



July 12, 2021 - DRAFT

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

**Re: Separate Actuarial Valuation as of September 30, 2020 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completed a separate actuarial valuation for current and former employees of the seven Michigan Universities that have withdrawn from the Michigan Public School Employees Retirement System (for their employees hired on or after January 1, 1996) due to the enactment of Act No. 272 of the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, 2020, and utilized the same actuarial assumptions and methods used for the 2020 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, 2022 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, 2020 MPSERS annual actuarial valuation report dated March 12, 2021 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, 2020 and September 30, 2019
- Table 2 - Contribution Rates for the Indicated Fiscal Years Expressed as a Percentage of Payroll
- Table 3 - University Contribution Rates as of September 30, 2020 for the Fiscal Year Beginning October 1, 2022 – Expressed as a Percentage of Payroll and Estimated Dollars
- Table 4 - Actuarial Valuation Results as of September 30, 2020
- Table 5 - Active University MPSERS Members as of September 30, 2020 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, 2020 by Type of Pension, Selected Option, and Pension Amount

Table 8 - Summary of MPSERS Liability Transfers Between Non-University and University from October 1, 2019 through September 30, 2020

Table 9 - Allocation of September 30, 2020 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 \$102.0 million for the year ending September 30, 2020. 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 (219.67% for the fiscal year beginning October 1, 2022) into a contribution rate (45.28% for the fiscal year beginning October 1, 2022) based on that payroll plus a percentage (38.86% for the fiscal year beginning October 1, 2022) 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 2022/2023 employer contribution should be the sum of:

- a) 45.28% of University MPSERS member payroll for those continuing in the defined benefit plan; plus
- b) 38.86% 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, 2022 (without regard for "floor" minimums) is \$59,373,219. 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, 2020 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, 2020 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, 2020 valuation is \$0 and \$63,500, respectively.

There have been no revisions in benefits or changes in assumptions and methods since the last annual actuarial valuation that impact University members.

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,



Mita D. Drazilov, ASA, FCA, MAAA



Louise Gates, ASA, FCA, MAAA

MDD:cs



Table 1

**Demographic Characteristics
Comparison of University and Non-University MPSERS Members
as of September 30, 2020 and September 30, 2019**

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
2019	Total	University MPSERS Members	Non-University MPSERS Members
<u>Active Members</u>			
Number	174,189	936	173,253
Average age	47.0	57.8	46.9
Average service	13.6	27.2	13.5
Reported payroll	\$ 8,039,477,830	\$ 49,211,746	\$ 7,990,266,084
Average annual payroll	\$ 46,154	\$ 52,577	\$ 46,119
<u>Inactive Vested Members</u>			
Number	21,771	355	21,416
<u>Retirees & Beneficiaries</u>			
Number	218,937	5,029	213,908
Annual pension	\$ 5,087,367,392	\$ 89,045,513	\$ 4,998,321,879
Average annual pension	\$ 23,237	\$ 17,706	\$ 23,367

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, 2019 inactive counts include 3,492 people (including 26 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, 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.



Table 2

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

Total - All MPSERS Members			
Valuation Date	September 30, 2020	September 30, 2019	September 30, 2018
Fiscal Year Beginning	October 1, 2022	October 1, 2021	October 1, 2020
Total Normal Cost	10.93 %	10.88 %	10.79 %
Member Contributions	<u>5.00</u>	<u>4.94</u>	<u>4.85</u>
Employer Normal Cost	5.93 %	5.94 %	5.94 %
Amortization Payment	<u>30.14</u>	<u>28.29</u>	<u>26.70</u>
Total Employer Contribution	N/A	N/A	N/A
Projected Active Member Payroll			
For Fiscal Year (in millions)			
Normal Cost \$	\$7,963.8	\$7,973.8	\$7,777.1
Amortization \$	\$9,441.7	\$9,409.4	\$8,984.2
University MPSERS Members			
Valuation Date	September 30, 2020	September 30, 2019	September 30, 2018
Fiscal Year Beginning	October 1, 2022	October 1, 2021	October 1, 2020
Total Normal Cost	9.73 %	9.70 %	9.63 %
Member Contributions	<u>3.31</u>	<u>3.21</u>	<u>3.11</u>
Employer Normal Cost	6.42 %	6.49 %	6.52 %
Amortization Payment	<u>213.25</u>	<u>165.07</u>	<u>143.10</u>
Total Employer Contribution	219.67 %	171.56 %	149.62 %
Projected Active Member Payroll ⁽¹⁾			
For Fiscal Year (in millions)			
Normal Cost \$	\$27.8	\$35.3	\$38.7
Amortization \$	\$27.8	\$35.3	\$38.7
Non-University MPSERS Members			
Valuation Date	September 30, 2020	September 30, 2019	September 30, 2018
Fiscal Year Beginning	October 1, 2022	October 1, 2021	October 1, 2020
Total Normal Cost	10.93 %	10.89 %	10.80 %
Member Contributions	<u>5.01</u>	<u>4.95</u>	<u>4.86</u>
Employer Normal Cost	5.92 %	5.94 %	5.94 %
Amortization Payment	<u>29.60</u>	<u>27.77</u>	<u>26.20</u>
Total Employer Contribution	N/A	N/A	N/A
Projected Active Member Payroll ⁽²⁾			
For Fiscal Year (in millions)			
Normal Cost \$	\$7,936.0	\$7,938.5	\$7,738.4
Amortization \$	\$9,413.9	\$9,374.1	\$8,945.5

⁽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, 2020
for the Fiscal Year Beginning October 1, 2022
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	9.73 %	\$ 2.709	9.73 %	\$ 2.709
Member Contributions	<u>3.31</u>	<u>0.922</u>	<u>3.31</u>	<u>0.922</u>
Employer Normal Cost	6.42 %	\$ 1.787	6.42 %	\$ 1.787
Amortization Payment	<u>213.25</u>	<u>59.373</u>	<u>38.86</u>	<u>59.373</u>
Total Employer Contribution	219.67 %	\$ 61.161	45.28 %	\$ 61.161
Projected Payroll (In Millions)				
For Normal Cost		\$ 27.842		\$ 27.842
For Amortization Payment		\$ 27.842		\$ 152.782

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, 2020

	Total All MPSERS Members	University MPSERS Members	Non-University MPSERS Members
(1) Fiscal Year Ending September 30,	2023	2023	2023
(2) Total Normal Cost of Benefits (as a % of member pay)	10.93%	9.73%	10.93%
(3) Member Contribution % (weighted average)	<u>5.00%</u>	<u>3.31%</u>	<u>5.01%</u>
(4) Employer Normal Cost % = (2) - (3)	5.93%	6.42%	5.92%
(5) Projected Active Member Payroll for Fiscal Year - Normal Cost \$	\$ 7,963,792,099	\$ 27,842,142	\$ 7,935,949,957
(6) Employer Normal Cost \$ = (4) x (5) ¹	471,858,627	1,787,466	470,071,161
(7) Actuarial Accrued Liability - Total	86,337,689,863	1,190,377,038	85,147,312,825
Active employees	25,036,812,137	181,465,290	24,855,346,847
Inactive vested members ²	2,495,689,107	22,715,543	2,472,973,564
Other inactive members ³	106,252,214	1,311,811	104,940,403
Retirees and surviving beneficiaries	58,698,936,405	984,884,394	57,714,052,011
(8) Funding Value of Assets	52,587,345,269	528,551,669	52,058,793,600
(9) Unfunded Actuarial Accrued Liabilities (UAAL) = (7) - (8)	33,750,344,594	661,825,369	33,088,519,225
(10) Amortization Period (years)	16	14	16
(11) Amortization Factor (level percent of payroll payments)	N/A	10.66719521	N/A
(12) Amortization Payment %	30.14%	213.25%	29.60%
(13) Projected Active Member Payroll for Fiscal Year - Amortization \$	\$ 9,441,678,376	\$27,842,142	\$ 9,413,836,234
(14) Amortization Payment \$	2,845,479,203	59,373,219	2,786,105,984
(15) Total Computed Employer Contribution % = (4) + (12)	N/A	219.67%	N/A
(16) Total Computed Employer Contribution \$ = (6) + (14)	\$ 3,317,337,830	\$ 61,160,685	\$ 3,256,177,145

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, 2020
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	3	1		1	3			8	\$ 256,802	\$ 32,100
45 - 49	7	3	9	12	17	21	2	71	3,624,075	51,043
50 - 54	5	14	5	5	19	49	54	151	8,201,219	54,313
55 - 59	9	4	11	13	17	48	122	224	11,540,587	51,520
60 - 64	6	5	7	8	10	29	111	176	9,605,208	54,575
65 - 69	3	2	3	4	2	7	46	67	3,845,782	57,400
70 & Over	7	3	1	2	2	3	7	25	973,869	38,955
Total	40	32	36	45	70	157	342	722	\$ 38,047,542	\$ 52,697

The September 30, 2020 active statistics exclude 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.

As of September 30, 2020, the total University payroll (MPSERS members and Non-MPSERS members) was reported to be \$140.8 million for valuation purposes.

Table 6**Active University MPSERS Member Statistics
by Plan Type**

	September 30, 2019	September 30, 2020
Basic Members		
Number	393	289
Average Age	58.9 years	58.7 years
Average Service	31.1 years	31.1 years
Reported Payroll	\$ 22,000,741	\$ 16,272,905
Average Annual Pay	\$ 55,982	\$ 56,308
MIP Members		
Number	543	433
Average Age	57.0 years	56.8 years
Average Service	24.4 years	24.2 years
Reported Payroll	\$ 27,211,005	\$ 21,774,637
Average Annual Pay	\$ 50,112	\$ 50,288
Total		
Number	936	722
Average Age	57.8 years	57.6 years
Average Service	27.2 years	27.0 years
Reported Payroll	\$ 49,211,746	\$ 38,047,542
Average Annual Pay	\$ 52,577	\$ 52,697

The September 30, 2019 total active count excludes 26 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, 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.

As of September 30, 2020, the total University payroll (MPSERS members and Non-MPSERS members) was reported to be \$140.8 million for valuation purposes.

Table 7

University MPSERS Pensions in Force on September 30, 2020 by Type of Pension, Selected Option, and Pension Amount

Amount of Monthly Benefit	Number of Retirees	Type of Retirement*						Selected Option**				Opt 1E 2E,3E,4E
		1	2	3	4	5	6	Opt. 1	Opt. 2	Opt. 3	Opt. 4	
\$ 1 - 400	790	620	125	6	32	0	7	371	232	121	19	47
401 - 800	922	718	103	9	64	0	28	425	243	140	29	85
801 - 1,200	836	706	67	5	43	0	15	376	190	144	50	76
1,201 - 1,600	722	630	63	2	17	0	10	294	185	137	62	44
1,601 - 2,000	536	489	36	0	7	0	4	225	118	104	48	41
2,001 - 2,400	376	339	30	0	3	0	4	147	94	84	34	17
2,401 - 2,800	212	189	19	0	1	0	3	66	67	58	15	6
2,801 - 3,200	171	150	19	0	2	0	0	67	50	28	19	7
3,201 - 3,600	113	100	11	0	0	0	2	44	33	23	8	5
3,601 - 4,000	101	96	5	0	0	0	0	38	35	16	5	7
Over 4,000	285	255	28	0	1	0	1	116	80	51	29	9
Totals	5,064	4,292	506	22	170	0	74	2,169	1,327	906	318	344

* 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, 2019 through September 30, 2020

Transfers between segments	
Transfers to University	
a) 0 Non-University actives as of 10/1/2019 who transferred to University actives by 10/1/2020	\$ 0
b) 0 Non-University terminated vested as of 10/1/2019 who transferred to University actives by 10/1/2020	0
c) 0 Non-University pensioners as of 10/1/2019 who transferred to University actives by 10/1/2020	0
d) 0 Non-University actives as of 10/1/2019 who transferred to University terminated vesteds by 10/1/2020	0
e) 0 Non-University terminated vesteds as of 10/1/2019 who transferred to University terminated vesteds by 10/1/2020	0
f) 0 Non-University pensioners as of 10/1/2019 who transferred to University terminated vesteds by 10/1/2020	0
g) 0 Non-University actives as of 10/1/2019 who transferred to University pensioners by 10/1/2020	0
h) 0 Non-University terminated vested as of 10/1/2019 who transferred to University pensioners by 10/1/2020	0
i) 1 Non-University pensioners as of 10/1/2019 who transferred to University pensioners by 10/1/2020	3,911
j) Total Transfers into University	\$ 3,911
Transfers from University	
k) 5 University actives as of 10/1/2019 who transferred to Non-University actives by 10/1/2020	\$ 435,060
l) 1 University terminated vesteds as of 10/1/2019 who transferred to Non-University actives by 10/1/2020	31,793
m) 0 University pensioners as of 10/1/2019 who transferred to Non-University actives by 10/1/2020	0
n) 0 University actives as of 10/1/2019 who transferred to Non-University terminated vesteds by 10/1/2020	0
o) 5 University terminated vested as of 10/1/2019 who transferred to Non-University terminated vesteds by 10/1/2020	664,707
p) 0 University pensioners as of 10/1/2019 who transferred to Non-University terminated vesteds by 10/1/2020	0
q) 0 University actives as of 10/1/2019 who transferred to Non-University pensioners by 10/1/2020	0
r) 0 University terminated vested as of 10/1/2019 who transferred to Non-University pensioners by 10/1/2020	0
s) 0 University pensioners as of 10/1/2019 who transferred to Non-University pensioners by 10/1/2020	0
t) Total Transfers from University	\$ 1,131,560
u) Total Net Transfers (j - t)	\$ (1,127,649)

Table 9

Allocation of September 30, 2020 MPSERS Assets Between University and Non-University Members

Year Ended September 30, 2020	Total MPSERS	MPSERS University	MPSERS Non-University
A. Funding Value Beginning of Year	\$ 51,421,988,660	\$ 537,319,266	\$ 50,884,669,394
B. Market Value			
B1. Market Value End of Year	51,456,228,555	516,732,549	50,939,496,006
B2. Market Value Beginning of Year	50,857,170,095	531,300,707	50,325,869,388
B3. Audit Adjustment ⁴	77,452,373	809,139	76,643,234
C. Non-Investment Net Cash Flow			
C1. Member Contributions	401,626,288	1,422,420	400,203,868
C2. Employer Contributions	2,808,839,412	50,830,877	2,758,008,535
C3. Benefit Payments	(5,183,129,306)	(91,936,685)	(5,091,192,621)
C4. Contribution Refunds / Transfers	(27,916,861)	(314,251)	(27,602,610)
C5. Administrative Expenses ¹	(23,118,595)	(352,159)	(22,766,436)
C6. University Employer Contribution Refund	-	-	-
C7. Other	73,860	-	73,860
C8. University/Non-University Participant Transfer	-	(1,127,649)	1,127,649
C9. Total Net Cash Flow: C1 + C2 + C3 + C4 + C5 + C6 + C7 + C8	(2,023,625,202)	(41,477,447)	(1,982,147,755)
D. Investment Return			
D1. Market Return Total: B1 - B2 - B3 - C9 ²	2,545,231,289	26,100,150	2,519,131,139
D2. Assumed Rate of Return ³	N/A	6.80%	N/A
D3. Market Rate of Return	5.10%	5.10%	5.10%
D4. Dedicated Gains Policy Trigger (Excess Return %)	Multiple Triggers	0.00%	Multiple Triggers
D5. Market Return for Immediate Recognition: D4 x (B2 + B3 + (C9 - C8)/2)	-	-	-
D6. Assumed Amount of Return: D2 x (A + B3 + (C9 - C8)/2)	3,432,900,841	35,220,838	3,397,680,003
D7. Amount Subject to Phase-In: D1 - D5 - D6	(887,669,552)	(9,120,688)	(878,548,864)
E. Phased-In Recognition of Investment Return			
E1. Current Year: 0.20 x D7	(177,533,910)	(1,824,138)	(175,709,772)
E2. First Prior Year	(171,054,453)	(1,833,580)	(169,220,873)
E3. Second Prior Year	39,002,548	415,928	38,586,620
E4. Third Prior Year	14,177,192	146,315	14,030,877
E5. Fourth Prior Year	(25,962,780)	(224,652)	(25,738,128)
E6. Total Phase-Ins	(321,371,403)	(3,320,127)	(318,051,276)
F. Funding Value End of Year			
F1. Preliminary Funding Value End of Year: A + B3 + C9 + D5 + D6 + E6	\$ 52,587,345,269	\$ 528,551,669	\$ 52,058,793,600
F2. Corridor Percent	30%	30%	30%
F3. Upper Corridor Limit: (100% + F2) x B1	66,893,097,122	671,752,314	66,221,344,808
F4. Lower Corridor Limit: (100% - F2) x B1	36,019,359,989	361,712,784	35,657,647,205
F5. Funding Value End of Year	\$ 52,587,345,269	\$ 528,551,669	\$ 52,058,793,600
G. Difference Between Market and Funding Value	(1,131,116,714)	(11,819,120)	(1,119,297,594)
H. Recognized Rate of Return	6.16 %	6.16 %	6.16 %
I. Market Rate of Return	5.10 %	5.10 %	5.10 %
J. Ratio of Funding Value to Market Value	1.0220	1.0229	1.0220

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 (6,320 University members and 414,897 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, 2019 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 Marked 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, 2020		
	All MPSERS Members	University MPSERS Members	Non-University MPSERS Members
1. Actuarial accrued liability	\$86,337,689,863	\$1,190,377,038	\$85,147,312,825
2. Valuation assets	<u>52,587,345,269</u>	<u>528,551,669</u>	<u>52,058,793,600</u>
3. Unfunded (overfunded) actuarial accrued liability = (1) - (2)	33,750,344,594	661,825,369	33,088,519,225
4. Funded ratio = (2) / (1)	60.91%	44.40%	61.14%
	Derivation of Actuarial Gain (Loss)		
	All MPSERS Members	University MPSERS Members	Non-University MPSERS Members
5. Unfunded Actuarial Accrued Liability (UAAL) - Previous Valuation	\$ 33,779,731,002	\$ 670,965,727	\$ 33,108,765,275
6. Total Normal Cost (employer plus member) for Year Ending 9/30/2020	895,885,193	4,439,913	891,445,280
7. Total Contributions (employer plus member) for Year Ending 9/30/2020	3,210,465,700	52,253,297	3,158,212,403
8. Interest on:			
a. UAAL: Discount Rate ¹ x (5)	2,297,032,368	45,625,669	2,251,406,699
b. Normal Cost and Contributions: Discount Rate ¹ / 2 x [(6) - (7)]	<u>(78,695,959)</u>	<u>(1,625,655)</u>	<u>(77,070,304)</u>
c. Net Total: (a) + (b)	2,218,336,409	44,000,014	2,174,336,395
9. Change in UAAL due to Benefit Changes	0	0	0
10. Change in UAAL due to Assumption Changes	0	0	0
11. Expected UAAL Current Year: (5) + (6) - (7) + (8c) + (9) + (10)	33,683,486,904	667,152,357	33,016,334,547
12. Actual UAAL Current Year	33,750,344,594	661,825,369	33,088,519,225
13. Experience Gain/(Loss): (11) - (12)	(66,857,690)	5,326,988	(72,184,678)
14. Actuarial accrued liability at start of year	85,201,719,662	1,208,284,993	83,993,434,669
15. Gain (loss) as percent of pension actuarial accrued liabilities at start of year	(0.08)%	0.44%	(0.09)%
16. Portion of gain (loss) due to investment performance	(321,371,403) ²	(3,320,127) ²	(318,051,276)

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, 2019 valuation.

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