Maryland Transit Administration
Pension Plan
Actuarial Valuation
As of July 1, 2015

Date of Report: **September 18, 2015**

Prepared By: **Bolton Partners, Inc.**
100 Light Street, 9th Floor
Baltimore, MD 21202

BOLTON PARTNERS

September 18, 2015

Robert Alonso
Chief Financial Officer
Maryland Transit Administration
6 St. Paul Street, 8th Floor
Baltimore, MD 21202

Dear Robert:

The following sets forth the actuarial valuation of the Maryland Transit Administration Pension Plan as of July 1, 2015. Section 1 of the report provides the executive summary while Sections 2 through 6 contains the development of the actuarially determined contribution for the 2016 fiscal year along with a summary of the census and asset data, plan provisions, assumptions and actuarial methods. Section 7 provides a glossary of many of the terms used in this report. The appendices of the report provide information for financial reporting as well as a 10-year projection of benefit payments and an actuarial certification.

We are available to answer any questions regarding the material in this report or to provide explanations or further details as appropriate. The undersigned credentialed actuaries meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained in this report. We are not aware of any direct or material indirect financial interest or relationship, including investments or other services that could create a conflict of interest, that would impair the objectivity of our work.

Respectfully submitted,

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1. Executive Summary

Background

Bolton Partners, Inc. has prepared the following report that sets forth the actuarial determined contribution of the Maryland Transit Administration Pension Plan as of July 1, 2015.

Actuarially Determined Contribution

The actuarially determined contribution increased this year both as a nominal amount and as a percentage of participant payroll. The primary cause of this change is changing the mortality table to include future mortality improvement as well as decreasing the discount rate by 0.05%. Exhibit 2 of the report shows a 2 year comparison of the determination of the contribution.

Actuarially Determined Contribution	FY2015	FY2016
Actuarially Determined Contribution	$40,807,270	$44,736,075
Percent of total payroll	30.11%	32.55%

Summary of Plan Results

	7/1/2014	7/1/2015	% Change
Participant Counts			
Active	2,639	2,649	.38%
Participants Receiving a Benefit	1,669	1,730	3.65%
Terminated Vested Participants	480	486	1.25%
Total	4,788	4,865	1.61%
Annual Pay of Active Members	$135,544,813	$137,427,168	1.39%
Assets and Liabilities			
Actuarial Liability	$515,327,523	557,256,179	8.14%
Actuarial Value of Assets	$230,072,392	248,469,522	8.00%
Unfunded Actuarial Liability	$285,255,131	308,786,657	8.25%
Funded Ratio	44.65%	44.59%	(0.13%)
Contributions			
Employer Normal Cost	$6,261,544	$6,996,628	11.74%
Amortization Payment	$34,545,726	$37,739,447	9.24%
Actuarially Determined Contribution	$40,807,270	$44,736,075	9.63%
Assumed Payment Date	09/01/2014	09/01/2015	

1. Executive Summary (cont)

Experience Analysis

The following factors affected the actuarially determined contribution:

- Changing the mortality table to include future mortality improvements was the primary cause of the liability increase during 2014 - 2015. The annual required contribution increased $3.1 million due to this assumption change.
- Decreasing the discount rate to 7.60% from 7.65% also caused an increase in the Plan's liabilities during 2014. The annual required contribution increased $0.3 million dollars due to the decrease in the discount rate.

Demographic Assumptions

Demographic assumptions are based on the 2011 Experience Study. There will be a new experience study in the fall of 2015.

Economic Assumptions

The economic assumptions are those used by the State of Maryland Pension Plan. They will be reviewed as part of the 2015 experience study.

Changes in Method, Assumptions, and Plan Amendments

The following changes to actuarial assumptions and methods are reflected in this valuation:

- The investment return was decreased from 7.65% to 7.60% for the July 1, 2015 valuation. The rate will be lowered by 0.05% each year until reaching 7.55%. The rate of return is intended to be consistent with the rate used by the Maryland State Retirement and Pension System.
- The mortality table was changed to the RP-2014 fully generational blue collar mortality table projected from 2014 using scale MP-2014 for active and healthy retirees.
- The disability mortality table was changed to the RP-2014 fully generational disabled mortality table projected from 2014 using scale MP-2014 for disabled participants.

There were no plan amendments since the July 1, 2014 valuation that affect participant benefits.

Projection of Expected Benefit Payments

The projection of expected benefit payments is shown in Appendix 3.

1. Executive Summary (cont)

Sources of Information

The July 1, 2015 participant data and market value of assets were provided by, or at the direction of the MTA. While we have reviewed this data for consistency and completeness, we have not audited this data.

Actuarial Statement

We are available to answer any questions on the material in this report or to provide explanations or further details as appropriate. As noted in the Actuarial Certification in Appendix 3, we believe that the actuarial assumptions and methods used in this report are reasonable and appropriate for the purposes of this report, and fairly present the current financial situation of the Plan.

2. Actuarial Costs

Liabilities

Below is a summary of the actuarial accrued liability of future benefits expected to be paid from the Plan.

Unfunded Liability

1. Actuarial accrued liability at July 1, 2015		
a. Active participants	$	238,492,007
b. Vested terminated participants		17,312,161
c. Retired participants, QDRO's, and beneficiaries		253,481,904
d. Disabled participants and disabled beneficiaries		47,970,107
e. Total		557,256,179
2. Actuarial asset value at July 1, 2015		248,469,522
3. Unfunded actuarial liability at July 1, 2015 (1.e. - 2.)		308,786,657
4. Funded ratio on July 1, 2015 (2. ÷ 1.e)		44.59%

Reconciliation of Unfunded Liability

1. Unfunded actuarial liability at July 1, 2014	$	285,255,131
2. Normal cost at July 1, 2014		6,185,086
3. Interest on (1. – 2.) to June 30, 2015 at 7.65% per annum		22,295,177
4. Expected contribution		40,807,270
5. Interest on contribution to June 30, 2015 at 7.65% (contribution is assumed to be made at 9/1/2014)		2,585,353
6. Projected unfunded actuarial liability at July 1, 2015 (1. + 2. + 3. - 4. - 5.)		270,342,771
7. Change in unfunded actuarial liability due to changes in actuarial methods		0
8. Change in unfunded actuarial liability due to changes in actuarial assumptions (mortality and discount rate change)		33,129,847
9. Change in unfunded actuarial liability due to changes in plan design		0
10. Expected unfunded actuarial liability at July 1, 2015 (6. + 7. + 8. + 9.)		303,472,618
11. Actual unfunded actuarial liability at July 1, 2015		308,786,657
12. Actuarial gain/(loss) at July 1, 2015 (10. - 11.)		(5,314,039)

2. Actuarial Costs (cont)

Normal Cost

Normal Cost	FYE 2015	FYE 2016
1. Retirement benefits	$ N/A	$ 4,299,779
2. Vested termination benefits	N/A	512,581
3. Preretirement death benefits	N/A	89,677
4. Disability benefits	N/A	2,009,693
5. Total normal cost (1. + 2. + 3. + 4. + 5.)	6,185,086	6,911,730
6. Interest on normal cost to September 1	76,458	84,898
7. Projected normal cost for plan year (5. + 6.)	6,261,544	6,996,628

Actuarially Determined Contribution

The breakdown of the actuarially determined contribution into normal cost and amortization payment is illustrated below.

Contributions are assumed to be made on September 1. The amortization payment for the unfunded actuarial liability is determined assuming payment as of September 1 of each year and the normal cost, which is determined as of July 1 is adjusted to September 1 as well.

Actuarially Determined Contribution	FYE 2015	FYE 2016
1. Normal cost	$ 6,261,544	$ 6,996,628
2. Amortization amount	34,545,726	37,739,447
3. Actuarially determined contribution (1. + 2.)	40,807,270	44,736,075
4. Covered payroll	135,544,813	137,427,168
5. Contribution as a percentage of payroll	30.11%	32.55%

2. Actuarial Costs (cont)

Amortizations

Description	Date Established	Initial Amount	Initial Amortization Years	7/1/2015 Outstanding Balance	Remaining Amortization Years	9/1/2015 Amortization Amount
Initial	6/30/2002	124,187,444	17	44,732,292	4	12,592,916
Plan Amendment	6/30/2002	14,399,897	25	10,103,191	12	1,235,240
Experience Loss	6/30/2002	6,345,365	25	4,452,006	12	544,313
Method Change	6/30/2002	(2,078,078)	25	(1,458,010)	12	(178,260)
Plan Amendment	6/30/2003	4,360,440	25	3,209,315	13	373,641
Experience Loss	6/30/2003	4,538,537	25	3,340,395	13	388,902
Plan Amendment	6/30/2004	4,418,159	25	3,392,591	14	378,195
Experience Loss	6/30/2004	17,337,872	25	13,313,304	14	1,484,124
Experience Gain	6/30/2005	(458,689)	25	(365,756)	15	(39,224)
Plan Amendment	6/30/2006	23,569,806	25	19,439,491	16	2,013,624
Experience Loss	6/30/2006	10,757,586	25	8,872,450	16	919,046
Assumption Change	6/30/2007	8,008,848	25	6,808,444	17	683,581
Plan Amendment	6/30/2007	762,523	25	648,233	17	65,084
Experience Loss	6/30/2007	7,007,396	25	5,957,092	17	598,103
Experience Gain	6/30/2008	(235,799)	25	(206,095)	18	(20,118)
Experience Loss	6/30/2009	11,377,550	25	10,197,074	19	970,352
Plan Amendment	6/30/2010	83,039,793	25	76,135,387	20	7,079,563
Experience Gain	6/30/2010	(5,618,484)	25	(5,151,331)	20	(479,004)
Method Change	6/30/2011	(9,372,548)	25	(8,772,538)	21	(798,773)
Experience Gain	6/30/2011	(13,418,790)	25	(12,559,750)	21	(1,143,613)
Assumption Change	6/30/2011	15,465,597	25	14,475,524	21	1,318,051
Experience Loss	6/30/2012	16,238,515	25	15,487,251	22	1,383,449
Experience Loss	6/30/2013	13,697,669	25	13,289,659	23	1,166,595
Assumption Change	6/30/2013	2,292,023	25	2,223,750	23	195,206
Plan Amendment	6/30/2013	29,352,563	25	28,478,242	23	2,499,882
Experience Loss	6/30/2014	10,541,610	25	10,389,873	24	897,608
Assumption Change	6/30/2014	2,530,438	25	2,494,015	24	215,464
Plan Amendment	6/30/2014	1,437,364	25	1,416,674	24	122,390
Assumption Change	6/30/2015	33,129,847	25	33,129,847	25	2,820,673
Experience Loss	6/30/2015	5,314,039	25	5,314,039	25	452,437
Total				**308,786,657**		**37,739,447**

3. Valuation Assets

Reconciliation of Assets

Below is a reconciliation of assets from the prior valuation date of July 1, 2014.

			7/01/2014 to 6/30/2015
(1)	Beginning of year assets		$211,303,379
(2)	Additions		
	(a)	Employer contributions	$ 45,630,176
	(b)	Employee contributions receivable	(10,230,176)
	(c)	Investment income & Dividends	14,044,525
	(d)	Increase/(Decrease) in Market Value of Investments	0
	(e)	Total receipts [(a) + (b) + (c) + (d)]	$ 49,444,525
(3)	Deductions		
	(a)	Benefit payments	$ 30,636,207
	(b)	Administrative expenses	1,850,637
	(c)	Investment expenses	0
	(d)	Total disbursements [(a) + (b) + (c)]	$ 32,486,844
(4)	Net increase [2(e) – 3(d)]		$ 16,957,681
(5)	Net assets [1 + 4]		$228,261,060

3. Valuation Assets (cont.)

Calculation of Actuarial Asset Value

The actuarial asset value represents a "smoothed" value developed by the actuary to reduce the volatile results that could develop due to short-term fluctuations in the market value of assets. The actuarial value of assets is equal to the expected actuarial value of assets, plus one-fifth of the difference between the actual market value and the expected actuarial value of assets.

1.	Actuarial Value of Assets as of July 1, 2014	$ 230,072,392
2.	Contributions for the 2014 - 2015 plan year	45,630,176
3.	Employer Contributions Receivable for the 2014 - 2015 plan year	(10,230,176)
4.	Benefit payments during the 2014 - 2015 plan year	30,636,207
5.	Expected return at 7.65% interest	18,685,453
6.	Expected assets as of June 30, 2015 (1. + 2. + 3. – 4. + 5.)	253,521,638
7.	Market value of assets as of June 30, 2015	228,261,060
8.	Asset (gain)/loss for 2014 - 2015 (7. – 6.)	$ (25,260,578)
9.	Actuarial asset value as of July 1, 2014 (6. + (8. x 20%))	$ 248,469,522
10.	Actuarial asset value as a percentage of market value (9. / 7.)	108.85%

4. Valuation Data

Counts

The following table summarizes the counts, ages and benefit information for plan participants used in this valuation.

			July 1, 2015
(1)	Actives		
	(a)	Number	2,649
	(b)	Average age	48.14
	(c)	Average service	13.46
	(d)	Average salary	$ 51,879
(2)	Service retirements and beneficiaries		
	(a)	Number	1,286
	(b)	Average age	71.54
	(c)	Total monthly benefits	$2,274,987
(3)	Disability retirements		
	(a)	Number	429
	(b)	Average age	63.65
	(c)	Total monthly benefits	$ 430,355
(4)	Vested terminations (including deferred transfers)		
	(a)	Number	486
	(b)	Average age	53.77
	(c)	Total monthly benefits	$ 294,097
(5)	QDRO participants		
	(a)	Number	15
	(b)	Average Age	65.87
	(c)	Total monthly benefits	11,290

4. Valuation Data (cont.)

Active Age/Service Distribution including Compensation

Shown below is the distribution of active participants based on age and service. The compensation shown is the average projected pay for the plan year beginning July 1, 2015.

	Years of Service									
	Under 1	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 34**	**35 +**	**Total**
Under 25	4	4	0	0	0	0	0	0	0	8
	33,925	36,434	0	0	0	0	0	0	0	35,179
25 - 29	28	89	44.00	0.00	0	0	0	0	0	161
	33,313	39,181	52,245	0	0	0	0	0	0	41,731
30 - 34	24	64	102	26	0	0	0	0	0	216
	33,072	39,568	53,628	55,328	0	0	0	0	0	47,383
35 - 39	17	46	99	70	19	0	0	0	0	251
	33,284	39,290	51,000	55,478	55,470	0	0	0	0	49,241
40 - 44	14	52	84	68	69	6	0	0	0	293
	33,149	39,129	51,892	55,202	55,473	57,879	0	0	0	50,466
45 - 49	13	64	79	94	84	33	14	0	0	381
	32,022	41,251	50,944	55,631	56,068	58,076	58,340	0	0	51,846
50 - 54	3	48	103	90	103	67	68	14	2	498
	32,295	41,239	51,426	55,584	55,534	59,257	58,383	58,386	54,725	54,143
55 - 59	6	35	58	71	67	62	68	59	16	442
	32,295	42,039	49,937	56,185	56,403	58,516	57,431	61,419	55,373	55,142
60 - 64	4	22	38	34	44	29	41	34	36	282
	39,356	43,209	48,879	55,487	55,561	54,221	57,003	62,114	60,352	54,932
65 - 69	0	2	12	10	9	13	10	9	25	90
	0	38,501	45,250	56,717	56,726	60,140	54,352	57,807	58,236	55,547
70 +	0	2	2	1	2	3	4	2	11	27
	0	35,225	44,866	34,632	48,890	59,301	56,701	53,612	60,284	54,357
Total	113	428	621	464	397	213	205	118	90	2,649
	33,243	40,178	51,344	55,571	55,777	58,188	57,559	60,852	58,746	51,879

Averages	
Age:	48.14
Service:	13.46

4. Valuation Data (cont.)

Age Distribution of Inactive Participants Currently Receiving Benefits

	Beneficiary		Disabled		QDRO		Retiree		Total	
Age	**Count**	**Benefit**	**Count**	**Benefit**	**Count**	**Benefit**	**Count**	**Benefit**	**Count**	**Benefit**
Under 35	3	2,929	1	778	0	0	0	0	4	3,707
35 - 39	4	2,835	5	2,409	0	0	0	0	9	5,244
40 - 44	3	2,941	12	5,431	0	0	0	0	15	8,373
45 - 49	2	1,634	17	13,069	0	0	1	408	20	15,111
50 - 54	6	6,425	32	24,476	0	0	1	1,947	39	32,848
55 - 59	6	8,483	75	71,945	2	2,067	37	77,013	120	159,510
60 - 64	11	10,564	79	91,447	4	2,630	119	278,666	213	383,306
65 - 69	26	32,775	92	103,649	5	4,542	342	667,578	465	808,544
70 - 74	26	26,187	64	70,793	3	1,743	277	498,727	370	597,450
75 - 79	27	27,030	29	27,447	1	308	185	335,032	242	389,817
80 - 84	14	10,820	14	11,590	0	0	106	182,445	134	204,855
85 - 89	10	6,962	5	5,467	0	0	52	66,323	67	78,752
90 - 94	4	2,843	3	1,578	0	0	19	20,117	26	24,539
95 & over	0	0	1	277	0	0	5	4,300	6	4,577
Total	**142**	**142,429**	**429**	**430,355**	**15**	**11,290**	**1,144**	**2,132,558**	**1,730**	**2,716,633**

Age Distribution of Inactive Deferred Vested Participants

Age	Count	Normal Retirement Benefit
Under 35	15	5,322
35 - 39	25	14,184
40 - 44	30	17,689
45 - 49	66	41,705
50 - 54	97	67,038
55 - 59	119	68,644
60 - 64	101	60,194
65 - 69	25	16,919
70 - 74	6	1,711
75 & over	2	690
Total	**486**	**294,097**

4. Valuation Data (cont.)

Participant Reconciliation

Shown below is the reconciliation of participants between the prior and current valuation date.

		Inactive Participants				
	Active Participants	**Retirees & Beneficiaries**	**Disabled & Disabled Beneficiaries**	**Terminated Vesteds**	**QDRO**	**Total**
Participants in last valuation	2,639	1,242	412	480	15	4,788
New Participants	154	0	0	0	1	155
Return to active status	6	0	0	(6)	0	0
Nonvested termination	(44)	0	0	0	0	(44)
Vested termination	(33)	0	0	33	0	0
Retired	(49)	62	0	(13)	0	0
Disabled	(26)	0	26	0	0	0
Adjustments	4	4	0	5	0	13
New Beneficiaries	0	12	0	0	0	12
Deceased	(2)	(34)	(9)	(13)	(1)	(59)
QDRO	0	0	0	0	0	0
Participants in this valuation	2,649	1,286	429	486	15	4,865

5. Summary of Principal Plan Provisions

Following is a summary of the major plan provisions used in the valuation of this report. The Maryland Transit Administration is solely responsible for the validity, accuracy, and comprehensiveness of this information. If any of the plan provisions shown below are not accurate and complete, the valuation results may differ significantly from those shown in this report and may require a revision of this report. Moreover, these plan provisions may be susceptible to different interpretations, each of which could be reasonable, and the different interpretations could lead to different valuation results.

Plan year	July 1 – June 30
Effective date of plan	January 8, 1950
Eligibility requirements	Any employee who is a member of The Amalgamated Transit Union, Local 1300, or the Office & Professional Employees International Union, Local No. 2, who is not included in the Maryland State Retirement and Pension System. Any employee who is a member of the Police Local Union No. 1859, who is not included in the Law Enforcement Officers' Pension System (LEOPS) offered by the Maryland State Retirement and Pension System. Any management employee who transferred from any of the bargaining units above. For purposes of this Plan, management employees are classified as Local 1300 employees Eligible employees become participants immediately upon employment.
Normal form	Life annuity
Vesting	100% with 5 or more years of credited service. 100% with 7 or more years of service for Local 1300 members hired on or after May 18, 2013 and Local 2 members hired on or after September 10, 2014.
Normal retirement date	First of the month coincident with or immediately following the earlier of: a. Attainment of age 65 with 5 years of service. b. Attainment of age 52 with 30 years of service.
Normal retirement benefit	A monthly income payable for life that is the minimum of: a. $80 per month times years of service ($85 for Local 1300 and Local 2 for retirements on or after July 1, 2012 and $90 for Local 1300 and Local 2 for retirements on or after July 1, 2013. b. 1.70% of Average Compensation (effective July 1, 2008) times years of service.

5. Summary of Principal Plan Provisions (cont)

Normal retirement benefit	The above described benefit cannot be less than $625 per month at age 65 with 25 years of service for Management, Local 2, and Local 1300 and $450 per month for Local 1859. The benefit is offset by a fixed amount for a group of former Allamerica Financial Program members. Management members are also entitled to Minimum Alternate. Benefits, if they are greater than the Plan benefit.
Compensation	Remuneration received as an MTA employee including overtime if eligible.
Average annual compensation	Average annual compensation is the average of the member's compensation for the three years over the last ten years of service that produces the highest average.
Early retirement benefit eligibility	Attainment of age 55 with age plus years of service equal to at least 85.
Early retirement benefit	Normal Retirement Benefit calculated using credited service on the date of retirement (DOR), reduced by 4/12% each month preceding age 65(if >= 59 at DOR) and 5/12% for each month preceding age 65 (if < 60 at DOR).
Disability retirement eligibility	Vested, and certification by the State Medical Director.
Disability benefit	Normal Retirement Benefit based on Average Annual Compensation and years of creditable service at termination date, but not less than the amounts in the table below: *Years of Service* — *Minimum Monthly Benefit* *5* — *$200* *10* — *$360* *20* — *$720*
Termination benefits	Vested participants shall receive a benefit computed in the same manner as the Normal Retirement Benefit but the benefit is based on credited service, average compensation, and the benefit formula in effect on the date of termination. The benefit is paid monthly beginning at age 65 for the life of the member.

5. Summary of Principal Plan Provisions (cont)

Pre-Retirement death benefit eligibility	Death of participant before commencement of benefits and after eligibility for normal or early retirement.
Pre-Retirement death benefit	The spouse will receive an allowance of 75% (50% for Police Local Union No. 1859) of the normal or early retirement benefit the member would have received if they had retired on the day before death and elected a 75% (50% for Police Local Union No. 1859) joint and survivor benefit.
Optional forms	50%, 75% or 100% joint and survivor 50%, 75% or 100% joint and survivor with pop-up option Partial lump sum of 5%, 10%, or 15% of accrued benefit plus a 50%, 75%, or 100% joint and survivor annuity.
Year of creditable service	Credited Service includes service with MTA, plus one month of service for every 20 days of unused sick leave. Part-time employees are credited service at the rate of one month for each 173 hours of work.
COLA increases	Pensions of retirees and beneficiaries, excluding members who retire from deferred vested status, who have been receiving payments for at least 13 months shall be granted a COLA of each of the following dates: 8/1/2008, 8/1/2009, 8/1/2010, 8/1/2011, 8/1/2012 (Local 1300 and Local 2 only), 8/1/2013 (Local 1300 and Local 2 only), and 8/1/2014 (Local 2 only). The percentage increase is equal to the increase in the Consumer Price Index (CPI-U, U.S. City Average, 1967=100) for the preceding fiscal year (July 1 to June 30), subject to a maximum increase of 3% annually.

5. Summary of Principal Plan Provisions (cont)

Changes in plan provisions since prior valuation

There were no changes in plan provisions since July 1, 2014 that affect participant benefits.

6. Valuation Assumptions and Methods

Economic Assumptions

Investment Rate of Return

The assumed annual net rate of return on investment (including appreciation and depreciation, realized and unrealized) is 7.60% (net of investment expenses).

Salary Scale

Salaries are assumed to increase for individuals by 3.50% per year due to inflation, plus the following service based percentages due to merit and longevity:

Years of Service	Management	Maintenance/ Operators	All Others
0 – 5	0.50%	6.00%	4.00%
6 – 20	0.50%	0.25%	4.00%
21 – 29	0.50%	0.25%	0.50%
30+	0.50%	0.00%	0.50%

Pay increases are assumed to occur during the middle of the fiscal year.

Payroll Growth

The rate of annual growth of participant payroll is assumed to be 3.50%.

Inflation

Inflation as measured by the Consumer Price Index (CPI) will increase at the rate of 3.50% per year.

Cost-of-Living Adjustments

None assumed.

6. Valuation Assumptions and Methods (cont)

Demographic Assumptions

Mortality

For Healthy Participants: RP-2014 Blue Collar table, fully generational, projected using scale MP-2014.

For Disabled Participants: RP-2014 Disabled table, fully generational, projected using scale MP-2014.

Projection to the year of the valuation is assumed to be current experience. The generational projection beyond the year of the valuation is assumed to account for future mortality improvements.

Retirement Rates

Retirement Rates are shown below:

Age	Management	Maintenance	All Others
52	5.00%	1.00%	15.00%
53	5.00%	1.00%	6.00%
54	2.00%	1.00%	6.00%
55	10.00%	1.00%	6.00%
56	2.00%	1.00%	6.00%
57	6.00%	1.00%	6.00%
58	6.00%	1.00%	6.00%
59	6.00%	5.00%	6.00%
60	15.00%	5.00%	8.00%
61	15.00%	5.00%	15.00%
62	40.00%	20.00%	30.00%
63	40.00%	10.00%	20.00%
64	40.00%	15.00%	15.00%
65	25.00%	15.00%	30.00%
66	10.00%	15.00%	20.00%
67	10.00%	15.00%	20.00%
68	10.00%	25.00%	20.00%
69	10.00%	25.00%	20.00%
70	100.00%	100.00%	100.00%

6. Valuation Assumptions and Methods (cont)

Termination of employment

Withdrawal Rates are shown below:

Years of Service	Management	Maintenance	Operators	All Others
0	22.0%	1.5%	20.0%	25.0%
1	17.6%	1.5%	10.0%	20.0%
2	14.1%	1.0%	7.0%	15.0%
3	11.3%	1.0%	7.0%	7.0%
5	7.2%	0.5%	5.0%	6.0%
10	2.7%	0.5%	2.0%	6.0%
15	2.7%	0.0%	1.5%	2.0%
20	2.7%	0.0%	1.0%	0.0%
25+	0.0%	0.0%	0.0%	0.0%

Disability Rates

Disability Rates are shown below:

Age	Annual Percentage of Disablement
20	0.19%
30	0.27%
40	0.46%
50	1.22%
60	1.98%

Marital status and age of spouse

85% of plan members are assumed to be married. Male spouses are assumed to be three years older than their wives.

Form of payment

All participants are assumed to elect payment in the form of a single life annuity.

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6. Valuation Assumptions and Methods (cont)

Cost Method

The actuarial valuation is completed on the basis of the entry age normal cost method calculated on an individual basis with level dollar normal cost. The unfunded actuarial accrued liability (UAAL) is amortized with level payments over:

- 17 years for the initial UAAL that began on 06/30/2002
- 25 years for experience gains and losses after 2002
- 25 years for assumption and method changes
- 25 years for plan amendments

Method for Determining Actuarial Value of Assets

The actuarial asset value represents a "smoothed" value developed by the actuary to reduce the volatile results which could develop due to short-term fluctuations in the market value of assets. The actuarial value of assets is equal to the expected actuarial value of assets, plus one-fifth of the difference between the actual market value and the expected actuarial value of assets. This method may result in a bias that is above or below the market value of assets.

Other Assumptions

- An additional 0.4 years of service is assumed for all members to account for sick leave conversion and prior military time.
- An additional pay load is assumed to account for expected overtime. For Local 1300 members, the amount is assumed to be 15% of their salary, and for all others, the load is assumed to be 10% of salary. No overtime pay load is assumed for management members.
- Part-time members are assumed to accrue one-half year of service credit each year.
- A 1% load is applied for retirees who have elected a joint and survivor option that includes a pop-up provision.

Changes in Assumptions and Cost Method

The following changes are reflected in this valuation:

- The investment return was decreased from 7.65% to 7.60% for the July 1, 2015 valuation. The rate will be lowered 0.05% each year until reaching 7.55%. The rate of return is intended to be consistent with the rate used by the Maryland State Retirement and Pension System.
- The mortality table was changed to the RP-2014 fully generational blue collar mortality table projected from 2014 using scale MP-2014 for active and healthy retirees.
- The mortality table was changed to the RP-2014 fully generational disabled mortality table projected from 2014 using scale MP-2014 for disabled participants.

7. Glossary

Accumulated Plan Benefits Actuarial Gain or Loss: Amortization payment/credit actuarial present value.

Actuarial Accrued Liability (AAL): The difference between the Actuarial Present Value of Future Benefits and the Actuarial Present Value of Future Normal Costs or the portion of the present value of future benefits allocated to service before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Valuation Method: The method of determining the value of the assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets or a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the Actuarially Required Contribution (ARC).

Actuarial Cost Method: A procedure for allocating the Actuarial Present Value of Future Benefits and the Actuarial Present Value of Future Normal Costs and the Actuarial Accrued Liability. Also known as the "funding method".

Actuarial Present Value of Future Benefits (APVFB): The Actuarial Present Value of amounts that are expected to be paid at various future times to active members, retired members, beneficiaries receiving benefits, and inactive, nonretired members entitled to either a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.

Aggregate Cost Method: An actuarial cost method that spreads the cost of all future benefits in excess of plan assets as a level percentage of future salary or service. The actuarial accrued liability is set to the value of assets in this method.

Annual Required Contributions of the Employer(s) (ARC): The employer's periodic required contributions to a pension plan, calculated in accordance with the parameters.

7. Glossary (cont.)

Cost-of-Living Adjustment (COLA): The annual increase in the amount of a retired participant's benefit, intended to adjust the benefit for inflation.

Covered Group: Plan members who are included in an actuarial valuation.

Deferred Retirement Option Program (DROP): A program allowing a participant, who is eligible to retire, to continue working for a fixed period of time, while accumulating the benefit payments he would have received if he had retired on his entry to DROP.

Demographic Assumption: The assumptions regarding the future population of pension participants. This includes retirement, termination, disability, and mortality assumptions.

Economic Assumptions: The assumptions regarding future economic factors, including COLA, salary improvement, change in average wages, changes in Social Security benefits, and investment returns.

Employer's Contributions: The Contributions made in relation to the annual required contributions of the employer (ARC). An employer has made a contribution in relation to the ARC if the employer has (a) made payments of benefits directly to or on behalf of a retiree or beneficiary, (b) made premium payments to an insurer, or (c) irrevocably transferred assets to a trust, or an equivalent arrangement, in which plan assets are dedicated to providing benefits to retirees and their beneficiaries in accordance with the terms of the plan and are legally protected from creditors of the employer(s) or plan administrator.

Entry Age Normal (EAN) Cost Method: An actuarial cost method that spreads the cost for each individual's expected benefits over their career, either as a level percentage of pay or service. The actuarial accrued liability is the accumulated value of all past normal cost, and the unfunded accrued liability (surplus) is the excess of the AAL over the value of assets.

Expenses: Plan expenses paid by the plan are divided into administrative and investment related expenses.

Funded Ratio: The actuarial value of assets expressed as a percentage of the plan's actuarial accrued liability.

7. Glossary (cont.)

GASB: Government Accounting Standards Board

GASB No. 25 and GASB No. 27: These are the government accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 27 sets the accounting rules for the employers that sponsor or contribute to public retirement systems while Statement No. 25 sets the rules for the systems themselves.

GASB No. 67 and GASB No. 68: The government standards that replaced GASB 25 and 27. They are effective for plan years beginning after June 14, 2013 and employer fiscal years beginning after June 14, 2014.

Investment Return Assumption or Investment Rate of Return (Discount Rate): The rate used to adjust a series of future payments to reflect the time value of money.

Level Percentage of Projected Payroll Amortization Method: Amortization payments are calculated so that they are a constant percentage of the projected payroll of active plan members over a given number of years. The dollar amount of the payments generally will increase over time as payroll increases due to inflation; in dollars adjusted for inflation, the payments can be expected to remain level.

Normal Cost or Normal Actuarial Cost: The portion of the Actuarial Present Value of pension plan benefits and expenses that is allocated to a valuation year by the Actuarial Cost Method.

Pay-as-you-go (PAYG): A method of financing a benefits plan under which the contributions to the plan are generally made at about the same time and in about the same amount as benefit payments and expenses becoming due.

Payroll Growth Rate: An actuarial assumption with respect to future increases in total covered payroll attributable to inflation; used in applying the level percentage of projected payroll amortization method.

Plan Liabilities: Obligations payable by the plan at the reporting date, primarily including, benefits and refunds due and payable to plan members and beneficiaries, and accrued investment and administrative expenses. Plan liabilities do not include actuarial accrued liabilities for benefits that are not due and payable at the reporting date.

7. Glossary (cont.)

Plan Members: The individuals covered by the terms of a Pension or OPEB plan. The plan membership generally includes employees in active service, terminated employees who have accumulated benefits but are not yet receiving them, and retired employees and beneficiaries currently receiving benefits.

Projected Unit Credit (PUC) Funding Method: An actuarial cost method that spreads the employee's benefit over their career, as a level percentage of service. The normal cost is the present value of the portion of the benefit assigned to the current year. The actuarial accrued liability is the accumulated value of all past normal cost, and the unfunded accrued liability (surplus) is the excess of the AAL over the value of assets.

Post-employment: The period between termination of employment and retirement as well as the period after retirement.

Salary Improvement: An actuarial assumption regarding the increase in employees' salaries, reflecting cost-of-living, merit, and longevity increases.

Select and Ultimate Rates: Actuarial assumptions that contemplate different rates for successive years. Instead of a single assumed rate with respect to, for example, the investment return assumption, the actuary may apply different rates for the early years of a projection and a single rate for all subsequent years. For example, if an actuary applies an assumed investment return of 8 percent for year 2000, 7.5 percent for 2001, and 7 percent for 2002 and thereafter, then 8 percent and 7.5 percent are select rates, and 7 percent is the ultimate rate.

Unfunded Actuarial Accrued Liabilities: The excess of the present value of prospective pension benefits, as of the date of a pension plan valuation, over the sum of (1) the actuarial value of the assets of the plan and (2) the present value of future normal costs determined by any of several actuarial cost methods. For plans that define an accrued liability, this amount equals the excess of the accrued liability over plan assets.

Vested Plan Benefits: All benefits to which current participants have a vested right. They are based on pay and service through the valuation date. A participant has a vested right to a benefit if he/she would still be eligible to receive that benefit if their employment was terminated on the valuation date.

Appendix 1

Summary of Funding Progress

Valuation Date	(1) Actuarial Value of Assets	(2) Actuarial Accrued Liability	(3) Percentage Funded (1) / (2)	(4) Unfunded Actuarial Accrued Liability (2) - (1)	(5) Annual Covered Payroll	(6) Unfunded Actuarial Accrued Liability as a Percentage of Covered Payroll (4) / (5)
7/1/2009	143,319,538	337,667,125	42.4%	194,347,587	151,559,520	128.2%
7/1/2010	162,755,825	426,040,805	38.2%	263,284,980	145,028,614	181.5%
7/1/2011	187,917,728	433,637,216	43.3%	245,719,488	147,474,199	166.6%
7/1/2012	200,259,694	451,288,292	44.4%	251,028,598	152,276,494	164.9%
7/1/2013	210,736,651	495,100,701	42.6%	284,364,050	137,596,326	206.7%
7/1/2014	230,072,392	515,327,523	44.6%	285,255,131	135,544,813	210.5%
7/1/2015	248,469,522	557,256,179	44.6%	308,786,657	137,427,168	224.7%

Analysis of the dollar amounts of net assets available for benefits, actuarial accrued liability, and unfunded actuarial accrued liability in isolation can be misleading. Expressing the net assets available for benefits as a percentage of the actuarial accrued liability provides one indication of funding status on a going-concern basis. Analysis of this percentage over time indicates whether the Plan is becoming financially stronger or weaker. Generally, the greater this percentage, the stronger the Plan. Trends in unfunded actuarial accrued liability and annual covered payroll are both affected by inflation. Expressing the unfunded actuarial accrued liability as a percentage of annual covered payroll approximately adjusts for the effects of inflation and aids analysis of the MTA's progress made in accumulating sufficient assets to pay benefits when due. Generally, the smaller this percentage, the stronger the Plan.

Appendix 1 (cont.)

Schedule of Employer Contributions

Plan Year Ending	Actuarially Determined Contribution	Actual Contribution	Percent Contributed
06/30/2010	$ 26,151,368	$ 37,760,833	144.4%
06/30/2011	33,928,274	47,528,274	140.1%
06/30/2012	32,859,285	32,859,285	100.0%
06/30/2013	34,582,249	29,518,757	85.4%
06/30/2014	39,748,933	39,748,933	100.0%
06/30/2015	40,807,270	35,400,000	86.75%
06/30/2016	44,736,075	TBD	TBD

The information presented in the required supplementary schedules was determined as part of the actuarial valuations at the dates indicated.

Actuarial cost method	Entry Age Normal, Level Dollar
Asset valuation method	5 Year open period smoothing (Actual vs. Expected Actuarial Value)
Actuarial assumptions:	
Investment rate of return	7.60% net of investment expenses
Projected salary increase	Refer to Actuarial Assumptions
Post-retirement cost-of-living adjustments	None Assumed

Appendix 2

Benefit Payment Projection

The following table shows the estimated benefit payments from July 1, 2015 through June 30, 2025.

Fiscal Year Ending	Benefits
2016	$35,121,000
2017	$36,452,000
2018	$37,827,000
2019	$39,245,000
2020	$40,781,000
2021	$42,358,000
2022	$43,849,000
2023	$45,272,000
2024	$46,751,000
2025	$48,232,000

Appendix 3

Actuarial Certification

This actuarial valuation sets forth our calculation of an estimate of the liabilities of the Maryland Transit Administration Pension Plan, together with a comparison of these liabilities with the value of the plan assets, as submitted by the Maryland Transit Administration (MTA). This calculation and comparison with assets is 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.

Different assumptions or scenarios within the range of possibilities may also be reasonable and results based on those assumptions would be different. As a result of the uncertainty inherent in a forward looking projection over a very long period of time, no one projection is uniquely "correct" and many alternative projections of the future could also be regarded as reasonable. Two different actuaries could, quite reasonably, arrive at different results based on the same data and different views of the future. A "sensitivity analysis" shows the degree to which results would be different if you substitute alternative assumptions within the range of possibilities for those utilized in this report. We have not been engaged to perform such a sensitivity analysis and thus the results of such an analysis are not included in this report. At the MTA's request, Bolton Partners, Inc. is available to perform such a sensitivity analysis.

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.

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.

Appendix 3 (cont.)

Actuarial Certification

In addition, decisions regarding benefit improvements, benefit changes, the trust's investment policy, and similar issues should not be based on this valuation. These are complex issues and other factors should be considered when making such decisions. These other factors might include the anticipated vitality of the local economy and future growth expectations, as well as other economic and financial factors.

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. It does not affect the cost of the Plan. Different funding methods provide for different timing of contributions to the Plan. As the experience of the Plan evolves, it is normal for the level of contributions to 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.

This report is based on plan provisions, census data, and asset data submitted by 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.

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 and its auditors in connection with our actuarial valuations of the pension plan. It is neither intended nor necessarily suitable for other purposes. Bolton Partners, Inc. is not responsible for the consequences of any other use or the reliance upon this report by any other party.

Appendix 3 (cont.)

Actuarial Certification

The only purpose of this report is to:

- Provide the recommended employer contribution for the 2016 fiscal year.

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 report 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.

Because valuations are a snapshot in time and are based on estimates and assumptions that are not precise and will differ from actual experience, contribution calculations are inherently imprecise. There is no uniquely "correct" level of contributions for the coming plan year.

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.

Appendix 3 (cont.)

Actuarial Certification

The MTA should notify Bolton Partners, Inc. promptly after receipt of this report if the MTA disagrees with anything contained in the report or is aware of any information that would affect the results of the report that has not been communicated to Bolton Partners, Inc. or incorporated therein. The report will be deemed final and acceptable to the MTA unless the MTA promptly provides such notice to Bolton Partners, Inc.

The undersigned credentialed actuaries meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. They are currently compliant with the Continuing Professional Development Requirement of the Society of Actuaries. We are not aware of any direct or material indirect financial interest or relationship, including investments or other services, that could create a conflict of interest that would impair the objectivity of our work.

We are available to answer any questions on the material in this report to provide explanations or further details as appropriate.

Bolton Partners, Inc.

Kevin Binder, FSA, EA, MAAA

Kristopher Seets, FSA, EA