MICHIGAN

OFFICE OF THE AUDITOR GENERAL

AUDIT REPORT

PERFORMANCE AUDIT
OF

ACTUARY DATA AND CONTRIBUTION RATES OF THE MICHIGAN PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM

OFFICE OF RETIREMENT SERVICES
DEPARTMENT OF TECHNOLOGY, MANAGEMENT, AND BUDGET

July 2014

Doug A. Ringler, C.P.A., C.I.A.
AUDITOR GENERAL

071-1152-12L

The auditor general shall conduct post audits of financial transactions and accounts of the state and of all branches, departments, offices, boards, commissions, agencies, authorities and institutions of the state established by this constitution or by law, and performance post audits thereof.

– Article IV, Section 53 of the Michigan Constitution

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REPORT SUMMARY

Performance Audit

Actuary Data and Contribution Rates of the Michigan Public School Employees' Retirement System

Office of Retirement Services, Department of Technology, Management, and Budget

Report Number:
071-1152-12L

Released:
July 2014

The Michigan Public School Employees' Retirement System (MPSERS) is a cost-sharing, multiple-employer, Statewide, defined benefit public employee retirement plan governed by the State of Michigan. MPSERS's pension plan provides retirement, survivor, and disability benefits to eligible employees in public school districts, intermediate school districts, certain public school academies, district libraries, tax-supported community or junior colleges, and certain universities. In addition, MPSERS's health plan provides eligible retirees with the option of receiving health, dental, and vision coverage.

Audit Objective:
To assess the effectiveness of the State's efforts in developing assumptions and estimates used by the Office of Retirement Services (ORS) in determining MPSERS's contribution rates to help ensure the solvency of MPSERS.

Audit Conclusion:
We concluded that the State's efforts in developing assumptions and estimates used by ORS in determining MPSERS's contribution rates to help ensure the solvency of MPSERS were moderately effective. We noted two reportable conditions (Findings 1 and 2) and one observation (Observation 1).

Reportable Conditions:
The MPSERS Board and the Department of Technology, Management, and Budget (DTMB) need to consider revising the assumptions used to amortize the unfunded actuarial accrued liability (UAAL) for MPSERS's pension plan (Finding 1).

The MPSERS Board and DTMB need to consider revising the mortality assumption for MPSERS's pension plan so that it is in line with actual mortality rates of the plan (Finding 2).

Observation:
Our assessment also resulted in one observation related to the assumed investment rate of return (Observation 1).

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Audit Objective:
To assess the effectiveness of ORS's efforts to transfer accurate and complete MPSERS member data to the actuary.

Audit Conclusion:
We concluded that ORS's efforts to transfer accurate and complete MPSERS

member data to the actuary were effective. However, we noted one reportable condition (Finding 3).

Reportable Condition:
ORS did not report all member service credit purchased and service credit agreed to be purchased by members to the actuary for inclusion in MPSERS's annual actuarial valuation (Finding 3).

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Agency Response:
Our audit report contains 3 findings and 3 corresponding recommendations and an observation. ORS's preliminary response indicates that it agrees with 2 of the recommendations and the observation and did not express agreement or disagreement with the other recommendation.

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A copy of the full report can be obtained by calling 517.334.8050 or by visiting our Web site at: http://audgen.michigan.gov

Michigan Office of the Auditor General
201 N. Washington Square
Lansing, Michigan 48913

Doug A. Ringler, C.P.A., C.I.A.
Auditor General

Scott M. Strong, C.P.A., C.I.A.
Deputy Auditor General

STATE OF MICHIGAN
OFFICE OF THE AUDITOR GENERAL
201 N. WASHINGTON SQUARE
LANSING, MICHIGAN 48913
(517) 334-8050
FAX (517) 334-8079

DOUG A. RINGLER, C.P.A., C.I.A.
AUDITOR GENERAL

July 22, 2014

Mr. Scott Koenigsknecht, Chair
Michigan Public School Employees' Retirement System Board
General Office Building
and
Mr. David B. Behen, Director
Department of Technology, Management, and Budget
Lewis Cass Building
and
Mr. Phillip J. Stoddard, Director
Office of Retirement Services
Department of Technology, Management, and Budget
General Office Building
Lansing, Michigan

Dear Mr. Koenigsknecht, Mr. Behen, and Mr. Stoddard:

This is our report on the performance audit of Actuary Data and Contribution Rates of the Michigan Public School Employees' Retirement System, Office of Retirement Services, Department of Technology, Management, and Budget.

This report contains our report summary; a description of agency; our audit objectives, scope, and methodology and agency responses; comments, findings, recommendations, agency preliminary responses, and observation; various exhibits, presented as supplemental information; and a glossary of abbreviations and terms.

Our comments, findings, recommendations, and observation are organized by audit objective. The agency preliminary responses were taken from the agency's response at the end of our audit fieldwork. The *Michigan Compiled Laws* and administrative procedures require that the audited agency develop a plan to comply with the audit recommendations and submit it within 60 days after release of the audit report to the Office of Internal Audit Services, State Budget Office. Within 30 days of receipt, the Office of Internal Audit Services is required to review the plan and either accept the plan as final or contact the agency to take additional steps to finalize the plan.

We appreciate the courtesy and cooperation extended to us during this audit.

Sincerely,

Doug Ringler

Doug Ringler, C.P.A., C.I.A.
Auditor General

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MICHIGAN PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM
OFFICE OF RETIREMENT SERVICES
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GLOSSARY

Description of Agency

The Michigan Public School Employees' Retirement System (MPSERS) is a cost-sharing, multiple-employer, Statewide defined benefit public employee retirement plan governed by the State of Michigan, originally created under Act 136, P.A. 1945, and recodified and currently operating under the provisions of Act 300, P.A. 1980, as amended. MPSERS's pension plan provides retirement, survivor, and disability benefits to eligible employees in public school districts, intermediate school districts, certain public school academies, district libraries, tax-supported community or junior colleges, and certain universities. In addition, MPSERS's health plan provides eligible retirees with the option of receiving health, dental, and vision coverage.

MPSERS is administered by a 12-member board composed of the Superintendent of Public Instruction and 11 members appointed by the Governor with the advice and consent of the Senate.

The Office of Retirement Services (ORS), within the Department of Technology, Management, and Budget (DTMB), acts as the central administrative unit for MPSERS and other State-managed retirement systems. ORS's mission* is to be an innovative retirement organization driven to empower its customers for a successful today and a secure tomorrow.

ORS's primary responsibilities include maintaining accurate active member* history files, adding new retirees to the pension payrolls, collecting employer and member contributions, and refunding member contributions. As of September 30, 2012, ORS had 155 employees. For fiscal year 2011-12, ORS had payroll expenditures of $13.0 million, of which $10.1 million was charged to MPSERS.

Section 38.1341(1) of the *Michigan Compiled Laws* states that an actuarial valuation shall be made of MPSERS in order to determine the actuarial condition of MPSERS and the required contribution to MPSERS. The actuarial valuation is completed by a contracted actuary, and the actuary completes the valuation using actuarial assumptions* approved by the MPSERS Board and DTMB and member data provided by ORS. The purpose of the actuarial valuation is to evaluate the compensation,

* *See glossary at end of report for definition.*

service, mortality, investment returns, and other financial experience of MPSERS and to recommend employer funding rates to fully fund MPSERS.

As of September 30, 2012, MPSERS had 436,597 members and a net asset balance of $39.6 billion. During the 12-month period ended September 30, 2012, ORS paid pension benefits of $4.1 billion on behalf of 196,661 retirees, health benefits of $690.3 million on behalf of 145,874 retirees, and dental and vision benefits of $95.6 million on behalf of 156,765 retirees.

Audit Objectives, Scope, and Methodology
and Agency Responses

Audit Objectives

Our performance audit* of Actuary Data and Contribution Rates of the Michigan Public School Employees' Retirement System (MPSERS), Office of Retirement Services (ORS), Department of Technology, Management, and Budget, had the following objectives:

1. To assess the effectiveness* of the State's efforts in developing assumptions and estimates used by ORS in determining MPSERS's contribution rates to help ensure the solvency of MPSERS.

2. To assess the effectiveness of ORS's efforts to transfer accurate and complete MPSERS member data to the actuary.

Audit Scope

Our audit scope was to examine the member data and other records of the Michigan Public School Employees' Retirement System related to the establishment of actuarial assumptions and contribution rates. Our audit procedures did not validate the member data reported by the reporting units*. We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. Our audit procedures, which included a preliminary survey, audit fieldwork, report preparation, analysis of agency responses, and quality assurance, generally covered the period October 1, 2010 through September 30, 2011.

As part of our audit, we prepared supplemental information that relates to our first audit objective. Our audit was not directed toward expressing a conclusion on this information and, accordingly, we express no conclusion on it.

* *See glossary at end of report for definition.*

Audit Methodology

We conducted a preliminary survey of ORS's operations to establish our audit objectives and scope. Our preliminary survey included interviewing various members of ORS management and staff; reviewing applicable State laws, policies, procedures, and manuals; examining reports from various external audits and reviews of MPSERS and similar pensions funds; conducting research to identify industry standards and best practices; and obtaining an understanding of and documenting ORS's internal control* related to the transfer of member data to the actuary.

To accomplish our first objective, we interviewed both ORS staff and the contracted actuary staff to gain an understanding of the process for developing actuarial assumptions and establishing contribution rates. We examined the actuary's process for developing critical assumptions used in the actuarial valuations, which included the return on investment rate, mortality rate*, merit and seniority pay increases, retirement rate, withdrawal from employment, projected payroll assumptions, and the actuarial rates for purchasing service credit. We then evaluated the reasonableness of those assumptions by comparing the assumptions to actual results of MPSERS. In addition, we reviewed the amortization* of the unfunded actuarial accrued liability*. We also examined ORS's process for establishing the employer pension and other postemployment benefits (OPEB) contribution rates.

To accomplish our second objective, we examined ORS's process for obtaining and transferring member data to the actuary. We obtained the member data files provided to the actuary. We performed various cross matches of the MPSERS member data to actuary data files to verify that the actuary data files were complete and performed audit procedures on discrepancies. We randomly selected a sample of MPSERS members to verify the accuracy of critical data used in the actuarial valuation. We randomly sampled members with tax-deferred payment agreements for the purchase of service credit to project the overall financial effect on MPSERS. In addition, we reviewed ORS's process for following up on data violations identified by the actuary and randomly tested a sample of violations to validate the accuracy of the data.

When selecting activities or programs for audit, we use an approach based on assessment of risk and opportunity for improvement. Accordingly, we focus our audit efforts on activities or programs having the greatest probability for needing improvement

* *See glossary at end of report for definition.*

as identified through a preliminary survey. Our limited audit resources are used, by design, to identify where and how improvements can be made. Consequently, we prepare our performance audit reports on an exception basis.

Agency Responses

Our audit report contains 3 findings and 3 corresponding recommendations and an observation*. ORS's preliminary response indicates that it agrees with 2 of the recommendations and the observation and did not express agreement or disagreement with the other recommendation.

The agency preliminary response that follows each recommendation in our report was taken from the agency's written comments and oral discussion at the end of our audit fieldwork. Section 18.1462 of the *Michigan Compiled Laws* and the State of Michigan Financial Management Guide (Part VII, Chapter 4, Section 100) require ORS to develop a plan to comply with the audit recommendations and submit it within 60 days after release of the audit report to the Office of Internal Audit Services, State Budget Office. Within 30 days of receipt, the Office of Internal Audit Services is required to review the plan and either accept the plan as final or contact the agency to take additional steps to finalize the plan.

* *See glossary at end of report for definition.*

COMMENTS, FINDINGS, RECOMMENDATIONS,
AGENCY PRELIMINARY RESPONSES,
AND OBSERVATION

DEVELOPMENT OF ASSUMPTIONS AND ESTIMATES USED IN DETERMINING MPSERS'S CONTRIBUTION RATES

COMMENT

Audit Objective: To assess the effectiveness of the State's efforts in developing assumptions and estimates used by the Office of Retirement Services (ORS) in determining the Michigan Public School Employees' Retirement System's (MPSERS's) contribution rates to help ensure the solvency of MPSERS.

Audit Conclusion: We concluded that the State's efforts in developing assumptions and estimates used by ORS in determining MPSERS's contribution rates to help ensure the solvency of MPSERS were moderately effective.

Our audit conclusion was based on our audit efforts as described in the audit scope and audit methodology sections and the resulting reportable conditions* noted in the comments, findings, recommendations, agency preliminary responses, and observation section.

We noted two reportable conditions related to the amortization of unfunded actuarial accrued liability (UAAL) and the mortality rate actuarial assumption (Findings 1 and 2). In our professional judgment, these matters are less severe than a material condition* but represent opportunities for improvement.

In addition, our assessment resulted in one observation related to the assumed investment rate of return (Observation 1). We identified this issue as an observation, and not a reportable condition, because ORS used the assumed rate of return established in statute and recommended by its actuary.

In reaching our conclusion that the State's efforts in developing assumptions and estimates used by ORS in determining MPSERS's contribution rates to help ensure the solvency of MPSERS were moderately effective, we considered the significance of the reportable conditions in relation to the contribution rates for MPSERS and its net asset balance of $39.6 billion as of September 30, 2012. We noted that ORS was complying with statutory requirements concerning the development and use of critical

* *See glossary at end of report for definition.*

assumptions. We believe that the results of our audit efforts provide a reasonable basis for our audit conclusion for this audit objective.

FINDING

1. Amortization of Unfunded Actuarial Accrued Liability (UAAL)

The MPSERS Board and the Department of Technology, Management, and Budget (DTMB) need to consider revising the assumptions used to amortize the UAAL for MPSERS's pension plan. As of fiscal year 2010-11, MPSERS assumed member payroll growth of 3.5%, which was approved by the MPSERS Board and DTMB, and assumed no change in future MPSERS membership. However, because of a decline in membership, MPSERS's total average annual payroll growth was 2.2% for the prior 20 fiscal years. As a result, assuming all other actuarial assumptions are realized, the UAAL contribution rate* will continue to increase every year that actual MPSERS membership declines and could ultimately cost school districts an additional $2.6 billion in contributions to amortize the UAAL. See Exhibits 1 and 2 for the amortization schedules assuming a 3.5% and a 2.2% annual payroll growth.

Governmental Accounting Standards Board* (GASB) Statement No. 25, paragraph 36b, states that actuarial assumptions should be based on actual experience of the covered group, to the extent that credible experience data is available. We conducted a review of active members' reported payroll from fiscal year 1990-91 through fiscal year 2010-11 and noted that, while the average member's pay increased 3.25%, overall membership declined, resulting in reported payroll for active members growing an average of 2.2% per year over the past 20 years. In fiscal year 2010-11, there were approximately 57,000 fewer active MPSERS members than there were in fiscal year 1990-91, a 19.4% decrease (see Exhibit 4).

GASB Statement No. 25, paragraph 36f, effective for fiscal years beginning after June 15, 2006, requires the amortization of the UAAL over not more than 30 years. As of fiscal year 2010-11, the $20.8 billion UAAL was to be amortized over 25 years. Using the actuarial assumed payroll growth of 3.5%, which was approved by the MPSERS Board and DTMB, and assuming no changes in future MPSERS membership, the actuary determined that the contribution rate needed to generate

* *See glossary at end of report for definition.*

the required contributions to pay off the UAAL over the remaining 25 years would be 14.4% ($1.4 billion in required contributions in fiscal year 2011-12) (see Exhibit 1). However, we determined that, when using the prior 20 years' actual payroll growth of 2.2% over the next 25 years, the UAAL contribution rate would need to be 16.2% ($1.5 billion in required contributions in fiscal year 2011-12) to pay off the UAAL in 2036 (see Exhibit 2).

A November 15, 2012 study conducted by an independent actuary, as required by Section 38.1393 of the *Michigan Compiled Laws*, also noted that payroll growth has fallen short of the 3.5% assumption and has been flat or declining the past 10 years (see Exhibit 3). The independent actuary presented five funding alternatives, one of which included MPSERS estimating 0% payroll growth for the next 10 years. The actuary noted that, assuming a payroll growth rate of 0% for the next 10 years and 3.5% thereafter, the UAAL contribution rate calculated for the fiscal year 2010-11 valuation would increase to 18.1%.

RECOMMENDATION

We recommend that the MPSERS Board and DTMB consider revising the assumptions used to amortize the UAAL for MPSERS's pension plan.

AGENCY PRELIMINARY RESPONSE

ORS did not express agreement or disagreement with the recommendation. ORS informed us that, similar to the rate of investment return (see Observation 1), this recommendation seems more like an observation. ORS noted that, every five years, the actuary conducts an experience study which measures the retirement system's assumed experience against the actual experience of the prior five years. The actuary may recommend changes if future conditions are expected to continue to deviate from the current assumptions. ORS also noted that it is important to note that no actuarial assumption is ever completely precise; in many cases, the discrepancy between assumption and actual experience can result in actuarial gains for the retirement system. ORS also informed us that it uses a standard methodology for evaluating actuarial assumptions. ORS further noted that, in the recent MPSERS experience study, no payroll growth assumption change was recommended by the actuary.

FINDING

2. Mortality Rate Actuarial Assumption

The MPSERS Board and DTMB need to consider revising the mortality assumption for MPSERS's pension plan so that it is in line with actual mortality rates of the plan. From fiscal year 2001-02 through fiscal year 2010-11, the MPSERS's pension plan incurred actuarial losses totaling $1.5 billion (see Exhibit 5) attributed to retirees living longer than the assumed mortality rate used in the actuarial valuations. In addition, as a result of overstating the assumed mortality rate, the calculated actuarial accrued liability* is understated.

GASB Statement No. 25, paragraph 36b, states that actuarial assumptions should be based on actual experience of the covered group, to the extent that credible experience data is available.

Every five years, the actuary performs an actuarial experience study for the purpose of updating the assumptions used in valuing the actuarial accrued liability of MPSERS. The actuary determines the mortality rate based on past experience of MPSERS and published standard mortality tables. The lower the mortality rate, the longer a retiree is expected to live, which increases MPSERS's future liability.

The actuary also completes an annual valuation of MPSERS's assets and liabilities, which includes calculating actuarial gains and losses* for the fiscal year. Actuarial gains and losses result from differences between assumed and actual experiences of MPSERS. If the actual mortality rate is higher than the assumed mortality rate for the fiscal year, there is a gain; if the actual mortality rate is less than the assumed mortality rate for the fiscal year, there is a loss.

In the most recent actuarial experience study, completed May 25, 2010 for fiscal years 2002-03 through 2006-07, the actuary utilized a weighted-average mortality rate of 3.3%. However, the actual weighted-average mortality rate for MPSERS retirees was 3.0%. The difference of 0.3% resulted in the UAAL increasing by $508.0 million. Exhibit 5 provides assumed and actual weighted-average mortality rates for fiscal years 2001-02 through 2010-11.

* *See glossary at end of report for definition.*

RECOMMENDATION

We recommend that the MPSERS Board and DTMB consider revising the mortality assumption for MPSERS's pension plan so that it is in line with actual mortality rates of the plan.

AGENCY PRELIMINARY RESPONSE

ORS agrees with this recommendation; however, ORS informed us that, similar to the rate of investment return (see Observation 1), this recommendation seems more like an observation. ORS noted that, every five years, the actuary conducts an experience study which measures the retirement system's assumed experience against the actual experience of the prior five years. The actuary may recommend changes if future conditions are expected to continue to deviate from the current assumptions. ORS also noted that it is important to note that no actuarial assumption is ever completely precise; in many cases, the discrepancy between assumption and actual experience can result in actuarial gains for the retirement system. ORS also informed us that it uses a standard methodology for evaluating actuarial assumptions. ORS further noted that, based on the fiscal year 2002-03 through 2006-07 experience study, the system adopted the actuary's recommendation to adjust the mortality assumption to be more conservative. Again, based on the fiscal year 2007-08 through 2011-12 experience study, the system adopted an even more conservative mortality assumption; the assumption adopted even anticipated future mortality improvements.

OBSERVATION

1. Assumed Investment Rate of Return

One of the more significant components used in the estimation of the UAAL for any pension plan is the assumed rate of return on the plan's investments. The higher the assumed rate of return is, the lower MPSERS's UAAL will be. In our audit of MPSERS's pension plan assumptions, including the projected rate of return, we noted that ORS used the statutory required rate of return of 8.00% for the non-hybrid pension plan*. Also, we noted that, in the most recent actuarial experience study completed by the MPSERS pension plan's actuary, the actuary had recommended the continued use of the 8.00% rate of return based on historical standard stock and bond index returns for the past 50 years. In addition,

* *See glossary at end of report for definition.*

the nonweighted-average investment return for the plan was 8.57% over the past 30 years (Exhibit 6). These are both good reasons to retain the projected rate of return at 8.00%.

However, in the same actuarial experience study in which the MPSERS pension plan's current actuary recommended that the plan retain the 8.00% rate of return, the actuary performed a forward theoretical look at the plan's rate of return assumptions based on investment returns in fiscal years 2007-08 and 2008-09. In this study, the actuary estimated that there was a 40% probability that the plan would achieve an 8.00% rate of return and a 50% probability that the plan would achieve a 7.50% return over the next 30 years.

As of fiscal year 2010-11, MPSERS's non-hybrid pension plan weighted-average actuarial investment rate of return* for the past 10 years was 4.5% (Exhibit 8). The nonweighted-average actuarial rate of return for the same period was 4.61% (Exhibit 6). The difference between the assumed rate of return of 8.0% and the achieved rate of return of 4.5% has resulted in a significant increase in the UAAL from $3.6 billion in fiscal year 2001-02 to $22.4 billion in fiscal year 2010-11 (Exhibit 8).

Exhibit 6 contains information on the funding progress of MPSERS's pension plan and the actuarial investment rate of return from September 30, 1982 through September 30, 2011. As can be seen in the exhibit, the funded ratio was 67.6% at September 30, 1982, grew to 100.9% at September 30, 1997, and declined to 64.7% at September 30, 2011.

AGENCY PRELIMINARY RESPONSE

ORS agrees with the Office of the Auditor General's (OAG's) observation that the investment rate of return is being reviewed throughout the industry. ORS informed us that it has validated that the actuary did review the investment rate of return assumption during the most recently completed five-year experience study and did not make a recommendation to change the rate of investment return. The actuary continues to monitor this assumption as part of the system's normal process.

* *See glossary at end of report for definition.*

The OAG has observed that the average actuarial rate of return between fiscal year 2000-01 and fiscal year 2010-11 did not match the 8% assumed rate of return (for Basic/Member Investment Plan [MIP] assets). There is no recommendation for this observation.

ORS also informed us that, as detailed in the two most recent five-year experience studies (the same period of time that the audit report examined), the actuary considers the investment assumption to be reasonable. In addition, the average market return for the past 30 years was greater than 8%. The audit report acknowledges both of these points.

ORS noted that, as with the other OAG items, this observation was developed using short-term past data, with no discussion of future trends. ORS also noted that the actuary, in consultation with the State Treasurer, has determined that the expected trends in capital markets will continue to support an 8% assumption, and has also presented 7.5% and 7.75% investment return assumptions for the Board and DTMB's consideration.

ORS further noted that the November 15, 2012 study completed by Segal, an independent actuary, examined the investment return assumption. On page 33 of that study, it states: "The MIP and Basic plans use an assumed rate of return of 8% and the Hybrid plan assumes a return of 7%. These are both within the reasonable range of rates currently being used in the public sector of the 126 state retirement plans listed in a recent survey; all but sixteen used an investment return assumption between 7% and 8%, inclusive" (NASRA Issues Brief - August 2012). The audit methodology outlined on page 10 of the audit report cites the report's intent to". . . identify industry standards and best practices . . . ." According to an independent actuary, the retirement system is currently using an industry standard and best practice.

ORS further informed us that the 10-year period between fiscal year 2000-01 and fiscal year 2010-11 contained two separate recessions that are not representative of the long-term or even short-term trends. Prior to 2008, the system exceeded the assumed market rate of return for five consecutive years; since 2009, the system has exceeded the assumed market rate of return in three out of four years, including the last two consecutive. ORS is unclear why this observation was included in the audit report.

ORS notes that Michigan led the nation in this area when it adopted a 7% investment return assumption for the hybrid plan, implemented in 2010. As the assets in that plan gradually increase, the weighted-average investment return for all of MPSERS will gradually decrease.

TRANSFER OF ACCURATE AND COMPLETE MPSERS MEMBER DATA TO THE ACTUARY

COMMENT

Audit Objective: To assess the effectiveness of ORS's efforts to transfer accurate and complete MPSERS member data to the actuary.

Audit Conclusion: We concluded that ORS's efforts to transfer accurate and complete MPSERS member data to the actuary were effective.

Our audit conclusion was based on our audit efforts as described in the audit scope and audit methodology sections and the resulting reportable condition noted in the comments, findings, recommendations, agency preliminary responses, and observation section.

We noted one reportable condition related to purchased service credit (Finding 3). In our professional judgment, this matter is less severe than a material condition but represents an opportunity for improvement.

In reaching our conclusion, we considered the significance of the reportable condition in relation to MPSERS member data. In addition, we considered ORS's process for obtaining and transferring member data to the actuary, the accuracy and completeness of the MPSERS member data, the accuracy of critical data used in the actuarial valuation, the tax-deferred payment agreements for the purchase of service credit, and ORS's process for following up on data violations identified by the actuary. We believe that the results of our audit efforts provide a reasonable basis for our audit conclusion for this audit objective.

FINDING

3. Purchased Service Credit

ORS did not report all member service credit purchased and service credit agreed to be purchased by members to the actuary for inclusion in MPSERS's annual actuarial valuation. As a result, the actuarial accrued liability was understated by $340.1 million as of September 30, 2011.

Section 38.1341(1) of the *Michigan Compiled Laws* states that an actuarial valuation shall be made of MPSERS in order to determine the actuarial condition of MPSERS and the required contribution to MPSERS. Also, GASB Statement No. 25, paragraph 36a, states that the actuarial present value of total projected benefits should include all pension benefits to be provided by the plan to plan members or their beneficiaries in accordance with (1) the terms of the plan and (2) any additional statutory or contractual agreement(s) to provide pension benefits through the plan that are in force at the actuarial valuation date. By not reporting all service credit to the actuary, the members' future pension benefits will be understated.

Eligible MPSERS members have the option of purchasing service credit. The most common type of service credit purchased is a universal buy-in, which allows a member to buy up to five years of service. Members have the option of either entering into a tax-deferred payment (TDP) agreement or paying a lump sum to purchase the service credit. Service credit purchased by members is then included in their total years of service and, upon retirement, will be included in the calculation of the members' pensions.

At the end of each fiscal year, ORS provides a member data file to the actuary of all MPSERS members. The member data file includes the amount paid by the members for the service credit purchased; however, the data file does not include the service credit purchased in the nonvested members' total years of service. In addition, the member data file does not include the service credit agreed to be purchased in the members' total years of service. The actuary uses the member data file, including the amount paid and service credit, to complete an actuarial valuation of MPSERS, which includes calculating the total accrued liability, required employer contribution, and corresponding employer contribution rate to fund MPSERS.

We conducted a review of TDP agreements for active nonvested members and active members who were in the process of purchasing service credit. Our review as of September 30, 2011 disclosed:

a. ORS did not include an estimated 41,000 years of service credit purchased by 12,283 active nonvested members with a present value of TDP agreement payments projected to total $146.3 million in the actuarial valuation. Although a member must first vest to include purchased service credit in a member's total years of service, most members vest after the full-time equivalent of 10 years of service. We determined that historically 73.8% of all active members who purchased service credit were vested as of September 30, 2011, and the 12,283 active nonvested members had an average of 7.4 full-time equivalent years of service.

b. ORS did not include 26,880 active members who were in the process of purchasing an estimated 58,000 years of service credit estimated by ORS to total $193.8 million in the actuarial valuation. We determined that there were approximately 35,600 TDP agreements for the purchase of service credit that were paid off and approximately 7,700 closed TDP agreements for the purchase of service credit that were not paid off. Based on our audit procedures, we estimated that 87.6% of the service credit agreed to be purchased as part of the TDP agreements is ultimately purchased by members.

The script to obtain the actuarial data file was designed in 2002, and ORS did not have documentation to support why all member service credit purchased and service credit agreed to be purchased by members were not reported to the actuary. ORS informed us that it included member service credit purchased and service credit agreed to be purchased in the fiscal year 2012-13 actuarial valuation.

RECOMMENDATION

We recommend that ORS report all member service credit purchased and service credit agreed to be purchased by members to the actuary for inclusion in MPSERS's annual actuarial valuation.

AGENCY PRELIMINARY RESPONSE

ORS agrees with this recommendation; however, ORS informed us that, similar to the rate of investment return discussed previously, this recommendation seems more like an observation. ORS stated that the recommendation has already been implemented through the five-year experience study process. ORS noted that, every five years, the actuary conducts an experience study which measures the retirement system's assumed experience against the actual experience of the prior five years. The actuary may recommend changes if future conditions are expected to continue to deviate from the current assumptions. ORS indicated that it is important to note that no actuarial assumption is ever completely precise; in many cases, the discrepancy between assumption and actual experience can result in actuarial gains for the retirement system. ORS informed us that it uses a standard methodology for evaluating actuarial assumptions.

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SUPPLEMENTAL INFORMATION

ACTUARY DATA AND CONTRIBUTION RATES OF THE
MICHIGAN PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM
Office of Retirement Services, Department of Technology, Management, and Budget

Unfunded Actuarial Accrued Liability Amortization Schedule Assuming a 3.5% Growth in Payroll
As of September 30, 2011
(In Thousands)

Fiscal Years	Projected Payroll Growth	Payment	Interest	Balance	
2011-12	$ 9,560,000	$ 1,373,722	$ 1,608,350	$ 21,017,057	
2012-13	$ 9,894,600	1,421,802	1,625,222	$ 21,220,476	
2013-14	$ 10,240,911	1,471,566	1,639,530	$ 21,388,441	
2014-15	$ 10,599,343	1,523,070	1,650,934	$ 21,516,304	
2015-16	$ 10,970,320	1,576,378	1,659,058	$ 21,598,985	
2016-17	$ 11,354,281	1,631,551	1,663,494	$ 21,630,927	
2017-18	$ 11,751,681	1,688,655	1,663,794	$ 21,606,066	*
2018-19	$ 12,162,990	1,747,758	1,659,472	$ 21,517,780	
2019-20	$ 12,588,694	1,808,930	1,649,993	$ 21,358,843	
2020-21	$ 13,029,299	1,872,242	1,634,778	$ 21,121,379	
2021-22	$ 13,485,324	1,937,771	1,613,194	$ 20,796,802	
2022-23	$ 13,957,310	2,005,593	1,584,549	$ 20,375,758	
2023-24	$ 14,445,816	2,075,789	1,548,094	$ 19,848,064	
2024-25	$ 14,951,420	2,148,441	1,503,010	$ 19,202,633	
2025-26	$ 15,474,720	2,223,637	1,448,406	$ 18,427,402	
2026-27	$ 16,016,335	2,301,464	1,383,314	$ 17,509,252	
2027-28	$ 16,576,907	2,382,015	1,306,682	$ 16,433,919	
2028-29	$ 17,157,098	2,465,386	1,217,363	$ 15,185,896	
2029-30	$ 17,757,597	2,551,674	1,114,114	$ 13,748,336	
2030-31	$ 18,379,113	2,640,983	995,582	$ 12,102,936	
2031-32	$ 19,022,382	2,733,417	860,300	$ 10,229,819	
2032-33	$ 19,688,165	2,829,087	706,673	$ 8,107,406	
2033-34	$ 20,377,251	2,928,105	532,970	$ 5,712,272	
2034-35	$ 21,090,454	3,030,588	337,313	$ 3,018,996	
2035-36	$ 21,828,620	3,136,659	117,663		
		$ 53,506,282	$ 32,723,853		

The unfunded actuarial accrued liability (UAAL) to be amortized as of September 30, 2011 was $20.8 billion and the UAAL is being amortized over 25 years. The UAAL is amortized based on a level percentage of payroll and assumes an annual payroll growth of 3.5% and an interest rate of 8.0%.

* Fiscal year 2017-18 is the first fiscal year in which the required payment exceeds the annual interest.

Source: Gabriel Roeder Smith & Company.

UNAUDITED
Exhibit 2

ACTUARY DATA AND CONTRIBUTION RATES OF THE
MICHIGAN PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM (MPSERS)
Office of Retirement Services, Department of Technology, Management, and Budget

Unfunded Actuarial Accrued Liability Amortization Schedule Assuming a 2.2% Growth in Payroll
As of September 30, 2011
(In Thousands)

Fiscal Years	Projected Payroll Growth	Payment	Interest	Balance	
2011-12	$ 9,560,000	$ 1,549,389	$ 1,601,414	$ 20,834,453	
2012-13	$ 9,770,320	1,583,476	1,604,230	$ 20,855,207	
2013-14	$ 9,985,267	1,618,312	1,604,514	$ 20,841,409	*
2014-15	$ 10,204,943	1,653,915	1,602,005	$ 20,789,498	
2015-16	$ 10,429,452	1,690,301	1,596,415	$ 20,695,612	
2016-17	$ 10,658,900	1,727,488	1,587,436	$ 20,555,560	
2017-18	$ 10,893,395	1,765,493	1,574,731	$ 20,364,798	
2018-19	$ 11,133,050	1,804,333	1,557,936	$ 20,118,401	
2019-20	$ 11,377,977	1,844,029	1,536,657	$ 19,811,029	
2020-21	$ 11,628,293	1,884,597	1,510,465	$ 19,436,897	
2021-22	$ 11,884,115	1,926,059	1,478,898	$ 18,989,736	
2022-23	$ 12,145,566	1,968,432	1,441,451	$ 18,462,756	
2023-24	$ 12,412,768	2,011,737	1,397,583	$ 17,848,601	
2024-25	$ 12,685,849	2,055,996	1,346,703	$ 17,139,309	
2025-26	$ 12,964,938	2,101,227	1,288,174	$ 16,326,255	
2026-27	$ 13,250,166	2,147,454	1,221,304	$ 15,400,104	
2027-28	$ 13,541,670	2,194,698	1,145,346	$ 14,350,752	
2028-29	$ 13,839,587	2,242,982	1,059,492	$ 13,167,262	
2029-30	$ 14,144,058	2,292,327	962,864	$ 11,837,799	
2030-31	$ 14,455,227	2,342,759	854,515	$ 10,349,555	
2031-32	$ 14,773,242	2,394,299	733,421	$ 8,688,677	
2032-33	$ 15,098,253	2,446,974	598,471	$ 6,840,174	
2033-34	$ 15,430,415	2,500,807	448,465	$ 4,787,831	
2034-35	$ 15,769,884	2,555,825	282,105	$ 2,514,110	
2025-36	$ 16,116,821	2,612,053	97,987		
		$ 50,914,964	$ 30,132,579		

The unfunded actuarial accrued liability (UAAL) to be amortized as of September 30, 2011 was $20.8 billion and the UAAL is being amortized over 25 years. The UAAL is amortized based on a level percentage of payroll and assumes an annual payroll growth of 2.2% and an interest rate of 8.0%.

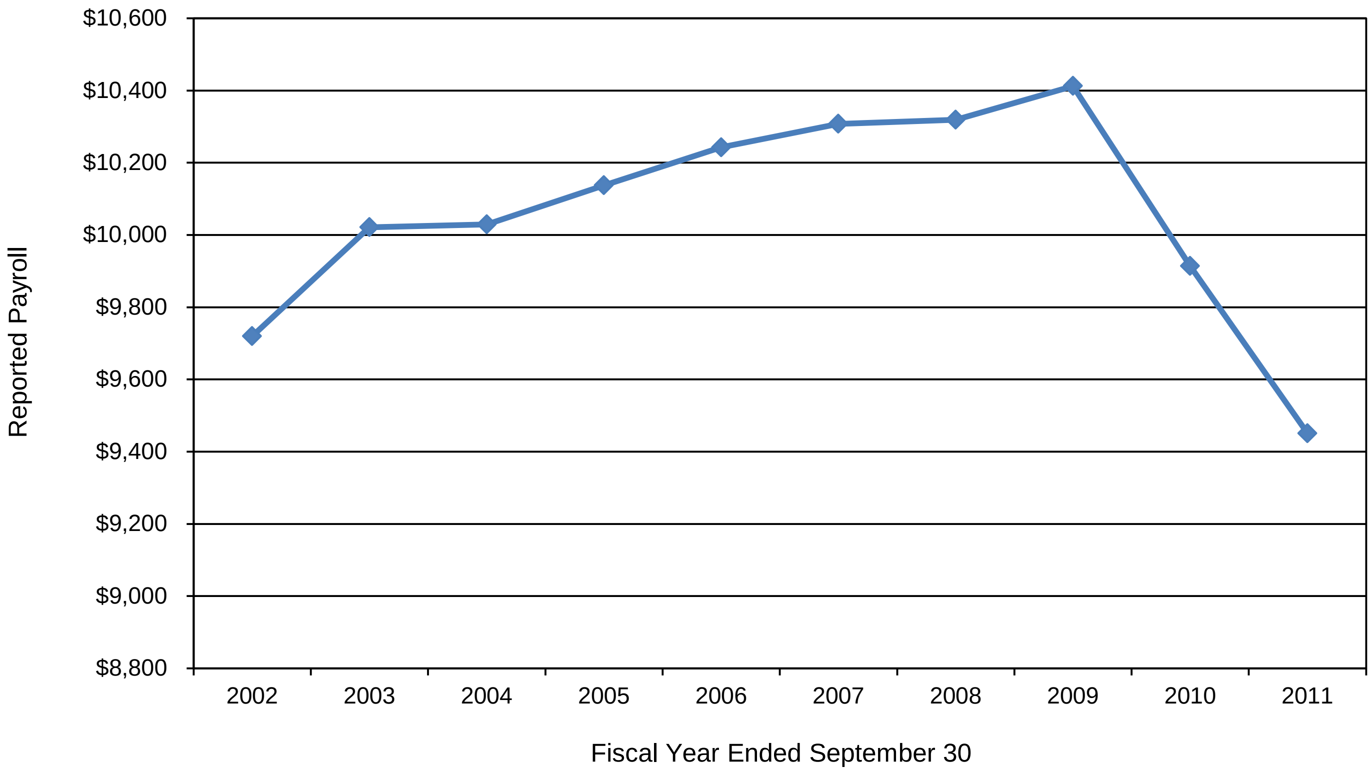
* Fiscal year 2013-14 is the first fiscal year in which the required payment exceeds the annual interest.

Source: Prepared by the Office of the Auditor General based on information from the MPSERS Annual Actuarial Valuation Report as of September 30, 2011.

UNAUDITED
Exhibit 3

ACTUARY DATA AND CONTRIBUTION RATES OF THE
MICHIGAN PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM
Office of Retirement Services, Department of Technology, Management, and Budget

Ten-Year History of Reported Payroll
For Fiscal Years 2001-02 Through 2010-11
(In Millions)

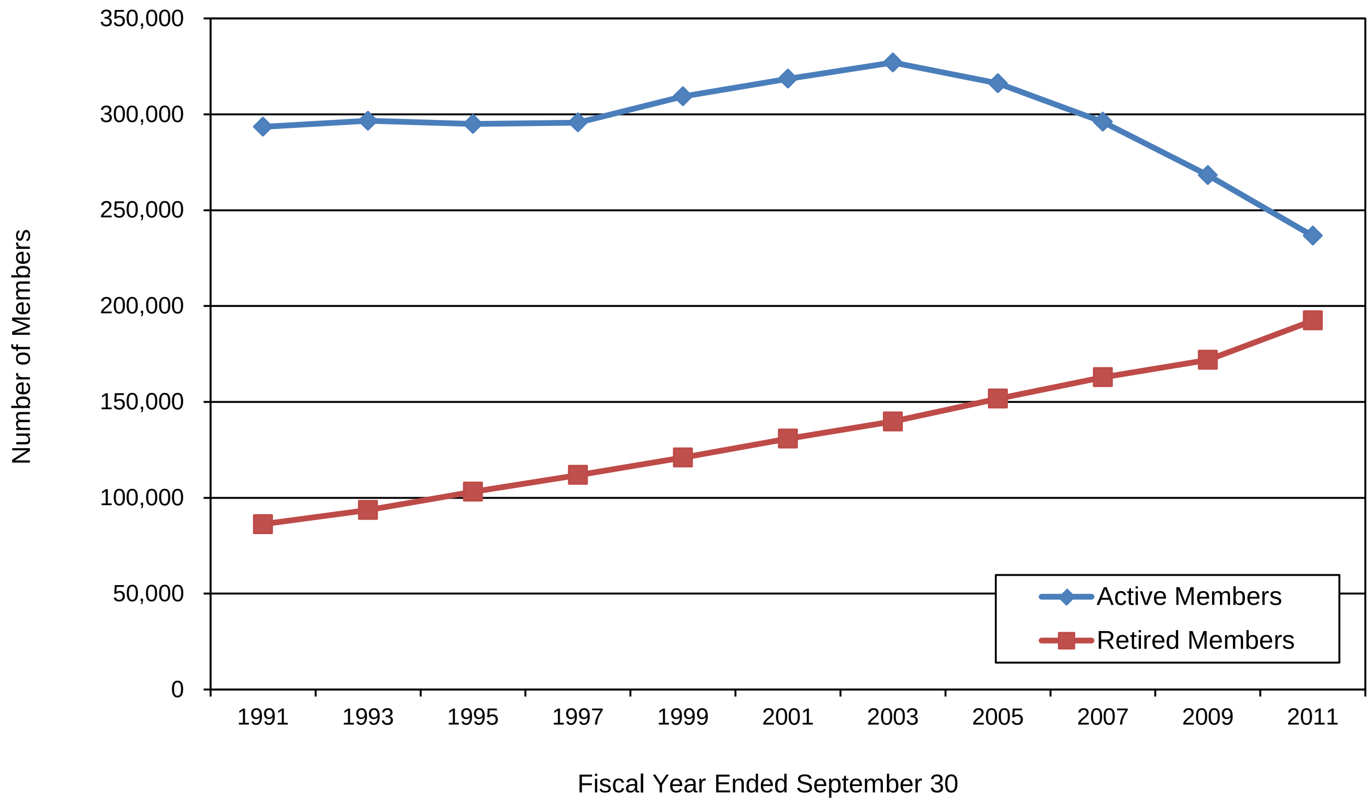


Source: Office of Retirement Services.

UNAUDITED
Exhibit 4

ACTUARY DATA AND CONTRIBUTION RATES OF THE
MICHIGAN PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM
Office of Retirement Services, Department of Technology, Management, and Budget

Twenty-Year History of Membership
For Fiscal Years 1990-91 Through 2010-11



Source: Michigan Public School Employees' Retirement System Comprehensive Annual Financial Reports.

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ACTUARY DATA AND CONTRIBUTION RATES OF THE
MICHIGAN PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM
Office of Retirement Services, Department of Technology, Management, and Budget

Ten-Year History of Mortality Rates
For Fiscal Years 2001-02 Through 2010-11

Fiscal Years	Assumed Actuarial Mortality Rate	Actual Mortality Rate	Actuarial Gain (Loss)*
2001-02	2.87%	2.96%	$ 6,211,923
2002-03 through 2006-07	3.31%	2.97%	(508,125,484)
2007-08 through 2010-11	3.05%	2.55%	(993,402,279)
			$ (1,495,315,840)

The actuary establishes mortality rate tables based on the member's age and sex and if the member is disabled. The assumed actuarial mortality rate is a weighted average of the mortality rates on the mortality tables based on the number of members who died during the fiscal year as compared to the total number of members.

The actual mortality rate is based on the number of members who died during the fiscal year as compared to the total number of members.

Source: Office of Retirement Services.

* *See glossary at end of report for definition.*

UNAUDITED
Exhibit 6

ACTUARY DATA AND CONTRIBUTION RATES OF THE MICHIGAN PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM

Office of Retirement Services, Department of Technology, Management, and Budget

Schedule of Funding Progress and Investment Returns for Pension Benefits
For Fiscal Years 1981-82 Through 2010-11
(In Millions)

Valuation Date September 30	Actuarial Value of Assets	Actuarial Accrued Liability (AAL) Entry Age	Unfunded (Overfunded) Accrued Liability (UAAL)	Funded Ratio AAL	Realized Actuarial Rate of Return
1982 (1)	$ 5,319	$ 7,867	$ 2,548	67.6%	10.29%
1983 (1)	$ 6,035	$ 8,434	$ 2,399	71.6%	10.40%
1984	$ 6,774	$ 8,945	$ 2,171	75.7%	9.70%
1985 (2)(3)	$ 7,559	$ 9,487	$ 1,928	79.7%	9.08%
1986 (4)	$ 9,645	$10,257	$ 612	94.0%	29.30%
1987 (5)	$10,930	$11,240	$ 310	97.2%	16.90%
1988	$11,823	$14,029	$ 2,206	84.3%	7.00%
1989 (2)(3)	$12,971	$14,382	$ 1,411	90.2%	10.00%
1990	$13,746	$15,766	$ 2,020	87.2%	6.20%
1991	$14,653	$18,032	$ 3,379	81.3%	7.00%
1992	$15,333	$19,563	$ 4,230	78.4%	5.16%
1993 (4)	$16,999	$21,699	$ 4,700	78.3%	11.04%
1994 (2)	$18,503	$25,014	$ 6,511	74.0%	8.48%
1995	$20,455	$27,402	$ 6,947	74.6%	10.95%
1996	$22,529	$28,571	$ 6,042	78.9%	10.99%
1997 (2)(4)	$30,051	$29,792	$ (259)	100.9%	13.93%
1998 (2)	$31,870	$32,863	$ 993	97.0%	7.98%
1999	$34,095	$34,348	$ 253	99.3%	9.56%
2000	$36,893	$37,139	$ 246	99.3%	10.67%
2001	$38,399	$39,774	$ 1,375	96.5%	6.35%
2002	$38,382	$41,957	$ 3,575	91.5%	2.76%
2003	$38,726	$44,769	$ 6,043	86.5%	3.55%
2004 (2)	$38,784	$46,317	$ 7,533	83.7%	2.87%
2005	$38,211	$48,206	$ 9,995	79.3%	2.51%
2006 (4)	$42,995	$49,136	$ 6,141	87.5%	15.70%
2007	$45,335	$51,107	$ 5,772	88.7%	9.80%
2008 (3)	$45,677	$54,608	$ 8,931	83.6%	4.71%
2009	$44,703	$56,685	$11,982	78.9%	1.91%
2010 (2)(3)	$43,294	$60,927	$17,633	71.1%	1.77% (6)
2011	$41,038	$63,427	$22,389	64.7%	0.56% (6)

Nonweighted-Average Returns:
- Last 10 years: 4.61%
- Last 20 years: 7.06%
- Last 30 years: 8.57%

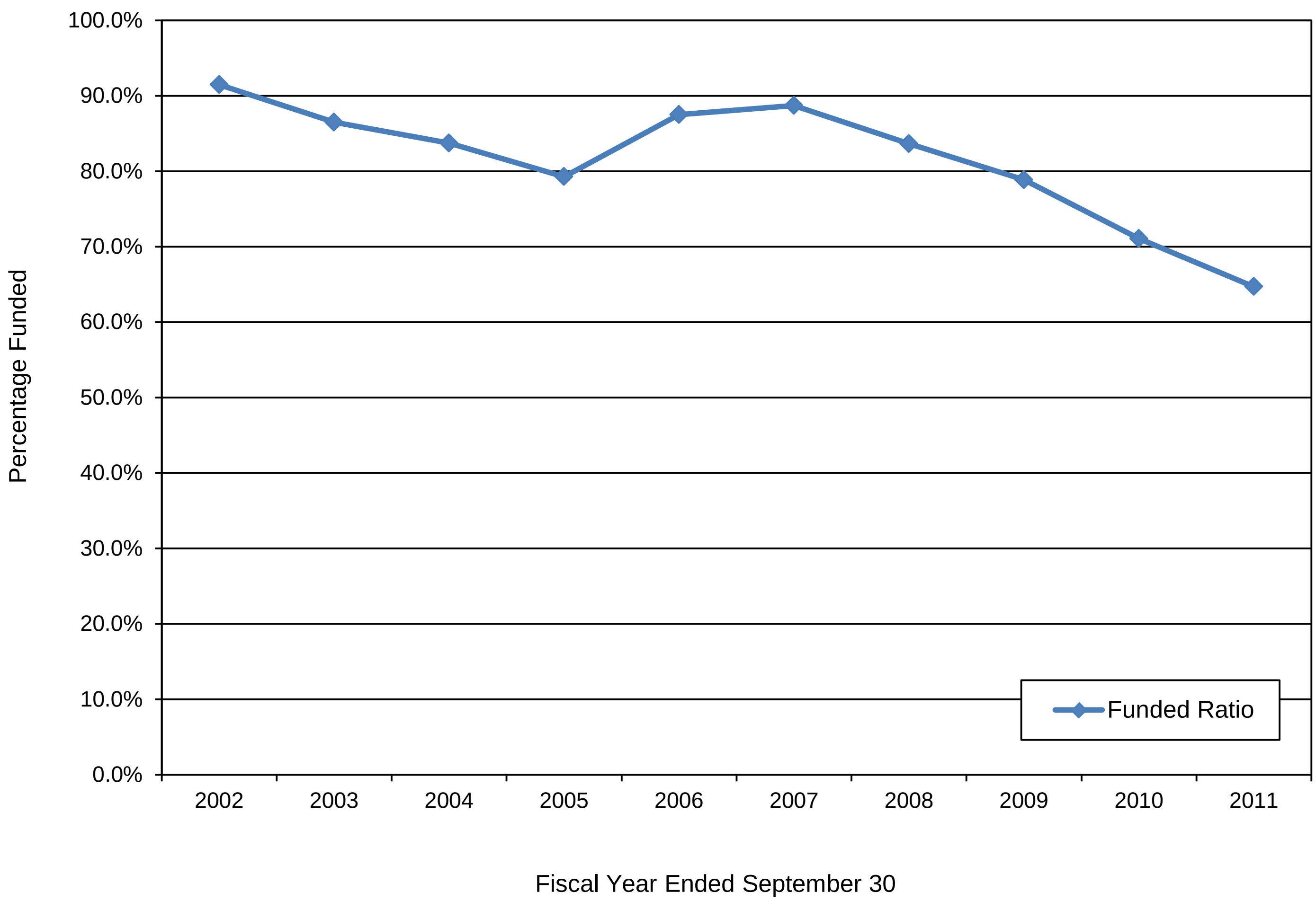
Notes:
- (1) Actuarial value of assets and actuarial accrued liability include both pension and health benefits.
- (2) Revised actuarial assumptions/methods.
- (3) Revised benefit provisions.
- (4) Revised actuarial asset valuation method.
- (5) After inclusion of member investment plan.
- (6) Does not include the actuarial rate of return on hybrid plan assets.

Source: Michigan Public School Employees' Retirement System Comprehensive Annual Financial Reports.

UNAUDITED
Exhibit 7

ACTUARY DATA AND CONTRIBUTION RATES OF THE
MICHIGAN PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM
Office of Retirement Services, Department of Technology, Management, and Budget

Ten-Year History of Funding Progress for Pension Benefits
For Fiscal Years 2001-02 Through 2010-11



Source: Michigan Public School Employees' Retirement System Comprehensive Annual Financial Reports.

Exhibit 8

ACTUARY DATA AND CONTRIBUTION RATES OF THE MICHIGAN PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM

Office of Retirement Services, Department of Technology, Management, and Budget

Description of the Actuarial Valuation Process, Development of Actuarial Assumptions, Determination of Unfunded Actuarial Accrued Liability, and Changes Affecting the Valuation

Actuarial Valuation Process

As of September 30, 2012, the Michigan Public School Employees' Retirement System (MPSERS), as it relates to pension benefits, is a prefunded pension system. However, the retiree health benefits provided under MPSERS are funded on a pay-as-you-go basis. MPSERS is funded by both employer and employee contributions. Employee contribution rates are set by statute.

To determine the required employer contributions needed to prefund the pension, MPSERS is required to obtain an annual actuarial valuation. The valuation measures MPSERS's funding progress by comparing the estimated value of future benefits to be paid to retirees to the value of the assets held by MPSERS to pay those benefits, utilizing generally accepted actuarial assumptions. The resulting funding percentage provides a measure of the system's financial health. Ideally, a system would be funded at 100%. See Exhibit 6 for a 30-year history of MPSERS's funding progress for pension benefits. As shown in Exhibit 6, the funding percentage for MPSERS's pension benefits peaked at just over 100% at September 30, 1997.

The valuation is based on information furnished by the Office of Retirement Services (ORS), including retirement system benefits, financial transactions, active members, terminated members, retirees, and beneficiaries. ORS information is checked by the actuary for internal and year-to-year consistency but is not audited by the actuary.

As part of the pension valuation, the actuary will determine, as of the valuation date, the total accrued liability, funding value of assets, and the annual required contribution* (ARC) needed to fund the system. The ARC includes the amount needed to fund both the employer normal cost* and the unfunded actuarial accrued liability (UAAL) amortization payment, if applicable. Using the ARC and the projected active member payroll for the upcoming fiscal year, the actuary will calculate an employer contribution rate for normal costs and an employer contribution rate for the UAAL.

Because of the timing of when the actuarial valuation is completed for a fiscal year, there is a delay in implementing the contribution rates. For example, the fiscal year 2010-11 valuation was not completed until May 2012. As a result, the contribution rates calculated in the valuation were not implemented until fiscal year 2012-13. To account for the timing differences, the Department of Technology, Management, and Budget (DTMB) makes an adjustment each year to the actuary recommended contribution rates in the valuations. Based on the actuarial valuation and the DTMB rate adjustment, DTMB sets the employer contribution rate for pension benefits for the fiscal year.

* *See glossary at end of report for definition.*

See Exhibit 9 for a ten-year history of MPSERS's employer contribution rates for pension benefits. Also, as a result of the timing delay in implementing the contribution rates, the employer contributions received in any given fiscal year relate to the ARC that was established in the year prior to the contributions being received. For example, the fiscal year 2010-11 valuation determined the ARC for fiscal year 2011-12; however, the actual contributions for the fiscal year 2011-12 ARC were not collected until fiscal year 2012-13.

For retiree health care benefits, MPSERS was funded on a pay-as-you-go basis. Effective with fiscal year 2012-13, the system began prefunding the retiree health benefits. Prior to fiscal year 2012-13, the employer contribution rates were set using a different methodology than what was used for pension benefits. For nonuniversity employers, the employer contribution rate is set based on projected health care costs as a percentage of projected member payroll for the next fiscal year. However, universities are responsible for paying the employer share of premiums for members who have retired from that university.

Development of Actuarial Assumptions

The actuarial valuation involves actuarial calculations that require making assumptions about future events. Every five years, the actuary performs an actuarial experience study for the purpose of updating the actuarial assumptions used in valuing the actuarial accrued liability of MPSERS. The most recent experience study, completed May 25, 2010, was for fiscal years 2002-03 through 2006-07. Based on the experience study, the actuary makes recommendations to the MPSERS Board on the actuarial assumptions to be used in completing the actuarial valuations, which the MPSERS Board and DTMB then approve.

Actuarial assumptions used in completing the actuarial valuation include both economic and demographic assumptions. Key assumptions used in the actuarial valuation include rate of investment return, rate of inflation, rates of pay increases, mortality rates, retirement rates, rates of separation from active membership, and rate of service credit accrual.

Determination of Unfunded Actuarial Accrued Liability (UAAL)

As part of the completion of the actuarial valuation, the actuary determines if there is an unfunded actuarial accrued liability. The UAAL is the difference between the actuarial accrued liability and the value of current plan assets recognized for valuation purposes. MPSERS's UAAL is primarily the result of actuarial gains and losses from differences between assumed and actual experiences. For example, if actual investment income exceeds the assumed investment income for the fiscal year, there is a gain; if actual investment income is less than the assumed investment income for the fiscal year, there is a loss.

A significant factor impacting MPSERS's UAAL relates to actuarial gains and losses due to the return on investment assumption. MPSERS assumes an 8.0% annual return on investments for non-hybrid plan assets and 7.0% for hybrid plan assets. The higher the assumed return on investments, the less funds that will need to be contributed by employers to achieve a given level of retirement benefits. From fiscal year 2001-02 through fiscal year 2010-11, the UAAL for MPSERS's pension fund increased $18.8 billion, from $3.6 billion to $22.4 billion, resulting in the funding status of the pension decreasing from 91.5% funded in fiscal year 2001-02 to 64.7% funded in fiscal year 2010-11. We determined that the primary reason for the increase is because of the actuarial loss on investments, which accounted for $17.2 billion (91.5%) of the $18.8 billion UAAL. See Exhibit 10 for a ten-year schedule of actuarial gains and losses.

As of fiscal year 2010-11, MPSERS's non-hybrid pension plan weighted-average actuarial investment rate of return for the prior 10 years was 4.5%, which has fallen short of the assumed investment rate of return of 8.0%, resulting in the actuarial loss. See Exhibit 6 for a 30-year history of MPSERS's actuarial investment rates of return. However, the 30-year actuarial rate of return is 8.57%. A November 15, 2012 study conducted by an independent actuary, as required by Section 38.1393 of the *Michigan Compiled Laws,* noted that a single percentage point decrease in the return on investment assumption will result in a 15% to 20% increase in the liabilities. As of September 30, 2011, the actuarial accrued liability was $63.4 billion and a half percentage point decrease in the return on investment assumption would result in a $4.8 billion to $6.3 billion increase in the actuarial accrued liability.

In addition to the actuarial loss on investments, a significant actuarial loss was noted from fiscal year 2001-02 through fiscal year 2010-11 because of retirants living longer than assumed, which resulted in an actuarial loss of $1.9 billion.

To recoup the UAAL, the actuary amortizes the liability based on a level percent of payroll over a specified number of years. At the end of the amortization period, the UAAL will be $0 and the pension fund will be 100% funded. GASB Statement No. 25, paragraph 36f, effective for fiscal years beginning after June 15, 2006, requires the amortization of the UAAL over not more than 30 years. As of fiscal year 2010-11, there were 25 years remaining in the UAAL amortization period. As part of the amortization, the actuary has to calculate the projected payroll for the remaining 25-year amortization period. The actuary assumes an annual 3.5% growth in payroll based on the assumptions approved by the MPSERS Board. Based on the amortization schedule, the actuary determines the contribution rate that will be needed to generate the required contributions to pay off the UAAL. See Finding 1 regarding the UAAL payroll growth assumption.

<u>Changes in Legislation Affecting Valuation</u>

Act 300, P.A. 2012, made several changes that affect the funding of MPSERS, including the following:

- Changed from paying for retiree health benefits on a pay-as-you-go method to prefunding the benefits with a combination of employee contributions, employer contributions, and State funding.

- Capped the employer contribution rate for the UAAL (pension and health benefits) at 20.96% and provided for State contributions to pay the amount of the annual required contributions that exceed the employer maximum rate.

See Exhibit 11 for a historical overview of changes in MPSERS legislation affecting members.

GASB Statement No. 67 Changes Affecting Valuation

Governmental Accounting Standards Board (GASB) Statement No. 67, *Financial Reporting for Pension Plans*, which is effective for MPSERS in fiscal year 2013-14, will replace GASB Statement No. 25, *Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans*.

The new GASB standard makes changes to pension reporting by state and local governments. The following changes would impact MPSERS's pension valuation:

- Requires the use of the entry age actuarial method and the level percentage of payroll method to assign costs to the period employees are expected to work. MPSERS currently utilizes the entry age actuarial method and the level percentage of payroll method when completing the actuarial valuation.

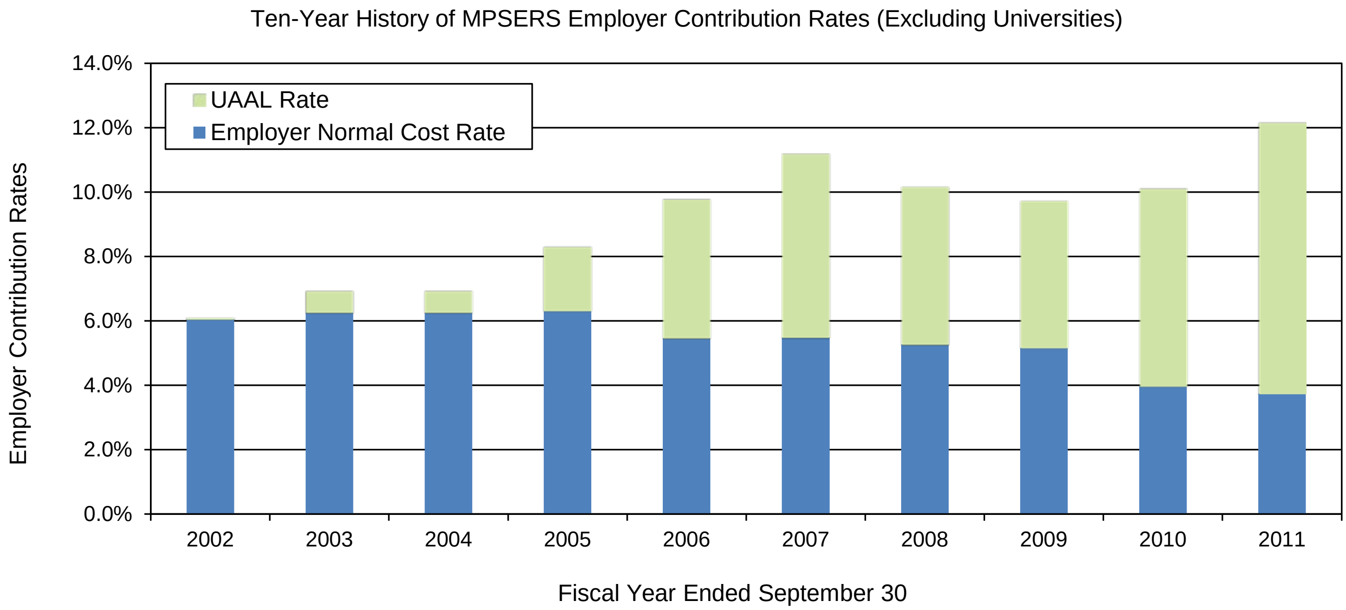
- Requires that liabilities be discounted by a combined rate that reflects the expected return for the portion of liabilities projected to be covered by plan assets and the return on high grade municipal bonds for the portion projected to be covered by other resources. In those instances in which the use of the return on high grade municipal bonds is required, the result will be an increase in the estimated pension liability above that which has been measured under today's accounting standards. We were informed by the actuary that, with MPSERS's current funding policy, the plan will have sufficient assets to cover plan liabilities and will not require the use of a lower combined discounted rate for the portion of liabilities that are to be covered by other resources.

Source: Prepared by the Office of the Auditor General based on information from the Office of Retirement Services, the Public School Employees Retirement Act of 1979 (Act 300, P.A. 1980, as amended), Michigan Public School Employees' Retirement System Comprehensive Annual Financial Reports, MPSERS Annual Actuarial Valuation Reports, and the Governmental Accounting Standards Board.

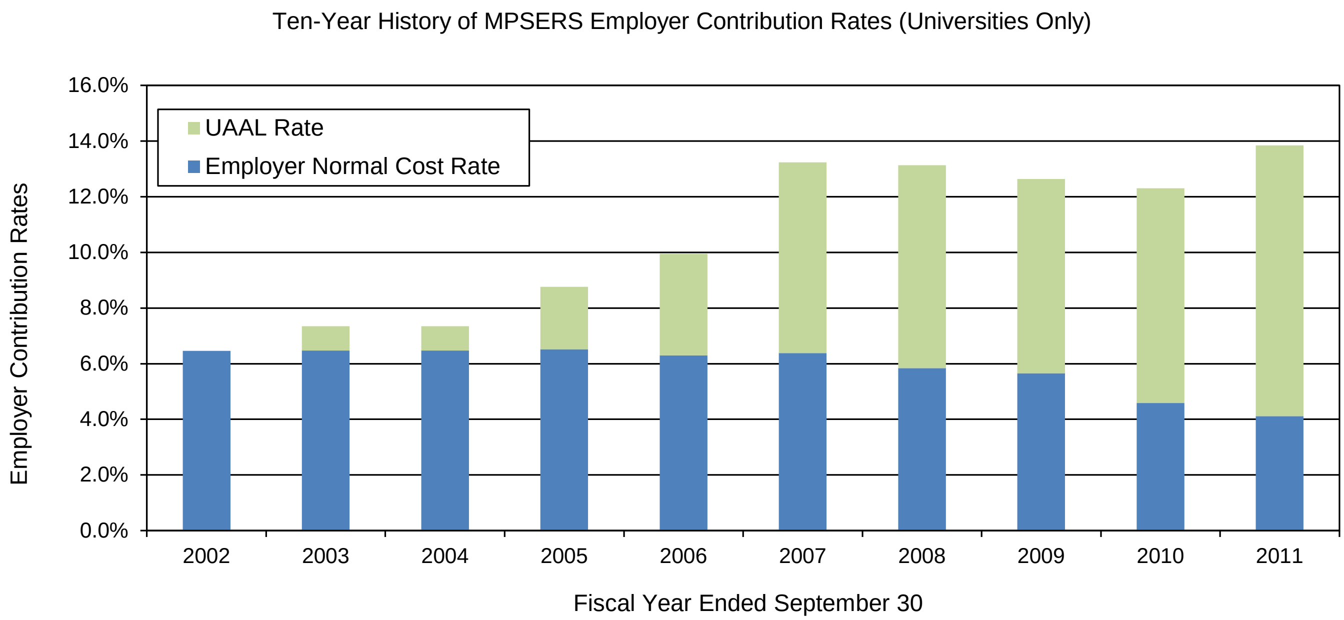
UNAUDITED
Exhibit 9

ACTUARY DATA AND CONTRIBUTION RATES OF THE
MICHIGAN PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM (MPSERS)
Office of Retirement Services, Department of Technology, Management, and Budget

Ten-Year History of Employer Contribution Rates for Pension Benefits
For Fiscal Years 2001-02 Through 2010-11



Note: The fiscal year 2009-10 and 2010-11 rates do not include the employer normal cost rate* for Pension Plus members. The fiscal year 2009-10 and 2010-11 employer normal cost rates for Pension Plus members were 2.48% and 2.24%, respectively.



Source: Office of Retirement Services.

* *See glossary at end of report for definition.*

ACTUARY DATA AND CONTRIBUTION RATES OF THE
MICHIGAN PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM
Office of Retirement Services, Department of Technology, Management, and Budget

Ten-Year Schedule of Actuarial Gain (Loss)*
Fiscal Years Ended September 30, 2002 Through September 30, 2011

	Fiscal Year				
Type of Activity	2002 Gain (Loss)	2003 Gain (Loss)	2004 Gain (Loss)	2005 Gain (Loss)	2006 Gain (Loss)
Retirements (including disability retirement). If members retire at older ages or with lower final average pay than assumed, there is a gain. If members retire at younger ages or with higher final average pay, a loss occurs.	$ 90,580,804	$ 23,965,774	$ 12,315,373	$ 64,636,845	$ 46,169,587
Withdrawal From Employment (including death-in-service). If more liabilities are released by withdrawals and deaths than assumed, there is a gain. If there are smaller releases, a loss occurs.	(115,198,101)	24,796,239	43,781,403	26,014,588	(5,918,000)
Pay Increases. If there are smaller pay increases than assumed, there is a gain. If there are greater pay increases, a loss occurs.	29,628,935	112,596,689	(162,444,380)	68,732,788	691,550,640
Investment Income. If there is greater investment income than assumed, there is a gain. If there is less investment income, a loss occurs.	(1,984,913,290)	(1,684,111,431)	(1,959,619,995)	(2,085,531,857)	(204,586,913)
Death After Retirement. If retirants live longer than assumed, there is a loss. If retirants live not as long as assumed, a gain occurs.	6,211,923	(15,977,286)	(127,339,279)	(84,227,707)	(49,164,540)
New Entrants/Rehires. New entrants into the system will generally result in an actuarial loss.	(97,482,047)	(169,527,788)	(46,357,369)	(68,324,763)	(98,700,211)
Other. Miscellaneous gains and losses resulting from data adjustments, timing of financial transactions, etc.	(24,654,475)	(628,481,462)	239,109,793	211,130,902	159,999,180
Total Gain (Loss) During Fiscal Year	**$ (2,095,826,251)**	**$ (2,336,739,265)**	**$ (2,000,554,454)**	**$ (1,867,569,204)**	**$ 539,349,743**

Source: Michigan Public School Employees' Retirement System Comprehensive Annual Financial Reports.

* *See glossary at end of report for definition.*

UNAUDITED
Exhibit 10

Ended September 30					
2007 Gain (Loss)	2008 Gain (Loss)	2009 Gain (Loss)	2010 Gain (Loss)	2011 Gain (Loss)	Total Gain (Loss)
$ 35,353,917	$ 80,522,091	$ 150,706,630	$ (19,645,766)	$ 17,590,756	$ 502,196,011
3,088,291	10,473,207	(21,393,067)	(528,385)	(29,434,968)	(64,318,793)
17,182,307	(320,170,969)	487,788,765	114,123,581	(255,369,513)	783,618,843
756,879,915	(1,463,608,097)	(2,727,806,702)	(2,718,208,285)	(3,129,071,573)	(17,200,578,228)
(231,416,672)	(158,045,971)	(259,405,425)	(259,583,254)	(316,367,629)	(1,495,315,840)
(90,007,837)	(97,195,342)	(91,109,697)	(60,048,594)	(74,608,220)	(893,361,868)
123,005,780	113,725,907	(257,974,773)	216,498,446	(193,251,862)	(40,892,564)
$ 614,085,701	**$ (1,834,299,174)**	**$ (2,719,194,269)**	**$ (2,727,392,257)**	**$ (3,980,513,009)**	**$ (18,408,652,439)**

ACTUARY DATA AND CONTRIBUTION RATES OF THE
MICHIGAN PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM
Office of Retirement Services, Department of Technology, Management, and Budget

Changes in MPSERS Legislation Affecting Members

Prior to 1987, employers paid the full cost of funding the Michigan Public School Employees' Retirement System's (MPSERS's) pension benefits. Under this plan, which is currently called the Basic Plan:

- Members could vest with 10 years of service and retire at either age 55 with 30 years of service or age 60 with 10 years of service.

- The member's final average compensation* (FAC) was determined based on the five highest consecutive years of wages.

- Retirees did not receive a cost of living adjustment. Retirees were eligible for a thirteenth check payment in years when investments yielded over 8.0%.

Effective beginning in 1987, a new contributory plan, called the Member Investment Plan (MIP), was created. Under MIP, employees contribute 3.9% of salary to fund a portion of the pension benefit costs in exchange for an increase in pension benefits, which included the following:

- An earlier retirement option: any age with 30 years of service or age 60 with 10 years of service.

- A shorter period for calculating FAC: three highest consecutive years.

- A non-compounding 3.0% annual pension benefit increase.

Basic Plan members were given the option to switch to MIP, both in 1986 and then again in 1991, but had to purchase years already served. Beginning in 1990, all newly hired employees automatically became MIP members.

Effective beginning in 1990, the employee contribution provisions were amended to reflect a progressive employee contribution schedule for new MIP members:

- 3.0% of an employee's first $5,000 of wages.

- 3.6% of the next $10,000 of wages.

- 4.3% of wages over $15,000.

* *See glossary at end of report for definition.*

In 2007, legislation was enacted to increase employee contribution rates toward pension benefits for employees hired beginning in July 2008 (all of whom would be MIP members) from 4.3% of wages above $15,000 to 6.4% of those wages.

The 2007 legislation also introduced a graded premium system for retirement health care benefits received by retirees hired beginning in July 2008 under which MPSERS pays 30% of premium costs if a retiree has at least 10 years of service (at which point he or she vests in health care benefits) plus 4.0% for each additional year of service, up to a maximum of 90% premium share (at 25 years of service). For a retiree hired prior to July 2008, MPSERS pays 100% of the premium costs for a retiree eligible for Medicare, and if a retiree is not eligible for Medicare, MPSERS pays 100% of the premium costs less the cost of the Medicare Part B premium. However, MPSERS pays only 90% of the premium costs for dental, vision, and hearing benefits.

In addition, the 2007 legislation revised service credit rules to reduce the ability of employees to use such credit to claim retirement benefits in certain situations.

In 2010, a new "hybrid" benefit structure, officially called the Pension Plus plan, was created for employees hired beginning in July 2010. Under the Pension Plus plan, employees continue to receive a pension benefit but with a reduced level of benefit. The pension benefit under the Pension Plus plan largely reversed the changes made for MIP:

- Employees cannot retire with a pension until they turn 60 and have 10 years of service.
- The period of calculating the FAC is lengthened from 3 years to 5 years.
- The 3.0% annual cost of living adjustment in the pension benefit is eliminated.
- Employees cannot purchase service credit.

The employee contribution level remained the same, topping out at 6.4% on wages above $15,000, as for MIP employees hired from July 1, 2008 through June 30, 2010.

Employees in the Pension Plus plan also receive an additional defined contribution (401k style) retirement benefit: if the employee contributes up to 2.0% of his or her wages to a defined contribution investment account, he or she receives a 50% matching contribution up to a total of 1.0% of wages from the employer. Employees may contribute more of their salary to the tax-deferred investment account if they choose, but without any additional employer match.

The 2010 legislation also began requiring a 3.0% employee contribution for all members to be used to pay for retirement health care benefits.

In 2012, legislation was enacted that made a number of changes affecting members' pension and health benefits, including the following:

- Required employees in the traditional pension plans to choose one of three options:

  - Make higher contributions toward their own benefits and maintain the 1.5% pension multiplier: 4.0% of wages for Basic Plan employees and 7.0% for MIP employees (flat percentage; no graduated scale).

  - Receive a reduced multiplier of 1.25% for future years of service (or elect the reduced multiplier after reaching 30 years of service).

  - Move into the Defined Contribution (DC) plan with a flat employer contribution of 4.0% for future service.

- Offered new employees the choice between the existing Pension Plus plan or an optional DC plan with a 50% employer match, up to 3.0% of pay, of an employee's contribution.

- Increased contributions toward health insurance premiums for current and future retirees to at least 20% of premium costs, except that retirees who are Medicare eligible (65 or older) as of January 1, 2013 will pay only 10%.

- Eliminated retiree health insurance benefits for new employees hired on or after September 4, 2012, replacing it with a DC-style benefit: an employer matching contribution of up to 2.0% of pay into a DC retirement account plus a lump sum payment of either $1,000 or $2,000 into a health insurance reimbursement account.

- Continued the 3.0% employee contribution for retiree health benefits created in 2010 but guarantees an individual's contributions. These funds will now be used toward prefunding future retiree health benefits. Alternatively, an employee can opt to forego retiree health benefits and instead receive a 2.0% matching contribution toward a DC account.

Exhibit 12 provides a benefit comparison of the various MPSERS benefit structures.

Source: Prepared by the Office of the Auditor General based on information from the Public School Employees Retirement Act of 1979 (Act 300, P.A. 1980, as amended).

Exhibit 12

ACTUARY DATA AND CONTRIBUTION RATES OF THE
MICHIGAN PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM
Office of Retirement Services, Department of Technology, Management, and Budget

Benefit Comparison

	Non-Hybrid Plans				**Hybrid Plan**	
Benefit Structure	**Basic Plan**	**Member Investment Plan (MIP)**			**Pension Plus plan**	
First day worked	Before January 1, 1990 (if not opted into MIP)	January 1, 1987 to December 31, 1989 (optional)	January 1, 1990 to June 30, 2008 (all)	July 1, 2008 to June 30, 2010 (all)	July 1, 2010 to September 3, 2012	On or after September 4, 2012

Pension Benefits				
Vesting period	10 Years of Service (YOS)			
YOS to Retire	Age 55 + 30 YOS or Age 60 + 10 YOS	Any Age + 30 YOS or Age 60 + 10 YOS	Age 60 + 10 YOS	
Pension formula	FAC x 1.5% x YOS (1.25% multiplier for Basic Plan/MIP members electing lower contribution percentage)			
Final average compensation (FAC) period	5 highest consecutive years	3 highest consecutive years	5 highest consecutive years	
Cost of living adjustment?	No	3.0% (non-compounding)	No	
Purchase of service credit allowed?	Yes		No	
Current employee contribution percentage (percent of wages)	4.0% (or 0% if electing lower multiplier)	7.0% (or previous lower levels if electing lower multiplier)	3.0% of first $5,000 3.6% of next $10,000 6.4% over $15,000	
Optional alternate Defined Contribution (DC) plan	4.0% flat employer contribution (members electing to freeze pension benefits earned and move to a DC plan for future years of service)		Not applicable	Up to 3.0% employer match with 6.0% employee contribution

Health Care Benefits			
Vesting period	10 YOS		
Base benefit	Medical insurance premium plus prescription/dental/vision/hearing coverage (or 2% DC matching contributions if electing not to pay 3.0% for health benefit)		Up to 2.0% employer match into DC account (with 2.0% employee contribution) plus $1,000/$2,000 lump sum at termination
Percent of premium costs covered	80% (90% if older than 65 on January 1, 2013)	30% after 10 YOS plus 4% for each additional year, up to 80%	Not applicable
Current employee contributions	3.0% (or 0% if electing DC benefit in lieu of health benefit)		Not applicable

Source: Prepared by the Office of the Auditor General based on information from the Public School Employees Retirement Act of 1979 (Act 300, P.A. 1980, as amended).

GLOSSARY

Glossary of Abbreviations and Terms

actuarial accrued liability (AAL)	That portion, as determined by a particular actuarial cost method, of the actuarial present value of pension plan benefits and expenses which is not provided for by future normal costs.
actuarial assumptions	Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income, and salary increases.
actuarial gain (loss)	A measure of the difference between actual experience and what was expected based upon the actuarial assumptions used for the period between two actuarial valuation dates, in accordance with the actuarial cost method being used. Actuarial gains (losses), as they occur, reduce (increase) the UAAL.
actuarial investment rate of return	The dollar-weighted rate of return resulting from the investment income implied by (1) the valuation assets at the beginning of the year, (2) the valuation assets at the end of the year, and (3) the non-investment net cash flow during the year.
amortization	Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.
annual required contribution (ARC)	The actuarially determined level of employer contribution that would be required on a sustained, ongoing basis to systematically fund the normal cost and to amortize the UAAL attributed to past service.
DC	Defined Contribution.
DTMB	Department of Technology, Management, and Budget.

effectiveness	Success in achieving mission and goals.
employer normal cost	The annual cost assigned, under the actuarial funding method, to current and subsequent plan years; sometimes referred to as "current service cost." Any payment toward the UAAL is not part of the normal cost.
employer normal cost rate	The actuarially determined percentage of member payroll to be paid by the employer to meet the ARC. Any payment toward the UAAL is not part of the normal cost rate.
final average compensation (FAC)	The aggregate amount of a member's compensation earned within the averaging period in which the aggregate amount of compensation was highest divided by the member's number of years, including any fraction of a year, of credited service during the averaging period.
Governmental Accounting Standards Board (GASB)	An arm of the Financial Accounting Foundation established to promulgate standards of financial accounting and reporting with respect to activities and transactions of state and local governmental entities.
internal control	The plan, policies, methods, and procedures adopted by management to meet its mission, goals, and objectives. Internal control includes the processes for planning, organizing, directing, and controlling program operations. It also includes the systems for measuring, reporting, and monitoring program performance. Internal control serves as a defense in safeguarding assets and in preventing and detecting errors; fraud; violations of laws, regulations, and provisions of contracts and grant agreements; or abuse.
material condition	A matter that, in the auditor's judgment, is more severe than a reportable condition and could impair the ability of management to operate a program in an effective and efficient manner and/or could adversely affect the judgment of an interested person concerning the effectiveness and efficiency of the program.

member	A retiree or beneficiary currently receiving benefits, a current employee, or an inactive employee entitled to benefits and not yet receiving benefits.
MIP	Member Investment Plan.
mission	The main purpose of a program or an entity or the reason that the program or the entity was established.
mortality rate	The probability that a pension plan retiree will die in a given year.
MPSERS	Michigan Public School Employees' Retirement System.
non-hybrid pension plan	A pension plan for MPSERS members hired before July 1, 2010, which includes the Basic Plan and MIP.
OAG	Office of the Auditor General.
observation	A commentary that highlights certain details or events that may be of interest to users of the report. An observation differs from an audit finding in that it may not include the attributes (condition, effect, criteria, cause, and recommendation) that are presented in an audit finding.
ORS	Office of Retirement Services.
performance audit	An audit that provides findings or conclusions based on an evaluation of sufficient, appropriate evidence against criteria. Performance audits provide objective analysis to assist management and those charged with governance and oversight in using the information to improve program performance and operations, reduce costs, facilitate decision making by parties with responsibility to oversee or initiate corrective action, and contribute to public accountability.

reportable condition	A matter that, in the auditor's judgment, is less severe than a material condition and falls within any of the following categories: an opportunity for improvement within the context of the audit objectives; a deficiency in internal control that is significant within the context of the audit objectives; all instances of fraud; illegal acts unless they are inconsequential within the context of the audit objectives; significant violations of provisions of contracts or grant agreements; and significant abuse that has occurred or is likely to have occurred.
reporting unit	A public school district, an intermediate school district, a public school academy, a district library, a tax-supported community or junior college, or a university.
TDP	tax-deferred payment.
UAAL contribution rate	The actuarially determined percentage of member payroll to be paid by the employer to meet the ARC to pay off the UAAL.
unfunded actuarial accrued liability (UAAL)	The difference between the actuarial accrued liability and the value of current plan assets recognized for valuation purposes.
YOS	years of service.

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