adjusted quarterly. For 2016, the annualized crediting rates were 2.356% for the first quarter, 2.394% for the second quarter, 2.272% for the third quarter, and 2.283% for the fourth quarter. For 2015, the annualized crediting rates were 2.659% for the first quarter, 2.560% for the second quarter, 2.497% for the third quarter, and 2.339% for the fourth quarter. The fair value of the SGIC at December 31, 2016 is $1,106 million and the contract or book value is $1,098 million. The fair value of the SGIC at December 31, 2015 is $1,068 million and the contract or book value is $1,048 million. The wrap contract is reported to have no value for the respective years shown in the table below because the fair value of the underlying investments, measured with Level 2 inputs as disclosed in note 4, was greater than the contract or book value, hence no exposure to the insurer. The following table discloses the fair value of the SGIC at December 31, 2016 and 2015:

SGIC components	2016 Fair Value ($ thousands)	2015 Fair Value ($ thousands)
Underlying investments	$ 1,106,438	$ 1,068,012
Wrap contract	—	—
Total	$ 1,106,438	$ 1,068,012

(6) Securities Lending

In accordance with a contract between the commonwealth's treasurer and its custodian, the DCP participates in a securities lending program.

The custodian, acting as lending agent, is able to loan securities from the DCP actively managed bond account for cash, securities, or letter of credit collateral. Collateral is required at 102% of the fair value of the securities. Collateral is marked-to-market daily. If the collateral falls below guidelines for the fair value of the securities loaned, additional collateral is obtained. Cash collateral is invested by the lending agent in accordance with investment guidelines approved by the SERB. The lending agent cannot pledge or sell securities collateral unless the borrower defaults.

As of December 31, 2016 and 2015, the DCP credit exposure to individual borrowers was limited because the amounts the DCP owed the borrowers exceeded the amounts the borrowers owed the DCP. The treasurer's contract with the lending agent requires the agent to indemnify the DCP if the borrowers fail to return the underlying securities and the collateral is inadequate to replace the loaned securities or if the borrowers fail to pay income distributions on the loaned securities.

All loaned securities at December 31, 2016 and 2015 could be terminated on demand by either the lending agent or the borrower. Cash collateral is invested, together with the cash collateral on loaned securities of other commonwealth entities, in a short-term collective investment pool. The duration of the investments in the pool at December 31, 2016 was three days, and in 2015, it was one day. The relationship between the average maturities of the investment pool and the DCP loans is affected by the maturities of the loans made by other entities in the investment pool. In addition, the interest rate risk posed by mismatched maturities is affected by other program features, such as the lending agent's ability to reallocate loaned securities among all of its lending customers.

As of December 31, 2016 and 2015, the fair value of loaned securities was approximately $1.96 million and $2.4 million, respectively. The fair value of the associated collateral was approximately $2.0 million and 2.5 million, most of which was held as cash.

(7) Tax Qualification Status

According to the U.S. Treasury Department, the DCP is an eligible deferred compensation plan pursuant to IRC Section 457(b). Therefore, compensation deferred under the DCP, including income attributable to the deferred compensation, will be includible in gross income for the taxable year or years in which amounts are paid or otherwise made available to a participant or a participant's beneficiary in accordance with the terms of the DCP.

The Small Business Jobs Act of 2010 includes a provision to allow those participating in 457(b) plans to do so through a Roth option. Those participants who use designated Roth accounts do not receive a deduction from their current income for a contribution to the plan, but their plan earnings and qualified withdrawals from the plan are tax-free. The SERB passed a motion in 2010 to allow the DCP to implement a Roth 457(b) provision. The DCP implemented the Roth option in 2012. In 2014, the SERB passed a motion to allow for in-plan Roth conversions while a participant is still actively employed by the Commonwealth of Pennsylvania. This allows participants to convert their traditional pre-tax contributions to Roth contributions. The participant is responsible for paying the taxes on the converted funds with monies outside of the plan. This provision became effective starting in 2015.

(8) Risks and Uncertainties

The DCP, as directed by participants, may invest in various types of investment securities. Investment securities are exposed to various risks, such as interest rate, market, and credit risk. Due to the level of risk associated with certain investment securities, it is possible that changes in the values of investment securities may occur in the near term and that such change could materially affect the amounts reported in the statements of net position available for benefits.

(9) Related Parties

Certain members of the SERB are participants in the DCP.