



June 14, 2022 - DRAFT

Mr. Anthony Estell
Director, Office of Retirement Services
530 W. Allegan
Lansing, Michigan 48909

**Re: Separate Actuarial Valuation as of September 30, 2021 for
University Members of MPSERS (Pension Benefits Only)**

Dear Mr. Estell:

We have completed a separate actuarial valuation for current and former employees of the seven Michigan Universities that have withdrawn from the Michigan Public School Employees' Retirement System (for their employees hired on or after January 1, 1996) due to the enactment of Act No. 272 of the Public Acts of 1995. This actuarial valuation was prepared as of September 30, 2021, and utilized the same actuarial assumptions and methods used for the 2021 valuation of MPSERS, except that:

- (1) The unfunded actuarial accrued liability for University members is expected to be completely amortized by September 30, 2036; and
- (2) The payroll growth assumption for amortization purposes is 2.75%.

The purpose of the valuation is to provide the required contribution rates for the fiscal year beginning October 1, 2023 and to evaluate the liabilities and funded status of the System for the affected members in total. This report should not be relied upon for any other purpose. Please see the September 30, 2021 MPSERS annual actuarial valuation report dated March 11, 2022 for additional discussion of the nature of actuarial calculations, additional disclosures required by Actuarial Standards of Practice, and more information related to economic and demographic assumptions and benefit provisions.

Select valuation results are presented in the following tables:

- Table 1 - Demographic Characteristics - Comparison of University and Non-University MPSERS Members as of September 30, 2021 and September 30, 2020
- Table 2 - Contribution Rates for the Indicated Fiscal Years Expressed as a Percentage of Payroll
- Table 3 - University Contribution Rates as of September 30, 2021 for the Fiscal Year Beginning October 1, 2023 – Expressed as a Percentage of Payroll and Estimated Dollars
- Table 4 - Actuarial Valuation Results as of September 30, 2021
- Table 5 - Active University MPSERS Members as of September 30, 2021 by Age and Years of Service
- Table 6 - Active University MPSERS Member Statistics by Plan Type

Table 7 - University MPSERS Pensions in Force on September 30, 2021 by Type of Pension, Selected Option, and Pension Amount

Table 8 - Summary of MPSERS Liability Transfers Between Non-University and University from October 1, 2020 through September 30, 2021

Table 9 - Allocation of September 30, 2021 MPSERS Assets Between University and Non-University Members

Table 10 - Unfunded Actuarial Accrued Liability and Actuarial Gain (Loss)

Section 41a of Act 300 of the Public Acts of 1980, as amended, provides for "... the payment schedule for universities being based on and applied to the combined payrolls of the universities' employees who are members and who were hired before January 1, 1996 and the universities' employees who would have been members on or after January 1, 1996, but for the enactment of 1995 PA 272." The total additional payroll for University employees hired since January 1, 1996 was reported to be \$98.6 million for the year ending September 30, 2021. Table 3 converts the employer percentage of payroll contribution rate that is based on payroll *only* for University MPSERS members with future benefit accruals in the defined benefit plan (230.64% for the fiscal year beginning October 1, 2023) into a contribution rate (44.53% for the fiscal year beginning October 1, 2023) based on that payroll plus a percentage (35.86% for the fiscal year beginning October 1, 2023) based on the combined payroll of University employees hired since January 1, 1996 who are not members of MPSERS and of University MPSERS members who elected not to continue future benefit accruals in the defined benefit plan. Therefore, the 2023/2024 employer contribution should be the sum of:

- a) 44.53% of University MPSERS member payroll for those continuing in the defined benefit plan; plus
- b) 35.86% of University non-MPSERS member payroll and University MPSERS member payroll for those who elected the defined contribution plan.

Please note, the amortization component of the employer contribution as a percentage of payroll has been calculated consistently with previously issued University reports. This report does **NOT** reflect the following:

- The payroll floor associated with the enactment of Public Act 136 of 2016;
- The normal cost or UAAL "floor" provisions of Public Act 92 of 2017 or Public Act 181 of 2018; or
- Any reconciliation payments as required by subsection 41(9) of MPSERS statute (for Non-University members).

The amortization payment portion of the employer contribution in dollars for the fiscal year beginning October 1, 2023 (without regard for "floor" minimums) is \$50,892,108. The source of this payment, either from the Universities or from the State, does not impact valuation results.

The valuation was based upon information furnished by the Office of Retirement Services, concerning Retirement System benefits, financial transactions, and active members, terminated members, retirees and beneficiaries. Data was checked for internal and year-to-year consistency, but was not audited by us. This report may be provided to parties other than the Office of Retirement Services only in its entirety and only with the permission of the Office of Retirement Services. GRS is not responsible for unauthorized use of this report.



The valuation summarized in this report involves actuarial calculations that require making assumptions about future events. The assumptions and methods are disclosed fully in the September 30, 2021 actuarial valuation of MPSERS, unless otherwise noted. We believe that the assumptions and methods used in this report are reasonable and appropriate. However, other assumptions and methods could also be reasonable and could result in materially different results. Some of the numbers in this report are rounded. There may be cases where schedules do not add, or where they do not exactly balance to other related schedules due to rounding. The use of rounded numbers for plan liabilities should not imply a lack of precision. In addition, because it is not possible or practical to consider every possible contingency, we may use summary information, estimates or simplifications of calculations to facilitate the modeling of future events. We may also exclude factors or data that we deem to be immaterial.

As noted in the September 30, 2021 actuarial valuation report of MPSERS, we continue to include two service purchase loads in the MPSERS accrued liability for purchased service – (1) a load for purchased service that has been paid for but not reported and (2) a load for amounts included in the plan’s reported assets for purchased service that has not yet been paid for by the members. The portion of the service purchase loads attributable to University members in the September 30, 2021 valuation is \$0 and \$6,600, respectively.

There have been no revisions in benefits since the last annual actuarial valuation that impact University members. In accordance with the Dedicated Gains Policy, the Non-Hybrid plan investment return assumption was lowered from 6.80% to 6.00% effective with this valuation. This assumption change increased the Actuarial Accrued Liability by \$89.6 million and the fiscal year 2024 employer contribution by \$1.5 million.

In addition to normally scheduled contributions, it was reported to the actuary that \$84.7 million was contributed in December 2021 to finance a portion of the University pension UAAL. In determining the University employer contribution requirements for fiscal year 2024, based upon the results of this valuation, this additional contribution has been reflected.

This report was prepared using our proprietary valuation model and related software which, in our professional judgment, has the capability to provide results that are consistent with the purposes of the valuation and has no material limitations or known weaknesses. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.



To the best of our knowledge, this report is complete and accurate and the valuation was conducted in accordance with standards of practice prescribed by the Actuarial Standards Board and in compliance with the applicable State statutes. Mita D. Drazilov and Louise Gates are Members of the American Academy of Actuaries (MAAA), are independent of the plan sponsor, and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. It is our opinion that the actuarial assumptions used for the valuation produce results which are reasonable.

Sincerely,

Gabriel, Roeder, Smith & Company



Mita D. Drazilov, ASA, FCA, MAAA



Louise Gates, ASA, FCA, MAAA

MDD:rmn



Table 1

**Demographic Characteristics
Comparison of University and Non-University MPSERS Members
as of September 30, 2021 and September 30, 2020**

2021	Total	University MPSERS Members	Non-University MPSERS Members
<u>Active Members</u>			
Number	157,021	576	156,445
Average age	47.4	57.7	47.4
Average service	14.3	27.2	14.3
Reported payroll	\$ 8,032,377,247	\$ 31,435,644	\$ 8,000,941,603
Average annual payroll	\$ 51,155	\$ 54,576	\$ 51,142
<u>Inactive Vested Members</u>			
Number	18,994	258	18,736
<u>Retirees & Beneficiaries</u>			
Number	223,767	5,031	218,736
Annual pension	\$ 5,334,628,343	\$ 93,958,935	\$ 5,240,669,408
Average annual pension	\$ 23,840	\$ 18,676	\$ 23,959
2020	Total	University MPSERS Members	Non-University MPSERS Members
<u>Active Members</u>			
Number	165,015	722	164,293
Average age	47.3	57.6	47.3
Average service	14.0	27.0	13.9
Reported payroll	\$ 7,979,260,206	\$ 38,047,542	\$ 7,941,212,664
Average annual payroll	\$ 48,355	\$ 52,697	\$ 48,336
<u>Inactive Vested Members</u>			
Number	20,241	299	19,942
<u>Retirees & Beneficiaries</u>			
Number	221,478	5,064	216,414
Annual pension	\$ 5,212,105,527	\$ 92,396,734	\$ 5,119,708,793
Average annual pension	\$ 23,533	\$ 18,246	\$ 23,657

The above statistics include only those members entitled to some type of defined benefit from the Retirement System. Active members hired after PA 300 of 2012 who elected the pure defined contribution plan are excluded from the statistics above.

The September 30, 2020 inactive counts include 3,187 people (including 22 University people) who elected not to continue future accruals (after the transition date of February 1, 2013) in the defined benefit plan as a result of PA 300.

The September 30, 2021 inactive counts include 2,842 people (including 20 University people) who elected not to continue future accruals (after the transition date of February 1, 2013) in the defined benefit plan as a result of PA 300.



Table 2

Contribution Rates for the Indicated Fiscal Years Expressed as a Percentage of Payroll

Total - All MPSERS Members			
Valuation Date	September 30, 2021	September 30, 2020	September 30, 2019
Fiscal Year Beginning	October 1, 2023	October 1, 2022	October 1, 2021
Total Normal Cost	13.27 %	10.93 %	10.88 %
Member Contributions	<u>5.09</u>	<u>5.00</u>	<u>4.94</u>
Employer Normal Cost	8.18 %	5.93 %	5.94 %
Amortization Payment	<u>30.56</u>	<u>30.14</u>	<u>28.29</u>
Total Employer Contribution	N/A	N/A	N/A
Projected Active Member Payroll			
For Fiscal Year (in millions)			
Normal Cost \$	\$8,078.8	\$7,963.8	\$7,973.8
Amortization \$	\$9,644.7	\$9,441.7	\$9,409.4
University MPSERS Members			
Valuation Date	September 30, 2021	September 30, 2020	September 30, 2019
Fiscal Year Beginning	October 1, 2023	October 1, 2022	October 1, 2021
Total Normal Cost	12.10 %	9.73 %	9.70 %
Member Contributions	<u>3.43</u>	<u>3.31</u>	<u>3.21</u>
Employer Normal Cost	8.67 %	6.42 %	6.49 %
Amortization Payment	<u>221.97</u>	<u>213.25</u>	<u>165.07</u>
Total Employer Contribution	230.64 %	219.67 %	171.56 %
Projected Active Member Payroll ⁽¹⁾			
For Fiscal Year (in millions)			
Normal Cost \$	\$22.9	\$27.8	\$35.3
Amortization \$	\$22.9	\$27.8	\$35.3
Non-University MPSERS Members			
Valuation Date	September 30, 2021	September 30, 2020	September 30, 2019
Fiscal Year Beginning	October 1, 2023	October 1, 2022	October 1, 2021
Total Normal Cost	13.27 %	10.93 %	10.89 %
Member Contributions	<u>5.09</u>	<u>5.01</u>	<u>4.95</u>
Employer Normal Cost	8.18 %	5.92 %	5.94 %
Amortization Payment	<u>30.10</u>	<u>29.60</u>	<u>27.77</u>
Total Employer Contribution	N/A	N/A	N/A
Projected Active Member Payroll ⁽²⁾			
For Fiscal Year (in millions)			
Normal Cost \$	\$8,055.9	\$7,936.0	\$7,938.5
Amortization \$	\$9,621.8	\$9,413.9	\$9,374.1

⁽¹⁾ Payroll for University members of MPSERS with future defined benefit accruals.

⁽²⁾ Payroll for Non-University members of MPSERS and University members of MPSERS with future defined contribution accruals.

Table 3

**University Contribution Rates as of September 30, 2021
for the Fiscal Year Beginning October 1, 2023
Expressed as a Percentage of Payroll and Estimated Dollars**

	Using Only Payroll of University Members of MPSERS with Future Defined Benefit Accruals		Also Using Payroll of University Non-Members Hired Since January 1, 1996 and University Members of MPSERS with Future Defined Contribution Accruals For Amortization Payment	
	Percentage of Pay	Dollar Amount (In Millions)	Percentage of Pay	Dollar Amount (In Millions)
Normal Cost	12.10 %	\$ 2.774	12.10 %	\$ 2.774
Member Contributions	<u>3.43</u>	<u>0.786</u>	<u>3.43</u>	<u>0.786</u>
Employer Normal Cost	8.67 %	\$ 1.988	8.67 %	\$ 1.988
Amortization Payment	<u>221.97</u>	<u>50.892</u>	<u>35.86</u>	<u>50.892</u>
Total Employer Contribution	230.64 %	\$ 52.880	44.53 %	\$ 52.880
Projected Payroll (In Millions)				
For Normal Cost		\$ 22.927		\$ 22.927
For Amortization Payment		\$ 22.927		\$ 141.912

This exhibit does not reflect the payroll floor associated with Public Act 136 of 2016 or the “floor” minimum provisions associated with Public Act 92 of 2017 or Public Act 181 of 2018 (see page 2). The results above may not add due to rounding.



Table 4
Actuarial Valuation Results
as of September 30, 2021

	Total All MPSERS Members	University MPSERS Members	Non-University MPSERS Members
(1) Fiscal Year Ending September 30,	2024	2024	2024
(2) Total Normal Cost of Benefits (as a % of member pay)	13.27%	12.10%	13.27%
(3) Member Contribution % (weighted average)	<u>5.09%</u>	<u>3.43%</u>	<u>5.09%</u>
(4) Employer Normal Cost % = (2) - (3)	8.18%	8.67%	8.18%
(5) Projected Active Member Payroll for Fiscal Year - Normal Cost \$	\$ 8,078,778,813	\$ 22,927,286	\$ 8,055,851,527
(6) Employer Normal Cost \$ = (4) x (5) ¹	660,752,695	1,987,796	658,764,899
(7) Actuarial Accrued Liability - Total	95,903,396,517	1,266,652,267	94,636,744,250
Active employees	28,988,200,333	167,028,250	28,821,172,083
Inactive vested members ²	2,711,222,565	23,884,733	2,687,337,832
Other inactive members ³	114,879,120	1,460,205	113,418,915
Retirees and surviving beneficiaries	64,089,094,499	1,074,279,079	63,014,815,420
(8) Funding Value of Assets	61,479,748,797	596,740,822	60,883,007,975
(9) Unfunded Actuarial Accrued Liabilities (UAAL) = (7) - (8)	34,423,647,720	669,911,445	33,753,736,275
(10) Amortization Period (years)	15	13	15
(11) Amortization Factor (level percent of payroll payments)	N/A	10.54755021	N/A
(12) Amortization Payment %	30.56%	221.97%	30.10%
(13) Projected Active Member Payroll for Fiscal Year - Amortization \$	\$ 9,644,724,026	\$ 22,927,286	\$ 9,621,796,740
(14) Amortization Payment \$	2,947,502,627	50,892,108	2,896,610,519
(15) Total Computed Employer Contribution % = (4) + (12)	N/A	230.64%	N/A
(16) Total Computed Employer Contribution \$ = (6) + (14)	\$ 3,608,255,322	\$ 52,879,904	\$ 3,555,375,418

¹ The formula in line (6) only applies to the University column. This is because of the effect of the Pension Plus Plan and the Pension Plus 2 Plan provisions on the Total and Non-University columns.

² Includes pending refunds of employee contributions for former employees who terminated without a vested benefit.

³ Includes liabilities for employees who transferred to the DC pension plan in connection with PA 300.

Table 5**Active University MPSERS Members as of September 30, 2021
by Age and Years of Service**

Age	Years of Service							Total Count	Total Pay	Average Pay
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 & up			
40 - 44	2	1			1	1		5	\$ 201,147	\$ 40,229
45 - 49	3	1	5	4	14	15		42	2,386,939	56,832
50 - 54	3	13	6	14	16	39	44	135	7,140,007	52,889
55 - 59	8	3	8	9	16	49	100	193	10,722,707	55,558
60 - 64	3	4	5	7	11	15	79	124	6,650,198	53,631
65 - 69	1	3	2	1	3	8	40	58	3,583,670	61,787
70 & Over	5	2	1	1	2	2	6	19	750,976	39,525
Total	25	27	27	36	63	129	269	576	\$ 31,435,644	\$ 54,576

The September 30, 2021 active statistics exclude 20 University people who elected not to continue future accruals (after the transition date of February 1, 2013) in the defined benefit plan as a result of PA 300. The payroll for this group was reported to be \$0.8 million for valuation purposes.

As of September 30, 2021, the total University payroll (MPSERS members and Non-MPSERS members) was reported to be \$130.8 million for valuation purposes.

Table 6

Active University MPSERS Member Statistics by Plan Type

	September 30, 2020	September 30, 2021
Basic Members		
Number	289	221
Average Age	58.7 years	58.8 years
Average Service	31.1 years	31.2 years
Reported Payroll	\$ 16,272,905	\$ 12,811,176
Average Annual Pay	\$ 56,308	\$ 57,969
MIP Members		
Number	433	355
Average Age	56.8 years	56.9 years
Average Service	24.2 years	24.8 years
Reported Payroll	\$ 21,774,637	\$ 18,624,468
Average Annual Pay	\$ 50,288	\$ 52,463
Total		
Number	722	576
Average Age	57.6 years	57.7 years
Average Service	27.0 years	27.2 years
Reported Payroll	\$ 38,047,542	\$ 31,435,644
Average Annual Pay	\$ 52,697	\$ 54,576

The September 30, 2020 total active count excludes 22 University people who elected not to continue future accruals (after the transition date of February 1, 2013) in the defined benefit plan as a result of PA 300.

The September 30, 2021 total active count excludes 20 University people who elected not to continue future accruals (after the transition date of February 1, 2013) in the defined benefit plan as a result of PA 300. The payroll for this group was reported to be \$0.8 million for valuation purposes.

As of September 30, 2021, the total University payroll (MPSERS members and Non-MPSERS members) was reported to be \$130.8 million for valuation purposes.

Table 7

University MPSERS Pensions in Force on September 30, 2021 by Type of Pension, Selected Option, and Pension Amount

Amount of Monthly Benefit	Number of Retirees	Type of Retirement*						Selected Option**				
		1	2	3	4	5	6	Opt. 1	Opt. 2	Opt. 3	Opt. 4	Opt 1E 2E,3E,4E
\$ 1 - 400	745	584	118	5	30	0	8	352	222	108	17	46
401 - 800	891	693	106	9	57	0	26	406	236	136	33	80
801 - 1,200	816	681	67	6	47	0	15	366	188	143	44	75
1,201 - 1,600	728	633	65	3	17	0	10	285	189	145	64	45
1,601 - 2,000	550	500	39	0	7	0	4	231	130	104	48	37
2,001 - 2,400	395	360	29	0	3	0	3	158	96	85	37	19
2,401 - 2,800	233	208	20	0	1	0	4	76	71	62	16	8
2,801 - 3,200	158	137	19	0	2	0	0	66	48	22	19	3
3,201 - 3,600	123	109	12	0	0	0	2	51	32	27	6	7
3,601 - 4,000	94	88	6	0	0	0	0	34	30	17	6	7
Over 4,000	298	266	30	0	1	0	1	115	90	52	33	8
Totals	<u>5,031</u>	<u>4,259</u>	<u>511</u>	<u>23</u>	<u>165</u>	<u>0</u>	<u>73</u>	<u>2,140</u>	<u>1,332</u>	<u>901</u>	<u>323</u>	<u>335</u>

* Type of Retirement

- 1 – Normal retirement for age & service
- 2 – Survivor payment – normal retirement
- 3 – Duty disability retirement (including survivors)
- 4 – Non-duty disability retirement (including survivors)
- 5 – Survivor payment – duty death in service
- 6 – Survivor payment – non-duty death in service

** Selected Option

- Opt. 1 – Straight life allowance
- Opt. 2 – 100% survivor option
- Opt. 3 – 50% survivor option
- Opt. 4 – 75% survivor option
- Opt. 1E, 2E, 3E, 4E – Equated retirement options

Table 8

Summary of MPSERS Liability Transfers Between Non-University & University from October 1, 2020 through September 30, 2021

Transfers Between Segments	
Transfers to University	
a) 0 Non-University actives as of 10/1/2020 who transferred to University actives by 10/1/2021	\$ 0
b) 0 Non-University terminated vested as of 10/1/2020 who transferred to University actives by 10/1/2021	0
c) 0 Non-University pensioners as of 10/1/2020 who transferred to University actives by 10/1/2021	0
d) 0 Non-University actives as of 10/1/2020 who transferred to University terminated vesteds by 10/1/2021	0
e) 1 Non-University terminated vesteds as of 10/1/2020 who transferred to University terminated vesteds by 10/1/2021	27,253
f) 0 Non-University pensioners as of 10/1/2020 who transferred to University terminated vesteds by 10/1/2021	0
g) 0 Non-University actives as of 10/1/2020 who transferred to University pensioners by 10/1/2021	0
h) 0 Non-University terminated vested as of 10/1/2020 who transferred to University pensioners by 10/1/2021	0
i) 0 Non-University pensioners as of 10/1/2020 who transferred to University pensioners by 10/1/2021	0
j) Total Transfers into University	\$ 27,253
Transfers from University	
k) 0 University actives as of 10/1/2020 who transferred to Non-University actives by 10/1/2021	\$ 0
l) 2 University terminated vesteds as of 10/1/2020 who transferred to Non-University actives by 10/1/2021	44,413
m) 0 University pensioners as of 10/1/2020 who transferred to Non-University actives by 10/1/2021	0
n) 0 University actives as of 10/1/2020 who transferred to Non-University terminated vesteds by 10/1/2021	0
o) 0 University terminated vested as of 10/1/2020 who transferred to Non-University terminated vesteds by 10/1/2021	0
p) 0 University pensioners as of 10/1/2020 who transferred to Non-University terminated vesteds by 10/1/2021	0
q) 0 University actives as of 10/1/2020 who transferred to Non-University pensioners by 10/1/2021	0
r) 0 University terminated vested as of 10/1/2020 who transferred to Non-University pensioners by 10/1/2021	0
s) 0 University pensioners as of 10/1/2020 who transferred to Non-University pensioners by 10/1/2021	0
t) Total Transfers from University	\$ 44,413
u) Total Net Transfers (j - t)	\$ (17,160)

Table 9

**Allocation of September 30, 2021 MPSERS Assets
Between University and Non-University Members**

Year Ended September 30, 2021	Total MPSERS	MPSERS University	MPSERS Non-University
A. Funding Value Beginning of Year	\$ 52,587,345,269	\$ 528,551,669	\$ 52,058,793,600
B. Market Value			
B1. Market Value End of Year	63,332,155,473	615,094,553	62,717,060,920
B2. Market Value Beginning of Year	51,456,228,555	516,732,549	50,939,496,006
B3. Audit Adjustment ⁴	-	-	-
C. Non-Investment Net Cash Flow			
C1. Member Contributions	413,530,505	1,104,285	412,426,220
C2. Employer Contributions	3,081,013,949	56,935,808	3,024,078,141
C3. Benefit Payments	(5,309,513,888)	(93,991,650)	(5,215,522,238)
C4. Contribution Refunds / Transfers	(26,727,739)	(808,902)	(25,918,837)
C5. Administrative Expenses ¹	(23,239,301)	(347,675)	(22,891,626)
C6. University Employer Contribution Refund	-	-	-
C7. Other	132,020	-	132,020
C8. University/Non-University Participant Transfer	-	(17,160)	17,160
C9. Total Net Cash Flow: C1 + C2 + C3 + C4 + C5 + C6 + C7 + C8	(1,864,804,454)	(37,125,294)	(1,827,679,160)
D. Investment Return			
D1. Market Return Total: B1 - B2 - B3 - C9 ²	13,740,731,372	135,487,298	13,605,244,074
D2. Assumed Rate of Return ³	N/A	6.80%	N/A
D3. Market Rate of Return	27.20%	27.20%	27.20%
D4. Dedicated Gains Policy Trigger (Excess Return %)	Multiple Triggers	15.63%	Multiple Triggers
D5. Market Return for Immediate Recognition: D4 x (B2 + B3 + (C9 - C8)/2)	7,912,994,755	77,865,297	7,835,129,458
D6. Assumed Amount of Return: D2 x (A + B3 + (C9 - C8)/2)	3,511,975,682	34,679,837	3,477,295,845
D7. Amount Subject to Phase-In: D1 - D5 - D6	2,315,760,935	22,942,164	2,292,818,771
E. Phased-In Recognition of Investment Return			
E1. Current Year: 0.20 x D7	463,152,187	4,588,433	458,563,754
E2. First Prior Year	(709,959,879)	(7,296,550)	(702,663,329)
E3. Second Prior Year	(513,128,980)	(5,500,742)	(507,628,238)
E4. Third Prior Year	77,997,028	831,858	77,165,170
E5. Fourth Prior Year	14,177,189	146,314	14,030,875
E6. Total Phase-Ins	(667,762,455)	(7,230,687)	(660,531,768)
F. Funding Value End of Year			
F1. Preliminary Funding Value End of Year: A + B3 + C9 + D5 + D6 + E6	\$ 61,479,748,797	\$ 596,740,822	\$ 60,883,007,975
F2. Corridor Percent	30%	30%	30%
F3. Upper Corridor Limit: (100% + F2) x B1	82,331,802,115	799,622,919	81,532,179,196
F4. Lower Corridor Limit: (100% - F2) x B1	44,332,508,831	430,566,187	43,901,942,644
F5. Funding Value End of Year	\$ 61,479,748,797	\$ 596,740,822	\$ 60,883,007,975
G. Difference Between Market and Funding Value	1,852,406,676	18,353,731	1,834,052,945
H. Recognized Rate of Return	20.83 %	20.65 %	20.83 %
I. Market Rate of Return	27.20 %	27.20 %	27.20 %
J. Ratio of Funding Value to Market Value	0.9708	0.9702	0.9708

¹ The Administrative Expense attributable to University and Non-University members is derived from the total MPSERS values by allocating in proportion to the membership counts provided by ORS (6,085 University members and 406,734 total MPSERS members).

² Allocated in proportion to average market value.

³ Discount rate was 6.80% for the Non-Hybrid group, 6.80% for the Pension Plus Plan, and 6.00% for the Pension Plus 2 Plan for the September 30, 2020 valuation.

⁴ Includes an adjustment for the difference between the amount submitted as Market Value Beginning of Year for the current report and the amount submitted as Market Value End of Year for the prior report. The adjustment was allocated between the University and Non-University groups in proportion to the prior year's end of year market values.



Table 10

Unfunded Actuarial Accrued Liability and Actuarial Gain (Loss)

	Unfunded Actuarial Accrued Liability as of September 30, 2021		
	All MPSERS Members	University MPSERS Members	Non-University MPSERS Members
1. Actuarial accrued liability	\$95,903,396,517	\$1,266,652,267	\$94,636,744,250
2. Valuation assets	<u>61,479,748,797</u>	<u>596,740,822</u>	<u>60,883,007,975</u>
3. Unfunded (overfunded) actuarial accrued liability = (1) - (2)	34,423,647,720	669,911,445	33,753,736,275
4. Funded ratio = (2) / (1)	64.11%	47.11%	64.33%
	Derivation of Actuarial Gain (Loss)		
	All MPSERS Members	University MPSERS Members	Non-University MPSERS Members
5. Unfunded Actuarial Accrued Liability (UAAL) - Previous Valuation	\$33,750,344,594	\$ 661,825,369	\$33,088,519,225
6. Total Normal Cost (employer plus member) for Year Ending 9/30/2021	905,716,841	3,599,018	902,117,823
7. Total Contributions (employer plus member) for Year Ending 9/30/2021	3,494,544,454	58,040,093	3,436,504,361
8. Interest on:			
a. UAAL: Discount Rate ¹ x (5)	2,295,046,446	45,004,125	2,250,042,321
b. Normal Cost and Contributions: Discount Rate ¹ / 2 x [(6) - (7)]	<u>(88,019,873)</u>	<u>(1,850,997)</u>	<u>(86,168,876)</u>
c. Net Total: (a) + (b)	2,207,026,573	43,153,128	2,163,873,445
9. Change in UAAL due to Benefit Changes	0	0	0
10. Change in UAAL due to Assumption Changes	8,130,602,890	89,606,511	8,040,996,379
11. Expected UAAL Current Year: (5) + (6) - (7) + (8c) + (9) + (10)	41,499,146,444	740,143,933	40,759,002,511
12. Actual UAAL Current Year	34,423,647,720	669,911,445	33,753,736,275
13. Experience Gain/(Loss): (11) - (12)	7,075,498,724	70,232,488	7,005,266,236
14. Actuarial accrued liability at start of year	86,337,689,863	1,190,377,038	85,147,312,825
15. Gain (loss) as percent of pension actuarial accrued liabilities at start of year	8.20%	5.90%	8.23%
16. Portion of gain (loss) due to investment performance	7,245,232,300 ²	70,634,610 ²	7,174,597,690

¹ Discount rate was 6.80% for the Non-Hybrid group, 6.80% for the Pension Plus Plan, and 6.00% for the Pension Plus 2 Plan for the September 30, 2020 valuation.

² Please note that row 15 above includes the accelerated recognition of investment gains associated with the Dedicated Gains Policy, if applicable.