



## Maryland Transit Administration Pension Plan

GASB68 Actuarial Information for the  
Measurement Period Ending  
June 30, 2020

# Bolton

Submitted by:

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October 2, 2020

Glenn Davis  
Chief Financial Officer  
Maryland Transit Administration  
6 St. Paul Street, 8<sup>th</sup> floor  
Baltimore, MD 21202

*Re: MTA Pension Plan – GASB68 Actuarial Information for the Measurement Period Ending June 30, 2020*

Dear Glenn,

The following report contains the GASB67 and GASB68 actuarial information to be included with the MTA's financial statements for FYE 2020. The GASB68 information has been provided as of the June 30, 2020 measurement date for FYE 2020.

### Methodology, Reliance and Certification

This report is prepared for the Maryland Transit Administration (MTA). The report contains the actuarial information to be included with the MTA's financial statements for the year ending June 30, 2020 (the MTA's fiscal year end date) as required by GASB68. This information has been prepared for use in the financial statements of the MTA. This information is not intended for, nor should it be used for, any additional purposes.

The total pension liability is based on the July 1, 2019 actuarial valuation rolled forward to June 30, 2020. The methods, assumptions, and participant data used are detailed in the July 1, 2019 actuarial valuation report with the exception of:

- The actuarial cost method - These calculations are based on the Entry Age Normal cost method as required by GASB68.
- The discount rate - The included calculations are based on a blended discount rate of 4.05%. The plan's expected gross rate of investment return of 8.10% has been blended with the 2.45% yield corresponding to the 20-year maturity on a municipal general obligation AA bond yield curve published on Fidelity's Fixed Income Market Data webpage as of June 30, 2020. The development of the blended discount rate is included within this report.
- The Cost-of-Living Adjustment assumption - The projected benefits for purposes of this report include expected Cost-of-Living Adjustments (COLAs) to benefits for pensioners and beneficiaries of 2.10% per year for all future years. Although there is not a firm promise to provide COLAs, there is a pattern of providing annual increases and, as such, they have been included as part of the substantive plan.

The calculation of the actuarially determined contribution (ADC) for the fiscal year ended June 30, 2020 is contained in the July 1, 2019 actuarial valuation report. The included calculations assume that the members and the County will continue to make all required actuarially determined contributions. Based on that assumption, the plan's fiduciary net position is not expected to be available to make all future benefit payments of current plan members.

### Methodology, Reliance and Certification (cont.)

The long-term nominal expected rate of return on pension plan investments was selected by the State of Maryland.

These calculations and comparisons with assets are applicable for the valuation date only. The future is uncertain, and the plan may become better funded or more poorly funded in the future. This valuation does not provide any guarantee that the plan will be able to provide the promised benefits in the future.

This is a deterministic valuation in that it is based on a single set of assumptions. This set of assumptions is one possible basis for our calculations. Other assumptions may be equally valid. The future is uncertain, and the plan's actual experience will differ from those assumptions; these differences may be significant or material because these results are very sensitive to the assumptions made and, in some cases, to the interaction between the assumptions. We may consider that some factors are not material to the valuation of the plan and may not provide a specific assumption for those factors. We may have used other assumptions in the past. We will likely consider changes in assumptions at a future date.

The MTA is responsible for selecting the plan's funding policy, actuarial valuation methods, asset valuation methods, and assumptions. The policies, methods and assumptions used in this valuation are those that have been so prescribed and are described in this report. The MTA is solely responsible for communicating to Bolton Partners, Inc. any changes required thereto.

The MTA could reasonably ask how the valuation would change if we used a different assumption set or if plan experience exhibited variations from our assumptions. This report does not contain such an analysis. This type of analysis would be a separate assignment.

The cost of this plan is determined by the benefits promised by the plan, the plan's participant population, the investment experience of the plan and many other factors. An actuarial valuation is a budgeting tool for the MTA or, in this case, a measure of accounting expense. It does not affect the cost of the plan. As the experience of the plan evolves, it is normal for the level of contributions and expense of the plan to change. If a contribution is not made for a particular year, either by deliberate choice or because of an error in a calculation, that contribution can be made in later years. We will not be responsible for contributions that are made at a future time rather than an earlier time. The plan sponsor is responsible for funding the cost of the plan.

We make every effort to ensure that our calculations are accurately performed. These calculations are complex. Despite our best efforts, we may make a mistake. We reserve the right to correct any potential errors by amending the results of this report or by including the corrections in a future valuation report.

Because modeling all aspects of a situation is not possible or practical, we may use summary information, estimates, or simplifications of calculations to facilitate the modeling of future events in an efficient and cost-effective manner. We may also exclude factors or data that are immaterial in our judgment. Use of such simplifying techniques does not, in our judgment, affect the reasonableness of valuation results for the plan.



### Methodology, Reliance and Certification (cont.)

This report is based on plan provisions, census data, and asset data submitted by the MTA. We have relied on this information for purposes of preparing this report but have not performed an audit. The accuracy of the results presented in this report is dependent upon the accuracy and completeness of the underlying information. The plan sponsor is solely responsible for the validity and completeness of this information.

The MTA is solely responsible for selecting the plan's investment policies, asset allocations and individual investments. Bolton Partners, Inc.'s actuaries have not provided any investment advice to the MTA.

The information in this report was prepared for the internal use of the MTA, the plan and their auditors in connection with our actuarial valuations of the pension plan as required by GASB68. This report may not be used for any other purpose; Bolton Partners, Inc. is not responsible for the consequences of any unauthorized use or the reliance on this information by any other party.

The calculation of actuarial liabilities for valuation purposes is based on a current estimate of future benefit payments. The calculation includes a computation of the "present value" of those estimated future benefit payments using an assumed discount rate; the higher the discount rate assumption, the lower the estimated liability will be. For purposes of estimating the liabilities (future and accrued) in this report, you selected an assumption based on the expected long-term rate of return on plan investments. Using a lower discount rate assumption, such as a rate based on long-term bond yields, could substantially increase the estimated present value of future and accrued liabilities.

This report provides certain financial calculations for use by the auditor. These values have been computed in accordance with our understanding of generally accepted actuarial principles and practices and fairly reflect the actuarial position of the plan. The various actuarial assumptions and methods which have been used are, in our opinion, appropriate for the purposes of this report.

The report is conditioned on the assumption of an ongoing plan and is not meant to present the actuarial position of the plan in the case of plan termination. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions, changes in economic or demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status), and changes in plan provisions or applicable law.

A model is a simplified representation of relationships among real world variables, entities, or events using statistical, financial, economic, mathematical, non-quantitative, or scientific concepts and equations. A model consists of three components: an information input component, which delivers data and assumptions to the model; a processing component, which transforms input into output; and a results component, which translates the output into useful business information.

The model(s) used in this report produce a deterministic valuation in that it is based on a single set of assumptions. This set of assumptions is one possible basis for our calculations. Other assumptions may be equally valid. We may consider that some factors are not material to the valuation of the plan and may not provide a specific assumption for those factors. We may have used other assumptions in the past. We will likely consider changes in assumptions at a future date.



Methodology, Reliance and Certification (cont.)

There are no known material inconsistencies among the set of assumptions in this report, and the output resulting from the aggregation of assumptions has been thoroughly tested and deemed reasonable.

The results provided in this valuation were produced from programs developed in-house by Bolton. We have relied upon the use of third-party software to calculate the actuarial liabilities using the input census data, plan provisions, and actuarial assumptions. Those liabilities are used as inputs to our proprietary programs. To safeguard against unexpected or inaccurate results, we have utilized sample life checking and gain/loss analysis to test the accuracy and integrity of the model output.

The undersigned credentialed actuary meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. The July 1, 2019 actuarial valuation report contains information that is integral to the results contained herein and a copy may be provided upon request.

Sincerely,



Kevin Binder, FSA, EA, MAAA



Tom Vicente, FSA, EA



# Maryland Transit Administration Pension Plan

Actuarial Information to Include in the Financial Statements  
for the June 30, 2020 Measurement Date

## Net Pension Liability

The components of the net pension liability at June 30, 2020, were as follows:

Total pension liability	\$ 1,393,190,047
Plan fiduciary net position	(335,912,260)
Employer's net pension liability	\$ 1,057,277,787
Plan fiduciary net position as a percentage of the total pension liability	24.11%

Actuarial assumptions. The total pension liability was determined by an actuarial valuation as of July 1, 2019 rolled forward to June 30, 2020 using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	3.1 percent
Salary increases	Rates vary by participant service
Investment rate of return	7.45 percent, net of pension plan investment expense, including inflation for funded benefits.
Mortality	RP-2014 Blue Collar tables with MP-2018. The RP-2014 Disabled Retiree table with MP-2018 is used for disabled members.

The above is a summary of key actuarial assumptions. Full descriptions of the actuarial assumptions are available in the July 1, 2019 actuarial valuation report.

## Sensitivity of the net pension liability to changes in the discount rate

	1% Decrease 3.05%	Current Discount Rate 4.05%	1% Increase 5.05%
Employer's net pension liability	\$ 1,273,463,512	\$ 1,057,277,787	\$ 880,615,322

**Maryland Transit Administration Pension Plan**  
 Actuarial Information to Include in the Financial Statements  
 for the June 30, 2020 Measurement Date

Changes in the Net Pension Liability

	Total Pension Liability (a)	Increase (Decrease) Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)
<b>Balances at 6/30/19</b>	\$ 1,254,698,383	\$ 322,304,417	\$ 932,393,966
<b>Changes for the year:</b>			
Service cost	42,307,645		42,307,645
Interest	55,831,451		55,831,451
Changes of benefit terms	208,455		208,455
Differences between expected and actual experience	(17,140,142)		(17,140,142)
Changes of assumptions	101,716,323		101,716,323
Contributions - employer		43,249,926	(43,249,926)
Contributions - member		4,609,744	(4,609,744)
Net Investment Income <sup>1</sup>		12,831,812	(12,831,812)
Benefit payments, including refunds of member contributions	(44,432,068)	(44,432,068)	-
Administrative expense		(2,651,571)	2,651,571
Other		-	-
<b>Net Changes</b>	138,491,664	13,607,843	124,883,821
<b>Balances at 6/30/20</b>	\$ 1,393,190,047	\$ 335,912,260	\$ 1,057,277,787

<sup>1</sup> Includes investment income and dividends and the increase/(decrease) in the market value of investments

# Maryland Transit Administration Pension Plan

## Actuarial Information to Include in the Financial Statements for the June 30, 2020 Measurement Date

### Components of Employer's Pension Expense for the Fiscal Year Ended June 30, 2020

Note	Description	Amount
A	Service cost	\$ 42,307,645
B	Interest on the total pension liability	55,831,451
A	Changes of benefit terms	208,455
C	Differences between expected and actual experience	(9,292,815)
C	Changes of assumptions	33,938,326
A	Employee contributions	(4,609,744)
D	Projected earnings on pension plan investments	(26,138,087)
C	Differences between expected and actual earnings on plan investments	(802,441)
A	Pension plan administrative expense	2,651,571
A	Other changes in fiduciary net position	-
<b>Total Pension Expense</b>		<b>\$ 94,094,361</b>

#### Notes:

- A Provided in the Changes in Net Pension Liability exhibit.
- B Based on the following calculation:

	Amount for Period (a)	Portion of Period (b)	Discount Rate (c)	Interest on the Pension Liability (a) x (b) x (c)
Beginning total pension liability	\$ 1,254,698,383	100%	4.53%	\$ 56,837,837
Service cost (end of year)	37,658,889	0%	4.53%	-
Benefit payments, including refunds of employee contributions	(44,432,068)	50%	4.53%	(1,006,386)
<b>Total interest on the total pension liability</b>				<b>\$ 55,831,451</b>

- C Provided in the Schedules of Deferrals.
- D Based on the following calculation:

	Amount for Period (a)	Portion of Period (b)	Projected Rate of Return (c)	Projected Earnings (a) x (b) x (c)
Beginning plan fiduciary net position	\$ 322,304,417	100%	8.10%	\$ 26,106,658
Employer contributions	43,249,926	50%	8.10%	1,751,622
Employee contributions	4,609,744	50%	8.10%	186,695
Benefit payments, including refunds of employee contributions	(44,432,068)	50%	8.10%	(1,799,499)
Administrative expense and other	(2,651,571)	50%	8.10%	(107,389)
<b>Total Projected Earnings</b>				<b>\$ 26,138,087</b>



# Maryland Transit Administration Pension Plan

## Actuarial Information to Include in the Financial Statements for the June 30, 2020 Measurement Date

### Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions

At June 30, 2020, the Employer reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	\$ 8,692,433	\$ 35,953,159
Changes of assumptions	189,246,347	126,923,260
Net difference between projected and actual earnings on pension plan investments	5,734,375	-
<b>Total</b>	<b>\$ 203,673,155</b>	<b>\$ 162,876,419</b>

Amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in pension expense as follows:

Year ended June 30:	
2021	\$ 24,785,717
2022	21,478,639
2023	(25,203,731)
2024	5,640,085
2025	14,096,026
Thereafter	-

**Maryland Transit Administration Pension Plan**  
**Actuarial Information to Include in the Financial Statements**  
**for the June 30, 2020 Measurement Date**

**Changes in the Net Pension Liability and Related Ratios**  
Last 10 Fiscal Years (Dollars amounts in thousands)

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
<b>Total pension liability</b>										
Service cost	\$ 42,308	\$ 36,027	\$ 37,195	\$ 36,334	\$ 48,499	\$ 24,718	\$ 19,438			
Interest	55,831	56,519	54,904	57,881	31,181	39,237	43,472			
Changes of benefit terms	208	(203)	3,106	2,133	82,510	-	-			
Differences between expected and actual experience	(17,140)	(8,528)	17,385	(20,741)	(15,024)	(19,621)	4,025			Information for FY2013 and earlier is not available
Changes of assumptions	101,716	(58,176)	(36,903)	(162,606)	338,950	53,480	38,643			
Benefit payments, including refunds of member contributions	(44,432)	(42,724)	(37,203)	(39,062)	(35,283)	(30,636)	(32,598)			
Net change in total pension liability	138,492	(17,084)	38,483	(126,062)	450,833	67,177	72,980			
<b>Total pension liability - beginning</b>	<b>1,254,698</b>	<b>1,271,782</b>	<b>1,233,299</b>	<b>1,359,361</b>	<b>908,528</b>	<b>841,351</b>	<b>768,371</b>			
<b>Total pension liability - ending (a)</b>	<b>\$ 1,393,190</b>	<b>\$ 1,254,698</b>	<b>\$ 1,271,782</b>	<b>\$ 1,233,299</b>	<b>\$ 1,359,361</b>	<b>\$ 908,528</b>	<b>\$ 841,351</b>			
<b>Plan fiduciary net position</b>										
Contributions - employer	\$ 43,250	\$ 41,597	\$ 40,997	\$ 40,997	\$ 40,997	\$ 35,400	\$ 39,749			
Contributions - member	4,610	3,006	3,316	3,094	-	-	-			
Net investment income	12,832	31,024	20,550	27,741	12,768	14,045	15,783			
Benefit payments, including refunds of member contributions	(44,432)	(42,724)	(37,203)	(39,062)	(35,283)	(30,636)	(32,598)			
Administrative expense	(2,652)	(2,325)	(2,213)	(1,914)	(1,967)	(1,851)	(1,587)			
Other	-	(6,720)	-	(2,631)	-	-	-			
Net change in plan fiduciary net position	\$ 13,608	\$ 23,858	\$ 25,447	\$ 28,225	\$ 16,515	\$ 16,958	\$ 21,347			
Plan fiduciary net position - beginning	322,304	298,447	273,000	244,776	228,261	211,303	189,957			
Plan fiduciary net position - ending (b)	\$ 335,912	\$ 322,304	\$ 298,447	\$ 273,000	\$ 244,776	\$ 228,261	\$ 211,303			
Net pension liability - ending (a)-(b)	\$ 1,057,278	\$ 932,394	\$ 973,335	\$ 960,299	\$ 1,114,585	\$ 680,267	\$ 630,048			
Plan fiduciary net position as a percentage of the total pension liability	24.11%	25.69%	23.47%	22.14%	18.01%	25.12%	25.11%			
Covered payroll	\$ 149,768	\$ 148,445	\$ 145,834	\$ 137,154	\$ 137,427	\$ 135,545	\$ 137,596			
Net pension liability as a percentage of covered payroll	705.94%	628.11%	667.43%	700.16%	811.04%	501.88%	457.90%			
Expected average remaining service years of all participants	6	6	6	7	7	7	7			

**Notes to Schedule:**

Benefit changes: FYE 2020 reflects that all Local 1300 employees will contribute 3% of earnings to the plan effective July 1, 2019 and 4% effective July 1, 2020.

Changes of assumptions: FYE 2020 reflects a decrease to the effective discount rate from 4.53% to 4.05%. Also, based on an experience study completed August 16, 2019, the decrement assumptions for mortality, termination, retirement, and disability were updated, as well as the salary scale, payroll growth, and inflation assumptions. Additionally, the existing amortization bases were consolidated to a 25 year base and all future experience and assumption changes will be amortized over 20 years.



**Maryland Transit Administration Pension Plan**  
 Actuarial Information to Include in the Financial Statements  
 for the June 30, 2020 Measurement Date

**Schedule of Employer Contributions**  
 Last 10 Fiscal Years (Dollar amounts in thousands)

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Actuarially determined contribution	\$ 55,213	\$ 64,649	\$ 66,495	\$ 62,217	\$ 44,736	\$ 40,807	\$ 39,749			
Contributions in relation to the actuarially determined contribution	43,250	41,597	40,997	40,997	40,997	35,400	39,749			
Contribution deficiency (excess)	\$ 11,963	\$ 23,052	\$ 25,498	\$ 21,220	\$ 3,739	\$ 5,407	\$ -	Information for FY2013 and earlier is not available		
Covered payroll	\$ 149,768	\$ 148,445	\$ 145,834	\$ 137,154	\$ 137,427	\$ 135,545	\$ 137,596			
Contributions as a percentage of covered payroll	28.88%	28.02%	28.11%	29.89%	29.83%	26.12%	28.89%			

**Notes to Schedule**

Valuation date:

Actuarially determined contribution amounts are calculated as of the beginning of the fiscal year (July 1) for the current fiscal year. Actuarial valuations are performed every year.

Methods and assumptions used to determine contribution rates:

Actuarial cost method	Level Dollar Entry Age Normal
Amortization method	Level Payments (Closed)
Remaining amortization period	Remaining payments range from 3 to 25 years
Asset valuation method	5-year smoothed market
Inflation	3.1 percent
Salary increases	Rates vary by participant service
Investment rate of return	7.45 percent, net of pension plan investment and administrative expenses, including inflation
Retirement age	Rates vary by participant age
Mortality	RP-2014 Blue Collar tables with MP-2018. The RP-2014 Disabled Retiree table with MP-2018 is used for disabled members.

**Maryland Transit Administration Pension Plan**  
 Actuarial Information to Include in the Financial Statements  
 for the June 30, 2020 Measurement Date

**Schedule of Differences between Projected and Actual Earnings on Pension Plan Investments**

In conformity with paragraph 33b of Statement 68, the effects of differences between projected and actual earnings on pension plan investments are recognized in pension expense using a systematic and rational method over a closed five-year period, beginning in the current reporting period. The following table illustrates the application of this requirement.

Increase (Decrease) in Pension Expense Arising from the Recognition of Differences between Projected and Actual Earnings on Plan Investments											
Year	Differences between Projected and Actual Earnings on Pension Plan Investments	Recognition Period (Years)	2016	2017	2018	2019	2020	2021	2022	2023	2024
Prior			\$ (787,685)	(787,685)	(787,685)	(787,687)					
2016	\$ (4,713,228)	5	\$ (942,646)	(942,646)	(942,646)	(942,646)	(942,644)				
2017	(7,649,509)	5		\$ (1,529,902)	(1,529,902)	(1,529,902)	(1,529,902)	(1,529,901)			
2018	2,036,482	5			\$ 407,296	407,296	407,296	407,296	407,298		
2019	(6,992,230)	5				\$ (1,398,446)	(1,398,446)	(1,398,446)	(1,398,446)	(1,398,446)	
2020	13,306,275	5					\$ 2,661,255	2,661,255	2,661,255	2,661,255	2,661,255
Net increase (decrease) in pension expense			\$ (1,730,331)	\$ (3,260,233)	\$ (2,852,937)	\$ (4,251,385)	\$ (802,441)	\$ 140,204	\$ 1,670,107	\$ 1,262,809	\$ 2,661,255

**Deferred Outflows of Resources and Deferred Inflows of Resources Arising from Differences between Projected and Actual Earnings on Pension Plan Investments**

Year	Investment Earnings Less than Projected (a)	Investment Earnings Greater Than Projected (b)	Amounts Recognized in Pension Expense Through June 30, 2020 (c)	Balances at June 30, 2020	
				Deferred Outflows of Resources (a) - (c)	Deferred Inflows of Resources (b) - (c)
2016	\$ -	\$ 4,713,228	\$ 4,713,228	\$ -	\$ -
2017	-	7,649,509	6,119,608	-	1,529,901
2018	2,036,482	-	1,221,888	814,594	-
2019	-	6,992,230	2,796,892	-	4,195,338
2020	13,306,275	-	2,661,255	10,645,020	-
				\$ 11,459,614	\$ 5,725,239

**Maryland Transit Administration Pension Plan**  
 Actuarial Information to Include in the Financial Statements  
 for the June 30, 2020 Measurement Date

**Schedule of Differences between Expected and Actual Experience**

In conformity with paragraph 33a of Statement 68, the effects of differences between expected and actual experience are recognized in pension expense, beginning in the current reporting period, using a systematic and rational method over a closed period equal to the average of the remaining service lives of all employees that are provided with pensions through the pension plan (active and inactive employees), determined as of the beginning of the measurement period. The following table illustrates the application of this requirement.

Increase (Decrease) in Pension Expense Arising from the Recognition of Differences between Expected and Actual Experience															
Year	Differences between Expected and Actual Experience	Recognition Period (Years)	Prior	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Thereafter
Prior	\$ -		\$ -												
2015	(19,621,279)	7		\$ (2,803,040)	(2,803,040)	(2,803,040)	(2,803,040)	(2,803,040)	(2,803,040)	(2,803,039)					
2016	(15,023,996)	7			\$ (2,146,285)	(2,146,285)	(2,146,285)	(2,146,285)	(2,146,285)	(2,146,285)	(2,146,286)				
2017	(20,741,099)	7				\$ (2,963,014)	(2,963,014)	(2,963,014)	(2,963,014)	(2,963,014)	(2,963,014)	(2,963,015)			
2018	17,384,864	6					\$ 2,897,477	2,897,477	2,897,477	2,897,477	2,897,477	2,897,479			
2019	(8,527,580)	6						\$ (1,421,263)	(1,421,263)	(1,421,263)	(1,421,263)	(1,421,263)	(1,421,265)		
2020	(17,140,142)	6							\$ (2,856,690)	(2,856,690)	(2,856,690)	(2,856,690)	(2,856,690)	(2,856,692)	
Net increase (decrease) in pension expense	\$ -		\$ -	\$ (2,803,040)	\$ (4,949,325)	\$ (7,912,339)	\$ (5,014,862)	\$ (6,436,125)	\$ (9,292,815)	\$ (9,292,814)	\$ (6,489,776)	\$ (4,343,489)	\$ (4,277,955)	\$ (2,856,692)	\$ -

**Deferred Outflows of Resources and Deferred Inflows of Resources Arising from Differences between Expected and Actual Experience**

Year	Experience Losses (a)	Experience Gains (b)	Amounts Recognized in Pension Expense Through June 30, 2020 (c)	Balances at June 30, 2020	
				Deferred Outflows of Resources (a) - (c)	Deferred Inflows of Resources (b) - (c)
Prior	\$ -	\$ -	\$ -	\$ -	\$ -
2015	-	19,621,279	16,818,240	-	2,803,039
2016	-	15,023,996	10,731,425	-	4,292,571
2017	-	20,741,099	11,852,056	-	8,889,043
2018	17,384,864	-	8,692,431	8,692,433	-
2019	-	8,527,580	2,842,526	-	5,685,054
2020	-	17,140,142	2,856,690	-	14,283,452
				<b>\$ 8,692,433</b>	<b>\$35,953,159</b>



**Maryland Transit Administration Pension Plan**  
 Actuarial Information to Include in the Financial Statements  
 for the June 30, 2020 Measurement Date

**Schedule of Changes of Assumptions**

In conformity with paragraph 33a of Statement 68, the effects of changes of assumptions should be recognized in pension expense, beginning in the current reporting period, using a systematic and rational method over a closed period equal to the average of the remaining service lives of all employees that are provided with pensions through the pension plan (active and inactive employees), determined as of the beginning of the measurement period. The following table illustrates the application of this requirement.

Increase (Decrease) in Pension Expense Arising from the Effects of Changes of Assumptions															
Year	Changes of Assumptions	Recognition Period (Years)	Prior	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Thereafter
Prior	\$ -		\$ -	-	-	-	-	-	-	-	-	-	-	-	-
2015	53,480,106	7		\$ 7,640,015	7,640,015	7,640,015	7,640,015	7,640,015	7,640,015	7,640,016					
2016	338,949,559	7			\$ 48,421,366	48,421,366	48,421,366	48,421,366	48,421,366	48,421,366	48,421,363				
2017	(162,605,699)	7				\$ (23,229,386)	(23,229,386)	(23,229,386)	(23,229,386)	(23,229,386)	(23,229,386)	(23,229,383)			
2018	(36,902,711)	6					\$ (6,150,452)	(6,150,452)	(6,150,452)	(6,150,452)	(6,150,452)	(6,150,451)			
2019	(58,175,626)	6						\$ (9,695,938)	(9,695,938)	(9,695,938)	(9,695,938)	(9,695,938)	(9,695,936)		
2020	101,716,323	6							\$ 16,952,721	16,952,721	16,952,721	16,952,721	16,952,721	16,952,718	-
Net increase (decrease) in pension expense			\$ -	\$ 7,640,015	\$ 56,061,381	\$ 32,831,995	\$ 26,681,543	\$ 16,985,605	\$ 33,938,326	\$ 33,938,327	\$ 26,298,308	\$ (22,123,051)	\$ 7,256,785	\$ 16,952,718	\$ -

**Deferred Outflows of Resources and Deferred Inflows of Resources Arising from Changes of Assumptions**

Year	Increases in the Total Pension Liability (a)	Decreases in the Total Pension Liability (b)	Amounts Recognized in Pension Expense Through June 30, 2020 (c)	Balances at June 30, 2020	
				Deferred Outflows of Resources (a) - (c)	Deferred Inflows of Resources (b) - (c)
Prior	\$ -	\$ -	\$ -	\$ -	\$ -
2015	53,480,106	-	45,840,090	7,640,016	-
2016	338,949,559	-	242,106,830	96,842,729	-
2017	-	162,605,699	92,917,544	-	69,688,155
2018	-	36,902,711	18,451,356	-	18,451,355
2019	-	58,175,626	19,391,876	-	38,783,750
2020	101,716,323	-	16,952,721	84,763,602	-
				<b>\$ 189,246,347</b>	<b>\$ 126,923,260</b>

# Maryland Transit Administration Pension Plan

## Actuarial Information to Include in the Financial Statements for the June 30, 2020 Measurement Date

### Projection of Contributions (Dollar amounts in thousands)

Year	Projected Covered Payroll			Projected Contributions			
	Payroll for Current Employees (a)	Payroll for Future Employees (b)	Total Employee Payroll <sup>1</sup> (c) = (a) + (b)	Contributions from Current Employees (d)	Projected Total Employer Contribution <sup>2</sup> (e)	Service Cost for Future Employees (f)	Total Contributions (g) = (d) + (e) - (f)
1	\$ 162,725	\$ -	\$ 162,725	\$ 3,255	\$ 55,977	\$ -	\$ 59,232
2	159,407	8,362	167,770	3,188	56,275	493	58,970
3	156,225	16,746	172,971	3,124	45,787	987	47,924
4	152,680	25,653	178,333	3,054	46,103	1,513	47,644
5	148,861	35,000	183,861	2,977	46,429	2,064	47,342
6	144,421	45,140	189,561	2,888	46,765	2,662	46,992
7	139,610	55,827	195,437	2,792	47,112	3,292	46,612
8	134,941	66,555	201,496	2,699	47,469	3,925	46,243
9	129,988	77,754	207,742	2,600	47,837	4,585	45,852
10	124,963	89,219	214,182	2,499	48,217	5,261	45,455

Note: Years subsequent to year 10 have been omitted from this table.

<sup>1</sup> Total covered payroll increases 3.10% per year.

<sup>2</sup> The employer is assumed to contribute the ADC annually to the trust

# Maryland Transit Administration Pension Plan

## Actuarial Information to Include in the Financial Statements for the June 30, 2020 Measurement Date

Projection of Pension Plan's Fiduciary Net Position (Dollar amounts in thousands)

Year	Projected Beginning Fiduciary Net Position (a)	Projected Total Contributions <sup>1</sup> (b)	Projected Benefit Payments (c)	Projected Administrative Expense <sup>2</sup> (d)	Projected Investment Earnings (e)	Projected Ending Fiduciary Net Position (f) = (a) + (b) - (c) - (d) + (e)
1	\$ 335,912	\$ 62,319	\$ 47,940	\$ 2,183	\$ 27,703	\$ 375,810
2	375,810	62,072	50,976	2,443	30,791	415,255
3	415,255	50,964	54,026	2,699	33,402	442,896
4	442,896	50,615	57,124	2,879	35,494	469,003
5	469,003	50,239	60,320	3,049	37,458	493,332
6	493,332	49,802	63,620	3,207	39,270	515,578
7	515,578	49,329	66,954	3,351	40,912	535,514
8	535,514	48,869	70,214	3,481	42,371	553,060
9	553,060	48,382	73,573	3,595	43,632	567,905
10	567,905	47,887	76,783	3,691	44,681	579,998

Note: Years subsequent to year 10 have been omitted from this table.

<sup>1</sup> From Projection of Contributions table; Column (g)

<sup>2</sup> Pension plan administrative expense equal to 0.65% of Projected Beginning Fiduciary Net Position



**Maryland Transit Administration Pension Plan**  
 Actuarial Information to Include in the Financial Statements  
 for the June 30, 2020 Measurement Date

Actuarial Present Value of Projected Benefit Payments (Dollar amounts in thousands)

Year (a)	Projected Beginning Fiduciary Net Position <sup>1</sup> (b)	Projected Benefit Payments (c)	"Funded" Portion of Benefit Payments (d)	"Unfunded" Portion of Benefit Payments (e)	Present Value of "Funded" Benefit Payments (f) = (d) / (1 + 8.10%) <sup>(a)</sup>	Present Value of "Unfunded" Benefit Payments (g) = (e) / (1 + 2.45%) <sup>(a)</sup>	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) / (1 + 4.05%) <sup>(a)</sup>
1	\$ 335,912	\$ 47,940	\$ 47,940	\$ -	\$ 44,348	\$ -	\$ 46,076
2	375,810	50,976	50,976	-	43,623	-	47,089
3	415,255	54,026	54,026	-	42,768	-	47,966
4	442,896	57,124	57,124	-	41,833	-	48,745
5	469,003	60,320	60,320	-	40,863	-	49,471
6	493,332	63,620	63,620	-	39,869	-	50,149
7	515,578	66,954	66,954	-	38,815	-	50,725
8	535,514	70,214	70,214	-	37,654	-	51,127
9	553,060	73,573	73,573	-	36,500	-	51,490
10	567,905	76,783	76,783	-	35,238	-	51,647
26	283,741	112,833	112,833	-	14,893	-	40,241
27	192,043	113,808	113,808	-	13,896	-	39,010
28	92,014	114,588	-	114,588	-	58,184	37,751
98	-	-	-	-	-	-	-
99	1	-	-	-	-	-	-
<b>Total</b>					<b>\$ 799,893</b>	<b>+ \$ 1,077,142</b>	<b>= \$ 1,877,035</b>

Note: Years 11-25 and 29-97 have been omitted from this table

<sup>1</sup> From Projection of Pension Plan's Fiduciary Net Position table; Column (a)