

October 13, 2014

Mr. Phillip J. Stoddard
Director, Office of Retirement Services
General Office Building, Third Floor
P.O. Box 30171
Lansing, Michigan 48909

**Re: Separate Actuarial Valuation as of September 30, 2013 for
University Members of MPSERS (Pension Benefits Only)**

Dear Mr. Stoddard:

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completed a separate actuarial valuation for current and former employees of the seven Michigan Universities that have withdrawn from the Michigan Public School Employees Retirement System (for their employees hired on or after January 1, 1996) due to the enactment of Act No. 272 of the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, 2013, and utilized the same actuarial assumptions and methods used for the 2013 valuation of MPSERS, with the exception that the unfunded actuarial accrued liability for University members is expected to be amortized by September 30, 2036.

The purpose of the valuation is to provide the required contribution rates for the fiscal year beginning October 1, 2015 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.

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, 2013 and September 30, 2012

Table 2 - Contribution Rates for the Indicated Fiscal Years Expressed as a Percentage of Payroll

Table 3 - University Contribution Rates as of September 30, 2013 for the Fiscal Year Beginning October 1, 2015 – Expressed as a Percentage of Payroll and Estimated Dollars

Table 4 - Actuarial Valuation Results as of September 30, 2013

Table 5 - Active University MPSERS Members as of September 30, 2013 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, 2013 by Type of Pension, Selected Option, and Pension Amount

Table 8 - Summary of MPSERS Liability Transfers Between Non-University and University from October 1, 2012 through September 30, 2013

Table 9 - Allocation of September 30, 2013 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 \$96.3 million for the year ending September 30, 2013. 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 (65.00% for the fiscal year beginning October 1, 2015) into a contribution rate (23.82% for the fiscal year beginning October 1, 2015) based on that payroll plus a percentage (18.95% for the fiscal year beginning October 1, 2015) 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 2015/2016 employer contribution should be the sum of:

- a) 23.82% of University MPSERS member payroll for those continuing in the defined benefit plan, plus
- b) 18.95% of University non-MPSERS member payroll and University MPSERS member payroll for those who elected the defined contribution plan.

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 otherwise audited. 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.

Mr. Phillip J. Stoddard

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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, 2013 actuarial valuation of MPSERS. 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. 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, 2013 actuarial valuation report of MPSERS, we included two service purchase loads in the accrued liability, identified in the gain/loss development as a method change, due to questions from the auditor as to how purchased service is reported. As the data indicated, since so few University individuals were being impacted, we did not include a load in the accrued liability for purchased service that has been paid for but not reported. However, we did include a \$234,600 load to the accrued liability for amounts included in the plan's reported assets for purchased service that have not been paid for yet by the 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 Drazilov is a Member of the American Academy of Actuaries (MAAA) and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. It is our opinion that the actuarial assumptions used for the valuation produce results which are reasonable.

Sincerely,

A handwritten signature in black ink that reads "Mita Drazilov". The signature is written in a cursive, flowing style.

Mita D. Drazilov, ASA, MAAA

MDD:rmn

TABLE 1
DEMOGRAPHIC CHARACTERISTICS
COMPARISON OF UNIVERSITY AND NON-UNIVERSITY MPERS MEMBERS
AS OF SEPTEMBER 30, 2013 AND SEPTEMBER 30, 2012

| 2013 | Total | University MPERS Members | Non-University MPERS Members |
|--|------------------|-----------------------------|---------------------------------|
| <u>Active Members</u> | | | |
| Number | 212,525 | 1,851 | 210,674 |
| Average age | 46.0 | 55.0 | 45.9 |
| Average service | 12.3 | 23.9 | 12.2 |
| Reported payroll | \$ 8,225,139,551 | \$ 79,932,165 | \$ 8,145,207,386 |
| Average annual payroll | \$ 38,702 | \$ 43,183 | \$ 38,663 |
| <u>Inactive Vested Members</u> | | | |
| Number | 16,235 | 413 | 15,822 |
| <u>Retirees & Beneficiaries</u> | | | |
| Number | 200,952 | 4,818 | 196,134 |
| Annual pension | \$ 4,289,280,950 | \$ 74,319,960 | \$ 4,214,960,990 |
| Average annual pension | \$ 21,345 | \$ 15,425 | \$ 21,490 |
| 2012 | Total | University MPERS Members | Non-University MPERS Members |
| <u>Active Members</u> | | | |
| Number | 223,769 | 2,018 | 221,751 |
| Average age | 45.7 | 54.7 | 45.6 |
| Average service | 11.9 | 23.1 | 11.8 |
| Reported payroll | \$ 8,649,028,987 | \$ 85,438,053 | \$ 8,563,590,934 |
| Average annual payroll | \$ 38,652 | \$ 42,338 | \$ 38,618 |
| <u>Inactive Vested Members</u> | | | |
| Number | 16,167 | 506 | 15,661 |
| <u>Retirees & Beneficiaries</u> | | | |
| Number | 196,661 | 4,952 | 191,709 |
| Annual pension | \$ 4,134,218,044 | \$ 74,499,916 | \$ 4,059,718,128 |
| Average annual pension | \$ 21,022 | \$ 15,044 | \$ 21,176 |

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

The September 30, 2012 total active count includes 7,901 people (including 51 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, 2013 total active count includes 6,964 people (including 48 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 MPERS Members | | | |
|--|---------------------------|---------------------------|---------------------------|
| Valuation Date | September 30, 2013 | September 30, 2012 | September 30, 2011 |
| Fiscal Year Beginning | October 1, 2015 | October 1, 2014 | October 1, 2011 |
| Total Normal Cost | 8.79 % | 8.76 % | 9.32 % |
| Member Contributions | <u>4.59</u> | <u>4.61</u> | <u>5.45</u> |
| Employer Normal Cost | 4.20 % | 4.15 % | 3.87 % |
| Amortization Payment | <u>21.18</u> | <u>18.76</u> | <u>17.03</u> |
| Total Employer Contribution | N/A | N/A | 20.90 % |
| Projected Active Member Payroll | | | |
| For Fiscal Year (in millions) | | | |
| Normal Cost \$ | \$8,948.9 | \$9,395.1 | \$9,560.0 |
| Amortization \$ | \$9,146.7 | \$9,563.3 | \$9,560.0 |
| University MPERS Members | | | |
| Valuation Date | September 30, 2013 | September 30, 2012 | September 30, 2011 |
| Fiscal Year Beginning | October 1, 2015 | October 1, 2014 | October 1, 2011 |
| Total Normal Cost | 7.98 % | 7.99 % | 9.07 % |
| Member Contributions | <u>3.11</u> | <u>3.19</u> | <u>5.32</u> |
| Employer Normal Cost | 4.87 % | 4.80 % | 3.75 |
| Amortization Payment | <u>60.13</u> | <u>51.93</u> | <u>32.06</u> |
| Total Employer Contribution | 65.00 % | 56.73 % | 35.81 % |
| Projected Active Member Payroll ⁽¹⁾ | | | |
| For Fiscal Year (in millions) | | | |
| Normal Cost \$ | \$61.6 | \$67.4 | \$80.0 |
| Amortization \$ | \$61.6 | \$67.4 | \$80.0 |
| Non-University MPERS Members | | | |
| Valuation Date | September 30, 2013 | September 30, 2012 | September 30, 2011 |
| Fiscal Year Beginning | October 1, 2015 | October 1, 2014 | October 1, 2011 |
| Total Normal Cost | 8.80 % | 8.77 % | 9.32 % |
| Member Contributions | <u>4.60</u> | <u>4.62</u> | <u>5.45</u> |
| Employer Normal Cost | 4.20 % | 4.15 % | 3.87 % |
| Amortization Payment | <u>20.92</u> | <u>18.52</u> | <u>16.90</u> |
| Total Employer Contribution | N/A | N/A | 20.77 % |
| Projected Active Member Payroll ⁽²⁾ | | | |
| For Fiscal Year (in millions) | | | |
| Normal Cost \$ | \$8,887.3 | \$9,327.7 | \$9,480.0 |
| Amortization \$ | \$9,085.1 | \$9,495.9 | \$9,480.0 |

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

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

TABLE 3
UNIVERSITY CONTRIBUTION RATES AS OF SEPTEMBER 30, 2013
FOR THE FISCAL YEAR BEGINNING OCTOBER 1, 2015
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 | 7.98 % | \$ 4.913 | 7.98 % | \$ 4.913 |
| Member Contributions | <u>3.11</u> | <u>1.914</u> | <u>3.11</u> | <u>1.914</u> |
| Employer Normal Cost | 4.87 % | \$ 2.999 | 4.87 % | \$ 2.999 |
| Amortization Payment | <u>60.13</u> | <u>37.016</u> | <u>18.95</u> | <u>37.016</u> |
| Total Employer Contribution | 65.00 % | \$ 40.015 | 23.82 % | \$ 40.015 |
| Payroll | | | | |
| For Normal Cost | | \$ 61.559 | | \$ 61.559 |
| For Amortization Payment | | \$ 61.559 | | \$ 195.378 |

MPSERS Annual Actuarial Valuation – University Supplement

TABLE 4
ACTUARIAL VALUATION RESULTS
AS OF SEPTEMBER 30, 2013

| | Total All MPSERS Members | University MPSERS Members | Non-University MPSERS Members |
|--|-----------------------------|------------------------------|----------------------------------|
| (1) Fiscal Year Ending September 30, | 2016 | 2016 | 2016 |
| (2) Total Normal Cost of Benefits (as a % of member pay) | 8.79% | 7.98% | 8.80% |
| (3) Member Contribution % (weighted average) | <u>4.59%</u> | <u>3.11%</u> | <u>4.60%</u> |
| (4) Employer Normal Cost % = (2) - (3) | 4.20% | 4.87% | 4.20% |
| (5) Projected Active Member Payroll for Fiscal Year - Normal Cost \$ | \$8,948,862,311 | \$61,559,320 | \$8,887,302,991 |
| (6) Employer Normal Cost \$ = (4) x (5) ¹ | 374,960,132 | 2,999,630 | 371,960,502 |
| (7) Actuarial Accrued Liability - Total | 63,839,727,800 | 980,227,806 | 62,859,499,994 |
| Active employees | 19,651,480,178 | 276,483,154 | 19,374,997,024 |
| Inactive vested members | 990,493,441 | 19,494,300 | 970,999,141 |
| Retirees and surviving beneficiaries | 43,197,754,181 | 684,250,352 | 42,513,503,829 |
| (8) Funding Value of Assets | 38,043,503,534 | 491,633,746 | 37,551,869,788 |
| (9) Unfunded Actuarial Accrued Liabilities (UAAL) = (7) - (8) | 25,796,224,266 | 488,594,060 | 25,307,630,206 |
| (10) Amortization Period (years) | Multiple Periods | 21 | Multiple Periods |
| (11) Amortization Factor (level percent of payroll payments) | N/A | 13.64920553 | N/A |
| (12) Amortization Payment % | 21.18% | 60.13% | 20.92% |
| (13) Projected Active Member Payroll for Fiscal Year - Amortization \$ | \$9,146,662,321 | \$61,559,320 | \$9,085,103,001 |
| (14) Amortization Payment \$ = (12) x (13) | 1,937,263,080 | 37,015,835 | 1,900,247,245 |
| (15) Total Computed Employer Contribution % = (4) + (12) | N/A | 65.00% | N/A |
| (16) Total Computed Employer Contribution \$ = (6) + (14) | \$ 2,312,223,212 | \$ 40,015,465 | \$ 2,272,207,747 |

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

TABLE 5
ACTIVE UNIVERSITY MPERS MEMBERS AS OF SEPTEMBER 30, 2013
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 | | | |
| 30 - 34 | 1 | | 1 | | | | | 2 | \$ 98,108 | \$ 49,054 |
| 35 - 39 | 4 | 5 | 5 | 10 | | | | 24 | 878,576 | 36,607 |
| 40 - 44 | 18 | 25 | 10 | 40 | 31 | 2 | | 126 | 4,620,566 | 36,671 |
| 45 - 49 | 10 | 9 | 11 | 57 | 72 | 80 | 5 | 244 | 10,206,754 | 41,831 |
| 50 - 54 | 26 | 12 | 13 | 64 | 86 | 144 | 100 | 445 | 17,952,418 | 40,343 |
| 55 - 59 | 20 | 17 | 12 | 45 | 113 | 134 | 179 | 520 | 23,112,750 | 44,448 |
| 60 - 64 | 14 | 14 | 10 | 29 | 61 | 87 | 141 | 356 | 16,615,940 | 46,674 |
| 65 - 69 | 10 | 3 | 4 | 10 | 14 | 25 | 24 | 90 | 4,327,352 | 48,082 |
| 70 & Over | 10 | 7 | 1 | 4 | 4 | 3 | 15 | 44 | 2,119,701 | 48,175 |
| Total | 113 | 92 | 67 | 259 | 381 | 475 | 464 | 1,851 | \$ 79,932,165 | \$ 43,183 |

The September 30, 2013 total active count includes 48 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, 2013, the total University payroll (MPERS members and Non-MPERS members) was reported to be \$176.2 million.

TABLE 6
ACTIVE UNIVERSITY MPSERS MEMBER STATISTICS
BY PLAN TYPE

| | September 30, 2012 | September 30, 2013 |
|----------------------|--------------------|--------------------|
| Basic Members | | |
| Number | 917 | 842 |
| Average Age | 55.3 years | 55.8 years |
| Average Service | 26.6 years | 27.4 years |
| Reported Payroll | \$ 41,378,461 | \$ 38,774,288 |
| Average Annual Pay | \$ 45,124 | \$ 46,050 |
| MIP Members | | |
| Number | 1,101 | 1,009 |
| Average Age | 54.1 years | 54.4 years |
| Average Service | 20.2 years | 20.9 years |
| Reported Payroll | \$ 44,059,592 | \$ 41,157,877 |
| Average Annual Pay | \$ 40,018 | \$ 40,791 |
| Total | | |
| Number | 2,018 | 1,851 |
| Average Age | 54.7 years | 55.0 years |
| Average Service | 23.1 years | 23.9 years |
| Reported Payroll | \$ 85,438,053 | \$ 79,932,165 |
| Average Annual Pay | \$ 42,338 | \$ 43,183 |

The September 30, 2013 total active count includes 48 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 7

**UNIVERSITY MPERS PENSIONS IN FORCE ON SEPTEMBER 30, 2013
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 - 200 | 381 | 318 | 60 | 0 | 2 | 0 | 1 | 175 | 114 | 59 | 7 | 26 |
| 201 - 400 | 571 | 447 | 70 | 7 | 38 | 0 | 9 | 281 | 147 | 90 | 9 | 44 |
| 401 - 600 | 589 | 463 | 63 | 4 | 42 | 0 | 17 | 282 | 163 | 88 | 10 | 46 |
| 601 - 800 | 537 | 434 | 42 | 5 | 36 | 0 | 20 | 256 | 125 | 89 | 20 | 47 |
| 801 - 1,000 | 451 | 381 | 38 | 2 | 24 | 0 | 6 | 222 | 88 | 79 | 17 | 45 |
| 1,001 - 1,200 | 372 | 316 | 28 | 2 | 20 | 0 | 6 | 151 | 83 | 76 | 24 | 38 |
| 1,201 - 1,400 | 335 | 292 | 31 | 1 | 6 | 0 | 5 | 130 | 91 | 68 | 23 | 23 |
| 1,401 - 1,600 | 245 | 221 | 15 | 0 | 4 | 0 | 5 | 92 | 47 | 57 | 21 | 28 |
| 1,601 - 1,800 | 224 | 199 | 20 | 0 | 2 | 0 | 3 | 78 | 56 | 44 | 22 | 24 |
| 1,801 - 2,000 | 169 | 146 | 18 | 0 | 2 | 0 | 3 | 74 | 39 | 30 | 13 | 13 |
| Over 2,000 | 944 | 842 | 87 | 0 | 4 | 0 | 11 | 332 | 286 | 193 | 67 | 66 |
| Totals | 4,818 | 4,059 | 472 | 21 | 180 | 0 | 86 | 2,073 | 1,239 | 873 | 233 | 400 |

* 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, 2012 THROUGH SEPTEMBER 30, 2013

| Transfers between segments | |
|--|------------------------|
| Transfers to University | |
| a) 21 Non-University actives as of 10/1/2012 who transferred to University actives by 10/1/2013 | \$ 3,004,652 |
| b) 0 Non-University terminated vested as of 10/1/2012 who transferred to University actives by 10/1/2013 | 0 |
| c) 0 Non-University pensioners as of 10/1/2012 who transferred to University actives by 10/1/2013 | 0 |
| d) 0 Non-University actives as of 10/1/2012 who transferred to University terminated vesteds by 10/1/2013 | 0 |
| e) 1 Non-University terminated vesteds as of 10/1/2012 who transferred to University terminated vesteds by 10/1/2013 | 80,559 |
| f) 0 Non-University pensioners as of 10/1/2012 who transferred to University terminated vesteds by 10/1/2013 | 0 |
| g) 0 Non-University actives as of 10/1/2012 who transferred to University pensioners by 10/1/2013 | 0 |
| h) 9 Non-University terminated vested as of 10/1/2012 who transferred to University pensioners by 10/1/2013 | 802,170 |
| i) 0 Non-University pensioners as of 10/1/2012 who transferred to University pensioners by 10/1/2013 | 0 |
| j) Total Transfers into University | \$ 3,887,381 |
| Transfers from University | |
| k) 12 University actives as of 10/1/2012 who transferred to Non-University actives by 10/1/2013 | \$ 1,313,270 |
| l) 1 University terminated vesteds as of 10/1/2012 who transferred to Non-University actives by 10/1/2013 | 80,660 |
| m) 0 University pensioners as of 10/1/2012 who transferred to Non-University actives by 10/1/2013 | 0 |
| n) 6 University actives as of 10/1/2012 who transferred to Non-University terminated vesteds by 10/1/2013 | 532,781 |
| o) 48 University terminated vested as of 10/1/2012 who transferred to Non-University terminated vesteds by 10/1/2013 | 3,261,110 |
| p) 0 University pensioners as of 10/1/2012 who transferred to Non-University terminated vesteds by 10/1/2013 | 0 |
| q) 1 University actives as of 10/1/2012 who transferred to Non-University pensioners by 10/1/2013 | 178,003 |
| r) 0 University terminated vested as of 10/1/2012 who transferred to Non-University pensioners by 10/1/2013 | 0 |
| s) 180 University pensioners as of 10/1/2012 who transferred to Non-University pensioners by 10/1/2013 | 19,032,514 |
| t) Total Transfers from University | \$ 24,398,338 |
| u) Total Net Transfers (j - t) | \$ (20,510,957) |

TABLE 9

ALLOCATION OF SEPTEMBER 30, 2013 MPERS ASSETS BETWEEN UNIVERSITY AND NON-UNIVERSITY MEMBERS

| | Total MPERS Assets | MPERS University Assets | MPERS Non-University Assets |
|---|------------------------|-------------------------|-----------------------------|
| 1. Beginning of Year Assets | | | |
| a) Market Value | \$ 37,700,411,961 | \$ 516,845,120 | \$ 37,183,566,841 |
| b) Valuation Assets | 38,449,959,892 | 531,672,289 | 37,918,287,603 |
| 2. End of Year Assets at Market Value | 40,015,539,616 | 516,580,721 | 39,498,958,895 |
| 3. Net Additions to Market Value | | | |
| a) Member Contributions | 385,007,587 | 5,451,817 | 379,555,770 |
| b) Employer Contributions | 1,364,136,462 | 14,959,022 | 1,349,177,440 |
| c) Investment Income ¹ | 4,859,910,264 | 65,907,168 | 4,794,003,096 |
| d) Benefit Payments | (4,238,482,066) | (65,512,494) | (4,172,969,572) |
| e) Contribution Refunds / Transfers | (30,442,439) | (219,891) | (30,222,548) |
| f) Administrative Expenses ¹ | (25,002,153) | (339,064) | (24,663,089) |
| g) Transfers from (to) stabilization subaccount | 0 | 0 | 0 |
| h) Transfers in (out) | 0 | (20,510,957) | 20,510,957 |
| i) Audit Adjustment ¹ | 0 | 0 | 0 |
| j) Total Additions to Market Value | 2,315,127,655 | (264,399) | 2,315,392,054 |
| 4. Average Market Value of Assets = (1a) + .5 x [(5a) + (5c)] | 36,440,521,734 | 494,184,347 | 35,946,337,387 |
| 5. Summary of Net Additions to Market Value | | | |
| a) Net Contributions = (3a) + (3b) + (3e) + (3g) | 1,718,701,610 | 20,190,948 | 1,698,510,662 |
| b) Net Investment Income = (3c) + (3f) | 4,834,908,111 | 65,568,104 | 4,769,340,007 |
| c) Benefit Payments = (3d) | (4,238,482,066) | (65,512,494) | (4,172,969,572) |
| d) Transfers in (out) = (3h) | 0 | (20,510,957) | 20,510,957 |
| e) Audit Adjustment = (3i) | 0 | 0 | 0 |
| f) Total Additions to Market Value | 2,315,127,655 | (264,399) | 2,315,392,054 |
| 6. Average Valuation Assets = (1b) + .5 x [(5a) + (5c)] + (5e) | 37,190,069,664 | 509,011,516 | 36,681,058,148 |
| 7. Imputed Income at Valuation Rate = Discount Rate ² x (6) | 2,974,743,785 | 40,720,921 | 2,934,022,864 |
| 8. Gain (Loss) from Investments = (5b) – (7) | 1,860,164,326 | 24,847,183 | 1,835,317,143 |
| 9. Portion of Gains (Losses) recognized from prior years | | | |
| a) From this year = .2 x (8) | 372,032,865 | 4,969,437 | 367,063,428 |
| b) From one year ago | 432,010,928 | 5,768,891 | 426,242,037 |
| c) From two years ago | (410,863,290) | (6,099,241) | (404,764,049) |
| d) From three years ago | 9,598,417 | (38,964) | 9,637,381 |
| e) From four years ago | <u>(1,264,198,607)</u> | <u>(19,527,084)</u> | <u>(1,244,671,523)</u> |
| f) Total | (861,419,687) | (14,926,961) | (846,492,726) |
| 10. Change in Valuation Assets = (5a) + (5c) + (5d) + (5e) + (7) + (9f) | (406,456,358) | (40,038,543) | (366,417,815) |
| 11. End of Year Assets | | | |
| a) Market Value = (2) | 40,015,539,616 | 516,580,721 | 39,498,958,895 |
| b) Valuation Assets = (1b) + (10) | 38,043,503,534 | 491,633,746 | 37,551,869,788 |
| 12a. Actuarial Rate of Return | 5.68% | 5.07% | 5.69% |
| 12b. Market Rate of Return | 13.27% | 13.27% | 13.27% |

¹ Allocated in proportion to average market value (i.e., item 4).

² Discount rate is 8% for Non-Hybrid groups and 7% for the Hybrid group.

TABLE 10

UNFUNDED ACTUARIAL ACCRUED LIABILITY AND ACTUARIAL GAIN (LOSS)

| | Unfunded Actuarial Accrued Liability as of September 30, 2013 | | |
|--|---|--------------------------|------------------------------|
| | All MPERS Members | University MPERS Members | Non-University MPERS Members |
| 1. Actuarial accrued liability | \$63,839,727,800 | \$980,227,806 | \$62,859,499,994 |
| 2. Valuation assets | <u>38,043,503,534</u> | <u>491,633,746</u> | <u>37,551,869,788</u> |
| 3. Unfunded (overfunded) actuarial accrued liability = (1) - (2) | 25,796,224,266 | 488,594,060 | 25,307,630,206 |
| | Derivation of Actuarial Gain (Loss) | | |
| | All MPERS Members | University MPERS Members | Non-University MPERS Members |
| 4. Unfunded Actuarial Accrued Liability (UAAL) - Previous Valuation | \$ 24,266,069,244 | \$ 461,666,026 | \$ 23,804,403,218 |
| 5. Total Normal Cost (employer plus member) for Year Ending 9/30/2013 | 716,259,946 | 6,268,186 | 709,991,760 |
| 6. Total Contributions (employer plus member) for Year Ending 9/30/2013 | 1,749,144,049 | 20,410,839 | 1,728,733,210 |
| 7. Interest on: | | | |
| a. UAAL: Discount Rate* x (4) | 1,941,223,285 | 36,933,282 | 1,904,290,003 |
| b. Normal Cost and Contributions: Discount Rate* / 2 x [(5) - (6)] | <u>(41,316,169)</u> | <u>(565,706)</u> | <u>(40,750,463)</u> |
| c. Net Total: (a) + (b) | 1,899,907,116 | 36,367,576 | 1,863,539,540 |
| 8. Change in UAAL due to Benefit Changes | 0 | 0 | 0 |
| 9. Change in UAAL due to Method Changes | 264,000,000 | 234,600 | 263,765,400 |
| 10. Expected UAAL Current Year: (4) + (5) - (6) + (7c) + (8) + (9) | 25,397,092,257 | 484,125,549 | 24,912,966,708 |
| 11. Actual UAAL Current Year | 25,796,224,266 | 488,594,060 | 25,307,630,206 |
| 12. Experience Gain/(Loss): (10) - (11) | (399,132,009) | (4,468,511) | (394,663,498) |
| 13. Actuarial accrued liability at start of year | 62,716,029,136 | 993,338,315 | 61,722,690,821 |
| 14. Gain (loss) as percent of pension actuarial accrued liabilities at start of year | (0.64)% | (0.45)% | (0.64)% |
| 15. Portion of gain (loss) due to investment performance | (861,419,687) | (14,926,961) | (846,492,726) |

* Discount rate is 8% for Non-Hybrid groups and 7% for the Hybrid group.