



500 Dallas Street
Suite 2550
Houston, TX 77002
USA

Tel +1 713 658 8451
Fax +1 713 658 9656

milliman.com

April 8, 2020

Sent via email

Mr. William McHale
Senior Director/Controller
Metropolitan Transit Authority
1900 Main
P.O. Box 61429
Houston, TX 77208-1429

Re: *Experience Study – Metropolitan Transit Authority Non-Union Pension Plan*

Dear Bill:

As requested, we have performed an actuarial experience study of the Metropolitan Transit Authority Non-Union Pension Plan (Pension Plan). The enclosed report includes a summary of recommended changes to the withdrawal (turnover), disability, retirement rate assumptions, the salary scale assumption, and the optional payment forms assumption. We have also summarized the estimated impact of the recommended changes on the contribution requirements to the Pension Plan. In addition, the report also estimates the impact on GASB 67/68 liabilities for the Pension Plan. For this study, we reviewed actual experience from January 1, 2015 through January 1, 2019. Thus, the experience studied was based on census data beginning with the January 1, 2015 funding valuation and ending with the January 1, 2019 funding valuation.

The rate of return (interest rate) assumption decreased from 6.75% to 6.50% effective January 1, 2019. Based on your current asset allocation, Milliman's Capital Market assumptions (including an inflation assumption of 2.20%), and a 30-year investment horizon, we find that a range of reasonable returns for the investment rate of return assumption for each of the pension plans as of December 31, 2019 could be as high as the current assumption of 6.50% and as low as 5.75%. Although our best-estimate based on our analysis would be 5.75% for each plan, we find the current assumption of 6.50% to be just above the 65th percentile of expected returns, easily below the 75th percentile, and to be comfortably within a range of reasonable returns. For now, we have not shown any impact of changing the interest rate assumption for this study. We understand that this assumption may be lowered to 6.25% for the January 1, 2020 funding valuation or for the following January 1, 2021 funding valuation.

Mortality was also reviewed as part of the experience study. Please recall that METRO elected to use the public plan mortality tables Pub-2010 (published in January 2019) with projection scale MP-2018 as published by the Society of Actuaries in October 2018 for the January 1, 2019 funding valuation report as well as for the Fiscal Year Ending (FYE) 2019 GASB 67/68 Disclosure Report. We will continue to use this up-to-date mortality table and will update the projection scale to the latest MP-2019 scale published by the Society of Actuaries in October 2019 for the January 1, 2020 funding valuation report and the FYE 2020 GASB 67/68 Disclosure Report.

Please contact us at your earliest convenience to discuss the recommended assumption changes in more detail. We seek your approval for the proposed actuarial assumption changes to be reflected in your next



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actuarial valuations to be performed as of January 1, 2020. Please note that we have shown the impact of the proposed salary scale changes separately as this assumption should only partially reflect the past and should also reflect current budget expectations. Thus, it may be reasonable to revise the salary scale assumption as proposed, keep it the same (flat 2.75%), or modify to some other increase rate reflecting your current future budget expectations. In the meantime, please let us know if you have any questions or if we may be of additional help concerning any other matter regarding the operation of the plans.

Sincerely,

A handwritten signature in black ink that reads "James Tumlinson, Jr." with a stylized flourish at the end.

James Tumlinson, Jr, MAAA
Principal & Consulting Actuary

A handwritten signature in black ink that reads "Katherine Pitzinger" in a cursive style.

Katherine Pitzinger, ASA, MAAA
Actuarial Associate

Enclosures

Metropolitan Transit Authority Non-Union Pension Plan

As requested, we have performed an actuarial experience study of the Pension Plan including experience from calendar years 2015 through 2019. Note that the results of the experience study will also apply to the Metropolitan Transit Authority Non-Union Postretirement Benefits Plan (where assumptions are applicable). This experience was included in our actuarial valuations performed from January 1, 2015 through January 1, 2019. Our findings are shown in the enclosed Exhibits and indicate that some intermediate adjustments are recommended. Furthermore, as expected with intermediate adjustments, the impact of the proposed assumption changes is within a moderate range.

Exhibit A1 – A3

Exhibit A1 shows the impact of the proposed assumption changes (assuming no salary scale assumption change) to the FYE2020 GASB 67/68 Total Pension Liability and Net Pension Liability. Exhibit A1 also estimates the impact on the 2020 actuarial accrued liability, unfunded actuarial accrued liability, and the actuarially determined contribution if the assumption changes are implemented for the 2020 Pension Plan valuation (estimated using 2019 valuation data and 2020 estimated Actuarial Value of Assets).

Exhibit A2 shows similar results to Exhibit A1 with one final assumption change—updating the salary scale assumption from a flat 2.75% to a proposed table scaling down from 4.25% before age 50 to 2.00% by age 65 (full table shown in Exhibit B3). Exhibit A3 shows similar results to Exhibit A1 with one final assumption change—updating the salary scale assumption from a flat 2.75% to a flat 3.50%.

Exhibit B1 – B3

Exhibits B1 – B3 display the proposed assumption changes for retirement rates, withdrawal rates, disability rates, the salary scale assumption, and the optional payment form assumptions for the Pension Plan. Our study of actual experience over the recent past indicates the following:

- Retirement rates should be decreased and the retirement assumption separated into two gender distinct tables (shown in Exhibit B1).
- Withdrawal rates should be decreased overall based on years of service rather than age (shown in Exhibit B1).
- Removal of the disability assumption would be appropriate (shown in Exhibit B1).
- The optional payment form assumption for retirement decrements for active participants is dependent on whether the participant is retiring early or at normal eligibility. Less lump sums are taken at normal retirement eligibility and overall more joint life and certain and life annuity optional payments forms are taken versus just single life annuities (shown in Exhibit B2).
- The optional payment form assumption for termination decrements for active participants overall have more joint life and certain and life annuity optional payments forms are taken versus just single life annuities (shown in Exhibit B2).
- The salary scale assumption should be overall increased, especially for ages before age 60 (shown in Exhibit B3).

The experience study was performed using information (some verbally and some in writing) as of the valuation dates, furnished by METRO. This information includes, but is not limited to, plan documents and provisions, employee data, and financial information. This data was relied upon as submitted. We have reviewed the data for reasonableness and consistency. Since the results are dependent on the integrity of the data supplied, the results can be expected to differ if the underlying data is incomplete or missing. It

should be noted that if any data or other information is inaccurate or incomplete, our calculations may need to be revised.

The results contained in this report and based on the actuarial methods, actuarial assumptions (except as list otherwise), principal plan provisions, and risk disclosures contained in the appendices of the most recent actuarial funding valuation report dated July 8, 2019.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the principles prescribed by the Actuarial Standards Board and the Code of Professional Conduct and Qualification Standards for Public Statements of Actuarial Opinion of the American Academy of Actuaries. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

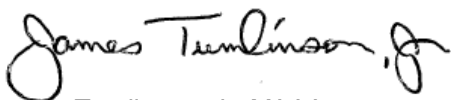
We further certify that all costs, liabilities, rates of interest, and other factors (except when determination is mandated directly by the Internal Revenue Code and its regulations) under the Plan have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the Plan and reasonable expectations) and which, in combination, offer our best estimate of anticipated experience under the Plan. Nevertheless, the emerging costs will vary from those presented in this report to the extent that actual experience differs from that projected by the actuarial assumptions.

Actuarial computations presented in this report are for purposes of determining the minimum funding requirements and of fulfilling annual financial accounting requirements. Actuarial computations presented in this report are for purposes of satisfying the funding policy. The calculations in the enclosed report have been made on a basis consistent with our understanding of the Authority's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the Plan's funding goals. Determinations for the purposes other than meeting those requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

This report has been prepared for the internal use of and is only to be relied upon by METRO and its auditors. No portion of this report may be disclosed to any other party without Milliman's prior written consent. In the event such consent is given, the report must be provided in its entirety, unless prior written consent is obtained from Milliman.

We respectfully submit the following report, and we look forward to discussing it with you.

Respectfully submitted,



James Tumlinson, Jr, MAAA
Principal & Consulting Actuary



Katherine Pitzinger, ASA, MAAA
Actuarial Associate

Exhibit A1

Metropolitan Transit Authority Non-Union Pension Plan
(in millions)

Current Assumptions	Proposed Assumptions					Proposed Combined / Current
	Individual Changes				Combined Changes With No Salary Change	
	Retirement	Withdrawal	No Disability	Optional Payment Form Updates		

ESTIMATED 2020 Funding Results*

Actuarial Accrued Liability	\$ 277.91	\$ 284.32	\$ 279.42	\$ 273.43	\$ 282.01	\$ 284.05	102.21%
Actuarial Value of Assets	181.43	181.43	181.43	181.43	181.43	181.43	
Unfunded Actuarial Accrued Liability	\$ 96.48	\$ 102.89	\$ 97.99	\$ 92.00	\$ 100.58	\$ 102.62	106.36%
Actuarially Determined Contribution	\$ 11.22	\$ 11.95	\$ 11.37	\$ 10.64	\$ 11.57	\$ 11.73	104.55%

FYE2020 GASB 67/68

Total Pension Liability	\$ 288.83	\$ 284.15	\$ 292.94	\$ 291.79	\$ 290.62	\$ 292.38	101.23%
Fiduciary Net Position	186.65	186.65	186.65	186.65	186.65	186.65	
Net Pension Liability	\$ 102.19	\$ 97.50	\$ 106.29	\$ 105.14	\$ 103.97	\$ 105.73	103.46%

* Using 1/1/2019 census data and estimated 1/1/2020 actuarial value of assets.

This work product was prepared solely for METRO for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

Exhibit A2

**Metropolitan Transit Authority Non-Union Pension Plan
(in millions)**

	Current Assumptions	Proposed Assumptions							Proposed Combined / Current
		Individual Changes					Combined Changes Using Salary Option 1		
		Retirement	Withdrawal	No Disability	Optional Payment Form Updates	Salary Option 1 - Proposed Table			
<u>ESTIMATED 2020 Funding Results*</u>									
Actuarial Accrued Liability	\$ 277.91	\$ 284.32	\$ 279.42	\$ 273.43	\$ 282.01	\$ 279.07	\$ 285.22	102.63%	
Actuarial Value of Assets	<u>181.43</u>	<u>181.43</u>	<u>181.43</u>	<u>181.43</u>	<u>181.43</u>	<u>181.43</u>	<u>181.43</u>		
Unfunded Actuarial Accrued Liability	\$ 96.48	\$ 102.89	\$ 97.99	\$ 92.00	\$ 100.58	\$ 97.64	\$ 103.79	107.58%	
Actuarially Determined Contribution	\$ 11.22	\$ 11.95	\$ 11.37	\$ 10.64	\$ 11.57	\$ 11.33	\$ 11.85	105.61%	
<u>FYE2020 GASB 67/68</u>									
Total Pension Liability	\$ 288.83	\$ 284.15	\$ 292.94	\$ 291.79	\$ 290.62	\$ 294.85	\$ 298.38	103.31%	
Fiduciary Net Position	<u>186.65</u>	<u>186.65</u>	<u>186.65</u>	<u>186.65</u>	<u>186.65</u>	<u>186.65</u>	<u>186.65</u>		
Net Pension Liability	\$ 102.19	\$ 97.50	\$ 106.29	\$ 105.14	\$ 103.97	\$ 108.21	\$ 111.73	109.34%	

* Using 1/1/2019 census data and estimated 1/1/2020 actuarial value of assets.

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Exhibit A3

**Metropolitan Transit Authority Non-Union Pension Plan
(in millions)**

	Current Assumptions	Proposed Assumptions							Proposed Combined / Current
		Individual Changes					Combined Changes Using Salary Option 2		
		Retirement	Withdrawal	No Disability	Optional Payment Form Updates	Salary Option 2 - 3.50%			
<u>ESTIMATED 2020 Funding Results*</u>									
Actuarial Accrued Liability	\$ 277.91	\$ 284.32	\$ 279.42	\$ 273.43	\$ 282.01	\$ 278.80	\$ 284.99	102.55%	
Actuarial Value of Assets	<u>181.43</u>	<u>181.43</u>	<u>181.43</u>	<u>181.43</u>	<u>181.43</u>	<u>181.43</u>	<u>181.43</u>		
Unfunded Actuarial Accrued Liability	\$ 96.48	\$ 102.89	\$ 97.99	\$ 92.00	\$ 100.58	\$ 97.37	\$ 103.56	107.34%	
Actuarially Determined Contribution	\$ 11.22	\$ 11.95	\$ 11.37	\$ 10.64	\$ 11.57	\$ 11.30	\$ 11.82	105.35%	
<u>FYE2020 GASB 67/68</u>									
Total Pension Liability	\$ 288.83	\$ 284.15	\$ 292.94	\$ 291.79	\$ 290.62	\$ 293.85	\$ 298.84	103.47%	
Fiduciary Net Position	<u>186.65</u>	<u>186.65</u>	<u>186.65</u>	<u>186.65</u>	<u>186.65</u>	<u>186.65</u>	<u>186.65</u>		
Net Pension Liability	\$ 102.19	\$ 97.50	\$ 106.29	\$ 105.14	\$ 103.97	\$ 107.20	\$ 112.20	109.80%	

* Using 1/1/2019 census data and estimated 1/1/2020 actuarial value of assets.

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Exhibit B1

Metropolitan Transit Authority Non-Union Pension Plan
Decrement Assumptions

Current					Proposed				Proposed	
Age	Withdrawal*	Retirement	Disability		Age	Retirement		Disability	Service	Withdrawal
			Male	Female		Male	Female			
15 - 20	15.0000%	N/A	0.1200%	0.0600%	15 - 20	N/A	N/A	0.000%	< 0	N/A
21	14.5500%	N/A	0.1200%	0.0600%	21	N/A	N/A	0.000%	0	N/A
22	14.1000%	N/A	0.1200%	0.0600%	22	N/A	N/A	0.000%	1	N/A
23	13.6500%	N/A	0.1200%	0.0600%	23	N/A	N/A	0.000%	2	N/A
24	13.2000%	N/A	0.1200%	0.0700%	24	N/A	N/A	0.000%	3	N/A
25	12.7500%	N/A	0.1200%	0.0700%	25	N/A	N/A	0.000%	4	N/A
26	12.3000%	N/A	0.1200%	0.0700%	26	N/A	N/A	0.000%	5	N/A
27	11.8500%	N/A	0.1200%	0.0800%	27	N/A	N/A	0.000%	6	N/A
28	11.4000%	N/A	0.1200%	0.0800%	28	N/A	N/A	0.000%	7	10.00%
29	10.9500%	N/A	0.1200%	0.0900%	29	N/A	N/A	0.000%	8	5.00%
30	10.5000%	N/A	0.1200%	0.0900%	30	N/A	N/A	0.000%	9	5.00%
31	10.3800%	N/A	0.1500%	0.1300%	31	N/A	N/A	0.000%	10	5.00%
32	10.2600%	N/A	0.1800%	0.1600%	32	N/A	N/A	0.000%	11	5.00%
33	10.1400%	N/A	0.2100%	0.2000%	33	N/A	N/A	0.000%	12	5.00%
34	10.0200%	N/A	0.2400%	0.2300%	34	N/A	N/A	0.000%	13	5.00%
35	9.9000%	N/A	0.2700%	0.2600%	35	N/A	N/A	0.000%	14	7.50%
36	9.7800%	N/A	0.3000%	0.3000%	36	N/A	N/A	0.000%	15	5.00%
37	9.6600%	N/A	0.3300%	0.3400%	37	N/A	N/A	0.000%	16	5.00%
38	9.5400%	N/A	0.3600%	0.3600%	38	N/A	N/A	0.000%	17	4.00%
39	9.4200%	N/A	0.3900%	0.3800%	39	N/A	N/A	0.000%	18	4.00%
40	9.3000%	N/A	0.4200%	0.4100%	40	N/A	N/A	0.000%	19	4.00%
41	9.1800%	N/A	0.4500%	0.4300%	41	N/A	N/A	0.000%	20	3.00%
42	9.0600%	N/A	0.4800%	0.4500%	42	N/A	N/A	0.000%	21	3.00%
43	8.9400%	N/A	0.5100%	0.4800%	43	N/A	N/A	0.000%	22	3.00%
44	8.8200%	N/A	0.5400%	0.5100%	44	N/A	N/A	0.000%	23	3.00%
45	8.2700%	N/A	0.5700%	0.5400%	45	N/A	N/A	0.000%	24	3.00%
46	7.7200%	N/A	0.6000%	0.5700%	46	N/A	N/A	0.000%	25	3.00%
47	7.1700%	N/A	0.6300%	0.6000%	47	N/A	N/A	0.000%	26	3.00%
48	6.6200%	N/A	0.6600%	0.6100%	48	N/A	N/A	0.000%	27	3.00%
49	6.0700%	N/A	0.7000%	0.6400%	49	N/A	N/A	0.000%	28+	2.00%
50	5.5200%	N/A	0.7500%	0.6600%	50	N/A	N/A	0.000%		
51	4.9700%	N/A	0.8100%	0.7000%	51	N/A	N/A	0.000%		
52	4.4200%	N/A	0.8600%	0.7300%	52	N/A	N/A	0.000%		
53	3.8700%	N/A	0.9300%	0.7800%	53	N/A	N/A	0.000%		
54	3.3200%	N/A	0.9800%	0.8300%	54	N/A	N/A	0.000%		
55	0.0000%	10.00%	1.0400%	0.9200%	55	7.50%	10.00%	0.000%		
56	0.0000%	10.00%	1.1000%	0.9700%	56	7.50%	7.50%	0.000%		
57	0.0000%	10.00%	1.1700%	0.9800%	57	7.50%	7.50%	0.000%		
58	0.0000%	15.00%	1.2400%	0.9700%	58	7.50%	7.50%	0.000%		
59	0.0000%	15.00%	1.3300%	0.9600%	59	7.50%	15.00%	0.000%		
60	0.0000%	15.00%	1.4000%	0.9500%	60	10.00%	7.50%	0.000%		
61	0.0000%	20.00%	1.4900%	0.9600%	61	10.00%	7.50%	0.000%		
62	0.0000%	30.00%	1.5800%	0.9700%	62	20.00%	10.00%	0.000%		
63	0.0000%	40.00%	1.6600%	0.9900%	63	20.00%	20.00%	0.000%		
64	0.0000%	40.00%	1.7500%	1.0100%	64	25.00%	15.00%	0.000%		
65	0.0000%	50.00%	0.0000%	0.0000%	65	30.00%	30.00%	0.000%		
66	0.0000%	50.00%	0.0000%	0.0000%	66	25.00%	25.00%	0.000%		
67	0.0000%	50.00%	0.0000%	0.0000%	67	40.00%	40.00%	0.000%		
68	0.0000%	50.00%	0.0000%	0.0000%	68	40.00%	50.00%	0.000%		
69	0.0000%	50.00%	0.0000%	0.0000%	69	40.00%	40.00%	0.000%		
70+	0.0000%	100.00%	0.0000%	0.0000%	70+	100.00%	100.00%	0.000%		

* Ultimate rates shown – assumed these rates would be 75% higher during the first year of employment, 50% higher during the second year of employment, and 20% higher during the third year of employment.

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Exhibit B2

Metropolitan Transit Authority Non-Union Pension Plan

Optional Payment Form Assumption

	Current		Proposed				
	Immediate Lump Sum	Single Life	Immediate Lump Sum	Single Life	50% Joint and Survivor Annuity	100% Joint and Survivor Annuity	20 Year Certain and Life Annuity
<i>Active Participants</i>							
Early Retirement Decrements*	50%	50%	50%	20%	20%	5%	5%
Normal Retirement Decrements*	50%	50%	20%	40%	25%	10%	5%
Termination Decrements**	50%	50%	50%	40%	5%	5%	0%

* Annuity options are immediate.

** Annuity options are deferred to normal retirement (age 65).

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Exhibit B3**Metropolitan Transit Authority Non-Union Pension Plan**
Salary Scale

Current (Single Rate)	Age	Proposed	
		Option 1 - Proposed Table	Option 2 - Single Rate
2.75%	<50	4.25%	3.50%
	50-54	4.00%	3.50%
	55-59	4.00%	3.50%
	60-64	3.00%	3.50%
	65+	2.00%	3.50%