



July 30, 2020 - DRAFT

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

**Re: Separate Actuarial Valuation as of September 30, 2019 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completed a separate actuarial valuation for current and former employees of the seven Michigan Universities that have withdrawn from the Michigan Public School Employees Retirement System (for their employees hired on or after January 1, 1996) due to the enactment of Act No. 272 of the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, 2019, and utilized the same actuarial assumptions and methods used for the 2019 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, 2021 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, 2019 MPSERS annual actuarial valuation report dated March 6, 2020 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, 2019 and September 30, 2018
- Table 2 - Contribution Rates for the Indicated Fiscal Years Expressed as a Percentage of Payroll
- Table 3 - University Contribution Rates as of September 30, 2019 for the Fiscal Year Beginning October 1, 2021 – Expressed as a Percentage of Payroll and Estimated Dollars
- Table 4 - Actuarial Valuation Results as of September 30, 2019
- Table 5 - Active University MPSERS Members as of September 30, 2019 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, 2019 by Type of Pension, Selected Option, and Pension Amount

Table 8 - Summary of MPSERS Liability Transfers Between Non-University and University from October 1, 2018 through September 30, 2019

Table 9 - Allocation of September 30, 2019 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 \$109.0 million for the year ending September 30, 2019. 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 (171.56% for the fiscal year beginning October 1, 2021) into a contribution rate (40.30% for the fiscal year beginning October 1, 2021) based on that payroll plus a percentage (33.81% for the fiscal year beginning October 1, 2021) 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 2021/2022 employer contribution should be the sum of:

- a) 40.30% of University MPSERS member payroll for those continuing in the defined benefit plan, plus
- b) 33.81% 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, 2021 (without regard for "floor" minimums) is \$58,349,532. 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, 2019 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, 2019 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, 2019 valuation is \$0 and \$65,000, respectively.

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

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:rmn



**Table 1**

**Demographic Characteristics  
Comparison of University and Non-University MPSERS Members  
as of September 30, 2019 and September 30, 2018**

<b>2019</b>	<b>Total</b>	<b>University MPSERS Members</b>	<b>Non-University MPSERS Members</b>
<b><u>Active Members</u></b>			
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
<b><u>Inactive Vested Members</u></b>			
Number	21,771	355	21,416
<b><u>Retirees &amp; Beneficiaries</u></b>			
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
<b>2018</b>	<b>Total</b>	<b>University MPSERS Members</b>	<b>Non-University MPSERS Members</b>
<b><u>Active Members</u></b>			
Number	182,930	1,061	181,869
Average age	46.4	57.4	46.3
Average service	13.1	27.1	13.0
Reported payroll	\$ 7,884,549,991	\$ 53,509,751	\$ 7,831,040,240
Average annual payroll	\$ 43,101	\$ 50,433	\$ 43,059
<b><u>Inactive Vested Members</u></b>			
Number	22,447	386	22,061
<b><u>Retirees &amp; Beneficiaries</u></b>			
Number	216,618	5,013	211,605
Annual pension	\$ 4,967,054,783	\$ 86,727,750	\$ 4,880,327,033
Average annual pension	\$ 22,930	\$ 17,301	\$ 23,063

*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, 2018 inactive counts include 3,849 people (including 30 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, 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.*



## Table 2

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

<b>Total - All MPSERS Members</b>			
<b>Valuation Date Fiscal Year Beginning</b>	<b>September 30, 2019 October 1, 2021</b>	<b>September 30, 2018 October 1, 2020</b>	<b>September 30, 2017 October 1, 2019</b>
Total Normal Cost	10.88 %	10.79 %	10.62 %
Member Contributions	<u>4.94</u>	<u>4.85</u>	<u>4.94</u>
Employer Normal Cost	5.94 %	5.94 %	5.68 %
Amortization Payment	<u>28.29</u>	<u>26.70</u>	<u>24.07</u>
Total Employer Contribution	N/A	N/A	N/A
Projected Active Member Payroll For Fiscal Year (in millions)			
Normal Cost \$	\$7,973.8	\$7,777.1	\$8,726.9
Amortization \$	\$9,409.4	\$8,984.2	\$9,090.0
<b>University MPSERS Members</b>			
<b>Valuation Date Fiscal Year Beginning</b>	<b>September 30, 2019 October 1, 2021</b>	<b>September 30, 2018 October 1, 2020</b>	<b>September 30, 2017 October 1, 2019</b>
Total Normal Cost	9.70 %	9.63 %	9.45 %
Member Contributions	<u>3.21</u>	<u>3.11</u>	<u>3.16</u>
Employer Normal Cost	6.49 %	6.52 %	6.29 %
Amortization Payment	<u>165.07</u>	<u>143.10</u>	<u>103.90</u>
Total Employer Contribution	171.56 %	149.62 %	110.19 %
Projected Active Member Payroll <sup>(1)</sup> For Fiscal Year (in millions)			
Normal Cost \$	\$35.3	\$38.7	\$45.0
Amortization \$	\$35.3	\$38.7	\$45.0
<b>Non-University MPSERS Members</b>			
<b>Valuation Date Fiscal Year Beginning</b>	<b>September 30, 2019 October 1, 2021</b>	<b>September 30, 2018 October 1, 2020</b>	<b>September 30, 2017 October 1, 2019</b>
Total Normal Cost	10.89 %	10.80 %	10.63 %
Member Contributions	<u>4.95</u>	<u>4.86</u>	<u>4.95</u>
Employer Normal Cost	5.94 %	5.94 %	5.68 %
Amortization Payment	<u>27.77</u>	<u>26.20</u>	<u>23.67</u>
Total Employer Contribution	N/A	N/A	N/A
Projected Active Member Payroll <sup>(2)</sup> For Fiscal Year (in millions)			
Normal Cost \$	\$7,938.5	\$7,738.4	\$8,681.9
Amortization \$	\$9,374.1	\$8,945.5	\$9,045.0

<sup>(1)</sup> Payroll for University members of MPSERS with future defined benefit accruals.

<sup>(2)</sup> 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, 2019  
for the Fiscal Year Beginning October 1, 2021  
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	9.70 %	\$ 3.429	9.70 %	\$ 3.429
Member Contributions	<u>3.21</u>	<u>1.135</u>	<u>3.21</u>	<u>1.135</u>
Employer Normal Cost	6.49 %	\$ 2.294	6.49 %	\$ 2.294
Amortization Payment	<u>165.07</u>	<u>58.350</u>	<u>33.81</u>	<u>58.350</u>
Total Employer Contribution	171.56 %	\$ 60.644	40.30 %	\$ 60.644
Projected Payroll (In Millions)				
For Normal Cost		\$ 35.348		\$ 35.348
For Amortization Payment		\$ 35.348		\$ 172.565

*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).*

**Table 4**  
**Actuarial Valuation Results**  
**as of September 30, 2019**

	Total All MPSERS Members	University MPSERS Members	Non-University MPSERS Members
(1) Fiscal Year Ending September 30,	2022	2022	2022
(2) Total Normal Cost of Benefits (as a % of member pay)	10.88%	9.70%	10.89%
(3) Member Contribution % (weighted average)	<u>4.94%</u>	<u>3.21%</u>	<u>4.95%</u>
(4) Employer Normal Cost % = (2) - (3)	5.94%	6.49%	5.94%
(5) Projected Active Member Payroll for Fiscal Year - Normal Cost \$	\$ 7,973,776,301	\$ 35,348,368	\$ 7,938,427,933
(6) Employer Normal Cost \$ = (4) x (5) <sup>1</sup>	473,915,267	2,294,109	471,621,158
(7) Actuarial Accrued Liability - Total	85,201,719,662	1,208,284,993	83,993,434,669
Active employees	24,856,379,192	233,454,981	24,622,924,211
Inactive vested members <sup>2</sup>	2,521,697,006	25,916,233	2,495,780,773
Other inactive members <sup>3</sup>	108,040,730	1,337,238	106,703,492
Retirees and surviving beneficiaries	57,715,602,734	947,576,541	56,768,026,193
(8) Funding Value of Assets	51,421,988,660	537,319,266	50,884,669,394
(9) Unfunded Actuarial Accrued Liabilities (UAAL) = (7) - (8)	33,779,731,002	670,965,727	33,108,765,275
(10) Amortization Period (years)	17	15	17
(11) Amortization Factor (level percent of payroll payments)	N/A	11.23049654	N/A
(12) Amortization Payment %	28.29%	165.07%	27.77%
(13) Projected Active Member Payroll for Fiscal Year - Amortization \$	\$ 9,409,381,509	\$35,348,368	\$ 9,374,033,141
(14) Amortization Payment \$	2,661,767,658	58,349,532	2,603,418,126
(15) Total Computed Employer Contribution % = (4) + (12)	N/A	171.56%	N/A
(16) Total Computed Employer Contribution \$ = (6) + (14)	\$ 3,135,682,925	\$ 60,643,641	\$ 3,075,039,284

<sup>1</sup> 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.

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

<sup>3</sup> 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, 2019  
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			
35 - 39	1							1	\$ 3,218	\$ 3,218
40 - 44	2	1	2	2	7			14	641,017	45,787
45 - 49	7	6	17	13	21	23		87	4,433,703	50,962
50 - 54	3	15	3	8	37	54	68	188	9,882,005	52,564
55 - 59	9	4	12	12	32	53	157	279	14,148,514	50,712
60 - 64	5	7	9	11	19	42	142	235	13,050,730	55,535
65 - 69	4	3	6	2	3	12	60	90	5,309,430	58,994
70 & Over	10	4	2	2	4	3	17	42	1,743,129	41,503
Total	41	40	51	50	123	187	444	936	\$ 49,211,746	\$ 52,577

The September 30, 2019 active statistics exclude 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.

As of September 30, 2019, the total University payroll (MPSERS members and Non-MPSERS members) was reported to be \$159.1 million for valuation purposes.



## Table 6

### Active University MPSERS Member Statistics by Plan Type

	September 30, 2018	September 30, 2019
<b>Basic Members</b>		
Number	457	393
Average Age	58.5 years	58.9 years
Average Service	30.7 years	31.1 years
Reported Payroll	\$ 24,934,495	\$ 22,000,741
Average Annual Pay	\$ 54,561	\$ 55,982
<b>MIP Members</b>		
Number	604	543
Average Age	56.5 years	57.0 years
Average Service	24.3 years	24.4 years
Reported Payroll	\$ 28,575,256	\$ 27,211,005
Average Annual Pay	\$ 47,310	\$ 50,112
<b>Total</b>		
Number	1,061	936
Average Age	57.4 years	57.8 years
Average Service	27.1 years	27.2 years
Reported Payroll	\$ 53,509,751	\$ 49,211,746
Average Annual Pay	\$ 50,433	\$ 52,577

*The September 30, 2018 total active count excludes 30 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, 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.*

*As of September 30, 2019, the total University payroll (MPSERS members and Non-MPSERS members) was reported to be \$159.1 million for valuation purposes.*

## Table 7

# University MPSERS Pensions in Force on September 30, 2019 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	822	651	123	6	34	0	8	396	233	122	20	51
401 - 800	964	750	106	10	68	0	30	439	255	149	30	91
801 - 1,200	852	721	69	5	44	0	13	385	185	153	49	80
1,201 - 1,600	693	611	54	2	16	0	10	286	170	134	59	44
1,601 - 2,000	498	450	38	0	5	0	5	199	113	100	44	42
2,001 - 2,400	349	310	31	0	3	0	5	142	82	83	27	15
2,401 - 2,800	207	183	19	0	2	0	3	63	71	48	17	8
2,801 - 3,200	173	153	18	0	1	0	1	69	45	33	19	7
3,201 - 3,600	110	97	12	0	0	0	1	43	31	22	8	6
3,601 - 4,000	93	85	8	0	0	0	0	35	36	11	5	6
Over 4,000	268	244	22	0	1	0	1	110	73	50	27	8
Totals	5,029	4,255	500	23	174	0	77	2,167	1,294	905	305	358

\* 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, 2018 through September 30, 2019

<b>Transfers between segments</b>	
<b>Transfers to University</b>	
a) 2 Non-University actives as of 10/1/2018 who transferred to University actives by 10/1/2019	\$ 105,300
b) 1 Non-University terminated vested as of 10/1/2018 who transferred to University actives by 10/1/2019	91,149
c) 0 Non-University pensioners as of 10/1/2018 who transferred to University actives by 10/1/2019	0
d) 0 Non-University actives as of 10/1/2018 who transferred to University terminated vesteds by 10/1/2019	0
e) 4 Non-University terminated vesteds as of 10/1/2018 who transferred to University terminated vesteds by 10/1/2019	436,593
f) 0 Non-University pensioners as of 10/1/2018 who transferred to University terminated vesteds by 10/1/2019	0
g) 0 Non-University actives as of 10/1/2018 who transferred to University pensioners by 10/1/2019	0
h) 0 Non-University terminated vested as of 10/1/2018 who transferred to University pensioners by 10/1/2019	0
i) 2 Non-University pensioners as of 10/1/2018 who transferred to University pensioners by 10/1/2019	175,296
<b>j) Total Transfers into University</b>	<b>\$ 808,338</b>
<b>Transfers from University</b>	
k) 0 University actives as of 10/1/2018 who transferred to Non-University actives by 10/1/2019	\$ 0
l) 0 University terminated vesteds as of 10/1/2018 who transferred to Non-University actives by 10/1/2019	0
m) 0 University pensioners as of 10/1/2018 who transferred to Non-University actives by 10/1/2019	0
n) 0 University actives as of 10/1/2018 who transferred to Non-University terminated vesteds by 10/1/2019	0
o) 0 University terminated vested as of 10/1/2018 who transferred to Non-University terminated vesteds by 10/1/2019	0
p) 0 University pensioners as of 10/1/2018 who transferred to Non-University terminated vesteds by 10/1/2019	0
q) 0 University actives as of 10/1/2018 who transferred to Non-University pensioners by 10/1/2019	0
r) 0 University terminated vested as of 10/1/2018 who transferred to Non-University pensioners by 10/1/2019	0
s) 0 University pensioners as of 10/1/2018 who transferred to Non-University pensioners by 10/1/2019	0
<b>t) Total Transfers from University</b>	<b>\$ 0</b>
<b>u) Total Net Transfers (j - t)</b>	<b>\$ 808,338</b>

## Table 9

# Allocation of September 30, 2019 MPSERS Assets Between University and Non-University Members

Year Ended September 30, 2019	Total MPSERS	MPSERS University	MPSERS Non-University
A. Funding Value Beginning of Year	\$ 50,630,333,694	\$ 546,213,646	\$ 50,084,120,048
B. Market Value			
B1. Market Value End of Year	50,857,170,095	531,300,707	50,325,869,388
B2. Market Value Beginning of Year	50,343,498,405	541,609,200	49,801,889,205
B3. Audit Adjustment	-	-	-
C. Non-Investment Net Cash Flow			
C1. Member Contributions	403,146,565	1,688,416	401,458,149
C2. Employer Contributions	2,706,712,537	49,992,358	2,656,720,179
C3. Benefit Payments	(5,058,624,097)	(88,565,327)	(4,970,058,770)
C4. Contribution Refunds / Transfers	(29,344,631)	(516,920)	(28,827,711)
C5. Administrative Expenses <sup>1</sup>	(27,740,993)	(404,578)	(27,336,415)
C6. University Employer Contribution Refund	-	-	-
C7. Other	202,305	-	202,305
C8. University/Non-University Participant Transfer	-	808,338	(808,338)
C9. Total Net Cash Flow: C1 + C2 + C3 + C4 + C5 + C6 + C7 + C8	(2,005,648,314)	(36,997,713)	(1,968,650,601)
D. Investment Return			
D1. Market Return Total: B1 - B2 - B3 - C9 <sup>2</sup>	2,519,320,004	26,689,220	2,492,630,784
D2. Assumed Rate of Return <sup>3</sup>	N/A	6.80%	N/A
D3. Market Rate of Return	5.11%	5.11%	5.11%
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)	3,374,592,268	35,857,122	3,338,735,146
D7. Amount Subject to Phase-In: D1 - D5 - D6	(855,272,264)	(9,167,902)	(846,104,362)
E. Phased-In Recognition of Investment Return			
E1. Current Year: 0.20 x D7	(171,054,453)	(1,833,580)	(169,220,873)
E2. First Prior Year	39,002,548	415,928	38,586,620
E3. Second Prior Year	14,177,192	146,315	14,030,877
E4. Third Prior Year	(25,962,780)	(224,653)	(25,738,127)
E5. Fourth Prior Year	(433,451,495)	(6,257,799)	(427,193,696)
E6. Total Phase-Ins	(577,288,988)	(7,753,789)	(569,535,199)
F. Funding Value End of Year			
F1. Preliminary Funding Value End of Year: A + B3 + C9 + D5 + D6 + E6	\$ 51,421,988,660	\$ 537,319,266	\$ 50,884,669,394
F2. Corridor Percent	30%	30%	30%
F3. Upper Corridor Limit: (100% + F2) x B1	66,114,321,124	690,690,919	65,423,630,205
F4. Lower Corridor Limit: (100% - F2) x B1	35,600,019,067	371,910,495	35,228,108,572
F5. Funding Value End of Year	\$ 51,421,988,660	\$ 537,319,266	\$ 50,884,669,394
G. Difference Between Market and Funding Value	(564,818,565)	(6,018,559)	(558,800,006)
H. Recognized Rate of Return	5.64 %	5.33 %	5.64 %
I. Market Rate of Return	5.11 %	5.11 %	5.11 %
J. Ratio of Funding Value to Market Value	1.0111	1.0113	1.0111

<sup>1</sup> 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 (6,460 University members and 442,948 total MPSERS members).

<sup>2</sup> Allocated in proportion to average market value.

<sup>3</sup> 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, 2018 valuation.



**Table 10**

**Unfunded Actuarial Accrued Liability and Actuarial Gain (Loss)**

	Unfunded Actuarial Accrued Liability as of September 30, 2019		
	All MPSERS Members	University MPSERS Members	Non-University MPSERS Members
1. Actuarial accrued liability	\$85,201,719,662	\$1,208,284,993	\$83,993,434,669
2. Valuation assets	<u>51,421,988,660</u>	<u>537,319,266</u>	<u>50,884,669,394</u>
3. Unfunded (overfunded) actuarial accrued liability = (1) - (2)	33,779,731,002	670,965,727	33,108,765,275
	Derivation of Actuarial Gain (Loss)		
	All MPSERS Members	University MPSERS Members	Non-University MPSERS Members
4. Unfunded Actuarial Accrued Liability (UAAL) - Previous Valuation	\$ 32,745,006,372	\$ 659,707,799	\$ 32,085,298,573
5. Total Normal Cost (employer plus member) for Year Ending 9/30/2019	891,982,872	5,303,651	886,679,221
6. Total Contributions (employer plus member) for Year Ending 9/30/2019	3,109,859,102	51,680,774	3,058,178,328
7. Interest on:			
a. UAAL: Discount Rate <sup>1</sup> x (4)	2,226,662,029	44,860,130	2,181,801,899
b. Normal Cost and Contributions: Discount Rate <sup>1</sup> / 2 x [(5) - (6)]	<u>(75,409,959)</u>	<u>(1,576,822)</u>	<u>(73,833,137)</u>
c. Net Total: (a) + (b)	2,151,252,070	43,283,308	2,107,968,762
8. Change in UAAL due to Benefit Changes	0	0	0
9. Change in UAAL due to Assumption Changes	0	0	0
10. Expected UAAL Current Year:			
(4) + (5) - (6) + (7c) + (8) + (9)	32,678,382,212	656,613,984	32,021,768,228
11. Actual UAAL Current Year	33,779,731,002	670,965,727	33,108,765,275
12. Experience Gain/(Loss): (10) - (11)	(1,101,348,790)	(14,351,743)	(1,086,997,047)
13. Actuarial accrued liability at start of year	83,375,340,066	1,205,921,445	82,169,418,621
14. Gain (loss) as percent of pension actuarial accrued liabilities at start of year	(1.32)%	(1.19)%	(1.32)%
15. Portion of gain (loss) due to investment performance	(577,288,988) <sup>2</sup>	(7,753,789) <sup>2</sup>	(569,535,199)

<sup>1</sup> 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, 2018 valuation.

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