

Pennsylvania Turnpike Commission

Turnpike Subordinate Revenue Refunding Bonds, Third Series of 2017



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Executive Summary

Kroll Bond Rating Agency (KBRA) has taken the following rating actions related to Pennsylvania Turnpike Commission (PTC).

| Ratings | | | | |
|--|--------|---------|----------|-----------------------------|
| Issuer: Pennsylvania Turnpike Commission | | | | |
| Series/Bond | Rating | Outlook | Action | Amount ¹ |
| Turnpike Subordinate Revenue Refunding Bonds, Third Series of 2017 | A+ | Stable | Assigned | Approx. \$79.7 million |
| Turnpike Subordinate Revenue Bonds | A+ | Stable | Affirmed | \$ 5.2 billion ² |
| Turnpike Revenue Bonds | AA- | Stable | Affirmed | \$5.1 billion |

KBRA's long-term ratings do not apply to bonds backed by a letter of credit or liquidity facility, unless otherwise noted.

¹Amounts are as of December 1, 2017.

²Figure is inclusive of \$160.8 million in accreted par on zero-coupon bonds.

This rating is based on the [KBRA's U.S. Public Toll Roads, Bridges, & Tunnels Rating Methodology](#). KBRA's rating evaluation focuses on the following key rating determinants:

- Size and Scope of Operations
- Demand Assessment
- Management/Regulatory Framework
- Financial Profile
- Security Provisions

KBRA's analysis on Pennsylvania Turnpike Commission Motor License Fund (MLF)-Enhanced Turnpike Subordinate Special Revenue Bonds can be found [here](#).

Security

The turnpike subordinate lien revenue bonds are secured by Commission Payment amounts paid from the general reserve fund after payment of senior indenture obligations.

Proceeds

The Third Series of 2017 Bonds are being issued to advance refund certain PTC's outstanding subordinate lien turnpike revenue bonds for debt service savings.

Key Rating Strengths

- The turnpike system connects roughly 80% of the Commonwealth's population in five primary population centers. It is an essential part of the regional economy road infrastructure with limited alternative roadway networks that could diverge system traffic.
- Demonstrated history of strong system utilization and traffic demands. Modest traffic growth is expected and price elasticity of demand is very low.
- PTC is governed by a strong regulatory and management framework set forth by Act 44, as amended by Act 89, and the bond indentures.

- PTC's managerial autonomy in rate setting, financial operations, and capital planning with well managed financial operations and a history of strong and improving operating margins.
- A history of solid liquidity with over 220 days cash on hand for the last five years. Liquidity levels in FY 2016 and FY 2017 are in excess of 330 days based on available funds in the general reserve fund.
- Solid historic debt service coverage including coverage of 3.22x, 1.63x, and 1.49x in FY 2017 on senior, subordinate, and MLF-enhanced subordinate special revenue bonds, respectively.
- A strong set of security provisions that include a 1.15x rate covenant, restrictive additional bonds test, and subordinate lien revenue bond debt service reserve fund that is funded at MADS. Although the rate covenant is set at 1.15x, the PTC has an internal policy to maintain minimum subordinate lien debt service coverage of at least 1.30x.

Key Rating Concerns

- Large annual contributions to PennDOT mandated by Act 44, as amended by Act 89, will require an additional \$2.0 billion in subordinate lien debt between 2018 and 2022.
- Future toll rate escalation could affect price elasticity of demand and reduce PTC's operating margins and financial flexibility.
- The lack of inter-state cooperation and reciprocity agreements could challenge toll revenue collection as PTC rolls out all electronic tolling (AET).
- PTC may be strained to maintain coverage covenants in the absence of solid revenues growth or rate increases.

Rating Summary

KBRA views the Pennsylvania turnpike system ("the turnpike system") as an essential intrastate and interstate roadway. The multi-asset system serves the southern portion of the Commonwealth and connects the Commonwealth's five primary population centers, which represent 80% of the Commonwealth's population, and are economically diverse with broad demographic characteristics. Importantly, the turnpike system is often the fastest and most direct route between these primary population centers and nearby states.

The turnpike system consists of 552 route miles of roadway and 68 toll interchanges. The most recent asset assessment released in February 2015 reported the overall condition of the turnpike system is satisfactory and that the turnpike roadways, tunnels, and facilities are in fair to good condition. The report also stated that majority of the structures including bridges and culverts are in good condition with less than 4% deemed structurally deficient.

KBRA notes that the Commonwealth is the sixth largest economy in the U.S. by both population and real gross state product (GSP). It is also the 33rd largest state encompassing a land area of 46 thousand square miles. As of 2016, the Commonwealth had a total population of 12.8 million, a limited 1.8% growth over 2010. In 2016, Pennsylvania's real GSP equaled \$652 billion, a compound annual growth rate of 1.4% since 2010, exceeding the region's 1.1% growth but slightly lower than the nation's 1.6%.

The turnpike system's customer base mainly consists of regional commuters, long distance intrastate and interstate commercial truckers, and business and recreational travelers. There are limited competing routes or modes of transportation that serve as alternatives to the turnpike system. Although projections for traffic growth are modest due to the region's mature economy and relatively flat demographic trends, the turnpike system is well utilized and PTC has been successful in generating significant increases in toll revenues over the last decade through a regimen of consistent and, at times, substantial toll increases. These increases have had little effect on demand as evidenced by both the strong essentiality of the turnpike system to the

regional economy and the limited threat of substitutes posed by alternative routes, despite a trend of rising toll charges.

Turnpike system utilization, as measured by toll transactions, has increased 25.1% since FY 2000 to 200.3 million transactions in FY 2017. This rate of growth exceeds population growth of the Commonwealth, the mid-Atlantic region, and the U.S. overall at 4.1%, 6.0%, and 14.8%, respectively, through 2016. From FY 2000 to FY 2017, annual car and commercial vehicle transactions have increased at compound annual growth rates (CAGRs) of 1.3% and 1.5%, respectively, with more recent growth from FY 2010 to FY 2017 shifting to CAGRs of 0.8% for cars and 2.7% for commercial vehicles. Estimates of annual average daily vehicle miles traveled across all highways in the Commonwealth, including tolled and non-tolled routes, indicate a decline of 0.1% from 2010 to 2016 compared to growth in transactions of 6.6% across the turnpike system over the same period, including growth of 2.7% across the mainline and northeastern expansion.

Gross toll revenue has increased significantly from \$367.3 million in FY 2000 to \$1.11 billion in FY 2017, compared to the aforementioned increase in transactions of just 25.1% over the same period. This difference reflects a regimen of regular toll increases across most of the turnpike system that has seen the average per mile electronic toll collection (ETC) charge across the mainline and northeastern extension increase from about \$0.03 in 2000 to \$0.10 in 2017 for cars and \$0.11 to \$0.39 for commercial vehicles. In FY 2017 system wide transaction count and toll revenues increased by 0.3% and 8.1%, respectively, versus increases of 3.4% and 10.7% in the prior year. While both years reflect mid-year toll increase of 6.0%, the relatively slower growth in FY 2017 partly reflects the closure of the Delaware River Bridge from January 20, 2017 to March 9, 2017 (48 days) for urgent structural repairs.

PTC operates under a regulatory framework established pursuant to Commonwealth statutes. The Commonwealth statutes grant PTC a strong level of managerial autonomy, including the full authority to set toll rates, manage financial operations, and manage capital projects related to the turnpike system. The management team is experienced and effective. They have demonstrated the ability to consistently find balance in managing the challenges of operating, expanding and improving turnpike facilities while adhering to the provisions of PTC's bond indentures and the requirements set forth by Act 44. KBRA notes that annual MLF-enhanced subordinate special revenue bond debt service coverage has been consistently greater than 1.00x since the inception of Act 44. KBRA views this achievement as significant, especially given the uncertainty faced by PTC as it addressed the substantial revenue gap created when PTC's application to toll I-80 was denied.

Act 44 requires PTC to make significant annual financial contributions to PennDOT, which is a department of the Commonwealth tasked with overseeing transportation issues. The contributions are used to support mass transit, multi-modal and alternative energy transportation capital projects throughout the Commonwealth. KBRA notes that the Act includes provisions that, in KBRA's view, enable the PTC to better identify and potentially mitigate financial challenges. Examples include submission to the Commonwealth an annual Act 44 financial plan and the mandate, set forth by Commonwealth statutes, requiring PTC to raise toll rates to levels that are sufficient, with other available revenues, to cover all obligations under Act 44. KBRA also views the toll-setting requirement, as it is set forth in Commonwealth statutes, as mitigating political pressure that may limit future toll rate increases.

KBRA also notes that PTC's obligations under Act 44, as amended by Act 89, have been significantly reduced and are now capped at \$450 million per year through fiscal year 2022, and \$50 million per year from fiscal year 2023 through the expiration of the funding agreement in 2057. Act 89 relieves PTC from over \$15 billion in future transfers to PennDOT between FY 2023 and 2057. KBRA positively views the amendments of Act 89 and notes that while Act 44 obligation are now substantially lower, PTC will need to issue an

additional \$2.0 billion in subordinate revenue bonds between FY 2018 and FY 2022 to meet Act 44 obligations.

KBRA views PTC's financial operations as being stable and well managed. Increasingly large operating margins and declining but solid debt service coverage reflect the managed implementation of actions needed to meet PTC's Act 44 obligations.

PTC's financial operations have performed well under the recent regimen of toll increases, successfully producing the annual increases in revenues available for debt service contemplated by its ongoing annual Act 44 financial plans. Toll revenues have performed generally in line with expectations while PTC's efforts to meet its cost containment target at 4.0% annual growth have often fallen somewhat short as a result of expenditure items outside the control of management. These expenditures are primarily escalating pension contributions and expenditures related to the state police turnpike patrol. PTC maintains an internal liquidity standard policy requiring the maintenance of a FYE uncommitted liquidity balance equal to at least the greater of 10% of annual budgeted revenues in the general reserve fund and MADS on all bonds not secured by a DSRF. KBRA notes that this balance equaled \$375.4 million at FYE 2017 or 32.4% of expenditures. At 363 days cash on hand KBRA considers this balance as providing solid liquidity support to PTC operations.

PTC's operating budget was \$871.4 million in FY 2017 including \$517.1 million in cost of services and \$354.3 million in depreciation. The cost of service portion has increased at a CAGR of 5.8% since FY 2013, which is slightly in excess of PTC's cost containment growth target of 4.0% implemented as part of the long-term plan to meet PTC's Act 44 obligations. Employee benefits and general & administrative expenses make up 53.6% of total service costs in FY 2017 but have accounted for 70.4% of expenditure growth in this category since FY 2013 reflecting PTC's limited control over these expenditure categories.

PTC currently has approximately \$12 billion in outstanding debt. Of this amount approximately \$11 billion is turnpike system revenue debt including senior, subordinate, and MLF-enhanced subordinate special revenue bonds. Across the \$11 billion of turnpike system revenue bonds, approximately 96% of debt is fixed or swapped to fixed rate through the use of interest rate derivatives with just 4% consisting of unhedged floating rate debt. Scheduled MADS across total senior, subordinate, and MLF-enhanced subordinate special revenue bonds will occur in FY 2022 at \$932.0 million with FY 2017 operations providing MADS coverage of 0.82x on all turnpike system revenue bonds in that year. Net of planned remarketing of floating rate notes (FRNs), however, KBRA understands that annual debt service increases are expected to be more moderate growing to \$660.3 million in FY 2019 and \$704.4 million by FY 2022. Based on these assumptions debt service requirements across the senior, subordinate, and MLF-enhanced subordinate special revenue bonds will peak in FY 2036 to \$812.7 million, upon which FY 2017 operations would provide coverage of across the senior, subordinate, and MLF-enhanced subordinate special revenue bonds at 2.29x, 1.07x, and 0.94x, respectively. It is KBRA's view that actions planned under the FY 2018 Act 44 financial plan, when executed, will enable PTC to comfortably achieve both covenanted coverage across the senior, subordinate, and MFL-enhanced subordinate special revenue bonds at 1.30x, 1.15x, and 1.00x, respectively, as well as internal policy driven coverage at 2.00x, 1.30x, and 1.20x, respectively, per PTC's debt management policy. The availability of MLF resources, which provide 3.79x MADS coverage on MLF-enhanced subordinate special revenue bonds is a significant backup source of payment.

The legal framework pursuant to which the PTC issues subordinate revenue bonds clearly identifies the PTC's obligations and responsibilities to bondholders. It also sets forth a flow of funds, rate covenant, additional bonds test, and the reserve requirements that, in KBRA's view, provides a satisfactory level of bondholder protection.

KBRA's rating determinants and associated rating assessments are summarized as follows:

| | <u>Senior</u> <u>Lien</u> | <u>Subordinate</u> <u>Lien</u> |
|----------------------------------|------------------------------|-----------------------------------|
| Size and Scope of Operations: | AA+ | AA+ |
| Demand Assessment: | AA- | AA- |
| Management/Regulatory Framework: | AA- | AA- |
| Financial Profile: | A+ | A+ |
| Security Provisions: | AA | A |

| Highlights of Important Financial Ratios⁽¹⁾ (dollars in thousands) | | |
|--|--|-------------------------------|
| Issuer Name | Pennsylvania Turnpike Commission | |
| Asset Type | 552 route miles 68 toll interchanges Multi-assets roadway | |
| Asset Conditions | Fair to Good conditions 61% of structures with age exceeding 50 years | |
| Service Area | Commonwealth of Pennsylvania Southern and Eastern Portions | |
| Service Area Population⁽²⁾ | 19.7 million | |
| Traffic Volume (2017) | 200.3 million | |
| Traffic Composition (2017) | 86.1% Cars / 13.9% Commercial Vehicles | |
| Net Toll Revenues | FY 2016 \$1,030,115 | FY 2017 \$1,111,061 |
| yoy % chg | 7.9% | |
| Total Revenues | \$1,066,367 | \$1,150,622 |
| yoy % chg | 7.9% | |
| Total Operating Expenditures | \$362,308 | \$382,756 |
| yoy % chg | 5.6% | |
| Revenues Less Operating Expenditures | \$704,059 | \$767,866 |
| yoy % chg | 9.1% | |
| Senior Lien DS | FY 2016 \$215,016 | FY 2017 \$237,010 |
| Senior Lien DSCR | 3.27x | 3.22x |
| Senior Lien MADS⁽³⁾ | | \$547,288 |
| Senior Lien MADS Year⁽³⁾ | | FY 2022 |
| Subordinate Lien DS | \$222,064 | \$233,804 |
| Subordinate Lien DSCR | 1.61x | 1.63x |
| Subordinate Lien MADS⁽³⁾ | | \$396,852 |
| Subordinate Lien MADS Year⁽³⁾ | | FY 2038 |
| MLF-Enhanced Subordinate Special Revenue DS | \$36,525 | \$43,348 |
| MLF-Enhanced Subordinate Special Revenue DSCR | 1.49x | 1.49x |
| MLF-Enhanced Subordinate Special Revenue MADS⁽³⁾ | | \$101,762 |
| MLF-Enhanced Subordinate Special Revenue MADS Year⁽³⁾ | | FY 2038 |
| Senior, Subordinate and MLF-Enhanced Subordinate Special Revenue MADS⁽³⁾ | | \$932,004 |
| MADS Coverage^(3,4) | | 0.82x |
| MADS Year⁽³⁾ | | FY 2022 |
| General Reserve Fund Balance | \$336,522 | \$376,427 |
| General Reserve Fund / Liquidity Balance as a % of Operating Expenditures | 92.9% | 98.3% |
| Days Cash on Hand | 339 | 363 |

(1) Operating performance and coverage figures are presented in conformity with coverage tables provided in January 2017 Subordinate Lien Revenue Bonds Offering Memorandum. FY 2017 estimates are based on adjusted figures taken from FY 2018 Act 44 Financial Plan.

(2) U.S. Census Bureau data 2015.

(3) MADS figures are as of November 28, 2017.

(4) MADS figure presented does not reflect the planned remarketing of outstanding floating rate notes (FRNs). Factoring in planned remarketing of outstanding FRNs, MADS is not scheduled to occur until FY 2036 at \$812.7 million, upon which FY 2017 operations would provide overall MADS coverage of 0.94x.

Outlook: Stable

The **Stable Outlook** reflects KBRA's view that the PTC will continue to successfully manage the challenges of operating, expanding, and improving turnpike facilities while adhering to the provisions of the Commission's bond indentures and the requirements set forth by Act 44, as amended by Act 89. It also reflects KBRA's expectation that the demand for turnpike service will remain in line with recent usage trends and that the PTC's current obligations under Act 44, as amended by Act 89, are not expanded without additional funding by future legislation actions by the Commonwealth.

In KBRA's view, the following factors may contribute to a rating upgrade:

- Significant and sustained increases in system traffic levels
- A reduction of the Act 44 obligations or the creation of a new revenue stream significantly offsetting the PTC's obligation

In KBRA's view, the following factors may contribute to a rating downgrade:

- Significant and sustained declines in system traffic levels
- A trend of structural imbalanced financial operations with significant declines in system liquidity
- Future legislation actions by the Commonwealth expanding the PTC's mandate without offsetting revenues

Key Rating Determinants

Rating Determinant 1: Size and Scope of Operations

KBRA views the turnpike system as essential to the intrastate and interstate roadway transportation infrastructure. The multi-asset system serves the southern portion of the Commonwealth and connects the five primary population centers, which comprise 80% of the Commonwealth's population, and have economically diverse and broad demographic characteristics. Most importantly, the turnpike system is often the fastest and most direct route between primary population centers and nearby states.

Asset Type

The turnpike system consists of 552 route miles of roadway and 68 toll interchanges. The turnpike system is comprised principally of the 359 mile east-west Mainline extending across the southern portion of the state (I-76), the 110 mile north-south Northeastern Extension located across the state's eastern region (I-476), and about 48 miles in completed segments of the north-south Mon/Fayette Expressway in the state's southwestern region (Route 43). The turnpike system additionally includes the 16-mile Beaver Valley Expressway (I-376), 13-mile Amos K. Hutchinson Bypass (Route 66) and a six-mile segment of the Southern Beltway (Route 576). The route of each of these roadways and other major Commonwealth thoroughfares are depicted below.



The 359 mile east-west Mainline constitutes most of Interstate 76, which extends from the Youngstown, Ohio area to the Walt-Whitman Bridge in New Jersey, just south of Philadelphia. Predating the interstate highway system, the route first opened in October of 1940 as a 165-mile roadway spanning a portion of the distance between Pittsburgh and Harrisburg and has the distinction of being the first long-distance limited access highway in the United States. The roadway was gradually expanded to its current length by 1956 and improved to an entirely four or more lane configuration across the entire route by the 1960s. The mainline has 32 toll interchanges and passes within 10 miles of the three major Pennsylvanian cities including Philadelphia to the east and Pittsburgh to the west, which are respectively, the first and second largest cities in the state. The road additionally passes through Harrisburg, which is the capital city of the Commonwealth.

The 110 mile north-south Northeastern Extension makes up most of Interstate 476, an auxiliary interstate highway extending from I-95 outside of Philadelphia to Interstate 81 near Scranton. Constructed from 1954 to 1957 as a primarily two-lane thoroughfare, the route has been incrementally improved into a six-lane roadway through its southern third near Philadelphia and a four-lane roadway up through Scranton. The Northeastern Extension is interspersed with 11 toll interchanges and is the primary north-south artery in the state.

The remaining roadways of the turnpike system, including the Beaver Valley Expressway, Amos K. Hutchinson Bypass, Mon/Fayette Expressway (initially opened in 2002 with the completion of additional major segments in 2008 and 2012) and a portion of the Southern Beltway are located in the southwest portion of the state and are interspersed with 25 tollway interchanges.

Asset Condition

The senior bond indenture requires the PTC to perform an asset condition assessment every three years. The most recent assessment was conducted by Michael Baker International for 2014 and released in February 2015. According to the report, the overall condition of the turnpike system is satisfactory. Turnpike roadways, tunnels, and facilities are in fair to good condition. The majority of the structures including bridges and culverts are in good condition with less than 4% deemed structurally deficient. KBRA notes that the age of 61% of these structures exceeds 50 years. The assessment also identified maintenance buildings that will require improvements in the future. The next asset condition assessment report is expected to be published in late 2017 or early 2018. KBRA notes positively that the turnpike system assets are being monitored periodically, which allows PTC to identify any potential issues, plan, and perform necessary maintenance.

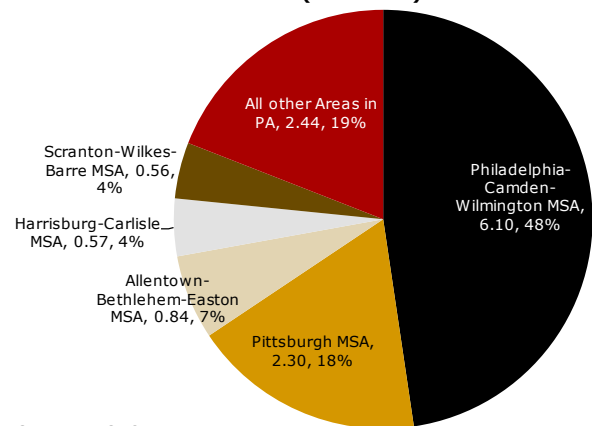
Service Area

The roadways operated by the PTC service connect to all of the primary population centers of Pennsylvania, which represent 80% of the Commonwealth's total population, as shown in the chart on the right. In our analysis, KBRA considers the turnpike system's service area to be the entire Commonwealth.

These primary population centers are as follows:

- (i) Philadelphia-Camden-Wilmington MSA,
- (ii) Pittsburgh MSA,
- (iii) Allentown-Bethlehem-Easton MSA,
- (iv) Harrisburg-Carlisle MSA, and
- (v) Scranton-Wilkes-Barre MSA.

**PA Turnpike
Service Area and Population
(in millions)**



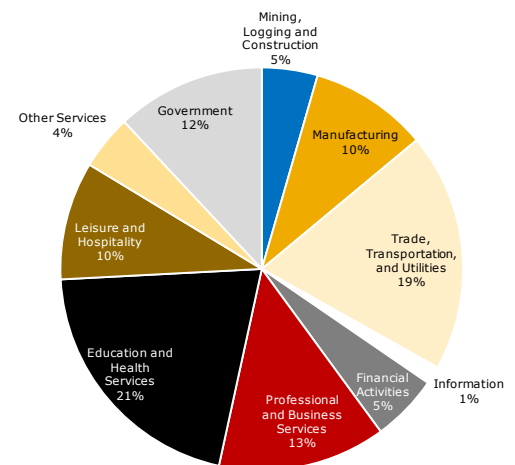
Source: U.S. Census Bureau

KBRA notes that the Commonwealth is the sixth largest economy in the U.S. by both population and real GSP. It is also the 33rd largest state encompassing a land area of 46 thousand square miles. As of 2016, the Commonwealth had a total population of 12.8 million, a limited 1.8% rate of growth from 2010. Despite the limited growth in population, the Commonwealth's productivity growth is the strongest amongst the Mideast region¹. In 2016, Pennsylvania's real gross state product (GSP) equaled \$652 billion, a compound annual growth rate of 1.4% since 2010, exceeding the region's 1.1% but slightly lower than the nation's 1.6%.

In addition to being one of the largest, the Commonwealth's economy is also broadly developed. No single employment sector dominates the employment base. The three largest employment sectors are education and healthcare services, which accounts for 21% of total non-farm employment, followed by trade, transportation, and utilities, which accounts for 19% of total non-farm employment. Professional services accounted for 13% of total non-farm employment.

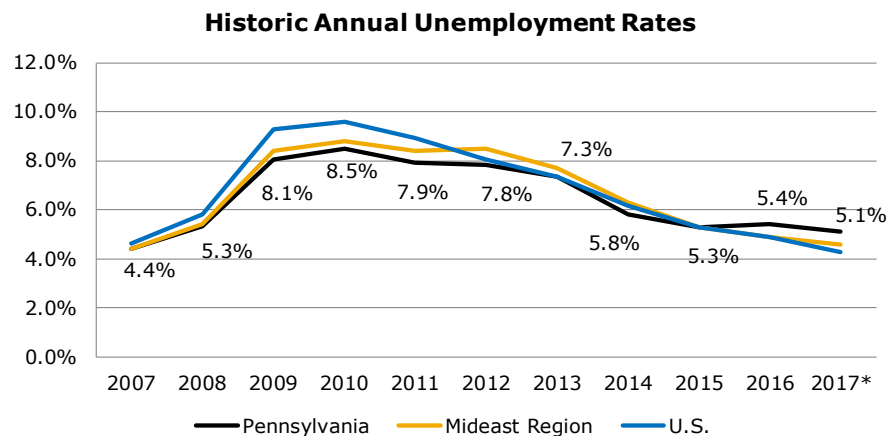
Total employment growth has been slow. Although the Commonwealth has recovered all the employment loss due to the Great Recession, total employment growth as of June 2017 is less than 2% compared to the pre-recession peak, which is slower than that of the Mideast region as well as the U.S. The unemployment rate in the Commonwealth generally mirrors that of the region and the nation, as shown in the chart below. KBRA notes that the unemployment rate during the post-recession period was lower than that of the nation. In 2016 and 2017, however, the Commonwealth's unemployment rates have been slightly higher than both the region and the nation despite the continued steady growth in GSP.

**Commonwealth of Pennsylvania
Non-Farm Employment by Sector
2016**



Source: U.S. Bureau of Labor Statistics

¹ Mideast region is defined as New York, New Jersey, Pennsylvania, Delaware, Maryland, and the District of Columbia



Source: U.S. Bureau of Labor Statistics

KBRA views the moderate growth in population, GSP, and employment as positive credit factors that support a steady growth in traffic demand while not affecting the turnpike system's overall capacity issues.

Competition

The turnpike system's customer base mainly consists of regional commuters, long distance intrastate and interstate commercial truckers, and business and recreational travelers. There are limited competing routes or modes of transportation that serve as alternatives to the turnpike system. The turnpike system is the fastest route traversing between the primary population centers. KBRA views the lack of meaningful alternative mode of transportation between major population centers as credit positive.

Based on the foregoing, KBRA views the turnpike system's size and scope as consistent with a AA+ rating determinant rating.

Rating Determinant 2: Demand Assessment

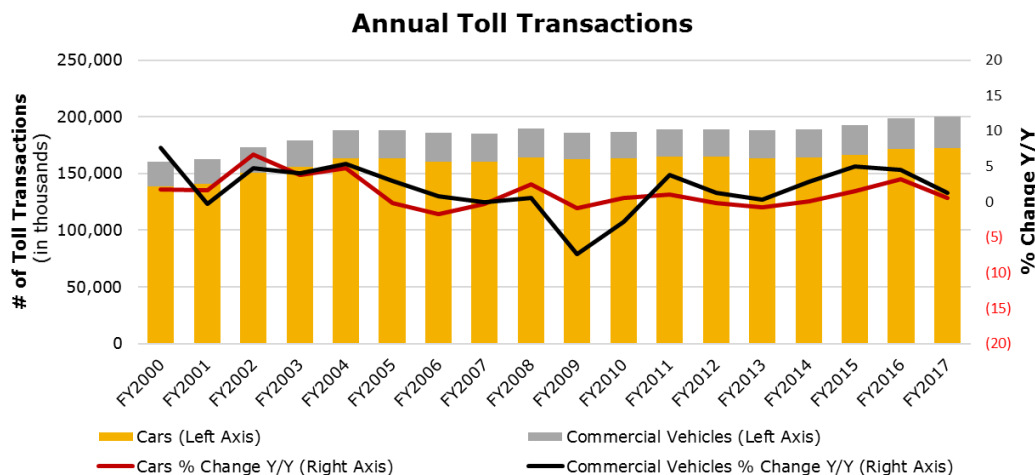
KBRA views the turnpike system's demand profile as strong. Although projections for traffic growth are modest due to the region's mature economy and relatively flat demographic trends, the turnpike system is well utilized and PTC has been successful in generating significant increases in toll revenues over the last decade through a regimen of consistent and, at times, substantial toll increases. These increases have had little effect on demand as evidenced by both the strong essentiality of the turnpike system to the regional economy and the limited threat of substitutes posed by alternative routes, despite a trend of rising toll charges.

Traffic Volume and Composition

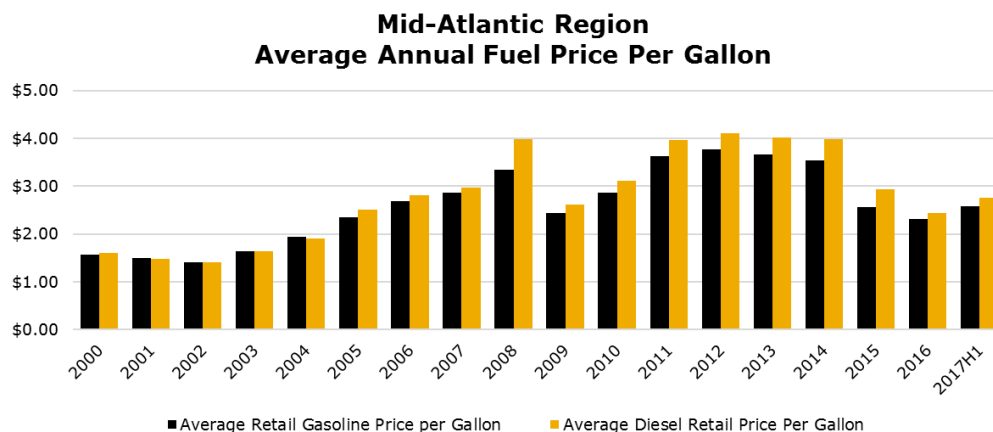
Turnpike system utilization, as measured by toll transactions, has increased 25.1% since FY 2000 to 200.3 million transactions per year in FY 2017. This rate of growth exceeds population growth of the Commonwealth, the mid-Atlantic region, and the U.S. overall at 4.1%, 6.0%, and 14.8%, respectively, through 2016. KBRA views the growth as reflecting a range of factors. While the region's mature economy provides for limited fundamental demand growth, the turnpike system has nevertheless experienced positive growth in traffic reflecting, among other factors, the completion of new sections of the Mon-Fayette Expressway, incremental system improvements such as the addition of lanes in certain high congestion areas, and periodic improvement and reconstruction of bridges, tunnels and interchanges. Gradual adoption of electronic tolling has likely also contributed to this positive trend, with many of these improvements

serving to incrementally improve the customer experience with respect to both ease of use and reduced travel times.

From FY 2000 to FY 2017 annual car and commercial vehicle transactions have increased at compound annual growth rates (CAGRs) of 1.3% and 1.5%, respectively, with more recent growth from FY 2010 to FY 2017 moving the CAGRs to 0.8% for cars and 2.7% for commercial vehicles. As shown in the chart below, notable declines in transactions in FY 2005 and FY 2009 correspond to large toll hikes of 42.5% and 25.0%, respectively, implemented in those years. Tempered growth through FY 2012 and FY 2013 meanwhile correspond with sizable increases in cash tolls, a period of relatively high fuel prices and very moderately paced economic recovery following the Great Recession.

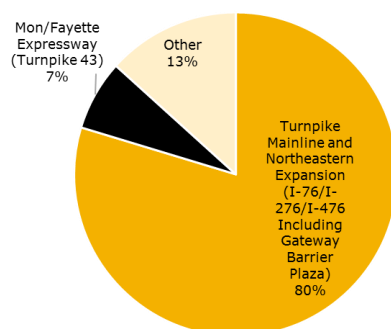
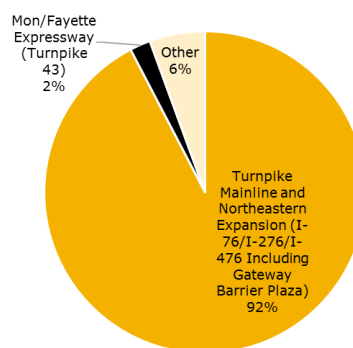


Source: 2017 Traffic and Toll Revenue Bring Down Letter and data provided by PTC management.



Source: U.S. Energy Information Administration

A time series analysis of toll transactions by route over the last decade from FY 2006 to FY 2016 (granular FY 2017 data is not yet available) indicates that while overall transaction count increased by 7.0% (13.0 million) to 198.9 million, transactions across PTC's east-west Mainline and Northeastern Expansion declined by about 1.2% (1.9 million) to 158.5 million, likely reflecting reduced utilization caused by the regimen of toll increases. System-wide growth was driven primarily by increased volume on Mon/Fayette Expressway (Turnpike 43) which increased by about 66.1% (5.6 million) to 14.0 million due to the completion of the fourth and fifth phases of the now 48 mile project in October 2008 and July 2012, respectively.

2016 Toll Transactions

2016 Toll Revenues


Source: 2017 Traffic and Toll Revenue Bring Down Letter

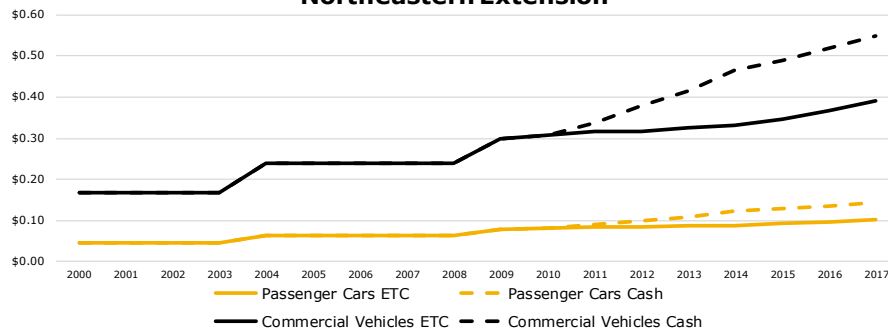
Estimates of annual average daily vehicle miles traveled across all highways in the Commonwealth, including tolled and non-tolled routes, indicate a decline of 0.1% from 2010 to 2016 compared to growth in transactions of 6.6% across the turnpike system over the same period, including growth of 2.7% across the Mainline and Northeastern Expansion. While the figure for the overall turnpike system was affected by the opening of a new section of the Mon/Fayette Expressway in 2012, KBRA views the above average transaction growth across these routes as evidencing both solid underlying demand and the essentiality of both the mainline and system overall.

Of the 200.3 million toll transactions recorded in FY 2017 86.2% consisted of car traffic while 13.8% consisted of commercial vehicle traffic. This split has been stable dating back to FY 2000, moving within a band of less than 2% and reflecting, in our view, the stable demand dynamic supporting both categories of use. Looking forward, there is reason to believe that there may be upward movement on commercial vehicle traffic due to the recently completed expansion of the Panama Canal expansion in mid-2016 which is expected to improve the economics of sending large cargo ships from Asia to the east coast. While it is too early to determine any definitive impact of this development, the director of the Philadelphia Regional Port Authority was noted in local media for referencing a 34% increase in auto shipments in January 2017 attributable largely to the receipt of larger ships not previously accommodated by the canal. Should this trend continue, KBRA anticipates the likelihood of positive demand growth for commercial vehicles on the PTC turnpike system.

Toll Revenue

Gross toll revenue has increased significantly from \$367.3 million in FY 2000 to \$1.11 billion in FY 2017, compared to the aforementioned increase in transactions of just 25.1% over the same period. This difference reflects a regimen of regular toll increases across most of the turnpike system that has seen the average per mile electronic toll collection (ETC) charge across the Mainline and Northeastern Extension increase from about \$0.03 in 2000 to \$0.10 in 2017 for cars and \$0.11 to \$0.39 for commercial vehicles. PTC had historically implemented toll increases approximately every ten years with sizable increases in 1969, 1978, 1987 and 1996 and 2004. As seen below, however, PTC has transitioned to modest annual increases since 2010. Also notable has been PTC's shift to offering lower toll rates for ETC versus cash transactions, providing additional incentive for ETC holdouts to opt into the ETC payment system.

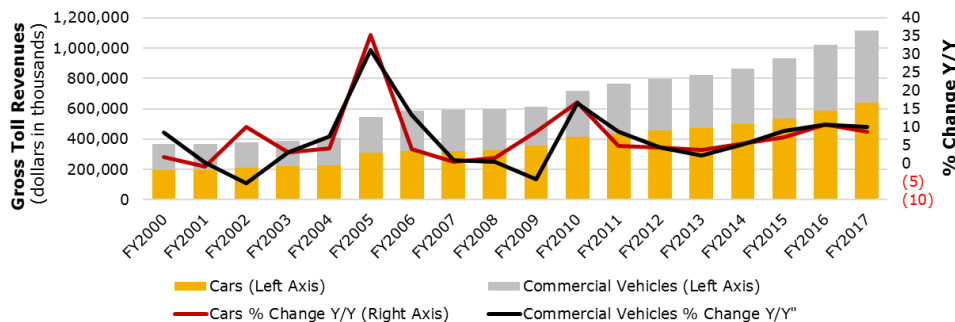
Cost of Average Toll Per Mile Traveled on Mainline and Northeastern Extension



Source: 2017 Traffic and Toll Revenue Bring Down Letter

From FY 2000 to FY 2017, annual car and commercial vehicle toll revenues have increased at CAGRs of 7.2% and 6.2%, respectively, with continued solid growth in the FY 2010 to FY 2017 period at CAGRs of 6.3% and 6.7%, respectively, as volume has continued to grow despite the schedule of sizable toll increases.

Annual Gross Toll Revenues



Source: 2017 Traffic and Toll Revenue Bring Down Letter and data provided by PTC management.

FY 2017 YOY Transaction and Toll Revenue Performance

In FY 2017, system wide transaction count and toll revenues increased by 0.7% and 8.4%, respectively, versus increases of 3.4% and 10.7% in the prior year. While both years reflect a mid-year toll increase of 6.0%, the relatively slower growth in FY 2017 partly reflects the closure of the Delaware River Bridge from January 20, 2017 to March 9, 2017 (48 days) for urgent structural repairs. PTC's consultant, CDM Smith, has estimated that the closure cost PTC 1.8 million transactions and \$12.1 million in toll revenue. Based on these estimates KBRA approximates that without the closure, system transactions and revenue would have increased by a somewhat stronger 1.3% and 9.3%, respectively. KBRA understands that such extraordinary outages are exceedingly rare and that traffic has rebounded fully, as expected, since the reopening. KBRA additionally understands that the harsh winter in FY 2017 relative to the prior year was a factor in slower overall growth, particularly across PTC's smaller western routes, which tend to exhibit more traffic volatility with respect to both weather related and other factors.

Toll Increases and Elasticity of Demand

PTC does not produce a formal demand elasticity study. However, KBRA understands that CDM Smith, the consultant contracted to produce PTC's most recent 2015 Traffic and Revenue Forecast Study, has estimated a price elasticity of demand coefficient in the range of -0.035 to -0.045, based on data leading up to and following the sizable 2004 and 2009 toll increases of 42.5% and 25.0%, respectively. This estimate would suggest that traffic would be expected to decline somewhere in the range of 3.5% to 4.5% for a 100%

increase in toll charges. KBRA considers this estimated elasticity factor to be low and generally supportive of the PTC's capacity to further raise tolls in order to increase revenues as required under the Act 44 amended funding agreement with PennDOT.

As discussed earlier, the turnpike system's average toll charge per mile is currently about average compared to similar systems making this estimated demand elasticity appear reasonable. KBRA cautions however that the schedule of rate increases called for by the current FY 2018 Act 44 plan will likely place the turnpike system among the more costly systems in the region over time. Given modest expectations for economic growth in the Commonwealth KBRA notes that there is no assurance that this demand elasticity factor will be stationary over time or linear across price levels as PTC transitions to a relatively more expensive transportation option.

Electronic Tolling

PTC utilizes an electronic toll collection system known as E-ZPass for the majority of toll transactions. This system provides drivers who have opted into the program with a transponder device that can be equipped to a vehicle and seamlessly detected and charged at tolling points, thereby forgoing human interaction and speeding up tolling transactions. The turnpike system was at first retrofitted to existing toll plazas with newer implementations allowing E-ZPass equipped drivers to pass tolling stations at speed while diverting non-ETC equipped vehicles to traditional toll plazas. PTC began implementing E-ZPass ETC in December 2000 and extended the technology to the length of the entire Turnpike Mainline and both passenger car and truck traffic by the end of 2002. Since this time ETC has been extended to all tolling locations across the turnpike system. As of 2017, 78% of total toll transactions used ETC compared to about 64% five years prior in 2012. ETC tolling has numerous benefits including the elimination of the labor otherwise needed to manually perform tolling transactions and the alleviation of bottlenecks at toll plazas during peak hours.

PTC has recently started piloting a new technology known as all electronic tolling (AET) which, through the use of video cameras, license plate reading software, and a billing system that ties into the Commonwealth's vehicle registration database, is able to electronically charge tolls to vehicle owners who have not opted into the E-ZPass ETC system. While E-ZPass ETC will continue to be utilized for ETC equipped vehicles, cashless tolling is being contemplated to eventually replace manual cash based plaza tolling for all other users of the turnpike system, which should result in operational savings for the turnpike system.

PTC first implemented AET on the Delaware River Bridge at the eastern terminus of the Mainline system in January 2016 and expanded the turnpike system to the Beaver Valley Expressway in April 2017. PTC additionally plans to introduce AET to two interchanges on the Northeastern Expansion (I-476) in the Scranton area as well as the Findlay Connector (I-576) outside Pittsburgh.

Notably, PTC has not yet obtained inter-state agreements to enforce the payment of tolls billed through the AET system for non-ETC equipped vehicles registered outside of the state. As a result, the PTC has limited ability to collect tolls for non-ETC equipped vehicles registered outside the Commonwealth. PTC indicates that it conservatively estimates a non-payment or "leakage" rate of about 50% for non-ETC AET transactions; however, KBRA notes that the magnitude of foregone revenues is diminished by the fact that ETC make up nearly 80% of total transactions. PTC's toll revenue data net out revenues that were not collected due to this leakage. Nevertheless, based on these data points KBRA estimates that approximately 10% of transactions went unpaid at the Delaware River Bridge toll station in FY 2016. With revenues collected from this toll location accounting for approximately 4.1% of total toll collections in FY 2016, KBRA estimates that revenues forgone due to AET leakage were equivalent to about \$5.5 million, or 0.5% of total toll revenues collected across the turnpike system in this year.

KBRA notes that the Pennsylvania legislature enacted Act 165 on November 4, 2016 granting PTC authority to enter reciprocity agreements with other state or tolling authorities to collect unpaid out-of-state tolls and KBRA understands that efforts to obtain such agreements are ongoing. Management has indicated that negotiations to formalize interstate cooperation and reciprocity in enforcement of non-ETC bill collection are ongoing.

Based on the foregoing, KBRA views the demand assessment as being consistent with the AA- rating determinant rating. Although KBRA anticipates only modest organic traffic volume growth going forward KBRA views the turnpike system to be both very well utilized and essential to the regional economy. This assessment is additionally informed by the aforementioned very low price elasticity of demand coefficient, which in our view is supportive of the PTC's ability to support its planned escalating debt service requirements per its obligations under the Act 44 plan, as amended by Act 89.

Rating Determinant 3: Regulatory/Management Framework

PTC operates under a regulatory framework established pursuant to Commonwealth statutes. It also operates in accordance with the provisions of the bond indentures governing PTC's senior, subordinate and MLF-enhanced subordinate special revenue bonds and a lease and funding agreement between PTC and the Pennsylvania Department of Transportation (PennDOT). The Commonwealth statutes grant PTC a strong level of managerial autonomy, including the full authority to set toll rates, manage financial operations, and manage capital projects related to the turnpike system. The bond indentures establish covenants related to financial performance and, among other things, set limits on leveraging system assets. The lease and funding agreement sets forth a "public-public partnership" between PTC and PennDOT which incorporated many of the provisions required by Act 44 of 2007.

The management team is experienced and effective. In KBRA's opinion, they have demonstrated the ability to consistently find balance in managing the challenges of operating, expanding and improving turnpike facilities while adhering to the provisions of PTC's bond indentures and the requirements set forth by Act 44. KBRA notes that annual senior lien debt service coverage has been consistently greater than 2.20x since the inception of Act 44. KBRA views this achievement as significant.

Act 44 requires PTC to make significant annual financial contributions to PennDOT in support of mass transit, multi-modal, and alternative energy transportation capital projects throughout the Commonwealth. KBRA notes that the Act includes provisions that, in KBRA's view, enable the PTC to better identify and potentially mitigate financial challenges. Examples include PTC's submission to the Commonwealth of an annual Act 44 financial plan and the mandate, set forth by Commonwealth statute, requiring PTC to raise toll rates to levels that are sufficient, with other available revenues, to cover all obligations under Act 44. KBRA notes that Act 44 obligations are subordinate to senior and subordinate lien bond obligations, which, in KBRA's view, creates an additional level of cushion for senior lien bondholders. KBRA also views the toll-setting requirement, as it is set forth in Commonwealth statutes, as mitigating political pressure that may limit future toll rate increases.

KBRA also notes that PTC's obligations under Act 44, as amended by Act 89, have been significantly reduced and are now capped at \$450 million per year through fiscal year 2022, and \$50 million per year from fiscal year 2023 through the expiration of the funding agreement in 2057. Act 89 relieves PTC from over \$15 billion in future transfers to PennDOT between FY 2023 and 2057. KBRA positively views the amendments of Act 89 and notes that while Act 44 obligation are now substantially lower, PTC will need to issue an additional \$2.0 billion in subordinate lien revenue bonds between FY 2018 and FY 2022 to meet Act 44 obligations. PTC plans to issue an additional \$3.0 billion in senior lien bonds over the same period for turnpike capital needs. This level of additional debt issuance will continue the trend of upward pressure on toll rate sensitivity. It is KBRA's view that PTC will need to maintain heightened focus on controlling operating

costs to offset revenue pressures from additional debt issuances through 2022. It is also KBRA's view that lower Act 44 payment obligations beginning in 2023 will provide some relief from future toll rate escalation and will likely enhance PTC's ability to better accommodate the turnpike system's capital needs.

Management Structure & Experience

PTC is composed of five members, including the Secretary of the Department of Transportation, who serves as an ex officio Commission member. Commissioners are appointed by the governor (except for the ex officio member) with the advice and consent of two-thirds of the members of the Pennsylvania Senate. Members (except for the ex officio member) serve for a term of four years and may serve a maximum of two terms. Term limits do not apply to members who were appointed prior to the provisions of Act 89, which established the current two-term limit. PTC members collectively select a Commission Chair and require a voting majority of three Commissioners to advance any action requiring a vote. A unanimous Commission vote is required if PTC fails to submit the annual financial plan required by Act 44 or, among other things, fails to make any payments to PennDOT required by the Act 44. The requirement for a unanimous vote would not apply to any action that would prevent PTC from complying with any covenants made to senior lien bondholders.

The Commissioners and PTC's executive management team are experienced managers of transportation related facilities. KBRA notes that the current Commissioners all have a deep level of experience and although some are relatively new to their posts as Commissioners, KBRA views the limited tenure as mitigated by experience gained at other transportation and non-transportation related organizations within the Commonwealth. KBRA further notes that the Secretary of the Department of Transportation, who is an ex officio member of PTC, and as such, oversees all Commonwealth roads, highways and bridges. KBRA views PTC and PTC's executive management team as having a strong ability to identify and mitigate challenges through planning and to react to current challenges in a changing environment.

The current Commissioners and Commission's executive management team along with a brief summary of related work experience can be found in the Appendix.

Enabling Acts 44 and 89

Act 44 and Act 89 fundamentally changed the Commonwealth's method of funding transportation projects by creating new dedicated revenue sources that are more reliable and have better growth potential. Pursuant to this goal, Act 44 established the Pennsylvania Transportation Trust Fund and identified funding sources that included contributions from PTC, public transportation assistance fund, state general fund, sales and use tax, lottery fund, and contributions from the Commonwealth's capital facilities fund.

A key focus of Act 44 was PTC's mandate to operate the Commonwealth's portion of Interstate 80 and make payments in support of transportation projects throughout the Commonwealth. The Act intended for PTC to support Act 44 obligations with toll revenues that would be collected from vehicles traveling on I-80 after it was leased by PTC from PennDOT and converted to a toll road. The creation of the "public-public partnership" was designed to leverage PTC's ability to collect tolls on roads that are part of the turnpike system, which PennDOT is precluded from doing.

PTC and PennDOT executed the lease and funding agreement as required by Act 44, but PTC did not receive Federal authority to convert I-80 to a toll road. PTC's option to re-apply for conversion expired in 2010 so the financial responsibility of operating I-80 remains with PennDOT. The inability to toll I-80 did not relieve the Commonwealth from its well-studied need to improve the level of funding for transportation projects. Similarly, it did not fully relieve PTC's obligation to make Act 44 payments to the Commonwealth. Act 44 addressed the potential inability to toll I-80 by authorizing and enabling PTC to meet its obligations by issuing subordinate revenue bonds, which PTC has done on a regular basis since 2008. Currently, PTC has

provided \$5.8 billion in funding support under Act 44, and has \$6.0 billion in subordinate revenue bonds and MLF-enhanced subordinate special revenue bonds outstanding as of October 18, 2017.

Financial Management & Policies

PTC monitors revenues and expenditures on a daily, weekly, and monthly basis and measures actual performance against budget estimates. It also presents monthly operating reports on traffic volumes, and tracking revenues and expenses on a monthly and fiscal year to date basis to senior management of PTC, including the CEO and COO, all five Commissioners and the senior management of each operating department within PTC. Management reports that any significant variations in actual revenues or expenses can result in corrective actions being initiated at the organization or department level.

Pursuant to Commission policy, PTC will budget and maintain a cumulative fund balance, including cash balances in the reserve maintenance fund and the general reserve fund, equal to the greater of either the maximum annual debt service on all bonds not secured by a debt service reserve fund or 10% of annual budgeted revenues. PTC also formulates a 20-year long-range plan that is used to help formulate a 10-year capital plan. The capital plan is updated annually by PTC. Management reports that there is some flexibility within the capital plan, given its size and duration, and that there are a number of areas within the plan that can be adjusted in the event of an unexpected revenue shortfall.

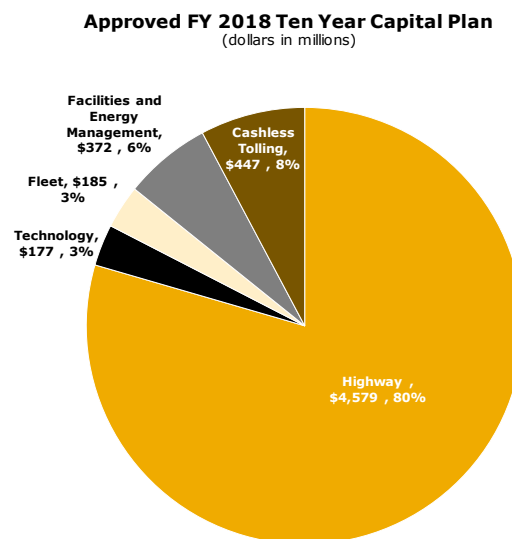
Act 44 Financial Plan Requirements

KBRA notes that Act 44 includes several provisions that, in KBRA's view, provide stability and balance against the Act's significant funding requirements. Specifically, Act 44 sets forth a requirement that PTC prepare and submit an annual financial plan by June 1 to the Commonwealth Secretary of the Budget describing PTC's proposed operating and capital expenditures, borrowings, liquidity and other financial management covenants and policies, as well as estimated toll rates, and all other revenues and expenditures for the ensuing fiscal year. The financial plan is required to demonstrate that PTC can comply with Act 44 obligations during the ensuing and future fiscal years after all other obligations, including senior lien and subordinate lien bonds, have been met. The financial plan is also required to provide an explanation of any deviations that occurred from the plan in the prior fiscal year. If the Secretary receives the financial plan by the required deadline, PTC is authorized to conduct operations in accordance with the plan.

Act 44, as amended by Act 89 increases the frequency of performance reviews conducted by the Commonwealth's Department of the Auditor General, who is required to review the performance, procedures, operating budget, capital budget and debt of PTC every two years, instead of every four. It is KBRA's view that the enhanced oversight and reporting obligations included within the Act appear to be aimed at bolstering the Commonwealth's oversight while maintaining PTC's autonomy.

Capital Improvement Plan

PTC's approved ten-year capital improvement plan, as shown in the chart on the previous page, net of federal reimbursement, totals approximately \$5.6 billion between FY 2018 and FY 2027. Major plan initiatives include roadway reconstruction and resurfacing, rehabilitation or replacement of structural



Source: Pennsylvania Turnpike Commission

deficient bridges, stage 1 design and construction of the I-95 interchange project and implementation of cashless tolling. Additional senior lien bonds will fund \$3.0 billion or 52% of the current \$5.6 billion program. The remaining \$2.6 billion will be funded on a pay-as-you go basis. KBRA positively notes that the annual revenues available for pay-as-you-go capital funding are expected to increase after Act 44 payments reduce from \$450 million to \$50 million in FY 2023 as the balance of outstanding subordinate lien bonds is gradually amortized.

KBRA views PTC's regulatory/management framework as being consistent with a AA- rating determinant rating, based on PTC's ability to manage the challenges of operating, expanding and improving turnpike facilities while adhering to the provisions of PTC's bond indentures and the requirements set forth by Act 44. The rating also reflects the Commonwealth statutes that grant PTC a strong level of managerial autonomy, including the full authority to set toll rates, manage financial operations, and manage capital projects related to the turnpike system. The rating further reflects the ongoing and upward pressure on toll rate sensitivity stemming from PTC issuance of additional subordinate lien debt, which in KBRA's view, will require heightened focus on controlling operating costs to offset revenue pressures through 2023.

Rating Determinant 4: Financial Profile

KBRA views PTC's financial operations as stable and well managed. Increasingly large operating margins and declining but solid debt service coverage reflect management's implementation of actions needed to meet PTC's Act 44 obligations to PennDOT. Since 2010, available revenues have provided solid coverage at or above 3.22x on the senior, 1.58x on the subordinate, and 1.46x on the MLF-enhanced subordinate special revenue bonds. In FY 2017, debt service coverage was 3.22x on the senior lien, 1.63x on the subordinate and 1.49x on the MLF-enhanced subordinate special revenue bonds.

PTC's financial operations have performed well under the recent regimen of toll increases successfully producing the annual increases in revenues available for debt service contemplated by its ongoing annual Act 44 financial plans. Toll revenues have performed generally in line with expectations while PTC's efforts to meet its cost containment target at 4.0% annual growth have often fallen somewhat short as a result of expenditure items outside the control of management including, namely, escalating pension contributions and expenditures related to the state police turnpike patrol. PTC maintains a liquidity standard policy requiring the maintenance of a FYE uncommitted liquidity balance equal to at least the greater of 10% of annual budgeted revenues in the general reserve fund and MADS on all bonds not secured by a DSRF. KBRA notes that this balance per the FY 2018 Act 44 financial plan is estimated at \$375.4 million as of FYE 2017, or 32.4% of revenues. At 364 days cash on hand KBRA considers this balance as providing solid liquidity support to PTC operations.

Revenue Base

PTC's operating revenues consist almost entirely of toll revenues with the balance (<3%) generated from concession plazas and other miscellaneous operating resources. Toll revenues were \$1.11 billion in FY 2017 and have increased at an 8.2% CAGR from FY 2013 to FY 2017. The increase in FY 2017 was slightly lower at 7.9% reflecting the 6.0% toll increase implemented January 8, 2017 and transaction growth of 0.7%. As discussed earlier, FY 2017 figures were negatively affected by the temporary closure of the Delaware River Bridge and the relatively harsh winter.

Revenue generation is notably concentrated across the Mainline and Northeastern Expansion, which account for more than 90% of toll revenues. KBRA, however, views the broadness of the turnpike system's user base as understated by this measure given the expansive nature of these primary assets and the multiple large metropolitan areas served by these thoroughfares.

Historic Operating Performance

On an audited GAAP compliant reporting basis, PTC's operating budget was \$871.4 million in FY 2017 including \$517.1 million in cost of services and \$354.3million in depreciation. The cost of service portion has increased at a CAGR of 5.8% since FY 2013, which is somewhat in excess of PTC's cost containment growth target of 4.0% implemented as part of the long-term plan to meet PTC's Act 44 obligations. Growth was notably higher in FY 2017 at 9.8%. Employee benefits and general and administrative expenses make up 53.6% of total service costs in FY 2017 but have accounted for 70.4% of expenditure growth in this category since FY 2013 reflecting PTC's limited control over these expenditure categories. Employee benefit costs are likely to grow in excess of the 4.0% target going forward given the contractual nature of these obligations while the transition to AET may serve to reduce general and administrative costs over time. KBRA anticipates that management will continue to focus on operational efficiencies and the 4.0% cost containment target going forward as part of a comprehensive effort to minimize toll increases necessary to meet its escalating financial obligations under Act 44.

The following table is a presentation of the PTC's audited GAAP compliant statement of changes in revenues, expenditures, and net assets taken from recent audited annual financial reports.

| Pennsylvania Turnpike Commission Changes in Revenues, Expenses, and Net Assets FYE May 31 (dollars in thousands) | | | | | | | | | |
|--|--------------------|--------------|--------------------|---------------|--------------------|--------------|--------------------|--------------|--------------------|
| | 2013 | Δ Y/Y (%) | 2014 | Δ Y/Y (%) | 2015 | Δ Y/Y (%) | 2016 | Δ Y/Y (%) | 2017 |
| Operating Revenues | | | | | | | | | |
| Net Toll Revenues | 811,542 | 6.2% | 861,846 | 8.2% | 932,146 | 10.5% | 1,030,115 | 7.9% | 1,111,061 |
| Other Revenues | 20,094 | -5.9% | 18,909 | -7.0% | 17,589 | -28.4% | 22,576 | 3.4% | 23,335 |
| Total Operating Revenues | 831,636 | 5.9% | 880,755 | 7.8% | 949,735 | 10.8% | 1,052,691 | 7.8% | 1,134,396 |
| Operating Expenses | | | | | | | | | |
| Cost of Services | 412,484 | 6.4% | 438,981 | 4.7% | 459,780 | 2.5% | 471,132 | 9.8% | 517,103 |
| Depreciation | 311,735 | 3.9% | 324,010 | 4.2% | 337,664 | -1.4% | 332,941 | 6.4% | 354,343 |
| Total Operating Expenses | 724,219 | 5.4% | 762,991 | 4.5% | 797,444 | 0.8% | 804,073 | 8.4% | 871,446 |
| Operating Income (Loss) | 107,417 | 9.6% | 117,764 | 29.3% | 152,291 | 63.3% | 248,618 | 5.8% | 262,950 |
| Nonoperating Revenues (Expenses) | | | | | | | | | |
| Act 44 and 89 Payments to PennDOT | (450,000) | | (450,000) | | (450,000) | | (450,000) | | (450,000) |
| Interest and Bond Expense | (393,822) | | (427,047) | | (465,869) | | (521,021) | | (560,660) |
| Other | 49,925 | | 37,200 | | 68,995 | | 9,783 | | (18,967) |
| Nonoperating Expenses, Net | (793,897) | 5.8% | (839,847) | 0.8% | (846,874) | 13.5% | (961,238) | 7.1% | (1,029,627) |
| Loss Before Capital Contributions | (686,480) | | (722,083) | | (694,583) | | (712,620) | | (766,677) |
| Capital Contributions | 97,836 | | 110,036 | | 146,472 | | 180,906 | | 214,664 |
| Discontinued Project | (51,009) | | 0 | | 0 | | 0 | | 0 |
| Increase (Decrease) in Net Position | (639,653) | -4.3% | (612,047) | -10.4% | (548,111) | -3.0% | (531,714) | 3.8% | (552,013) |
| Net Position at End of Year* | (2,617,625) | 26.1% | (3,300,455) | 24.7% | (4,114,945) | 12.9% | (4,646,659) | 11.9% | (5,198,672) |

*The decrease in net position reflects the Act 44 payments to PennDOT and the interest and bond expenses related to bond issued to finance Act 44 payments.

Source: Pennsylvania Turnpike Commission Audited Financial Statements from FY 2013 to FY 2016 CAFRs and FY 2017 Basic Financial Statements.

Operating margins have increased since FY 2013 reflecting actions taken by PTC to increase toll revenues and contain operating costs in order to ensure the availability of adequate resources to support its Act 44 obligations. These obligations include recurring \$450.0 million payments to PennDOT and escalating debt service obligations arising as a result of the ramp up in debt used to fund a portion of these PennDOT payments since FY 2007. Evidencing this trend, operating income has increased from \$107.4 million (14.8% of operating expenditures) in FY 2013 to \$263.0 million (30.2% of operating expenditures) in FY 2017. KBRA anticipates that this margin will widen further in the foreseeable future as contemplated in the FY 2018 Act 44 financial plan, providing PTC with adequate resources to fulfill its escalating financial obligations.

Reserves and Liquidity

PTC's liquidity position included \$283.7 million in unrestricted cash, cash equivalents, and short-term investments as of FYE 2017 on an audited, GAAP compliant basis. This balance represents an increase of 59.4% since FY 2013 and an increase of 35.1% YOY. As a portion of operating revenues, this liquidity balance has ranged from a low of 16.2% in FY 2015 to a high of 25.0% in FY 2017 over the last five years, which KBRA views as providing solid support for PTC's liquidity needs.

PTC additionally maintains a liquidity standard policy which requires the budgeting and maintenance of an FYE uncommitted liquidity balance (including the cash balances of the general reserve fund and the reserve maintenance fund) equal to at least the greater 10% of annual budgeted revenues in the general reserve fund and MADS on all bonds not secured by a DSRF. In KBRA's view, the liquidity standard policy provides a meaningful liquidity cushion with which to withstand unexpected cash flow challenges on a year to year basis. KBRA additionally views the subordination of both subordinate lien debt service and PennDOT transfers to maintenance of both operating and maintenance reserves and debt service on the senior lien bonds as a key security feature serving to enhance the strength of the security package supporting the senior lien bonds.

Seen below and according to the FY 2018 Act 44 financial plan, the general reserve fund maintains an estimated liquidity balance of \$375.4 million as of FYE 2017 equivalent to 32.6% of operating revenues. This balance is the highest it has been in five years and represents an increase of 11.6% YOY. The FY 2018 Act 44 financial plan estimates that this balance will decline slightly to \$356.6 million in FY 2018. This balance exceeds the PTC liquidity requirement of 10% budget revenues in the GRF and RMF, which equals approximately \$114 million for FY 2018. KBRA understands that this decline incorporates the PTC's expectation to redeem \$100 million of floating rate notes on December 1, 2017. KBRA views these historic and budgeted liquidity levels as providing adequate resources with which to meet PTC's cash needs.

The following table presents PTC's debt service coverage of the turnpike revenue bonds. The calculations are consistent with those presented in the PTC's offering documents. The general reserve fund balances are as presented in the Act 44 financial plan.

Pennsylvania Turnpike Commission
Debt Service Coverage as Presented in Offering Documents¹ and Liquidity Ratios
FYE May 31
(dollars in thousands)

| | 2013 | 2014 | 2015 | 2016 | 2017 | Budgeted 2018 |
|--|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| Revenues | | | | | | |
| Net Toll Revenues | \$811,542 | \$861,846 | \$932,146 | \$1,030,115 | \$1,111,061 | \$1,203,624 |
| Concession Revenues and Miscellaneous | \$20,094 | \$18,909 | \$17,589 | \$22,576 | \$23,335 | \$24,240 |
| Interest Income (Non bond Proceeds) ² | \$19,497 | \$14,917 | \$13,008 | \$13,676 | \$16,226 | \$16,704 |
| Total Revenues | \$851,133 | \$895,672 | \$962,743 | \$1,066,367 | \$1,150,622 | \$1,244,568 |
| Operating Expenditures | | | | | | |
| General & Administrative | \$41,632 | \$39,983 | \$39,541 | \$40,725 | \$47,861 | |
| Traffic Engineering and Operations | \$4,455 | \$3,966 | \$3,986 | \$4,654 | \$3,813 | |
| Service Centers | \$24,480 | \$22,448 | \$24,128 | \$28,304 | \$32,304 | |
| Employee Benefits | \$80,670 | \$83,810 | \$98,475 | \$107,646 | \$113,986 | |
| Toll Collection | \$60,862 | \$59,139 | \$60,429 | \$59,387 | \$60,112 | |
| Normal Maintenance | \$65,924 | \$74,789 | \$73,792 | \$64,545 | \$66,191 | |
| Facilities and Energy Mgmt. Operations | \$8,903 | \$9,850 | \$10,957 | \$10,886 | \$11,266 | |
| Turnpike Patrol | \$36,171 | \$39,818 | \$41,234 | \$46,161 | \$47,223 | |
| Total Operating Expenditures ³ | \$323,097 | \$333,803 | \$352,542 | \$362,308 | \$382,756 | \$399,570 |
| Revenue Less Operating Expenditures | \$528,036 | \$561,869 | \$610,201 | \$704,059 | \$767,866 | \$844,998 |
| General Reserve Fund Balance | | | | | | |
| General Reserve Fund / Liquidity Balance | \$255,205 | \$200,746 | \$235,603 | \$336,522 | \$375,400 | \$356,600 |
| General Reserve Fund / Liquidity Balance to Operating Revenues | 30.0% | 22.4% | 24.5% | 31.6% | 32.6% | 28.7% |
| Days Cash on Hand ⁴ | 288 | 220 | 244 | 339 | 358 | 326 |
| Senior Annual Debt Service Requirement | \$142,552 | \$158,995 | \$170,155 | \$215,019 | \$237,010 | \$319,952 |
| Coverage Ratio | 3.70x | 3.53x | 3.59x | 3.27x | 3.22x | 2.64x |
| Subordinate Annual Debt Service Requirement Coverage Ratio | \$156,067 1.77x | \$196,475 1.58x | \$205,627 1.62x | \$222,064 1.61x | \$233,804 1.63x | \$266,335 1.44x |
| MLF-Enhanced Subordinate Special Revenue Annual Debt Service Requirement | \$20,305 | \$29,632 | \$36,027 | \$36,525 | \$43,348 | \$45,150 |
| Coverage Ratio | 1.66x | 1.46x | 1.48x | 1.49x | 1.49x | 1.34x |
| Remaining Turnpike Cash | \$172,041 | \$112,818 | \$124,086 | \$231,253 | \$261,299 | \$233,871 |
| Total | \$427,246 | \$313,564 | \$359,689 | \$567,775 | \$636,699 | \$590,471 |

¹All figures including debt service coverage ratios are presented in conformity with coverage tables provided in September 2017 Turnpike Revenue Bonds, Series A of 2017 Offering Memorandum, which includes interest income from subordinate and subordinate special revenue DSRF earnings as interest income available for debt service. The FY 2018 Act 44 Plan excludes these additional amounts resulting in coverage calculations provided therein for the senior lien bonds at 3.25x for FY 2016, 2.98x for Estimated FY 2017, and 2.62x for Budgeted FY 2018.

²Figures for Budgeted 2018 Interest Income are adjusted from presentation in Act 44 plan to conform with presentation of audited financials.

³A breakdown of operating expenditures for Budgeted 2018 is not available.

⁴Days Cash on Hand = [(General Reserve Fund Liquidity Balance) ÷ (Total Operating Expenditures)] x 365

Source: Historic Operating data and coverage figures taken from Appendix A Table III of Official Statement for Turnpike Subordinate Revenue Bonds, Series A of 2017. Preliminary and budgeted figures as well as General Reserve Fund balances taken from Act 44 Financial Plans.

Budgeted FY 2018 Operating Performance

According to the approved FY 2018 Act 44 financial plan, operating revenues are budgeted to grow by an additional 8.2% in FY 2018 versus expenditure growth of 4.4%. These figures place the budgeted FY 2018 operating surplus at \$845.0 million compared to the FY 2017 surplus at \$767.9 million as PTC works to grow net income in order to satisfy its PennDOT payment commitments and rising debt service obligations. PTC has identified escalating annual pension commitments as well as growth in projected expense for the Pennsylvania state police highway patrol services as fixed obligations outside of management's control and which are likely to grow at rates in excess of the 4.0% cost containment target. Indeed, pension contributions have increased at a 29.1% CAGR from FY 2013 to FY 2017 and are expected to grow by an additional 19.7% (\$6.6 million in FY 2018). Expenditures for turnpike patrol similarly have increased at a 6.9% CAGR over the same period and are expected to grow by an additional 8.9% (\$4.0 million) in FY 2018 alone.

Labor and Pensions

PTC has approximately 2,004 employees as of October 1, 2017, of which 1,430 full-time employees and 89 temporary employers are represented by three Teamsters' Local Unions. Approximately 70.3% of the workforce was allocated to maintenance operations and fare collections. Contracts with two unions were ratified January 27, 2016 and expire September 30, 2019. An agreement with a third union has been effective since November 19, 2013 and expired September 30, 2017. PTC is additionally party to an open-ended memorandum of understanding effective October 1, 2007. PTC has experienced just one work stoppage since union representation began which occurred November 24, 2004 and lasted one full week.

This employment headcount reflects a notable decline of 20.0% from a historic high in 2002, largely reflecting a reduction in toll collection headcount due to gradual adoption of ETC tolling. This employment figure additionally reflects a decline of 13.2% since FY 2009 as PTC management has honed its focus on expense management in order to meet its Act 44 financial commitments.

PTC provides defined benefit retirement, death, and disability benefits to eligible employees through its participation in the multiple-employer Pennsylvania State Employees' Retirement System (SERS). The Commonwealth constitution assigns the authority to establish and amend the benefit provisions of SERS to the Commonwealth's General Assembly. PTC contributions are mandated by statute, based on actuarially determined amounts and are expressed as a percentage of payroll. In FY 2017 these amounts ranged from 20.7% to 29.95% of payroll compared to a range of 7.29% to 10.51% in FY 2013. PTC's pension contributions have been equivalent to the full, statutorily required and actuarially based amount in each of the last five years. These amounts have increased markedly over this period from \$12.0 million in FY 2013 to \$33.3 million in FY 2017. Pension expenses as a portion of PTC's operating expenditures (excluding depreciation) increased from 3.7% in FY 2013 to 8.7% in FY 2017. As of December 31, 2016, and per GASB 68, SERS maintained an asset sufficiency ratio of 57.8%. Of the net pension liability, PTC's proportionate share is \$379.2 million.

On June 12, 2017, Act 5 was signed into law reworking retirement options for new PTC employees hired on or after January 1, 2019 and allowing current employees to opt into three new retirement plans including two hybrid defined benefit / defined contribution plans and one defined contribution only plan. In general, the changes include benefit reductions and increased retirement ages for members joining SERS after this date. KBRA notes that while these revisions will likely reduce benefit costs over the long run, they will have little if any effect on commitments tied to existing employees, who will be grandfathered into existing benefit provisions and will be unlikely to opt into newer less generous benefit tiers.

| Pennsylvania Turnpike Commission Pension Contribution Summary (dollars in thousands) | | | | |
|--|-------------------------------|-------------------|------------------------------|--|
| FYE June 30 | Employer Contributions | Y/Y Change | Required Contribution | Portion of Required Contribution Paid |
| 2013 | \$12,000 | 51.9% | \$12,000 | 100.0% |
| 2014 | \$17,400 | 45.0% | \$17,400 | 100.0% |
| 2015 | \$22,588 | 29.8% | \$22,588 | 100.0% |
| 2016 | \$27,864 | 23.4% | \$27,864 | 100.0% |
| 2017 | \$33,303 | 19.5% | \$33,303 | 100.0% |

Source: Pennsylvania Turnpike Commission FY 2017 AFR and historic CAFRs.

PTC additionally provides other post-employment benefits (OPEB) including medical, prescription drug, dental and vision benefits to qualifying employees through a single-employer defined benefit plan. Benefit provisions of the plan are established and may be amended by PTC. Per a Medical Trust Funding Policy effective September 17, 2008, PTC has contributed amounts toward the OPEB plan well in excess of the

annual required contribution that have declined from \$54.8 million in FY 2013 to \$28.2 million in FY 2017 over the last five years with each contribution well in excess of the actuarially required contribution. OPEB expenditures as a portion of PTC's operating expenditures (excluding depreciation) have declined from 13.3% in FY 2013 to 5.4% in FY 2017. As of January 1, 2016, the plan was funded at a level of 100.4%. KBRA views positively PTC's successful efforts to fully fund OPEB commitments and notes that it is among a very limited number of governmental entities to accomplish this.

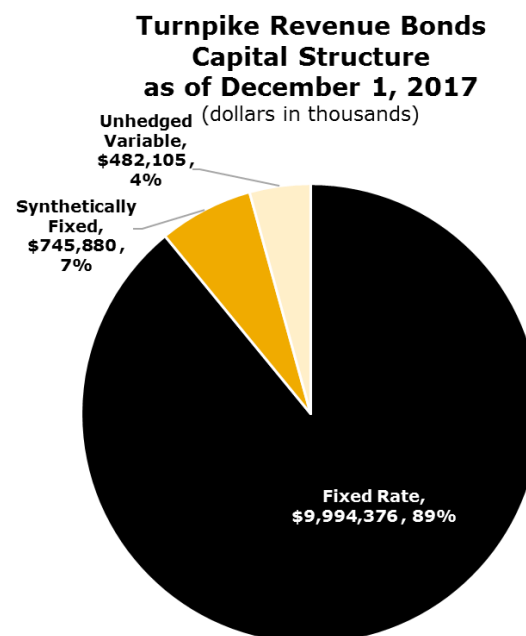
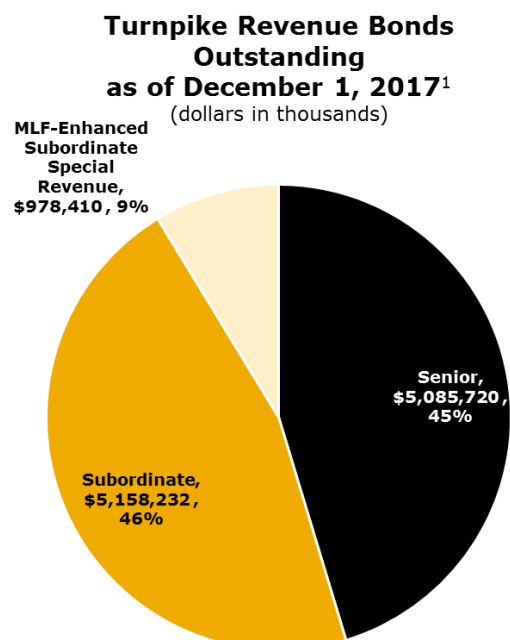
| Pennsylvania Turnpike Commission OPEB Contribution Summary (dollars in thousands) | | | | |
|---|------------------------|------------|-----------------------|---------------------------------------|
| FYE June 30 | Employer Contributions | Y/Y Change | Required Contribution | Portion of Required Contribution Paid |
| 2013 | \$54,768 | 0.7% | \$23,423 | 233.8% |
| 2014 | \$44,228 | -19.2% | \$18,353 | 241.0% |
| 2015 | \$46,180 | 4.4% | \$12,683 | 364.1% |
| 2016 | \$28,143 | -39.1% | \$11,368 | 247.6% |
| 2017 | \$28,176 | 0.1% | \$11,121 | 253.4% |

Source: Pennsylvania Turnpike Commission FY 2017 AFR and historic CAFRs.

On a combined basis, PTC's pension and OPEB commitments have ranged from \$68.8 million to \$61.5 million through the last five years largely reflecting PTC's choice to accelerate OPEB commitments to fully fund the aforementioned OPEB Medical Trust. With the OPEB Trust fully funded, KBRA expects annual contributions to this commitment to make up a very small portion of operating expenditures going forward; however, pension contributions are projected to grow at a rate well in excess of the 4.0% cost containment target into the foreseeable future. Together, pension and OPEB contributions have declined from 16.2% of PTC operating expenditures in FY 2013 to 11.9% in FY 2017, due primarily to a reduction of accelerated OPEB contributions commencing FY 2016.

Debt

As of December 1, 2017, PTC has approximately \$11 billion in turnpike system revenue debt including (i) \$5.1 billion in turnpike senior revenue bonds and (ii) \$6.1 billion in turnpike subordinate revenue bonds including a \$978.4 million portion that is enhanced by a backstop security mechanism to borrow funds from the Commonwealth's motor license fund for payment in the event that PTC is unable to provide timely payment of debt service. The PTC also has oil franchise tax revenue bonds payable solely from oil franchise tax receipts and registration fee revenue bonds paid solely from motor license fund receipts, totaling approximately \$1 billion. As discussed throughout this report the turnpike senior revenue bonds are used to finance general capital needs including projects, improvement, and reconstruction of the highway system including the Mainline and Northeastern Extension and are paid from the net revenues of the turnpike system. Turnpike subordinate revenue bonds are in turn used exclusively to finance PTC's Act 44 payment obligations to PennDOT and secured by a subordinate priority payment obligation from turnpike operations. The oil franchise tax revenue bonds and registration fee revenue bonds are in turn used by policy decision of PTC to fund the construction of and improvements to the Mon/Fayette Expressway and Southern Beltway Projects. As these later two categories of debt are not paid from PTC operating funds and are instead paid from special tax and fee revenues derived from the Commonwealth, KBRA's analysis will focus only on the turnpike senior and subordinate, and MLF-enhanced subordinate special revenue bonds.



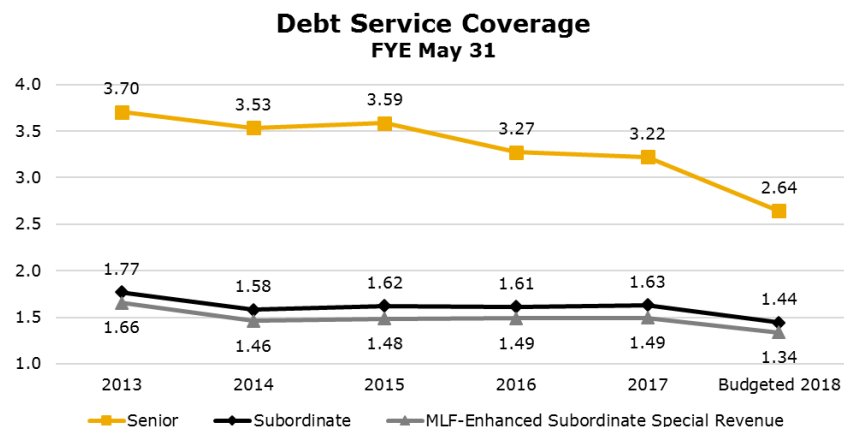
Source: Pennsylvania Turnpike Commission

¹Subordinate and MLF-Enhanced Subordinate Special Revenue principal outstanding figures are inclusive of accreted par on zero-coupon bonds of \$160.8 million and \$35.1 million, respectively.

PTC's Turnpike Revenue Bonds Capital Structure as of December 1, 2017 is shown in the chart above. Excluding derivatives tied to PTC's oil franchise tax revenue and vehicle registration fee revenue bonds, which are payable exclusively from discrete sources of funding outside the purview of our analysis of the turnpike system revenue bonds, PTC maintains a portfolio of interest rate swaps in the notional amount of \$1.3 billion as of November 24, 2017. This portfolio maintains a mark to market value of \$146.1 million in favor of the counterparties as of this date, which is the net amount of money that would have been needed to terminate all instruments on this date. Under the respective swap agreements, KBRA understands that PTC is subject to collateral posting requirements in the event that credit ratings on the senior revenue bonds fall below specified thresholds, generally set below the single-A credit quality range.

Debt Service Coverage

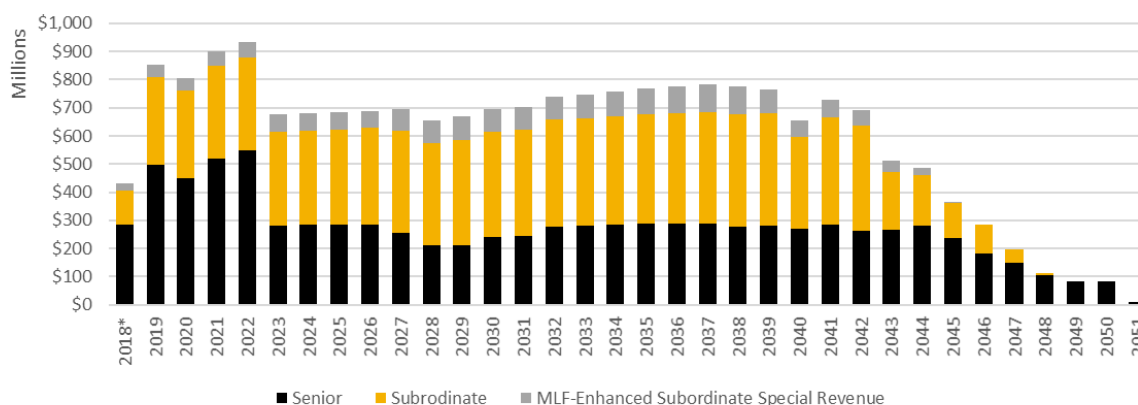
PTC has historically maintained strong debt service coverage ratios. Seen on the following page, coverage on the senior bonds has ranged from 3.70x to 3.22x from FY 2013 to FY 2017. Coverage on the subordinate bonds has been at or above 1.58x over this period while coverage on the MLF-enhanced subordinate special revenue bonds was slightly lower at 1.46x. Lower coverage of the MLF-enhanced subordinate special revenue bonds reflects a flow of funds directing available revenues first to the unenhanced subordinate bonds. Based on the FY 2018 Act 44 financial plan, coverage on the three tiers of bonds is budgeted to decline to 2.64x, 1.44x, and 1.34x, respectively in FY 2018.



Source: Pennsylvania Turnpike Commission

PTC operations in FY 2017 provided strong coverage of 1.49x across the three categories of bonds. As of December 1, 2017, debt service is scheduled to increase from \$514.2 million in FY 2017 to \$851.8 million in FY 2019 before reaching MADS of \$932.0 million in FY 2022, producing MADS coverage based upon FY 2017 operations at 1.40x on senior, 0.87x on subordinate, and 0.82x on MLF-enhanced subordinated special revenue bonds. This notable increase in annual debt service reflects the rolling maturity of about \$1.0 billion in floating rate notes (FRNs) for which the bulk of principal repayment is typically refinanced forward upon maturity through the remarketing of the FRNs. KBRA understands that for the purpose of additional bonds tests under the various governing documents and the annual Act 44 financial plan, the FRN principal amounts are expected to amortize over a window of approximately 25 years. Based on PTC's demonstrated history of frequent market access, KBRA views PTC's ability to successfully remarket the FRNs as strong and therefore anticipates that PTC will be able to refinance forward significant portions of scheduled FRN principal payments through remarketing of the FRNs as planned. Annual debt service projections, net of planned FRN remarketing, indicate that debt service escalation is anticipated to be manageable increasing to \$660.3 million in FY 2019 and \$704.4 million by FY 2022. Based on these assumptions debt service coverage across the senior, subordinate, and MLF-enhanced subordinate special revenue bonds will occur in FY 2036 at \$812.7 million, upon which FY 2017 operations would provide coverage across the senior, subordinate, and MLF-enhanced subordinate special revenue bonds at 2.29x, 1.07x, and 0.94x, respectively. These projections indicate that PTC may be strained to maintain coverage covenants in the absence of solid revenue growth or rate increases. KBRA believes however that actions planned under the FY 2018 Act 44 financial plan, when executed, will enable PTC to comfortably achieve both covenanted coverage across the senior, subordinate, and MLF-enhanced subordinate special revenue bonds at 1.30x, 1.15x, and 1.00x, respectively, as well as internal policy driven coverage at 2.00x, 1.30x, and 1.20x, respectively, per the PTC's debt management policy.

Turnpike Revenue Bonds Debt Service Schedule
As of November 28, 2017
(FYE May 31)



Source: Pennsylvania Turnpike Commission

*FY 2018 values reflect only payments for the remaining portion of the fiscal year.

The most recent Act 44 financial plan and the 2017 CDM Smith Traffic and Revenue Study Update (bring down letter) anticipates that PTC will be able to meet its financial obligations going forward by increasing toll revenues by 6.0% each year through FY 2020, 5.0% annually thereafter through FY 2025 and just 3.0% annually in FY 2028 to FY 2045. The plan further anticipated that this regimen would produce revenue growth of 8.4% in FY 2017 (versus the 8.1% realized) with revenue growth gradually slowing to slightly more than 4.0% annually from FY 2029 to FY 2045. KBRA notes that PTC expects to issue \$5.0 billion in turnpike revenue bonds between FY 2018 to FY 2022 including \$3.0 billion in senior revenue bonds and \$2.0 billion in subordinate revenue bonds. The FY 2018 Act 44 financial plan projects that these additional borrowings will be manageable within the assumed schedule of toll rate increases while maintaining coverage on the senior, subordinate, and MLF-enhanced subordinate special revenue bonds at levels of 2.62x, 1.44x, and 1.34x, respectively, over the long term compared to covenanted coverage levels at 1.30x, 1.15x, and 1.00x, respectively.

KBRA has assigned an A+ rating determinant rating for PTC's financial profile reflecting a trend of stable increases in revenues and well managed operations in the context of mounting financial obligations under Act 44 that must be carefully managed over time to ensure sustainability.

Rating Determinant 5: Security Provisions

The legal framework pursuant to which the Commission issues subordinate revenue bonds clearly identifies the PTC's obligations and responsibilities to bondholders. It also sets forth a flow of funds, rate covenant, additional bonds test, and the reserve requirements that, in KBRA's view, provides satisfactory level of bondholder protection.

Pledged Revenues

The subordinate trust indenture sets forth required payments after meeting all necessary debt service on senior indebtedness issued under the senior indenture. The subordinate indenture requires the commission to furnish a debt service schedule to the senior trustee providing for payment to the subordinate trustee out of funds held in the senior indenture general reserve fund. These payments are deposited into the subordinate indenture-commission payments fund with respect to the outstanding bonds issued under the

subordinate indenture. Tolls received by or on behalf of the Commission from the turnpike system are not pledged to the subordinate revenue bonds and MLF-enhanced subordinate special revenue bonds.

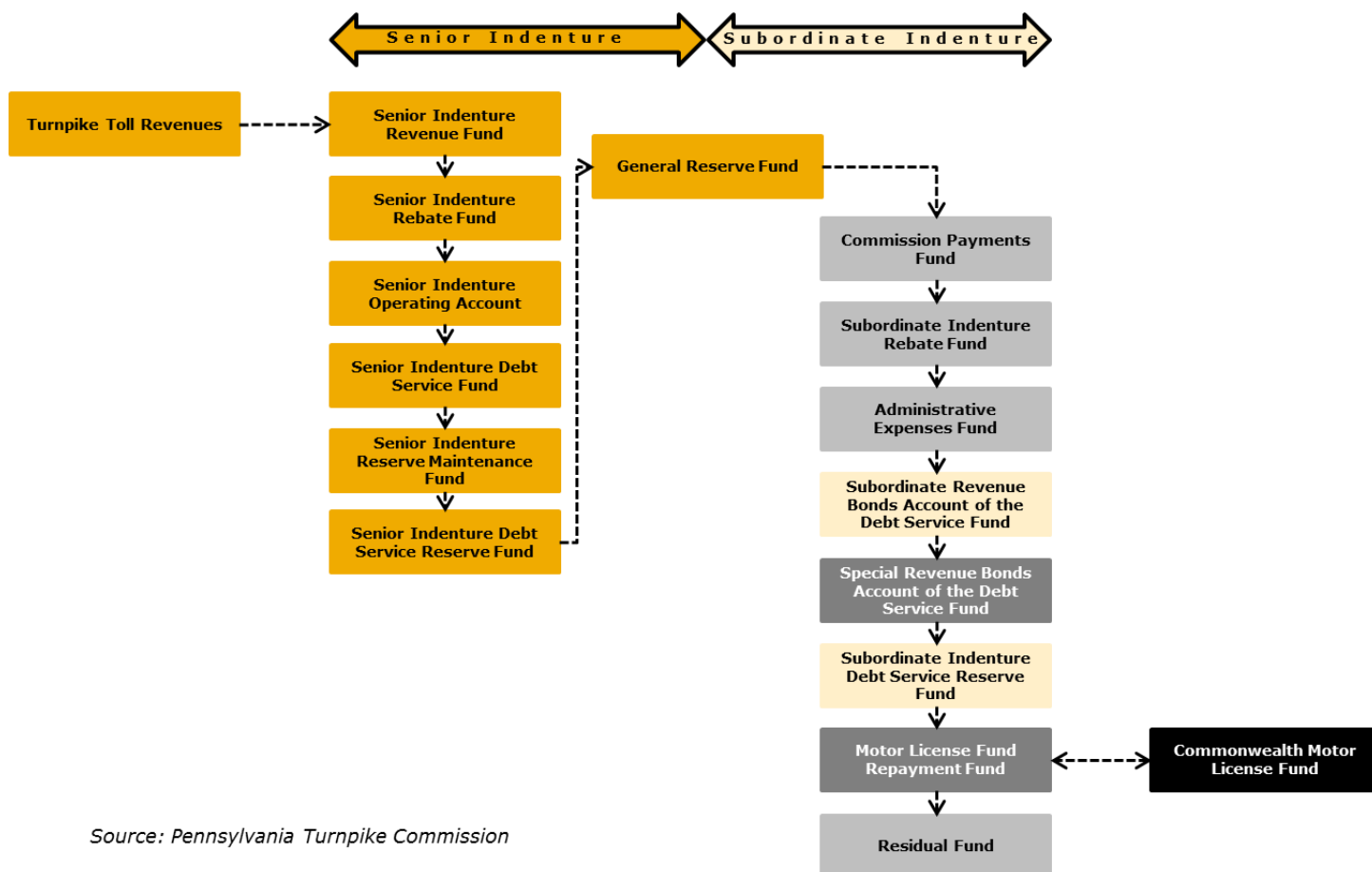
Flow of Funds

The Commission deposits all revenues into a revenue fund, which is held by the senior bond trustee, on a daily basis. On or before the last business day of the month, an amount equal to the following month's operating and maintenance expenses is transferred into the operating account. After meeting the operating account requirement, the Commission transfers an amount equal to that month's accrued interest and principal requirement into the senior revenue bonds debt service fund. Remaining amounts are paid into the reserve maintenance fund in the following order:

- The amounts equal to the amount required for the following month defined in the Commission's annual capital budget,
- The amount required for deposit into the senior revenue bond debt service reserve fund to restore a deficiency, if any, within 18 months,
- The remaining surplus is deposited into the general reserve fund.

Balances in the general reserve fund are available to pay subordinate lien debt, optionally redeem bonds, fund capital improvements or be applied for any other authorized Commission purposes.

After meeting the deposit requirements of the senior indenture, as illustrated in the diagram below, one-sixth and one-twelfth deposits of interest and principal, respectively, are set aside in the subordinate revenue bonds account on or before the first day of each month.



Source: Pennsylvania Turnpike Commission

Subordinate Rate Covenant

Commission payments out of the general reserve fund are required to be at least 1.15x annual debt service on the subordinate revenue bonds. KBRA notes that the Commission adheres to an internal policy to maintain subordinate revenue bond debt service coverage of at least 1.30x.

KBRA also notes that in addition to the rate covenant set forth in the subordinate bond indenture, the PTC is mandated, as set forth by Commonwealth statute, to raise toll rates to levels that are sufficient, with other available revenues, to cover all obligations under Act 44. KBRA notes that Act 44 obligations are subordinate to senior and subordinate lien bond obligations, which, in KBRA's view, creates an additional level of cushion for bondholders.

Subordinate Additional Bonds Test

The Commission may not issue additional subordinate revenue bonds unless the following conditions are met:

- Certification that the amount paid into the general reserve fund for the most recent fiscal year divided by the annual debt service on outstanding revenue bonds (including the additional bonds to be issued) and outstanding parity obligations, was not less than 1.15x; and
- Certification that the projected debt service coverage ratio is not less than 1.10x for outstanding bonds, including bonds to be issued at that time.

Subordinate Debt Service Reserve Requirements

PTC has the option of establishing a debt service reserve fund requirement for subordinate lien bonds. The debt service reserve requirement is equal to the lesser of maximum annual debt service for subordinate lien bonds, 125% of average annual debt service, or 10% of aggregate outstanding principal.

Based on the foregoing KBRA views the security provisions governing the subordinate lien turnpike revenue bonds as being consistent with an A rating determinant rating.

Bankruptcy Assessment

The Commonwealth of Pennsylvania created the Commission in the 1930s, and it is an instrumentality of the Commonwealth. KBRA has consulted outside counsel, and it is KBRA's understanding that the Commission is a political subdivision under Pennsylvania state law, and a municipality as defined under the U.S. Bankruptcy Code. To be a debtor under the municipal bankruptcy provisions of the U.S. Bankruptcy Code (Chapter 9), a local governmental entity must, among other things, qualify under the definition of "municipality" in the Bankruptcy Code, and must also be specifically authorized to file a bankruptcy petition by the state in which it is located. KBRA understands that the Pennsylvania statute authorizing Chapter 9 filings, called Act 47, applies only to a county, city, borough, incorporated town, township or home rule municipality, and not to entities such as the Commission. Accordingly, Pennsylvania law would not currently permit the Commission to file for protection under the U.S. Bankruptcy Code. Of course, state law can be amended generally, or a specific bill can be passed to permit a particular municipal issuer to seek Chapter 9 relief, so Pennsylvania law could change in the future.

To secure the Subordinate Bonds the Commission has pledged to the Trustee its "Commission Payments" (certain payments made by the Commission from funds released from the General Reserve Fund established under the Senior Indenture after the payment of all Senior Indenture Parity Obligations) and other specified funds (collectively, the "Subordinate Trust Estate"). Thus, the Subordinate Bonds are not paid directly from toll revenues or other specific road system (the "System") revenue received by the Commission from operating the System, nor are the Commission Payments backed by a lien on the General Reserve Fund.

There are certain statutory and document provisions that enhance the likelihood of payment of both the Subordinate Bonds and Motor License Fund Bonds. The Commission is required by the terms of the Amended Funding Agreement and Act 44 to fix and adjust tolls at levels that will generate revenues (together with other available moneys) sufficient to pay, among other things, amounts to PennDOT pursuant to the Amended Lease and Funding Agreement, executed between the Commission and PennDOT (the "Amended Funding Agreement"), when due and other obligations of the Commission, and the Commission has covenanted in the Subordinate Indenture to set tolls at a level sufficient to meet its coverage obligations taking into account any additional debt incurred in order to make such payments. Also, Pennsylvania law requires that the Commission submit a financial plan to the Commonwealth Secretary of the Budget demonstrating that the operation of the Commission in accordance with the plan can reasonably be anticipated to result in the Commission having unencumbered funds during ensuing and future fiscal years sufficient to make the payments due to the Commonwealth after all other obligations of the Commission have been met.

Conclusion

Based on the foregoing analysis, KBRA has assigned a long-term rating of **A+** and **Stable Outlook** to the Pennsylvania Turnpike Commission's Turnpike Subordinate Revenue Refunding Bonds, Third Series of 2017 and affirms the long-term rating of A+ with a stable outlook on the Commission's outstanding turnpike subordinate revenue bonds KBRA has also affirmed the long-term rating of AA- with a stable outlook on the Commission's outstanding Turnpike Revenue Bonds.

Appendix

| Pennsylvania Turnpike Commission | | |
|--|-------------|---|
| Commissioners | Nominated | Previous Experience |
| Leslie S. Richards Secretary of Transportation Commission Chair | 2015 | <ul style="list-style-type: none"> • Worked as a senior project manager at a woman-owned civil engineering firm and served as a public involvement specialist at a consulting firm gaining experienced with managing multi-million-dollar infrastructure projects and writing annual and long-range strategic plans. • Served as the vice chair of the Montgomery County Board of Commissioners, PA. • Served as chair of the Delaware Valley Regional Planning Commission. • Served on the boards of the Southeastern Pennsylvania Transportation Authority (SEPTA) and the Greater Valley Forge Transportation Management Association (GVFTMA). • Served as the chair and vice chair of the Whitemarsh Township Board Supervisors. |
| William K. Lieberman Commission Vice Chair | 2010 | <ul style="list-style-type: none"> • Served as Chairman of the Pennsylvania Turnpike Commission from January 2011 until January 2015. • Mr. Lieberman has been President of The Lieberman Companies, an insurance and pension provider, since 2003. • Serves on the board of AMPCO Pittsburgh (Forged and Cast Engineered Products and Air and Liquid Processing) • A graduate of The Pennsylvania State University, Mr. Lieberman is a University of Pittsburgh Trustee and former Chairman of the Manchester-Bidwell Corp., Pittsburgh, Pennsylvania. • Term expires in May 2019. |
| Pasquale T. Deon, Sr Commissioner | 2002 | <ul style="list-style-type: none"> • Mr. Deon is Chairman of the Board of Directors of the Southeastern Pennsylvania Transportation Authority (SEPTA). • Mr. Deon is a service-industry entrepreneur involved in real-estate development, beverage distribution and construction services. • Mr. Deon is the owner of WBCB-1490AM Radio, Levittown, Pennsylvania. • Term expires in December 2017. |
| Barry Drew Commissioner Secretary/Treasurer | 2015 | <ul style="list-style-type: none"> • Previously served as the Deputy Secretary of Administration at the Pennsylvania Department of Revenue from 1995 until 2011. • Former solicitor for the City of Erie, Pennsylvania and Director of Administration for the County of Erie. • Mr. Drew is a Vietnam War veteran who served as a Sergeant in the United States Air Force. • His term expires in December 2019. |
| John N. Wozniak Commissioner | 2017 | <ul style="list-style-type: none"> • Mr. Wozniak served as a Pennsylvania State Senator from the 35 District from 1997 to 2016. • Served as a member of the Pennsylvania House of Representatives from the 71 District from 1981 to 1996. • Term expires in July 2021. |

Source: Pennsylvania Turnpike Commission

| Pennsylvania Turnpike Commission Executive Management Team | | |
|---|--------------------|---|
| Executive Management Team | Joined PA Turnpike | Previous Experience |
| Mark P. Compton Chief Executive Officer | 2013 | <ul style="list-style-type: none"> Mr. Compton previously served as Deputy Secretary of Administration of PennDOT, overseeing eight bureaus within the agency, including: human resources, information systems, governance, business solutions and services, infrastructure and operations, and fiscal management. Served as Director of Government Affairs for all four companies of American Infrastructure, a heavy duty civil construction company headquartered in Worcester, Pennsylvania. Has worked in various public and private operations, focusing largely on transportation, construction and economic development. |
| Craig R. Shuey Chief Operating Officer | 2009 | <ul style="list-style-type: none"> Mr. Shuey joined the Commission in August 2009 as Director of Government Affairs and was named Chief Operating Officer in January 2011. Mr. Shuey served as Acting Commission Chief Executive Officer from October 2012 to February 2013. Served as executive director of the Pennsylvania Senate Transportation Committee from 2001 to 2009. Served as a representative on the State Senate Transportation Commission and on various advisory committees in areas such as air, rail, freight movement and safety. |
| Nikolaus H. Grieshaber Chief Financial Officer | 2000 | <ul style="list-style-type: none"> Served as Director of Treasury Management and Treasury Manager with the Pennsylvania Turnpike Commission. Served as a finance manager and portfolio manager for ADP Capital Management, assistant treasurer for BTR Dunlop Finance, cash manager for Silo, Inc. and investment analyst for American Life Insurance Company. |
| Bradley J. Heigel, P.E. Chief Engineer | 1990 | <ul style="list-style-type: none"> Previously worked for the Pennsylvania Turnpike Commission from 1990 to 2010, and served as the Total Reconstruction Program Manager from 2000 to 2010. From 2010 to 2012, Mr. Heigel was employed as a Vice President with Michael Baker, Jr., Inc., an engineering unit of Michael Baker Corporation. |
| Doreen A. McCall, Esq. Chief Counsel | 2005 | <ul style="list-style-type: none"> Served as Chief Counsel to the Pennsylvania Historical and Museum Commission from February 2003 to July 2005 and as Deputy General Counsel in the Governor's Office of General Counsel from April 2000 to January 2003. From September 1996 to April 2000, Mrs. McCall was an Assistant General Counsel and from November 1993 to August 1996, Mrs. McCall was a staff attorney in the Office of Inspector General. |
| Ray A. Morrow Chief Compliance Officer | 2014 | <ul style="list-style-type: none"> Prior to being named the Chief Compliance Officer, Mr. Morrow served the Commission as its Acting Chief Compliance Officer and Inspector General. Morrow served as a Senior Compliance Investigator for the Siemens Corporation from 2010-2013. 1987-2007 Mr. Morrow once again joined the FBI as a Special Agent culminating his career as the Special Agent in Charge of the FBI's Pittsburgh Field Office. From 1978 to 1980, Mr. Morrow served with the U.S. Secret Service Uniformed Division assigned to the White House and the Presidential Protective Detail. From 1980 to 1987, Mr. Morrow served as an Executive Protection Specialist for Allegheny International ("AI"), a Fortune 500 company, assigned to protect the President of AI. |

Source: Pennsylvania Turnpike Commission

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