

**REVIEW OF THE ADEQUACY  
OF THE CONTRIBUTION RATES  
TO HPRS AND PERS**

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## I. Introduction

Pursuant to the request of the Ohio Retirement Study Council, "ORSC", the purpose of this report is to review the adequacy of the contribution rates to:

- the Ohio State Highway Patrol Retirement System, "HPRS"; and
- the Ohio Public Employees' Retirement System, "PERS".

Results for PERS are displayed for each of the three divisions:

- the State Government Division, "PERS State";
- the Local Government Division, "PERS Local"; and
- the Law Enforcement Division, "PERS Law".

The following table summarizes the market value of assets and the current membership of these systems as of January 1, 2003, the most recent valuation of each of the systems.

### **Retirement System's Statistics**

<b><u>System</u></b>	<b><u>Market Value of Total System Assets</u></b>	<b><u>Active Members*</u></b>	<b><u>Inactive Members</u></b>	<b><u>Retired Members and Beneficiaries</u></b>
<b>HPRS</b>	\$ 513,415,930	1,548	6	1,231
<b>PERS-State</b>	\$ 18,984,406,409	110,017	22,081	50,011
<b>PERS-Local</b>	\$ 27,238,656,277	247,377	40,334	88,483
<b>PERS-Law</b>	\$ 1,672,240,233	8,030	331	2,525
<b>Total</b>	<b>\$ 48,408,718,849</b>	<b>366,972</b>	<b>62,752</b>	<b>142,250</b>

\* Money purchase plan members not included in the PERS active member counts above are as follows: State = 3,615, Local = 12,125 and Law = 31.

This review is in response to the significant decline in each of the retirement system's assets from the spring of 2000 to the spring of 2003 due to the general market decline during that period. As a result, each of the system's actuarial status eroded during that period.

This review is to determine whether the current contribution rates, which are established by statute, remain adequate to fund the retirement systems and, if not, indicate the magnitude of changes in contribution rates and/or benefit provisions that may be appropriate to restore each system's actuarial status.

The analysis that follows addresses primarily the pension benefits and Medicare Part B reimbursements mandated by the Legislature in Ohio statutes. It addresses

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discretionary healthcare benefits only to the extent that a portion of the maximum statutory rates is currently allocated to provide such benefits. To the extent that the portion of contributions allocated to such discretionary benefits is redirected to restore the actuarial status of each system's mandated pension benefits and Medicare Part B reimbursements, the discretionary benefits will need to be reduced or eliminated.

In general, this review is based on the results of the January 1, 2003 Actuarial Valuations prepared for each of the systems. Each of the systems and their consulting actuary provided us with the detailed participant data and actuarial assumptions that were used to prepare the valuation so we could base our calculations on consistent information. Except where we indicate that some change was made, we used those assumptions without modification throughout this review. In addition, each of the systems provided us with the Capital Market Assumptions they used for updating their investment policy. We want to thank them for their cooperation and prompt responses to our requests and questions.

In light of the significant rebound in the financial markets during 2003, we estimated the effect of that market recovery on the actuarial status of each of the systems as of December 31, 2003. These estimates were based on the preliminary returns reported by the systems through December 31, 2003.

In performing this analysis, we relied on the data and other information provided by the systems and their consulting actuaries. We have not audited or verified this data and other information. If the underlying data or information is inaccurate or incomplete, the results of our analysis may likewise be inaccurate or incomplete.

We performed a limited review of the data used directly in our analysis for reasonableness and consistency and have not found material defects in the data. If there are material defects in the data, it is possible that they would be uncovered by a detailed, systematic review and comparison of the data to search for data values that are questionable or for relationships that are materially inconsistent. Such a review was beyond the scope of our assignment.

Differences between our projections and actual amounts depend on the extent to which future experience conforms to the assumptions made for this analysis. It is certain that actual experience will not conform exactly to the assumptions used in this analysis. Actual amounts will differ from projected amounts to the extent that actual experience deviates from expected experience.

## II. Summary

The major findings and recommendations from this review are summarized below.

- Investment returns achieved by HPRS and PERS in 2003 were far in excess of the long-term actuarial assumed rate of return. However, due to the smoothing of investment losses from prior years and investment gains from 2003, we estimate that, as of December 31, 2003, only PERS Local Division satisfied the 30-year funding period required by law. (Technically, the 30-year funding period limitation applies to PERS on an aggregate basis including all Divisions. Throughout this report, we will discuss the 30-year limitation as if it applied to each Division separately.)
- The funding period calculation required by law should be based on the actuarial costs of all benefits mandated by statute - the pension benefits and the Medicare Part B premium reimbursements. We recommend that both HPRS and PERS include these statutorily mandated Medicare Part B premium reimbursement benefits when determining their funding periods in future actuarial valuations. (SERS is the only Ohio retirement system that has included these mandated Medicare Part B premium reimbursement benefits in its actuarial valuation. We previously recommended that OP&F and STRS include them in future valuations also.)
- The Capital Market Assumptions used by the systems for investment planning purposes anticipate that the annualized returns will be approximately 7.2% in the case of HPRS and 7.3% in the case of PERS over the next 10 years based on their current asset allocation policies and their own capital market assumptions. These returns fall short of the long-term actuarial investment return assumption of 8.00% used by both systems.
- If neither contributions nor benefits are modified, based on the average Capital Market Assumptions used by the five Ohio Retirement Systems for investment planning purposes there is a 43% probability that HPRS will be in compliance with the 30-year limit on the funding period 10 years from now, in 2014. Based on these assumptions, the probabilities of PERS State, PERS Local and PERS Law being in compliance with the 30-year limit in 2014 are 49%, 53% and 54% respectively.
- The current contribution rates to HPRS and PERS are less than the statutory maximum rates. As a result, HPRS and PERS-State and PERS-Local could each comply with the 30-year funding period limit by increasing the current contribution rates without reducing the portion of the contribution rates allocated to discretionary healthcare benefits and still remain within the maximum contribution rate limitations provided by statute.

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- If investment returns over the near term are favorable so that the PERS actuarial value of assets grows to “catch-up” with the market value, PERS-LE and PERS-Public Safety could also bring themselves into compliance with the 30-year funding period limit by increasing member and/or employer contributions and still remain within the maximum contribution rate limitations provided by statute.
- If investment returns over the near term meet the actuarial investment return assumption but provide no “excess” returns, PERS-LE and PERS-Public Safety could bring themselves into compliance with the 30-year funding period limit by both (a) increasing member and/or employer contributions to the statutory maximum limitation and (b) slightly reducing the current allocation to discretionary healthcare benefits.

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**III. Information as of the January 1, 2003 actuarial valuations**

The unfunded actuarial accrued liabilities for pension benefits, "UAL", and funding periods as reported in the most recent actuarial valuations of HPRS and PERS are summarized in the table below.

**Reported UAL and Funding Period at January 1, 2003**  
(\$ amounts in millions)

	<u>HPRS</u>	<u>PERS All Divisions</u>	<u>PERS State</u>	<u>PERS Local</u>	<u>PERS Law</u>
<b>UAL:</b>	\$135.5	\$7,166.5	\$2,857.4	\$4,027.6	\$281.5
<b>Funding Period:</b>	32	29	38	25	36

Based on the above figures, as of January 1, 2003, HPRS fell just short of complying with the requirement in law that the Board of each system keep the funding period at 30 years or less. PERS in total (all divisions combined) complied with the 30-year funding period limitation. When the funding period for a system exceeds 30 years, its Board is required to develop a plan and submit it to the ORSC and the Legislature to bring the funding period back to within the 30-year limit.

Through the remainder of this report, we will discuss PERS as if each of its divisions is required to meet the 30-year funding period limitation. The statute does not require that each division comply with the 30-year limitation, only that PERS comply in total.

***Significance of "Funding Period"***

In order for a retirement system to be "actuarially sound", it needs to have sufficient assets and dedicated future contributions to cover the actuarial value of all benefits it will pay. Since the Ohio Retirement Systems use the Entry Age Normal Actuarial Cost Method, this means that the future employer and member contributions must be adequate to pay each system's normal cost and amortize its UAL over some reasonable timeframe. If the contributions are not adequate to cover the normal cost and amortize the UAL, the system's UAL will grow indefinitely, gradually disfunding the retirement system.

The fact that the UAL grows over the short term does not mean that the retirement system is actuarially unsound. Some amortization schedules will produce increasing UALs over the near term even though the scheduled amortization payments will ultimately fully fund the UAL. Moreover, fluctuations in investment and other actuarial experience should be expected. Such fluctuations will cause the UAL to increase or decrease from year to year.

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The exact length of the appropriate funding period is, of course, open to debate. Thirty years has become a generally accepted time period for this purpose over the past few decades. For example, ERISA required private sector pension plans to move to maximum 30-year funding period for UALs when it was enacted in 1974. Within the public sector, the Governmental Accounting Standards Board, "GASB", selected 30-years as the maximum funding period for UALs also. (In the case of both ERISA and GASB, retirement programs were given a longer period of 40 years for UALs existing when the new rules became effective. In the case of the GASB rules, this 40-year alternative will expire in 2006.)

In light of this background, the 30-year period established by Ohio statute falls well within generally accepted practice.

### ***Use of "Actuarial Value of Assets"***

The figures shown on the previous page reflect the systems' "actuarial value of assets". The actuarial value of assets is calculated by phasing-in the recognition of market returns to the extent that they deviate from the actuarial assumption regarding long-term investment returns. This value is intended to dampen fluctuations in the value of assets used to determine long-term funding progress. (Most public employee retirement systems make use of an actuarial value of assets in lieu of the market value.) Both HPRS and PERS phase-in the short-term deviations from the assumed long-term rate of investment return over 4 years. The deviation between the actuarial value and market value of assets is limited to 20% in the case of HPRS (the limit was increased from 12% to 20% effective January 1, 2003) and 12% in the case of PERS.

After an extended period when actual investment returns are significantly higher or lower than long-term average expected returns, as over the 3-year period ending March 31, 2003 when returns were negative, the difference between the actuarial value and the market value of assets can become quite large.

The actuarial value of assets for each system as of the most recent actuarial valuation is compared below with the market value of assets as of the same date. As shown in the following table, the actuarial value of assets for both HPRS and PERS were at their uppermost limits with respect to the market values as of January 1, 2003.

**Comparison of Actuarial and Market Value of Assets as of January 1, 2003**  
(\$ amounts in millions)

	<u>HPRS</u>	<u>PERS State</u>	<u>PERS Local</u>	<u>PERS Law</u>
<b>Actuarial Value of Pension Assets:</b>	\$527.6	\$17,713.7	\$24,425.4	\$1,566.6
<b>Market Value of Pension Assets:</b>	\$439.7	\$15,785.8	\$21,767.1	\$1,396.1
<b>Difference in \$:</b>	\$ 87.9	\$ 1,927.9	\$ 2,658.3	\$ 170.5
<b>Difference as % of MV:</b>	20%	12%	12%	12%
<b>Actuarially assumed long-term average rate of investment return:</b>	8.0%	8.0%	8.0%	8.0%

***Magnitude of Healthcare Funds***

The balances in the Healthcare Funds of HPRS and PERS are compared with the annual benefits and expenses paid from those funds during 2002 in the table below.

**Healthcare Funds and Annual Benefit Costs as of January 1, 2003**  
(\$ amounts in millions)

	<u>HPRS</u>	<u>PERS (all divisions)</u>
<b>Healthcare Fund:</b>	\$73.7	\$8,886.3
<b>Annual Benefit Costs &amp; Expenses:</b>	\$ 7.0	\$ 780.1
<b>Ratio:</b>	10.5 years	11.4 years

The ratios shown in the above table are not precise estimates of the number of years that healthcare benefits could be continued since they do not consider likely increases in annual benefits due to healthcare inflation, investment returns, nor future contributions. Since Medicare Part B premium reimbursements are paid from the HPRS and PERS Healthcare Funds, all or a portion of those funds would need to be allocated to mandated benefits before determining whether assets would remain to provide discretionary healthcare benefits.

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#### IV. Estimated information as of December 31, 2003

The financial markets rebounded significantly during 2003. Since that rebound improved the funded status of both of the systems, we roughly estimated its effect on the UALs and funding periods reported above. In this way, the ORSC can see a more up-to-date appraisal of each system's funded status. We based this estimate on the preliminary returns reported by the systems through December 31, 2003. We have shown below calculations reflecting the estimated actuarial value of assets and the estimated market value of assets as of December 31, 2003.

#### **Estimated Actuarial and Market Value of Pension Assets and Funding Period as of December 31, 2003** (\$ amounts in millions)

	<u>HPRS</u>	<u>PERS State</u>	<u>PERS Local</u>	<u>PERS Law</u>
<b>Estimated Actuarial Value:</b>	\$549.0	\$18,738.3	\$25,987.8	\$1,701.0
<b>Estimated Market Value:</b>	540.4	19,304.2	26,776.9	1,753.7
<b>Difference in \$:</b>	8.6	( 565.9)	( 789.1)	( 52.7)
<b>Difference as % of MV:</b>	2%	(3%)	(3%)	(3%)
<b>Est. Funding Period based on Actuarial Assets:</b>	37 years	41 years	26 years	36 years
<b>Est. Funding Period based on Market Assets*:</b>	42 years	27 years	19 years	25 years

\* This would be the funding period if returns on the market value over the next 4 years met the long-term actuarial assumed rate of return.

Investment returns during 2003 far exceeded the long-term actuarial assumption for both HPRS and PERS. For HPRS, these excess returns have significantly narrowed the difference between the actuarial and market value of assets since January 1, 2003. For PERS, these excess returns were sufficient to have the market value of assets "catch-up" with the actuarial value of assets.

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## V. Projected funded status in 10 years if no changes made in contributions or benefits

Traditional actuarial calculations present single values for plan liabilities and costs even though there is significant uncertainty regarding future actuarial experience, e.g., variability in investment returns, inflation, retirement ages, etc.

Investment consultants deal with uncertainty regarding the economic factors that will affect the growth of plan assets and liabilities by making assumptions regarding expected investment returns and their volatility (as measured by standard deviation) and their interdependence (as measured by their correlation) in order to develop long-term investment strategies that reflect (a) the inherent uncertainty in future investment results and (b) the expected benefits of diversification in the types of investments to mitigate the impact of unfavorable deviations. They call these assumptions Capital Market Assumptions, which include the expected returns, standard deviations and correlation of investment returns for major classes of investments.

It is possible to use the same Capital Market Assumptions used by investment consultants to project the funded status of a retirement system so that, rather than showing only a single estimate of future results, the uncertainty regarding future results can be estimated by projecting the expected range of possible economic results.

It will be helpful to the ORSC to see the results of such an analysis for the following reasons.

- Only a few years ago, the benefits provided by HPRS and PERS were improved based, in part, on actuarial projections that indicated that the systems could afford to fund the cost of the improved benefits. Those actuarial projections were based on traditional actuarial projections, which reflect a single scenario where the future unfolds "as expected". Experience over the 3 years ending March 31, 2003 turned out to be extremely adverse.
- The Capital Market Assumptions used by the investment consultants to HPRS and PERS anticipate lower annualized (or compounded) investment returns over the next 10 years than the actuarial assumption regarding long-term average investment returns, which is used to prepare the actuarial valuations for the systems. (It is important to note that this apparent inconsistency is not a cause for concern *if* it is due to the expectation that investment returns and inflation over the next 10 years are lower than long-term – meaning the next 75 to 100 years – expectations. If investment returns were expected to be higher than the long-term average beyond the next 10 years, then blending the lower expected investment returns over the next 10 years with the higher later returns could justify such an assumption.)

- As it considers possible changes in the statutory contribution rates or benefit provisions, it would be helpful for the ORSC to have information regarding the likelihood and magnitude of deviations in UALs and funding periods from the traditional actuarial projections due to expected volatility in future rates of investment returns and general wage inflation.

A prime source of variation will be normal fluctuations that occur in the rate of investment returns and wage inflation. One way of estimating the range of possible outcomes is to stochastically model the financial operation of the systems using “Monte Carlo” techniques. (This is a generally accepted approach to estimate the range of possible outcomes.) This approach involves preparing 1,000 projections of financial results under randomly derived scenarios of investment returns and wage inflation. Each of these scenarios is based on statistical factors such as the expected annual return, the standard deviation of the annual return, and the correlation between the annual returns for different asset classes and inflation.

The expected return on each asset class and the expected inflation component of wage growth used in this report were taken from our November 5, 2003 report, where they were established by averaging the three sets of asset class expected returns and the inflation assumptions contained in the Capital Market Assumptions provided by the investment consultants to OP&F, SERS, and STRS. We used the assumptions from the November report because the HPRS and PERS assumptions were reasonably close to those assumptions and we believe it is desirable to use the same assumptions for all of the systems for comparison purposes. The standard deviation and correlation factors were developed by Milliman and were based on actual historical results over the period from 1970 to 2002 for representative market indices. In developing assumptions for the standard deviation of inflation and the correlation between inflation and asset class returns, we used the annual increases in the Social Security average annual wage index over this same time period. The assumptions are presented in [Appendix A](#).

Those Capital Market Assumptions were applied to each system’s asset mix based on its investment policy. By tabulating the results under all of these projections we estimated the probability that current assets, along with all anticipated employer and member contributions plus investment returns, will be sufficient to reduce the UALs and funding periods of HPRS and PERS.

In order to prepare forecasts of the range of UALs and funded periods in 10 years, we needed to make assumptions regarding the number of active members covered by the systems over the projection period and the age/gender/salary characteristics of future hires. We assumed that the number of active members will remain stable, i.e., not increase or decrease, over the 10 year projection period and that the age/gender/salary characteristics of new hires will mirror the age/gender/salary characteristics of active members as of the most recent valuation date with less than 1 year of service.

We have summarized in the table below the results of this process. It illustrates the possible magnitude and variability of results by showing the UAL and funding period at various percentile levels. It is important to understand that these figures are only illustrative of the range of results that are possible and are dependent on the assumptions utilized.

**Projected Funded Status in 2014**  
**assuming no changes in Contributions or Benefits**  
**(negative figures indicate a Surplus instead of an Unfunded Accrued Liability)**  
(\$ amounts in millions)

	<u>HPRS</u>	<u>PERS State</u>	<u>PERS Local</u>	<u>PERS Law</u>
<b>UAL/(Surplus):</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
<b>Estimated as of January 1, 2004</b>	<b>150.5</b>	<b>2,991.2</b>	<b>4,155.7</b>	<b>293.7</b>
<b>5<sup>th</sup> percentile</b>	(482.5)	(24,095.3)	(35,524.5)	(2,360.9)
<b>25<sup>th</sup> percentile</b>	( 22.0)	( 6,365.4)	(10,133.5)	( 667.3)
<b>40<sup>th</sup> percentile</b>	136.2	( 130.4)	( 1,197.3)	( 70.5)
<b>45<sup>th</sup> percentile</b>	186.1	1,532.3	999.0	86.0
<b>50<sup>th</sup> percentile</b>	<b>221.0</b>	<b>3,203.9</b>	<b>3,523.6</b>	<b>242.5</b>
<b>55<sup>th</sup> percentile</b>	262.4	4,792.5	5,735.6	402.6
<b>60<sup>th</sup> percentile</b>	303.8	6,157.5	7,853.2	532.7
<b>75<sup>th</sup> percentile</b>	448.9	11,977.3	16,085.2	1,087.3
<b>95<sup>th</sup> percentile</b>	685.9	20,554.4	28,385.3	1,950.0
<b>Funding Period:</b>	<b><u>in years</u></b>	<b><u>in years</u></b>	<b><u>in years</u></b>	<b><u>in years</u></b>
<b>Estimated as of January 1, 2004</b>	<b>37</b>	<b>41</b>	<b>26</b>	<b>36</b>
<b>5<sup>th</sup> percentile</b>	0	0	0	0
<b>25<sup>th</sup> percentile</b>	0	0	0	0
<b>40<sup>th</sup> percentile</b>	21	0	0	0
<b>45<sup>th</sup> percentile</b>	38	12	4	5
<b>50<sup>th</sup> percentile</b>	<b>56</b>	<b>38</b>	<b>18</b>	<b>17</b>
<b>55<sup>th</sup> percentile</b>	Infinite	Infinite	41	34
<b>60<sup>th</sup> percentile</b>	Infinite	Infinite	Infinite	Infinite
<b>75<sup>th</sup> percentile</b>	Infinite	Infinite	Infinite	Infinite
<b>95<sup>th</sup> percentile</b>	Infinite	Infinite	Infinite	Infinite

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The 50<sup>th</sup> percentile represents the median result of these forecasts, that is one-half of the results are expected to be more favorable than this and one-half are expected to be less favorable. The 5<sup>th</sup> percentile result is an extremely favorable result; that is, based on the assumptions there is only a 5% chance that a result this favorable or better will occur and a 95% chance that results will be less favorable. At the other extreme, the 95<sup>th</sup> percentile result is an extremely unfavorable result; that is, based on the assumptions there is only a 5% chance that a result this unfavorable or worse will occur and a 95% chance that results will be more favorable.

For example, the projection model estimates there is a 25% chance that if experience is favorable, the UAL under HPRS will decrease from \$150.5 to a surplus of \$22.0 million or more by January 1, 2014 and that its funding period at that time will be 0 years. This result is shown on the lines labeled as the **25<sup>th</sup>** percentile.

As another example, there is a 25% chance that if experience is unfavorable, the UAL under HPRS will increase from \$150.5 to \$448.9 million or more by January 1, 2014 and that its funding period at that time will be infinite. This result is shown on the lines labeled as the **75<sup>th</sup>** percentile.

If neither contributions nor benefits are modified, based on the assumptions described above there is:

- a 43% probability that HPRS will be in compliance with the 30-year limit on the funding period 10 years from now, in 2014, and,
- the probabilities of PERS State, PERS Local and PERS Law being in compliance with the 30-year limit in 2014 are 49%, 53% and 54% respectively.

Note that since we used each system's current actuarial assumptions and methods in preparing these projections, the projections treat HPRS's and PERS's Medicare Part B premium reimbursements as discretionary healthcare benefits, which is the approach taken by the actuaries for HPRS and PERS in preparing the annual actuarial valuations. We recommend that HPRS and PERS include these mandated Medicare Part B premium reimbursements in the calculation of their funding period in future actuarial valuations.

In addition to the assumptions described above, we assumed that there would be no actuarial gains or losses due to experience deviations from the other non-economic actuarial assumptions used by the systems in preparing these estimates.

## **VI. Possible changes in Contribution Rates or Benefit Provisions needed to satisfy 30-year funding limit as of January 1, 2004**

This section of the review will discuss several alternative options that could be adopted by the Boards or the Legislature. (In the case of HPRS, PERS-State and PERS-Local, the Boards currently have the statutory authority to increase member and/or employer contribution rates enough to satisfy the 30-year funding limit. We will show figures for HPRS, PERS-State and PERS-Local in the following tables so that the ORSC can see the figures on the same basis as shown for PERS-Law and PERS-Public Safety in this report and as shown for OP&F, SERS and STRS in our report dated November 5, 2003 even though HPRS, PERS-State and PERS-Local do not need any legislated changes to comply with the 30-year funding limit.)

We will first present information regarding possible modifications in contribution rates and then possible changes in benefit provisions to satisfy the 30-year funding limit.

It would be possible to adopt more than one of the types of modifications illustrated. The possible changes will be presented in the following order:

- A. Changes in Contribution Rates
  - Changes in the contribution rates allocated to discretionary healthcare benefits
  - Additional time to bring funding period to 30-years
- B. Possible benefit reductions to reduce the funding period

## **A. Changes in Contribution Rates**

The current employer and member contribution rates to HPRS and PERS are summarized below along with the maximum statutory rates and the increases that are possible at Board discretion. The HPRS member contribution rate is fixed at 10% by statute, and the PERS Law member contribution rate is fixed at 10.1% by statute.

	<b><u>HPRS</u></b>	<b><u>PERS State</u></b>	<b><u>PERS Local</u></b>	<b><u>PERS Law</u></b>	<b><u>PERS Public Safety</u></b>
<b>Current Contribution Rates:</b>					
<b>Employer Rate</b>	24.50%	13.31%	13.55%	16.70%	16.70%
<b>Member Rate</b>	<u>10.00</u>	<u>8.50</u>	<u>8.50</u>	<u>10.10</u>	<u>9.00</u>
<b>Total</b>	34.50	21.81	22.05	26.80	25.70
<b>Maximum Contribution Rates:</b>					
<b>Employer Rate</b>	30.00%*	14.00%	14.00%	18.10%	18.10%
<b>Member Rate</b>	<u>10.00</u>	<u>10.00</u>	<u>10.00</u>	<u>10.10</u>	<u>10.00</u>
<b>Total</b>	40.00	24.00	24.00	28.20	28.10
<b>Increases Possible at Board Discretion under current law:</b>					
<b>Employer Rate</b>	5.50%	0.69%	0.45%	1.40%	1.40%
<b>Member Rate</b>	<u>0.00</u>	<u>1.50</u>	<u>1.50</u>	<u>0.00</u>	<u>1.00</u>
<b>Total</b>	5.50	2.19	1.95	1.40	2.40

\* The HPRS employer rate is capped at 3 times the member rate.

Appendix B contains a history of the contribution rates paid by employers and members taken from the ORSC Pension Profiles.

***A(1). Changes in Contribution Rates  
allocated to Discretionary Healthcare Benefits***

Under current law, the pension benefits and Medicare Part B reimbursements provided to retirees are established under Ohio law. The healthcare benefits provided by the systems are discretionary, in that the Boards are authorized to provide such benefits to the extent that they have the available financial resources to do so. Thus based on current law, the Boards should first allocate their available resources – that is, employer and member contributions – to provide pension benefits and Medicare Part B reimbursements. Allocations to provide discretionary healthcare benefits should be made only to the extent that additional contributions are available after fully providing for the statutorily mandated benefits.

We have summarized the current contribution rates in the table below and compared them with the estimated contribution rates required to be allocated to pension benefits and Medicare Part B reimbursements to comply with the 30-year funding period limit required by law as of the 2004 actuarial valuation. We have also indicated the increases in contribution rates that could be made by the Boards based on current statutory limitations.

Neither HPRS nor PERS includes in its actuarial calculations the actuarial cost of the Medicare Part B reimbursements. Thus Milliman has estimated the 30-year funding period cost figures for these Medicare Part B reimbursement benefits for HPRS and PERS in preparing the following table. The assumptions used to estimate the cost of the Medicare Part B reimbursements are described in Appendix C. (We recommend that both HPRS and PERS include these mandated Medicare Part B reimbursement benefits in future actuarial valuations.)

As noted previously, HPRS, PERS-State and PERS-Local could comply with the 30-year funding limit by increasing member and/or employer contribution rates without exceeding the current statutory limitations on contribution rates, thereby maintaining the current allocations to healthcare benefits.

Both PERS-Law and PERS-Public Safety could comply with the 30-year funding period limitation if the full market value of assets as of December 31, 2003 were reflected in the calculation. As indicated in the following table, the current allocation to discretionary benefits would have to be decreased by roughly 0.25% to 0.50% of payroll in order to comply with the 30-year funding period limitation if the calculation reflected the actuarial value of assets. These reductions in the contribution rates allocated to discretionary benefits would be needed because the statutory maximum limitations on the contribution rates are slightly less than the sum of (a) the contributions needed to comply with the 30-year limitation based on the estimated actuarial value of assets as of December 31, 2003 plus (b) the current contribution rates allocated to discretionary healthcare benefits.

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**Portion of Current Contribution Rates available  
for discretionary healthcare benefits after fully funding  
mandated Pensions and Medicare Part B reimbursements**

	<u>HPRS</u>	<u>PERS State</u>	<u>PERS Local</u>	<u>PERS Law</u>	<u>PERS Public Safety</u>
<b>Current Employer and Member Contribution Rates:</b>					
<b>Total</b>	34.50%	21.81%	22.05%	26.80%	25.70%
<b>Actuarial cost of mandated benefits:</b>					
<b>Actuarial assets</b>	33.60%	19.40%	19.30%	24.40%	24.40%
<b>Market assets</b>	34.20%	18.70%	18.60%	23.70%	23.70%
<b>Current Contribution Rates available for discretionary benefits:</b>					
<b>Actuarial assets</b>	0.90%	2.41%	2.75%	2.40%	1.30%
<b>Market assets</b>	0.30%	3.11%	3.45%	3.10%	2.00%
<b>Increases Possible at Board Discretion under current law:</b>					
<b>Employer Rate</b>	5.50%	0.69%	0.45%	1.40%	1.40%
<b>Member Rate</b>	<u>0.00</u>	<u>1.50</u>	<u>1.50</u>	<u>0.00</u>	<u>1.00</u>
<b>Total</b>	5.50	2.19	1.95	1.40	2.40
<b>Total Contribution Rates available for discretionary benefits*:</b>					
<b>Actuarial assets</b>	6.40%	4.60%	4.70%	3.80%	3.70%
<b>Market assets</b>	5.80%	5.30%	5.40%	4.50%	4.40%
<b>Current allocation to discretionary healthcare benefits:</b>					
<b>Allocation</b>	3.50%	4.00%	4.00%	4.00%	4.00%

\* The total contribution rates available for discretionary benefits is slightly overstated for PERS-State, PERS-Local and PERS-Public Safety because the actuarial cost of mandated benefits would increase slightly if member rates were increased. This is due to member contributions that are refunded to members who terminate and elect refunds. The overstatement should be 0.40% of payroll or less.

If the contributions allocated to discretionary healthcare benefits are reduced (or eliminated) in any system, discretionary healthcare benefits would have to be likewise reduced (or eliminated), or provided to retirees at full cost to the retiree.

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**A(2). Increase employer contributions and grant additional time  
to bring funding period to 30-years**

In lieu of contribution increases, consideration could be given to granting the systems additional time to reduce their funding periods to 30 years. We have summarized in the following table the number of additional years needed effective in 2004 in order to put the systems on track to achieve the 30-year limit.

**Estimated Funding Period as of December 31, 2003**

	<u>HPRS</u>	<u>PERS State</u>	<u>PERS Local</u>	<u>PERS Law</u>
<b>Est. Funding Period based on:</b>				
<b>Actuarial Assets:</b>	37 years	41 years	26 years	36 years
<b>Market Assets*:</b>	42 years	27 years	19 years	25 years
<b>Additional years needed to achieve 30-year funding limitation:</b>				
<b>Actuarial Assets:</b>	7 years	11 years	-	6 years
<b>Market Assets*:</b>	12 years	-	-	-

\* This would be the funding period if returns on the market value over the next 4 years met the long-term actuarial assumed rate of return.

## **B. Possible benefit reductions to reduce contributions and/or the funding period**

To indicate the extent to which the cost of pension benefits and Medicare Part B premium reimbursements could be reduced or capped by modifying the statutorily mandated benefits, we have roughly estimated the effect of rolling back several of the benefit improvements and increasing retirement eligibility requirements.

These estimates were prepared solely to provide the ORSC a rough estimate of the potential savings in HPRS and PERS due to the benefit cutbacks illustrated in our November 5, 2003 report covering OP&F, SERS and STRS. As indicated previously, **neither HPRS nor PERS need increases in the current statutory maximum contribution rate limitations in order to comply with the 30-year funding period limitation.** (If the Legislature wishes to consider such benefit reductions, careful consideration of all of the benefit provisions of the systems should be undertaken to assure that the complete package of benefits provided by the systems interrelate logically. We have not undertaken such a comprehensive review in preparing this report.)

In developing these possible benefit reductions, we have assumed that the fully accrued benefit rights of members would not be reduced. Instead, only benefit amounts or entitlements which could be earned through future service by active members, or the passage of time in the case of retirees, would be affected.

Specifically, we considered the following package of possible changes for purposes of estimating the potential magnitude of savings to the systems if such reductions were made. Note that while this package of benefit reductions is similar to that shown in November 5, 2003 report on OP&F, SERS and STRS, cost estimates could be prepared for many other packages if the ORSC or the Legislature wishes to consider benefit reductions.

- The automatic 3% cost-of-living adjustments to pensions enacted recently would be repealed and the prior cost-of-living provisions, which were based on the rate of inflation and limited to 3% in any year, would be reinstated.
- The rate of benefit accrual for active members in PERS State and PERS Local would be reduced to 2% for each year of future service.
- The age and service requirements for unreduced retirement benefits in PERS State and PERS Local would be increased by 2 years, with the exception that unreduced retirement would be permitted at age 67 with 5 years of service since that 5 year requirement seems more like a vesting provision than a retirement eligibility provision. Thus, active members not currently eligible for unreduced retirement at 30 years of service or at age 65 with 5 years of service would have to complete 32 years of service or attain age 67 with 5 years of service to become eligible for an unreduced retirement benefit.
- A similar 2-year increase in eligibility requirements would be made for reduced retirement benefits in both PERS State and PERS Local.

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- The age requirement for unreduced retirement in HPRS would be increased from age 48 for members with 25 years of service to age 52 with 20 years of service. (HPRS members can currently retire at age 52 with 20 years of service.) Reduced pensions would remain available at age 48 with 20 years of service for members who wish to retire before age 52. This would not apply to members who are currently age 48 or higher with 25 or more years of service.
- The age requirement for unreduced retirement in PERS Law would be increased from age 48 for members with 25 years of service to age 52 with 25 years of service. Reduced pensions would be available at age 48 with 25 years of service for members who wish to retire before age 52. This would not apply to members who are currently age 48 or higher with 25 or more years of service.
- The age requirement for unreduced retirement in PERS Public Safety is already age 52 with 25 years of service, and was not increased for this analysis.
- The Medicare Part B premium reimbursements would be frozen at the \$58.70 monthly premium rate in effect during 2003.

The resulting rough estimate of cost savings due to these changes if they were effective as of the January 1, 2004 actuarial valuations of the systems are summarized below.

**Portion of Current Contribution Rates available  
after fully funding Pensions and Medicare Part B premium reimbursements  
if benefits were reduced based on the above package**

	<u>HPRS</u>	<u>PERS State</u>	<u>PERS Local</u>	<u>PERS Law</u>	<u>PERS Public Safety</u>
<b>Current Employer and Member Contribution Rates:</b>					
<b>Total</b>	34.50%	21.81%	22.05%	26.80%	25.70%
<b>Actuarial cost of mandated benefits:</b>					
<b>Actuarial assets</b>	29.60%	15.00%	14.80%	20.20%	20.20%
<b>Market assets</b>	30.20%	14.30%	14.20%	19.40%	19.40%
<b>Current Contribution Rates available for discretionary benefits:</b>					
<b>Actuarial assets</b>	4.90%	6.81%	7.25%	6.60%	5.50%
<b>Market assets</b>	4.30%	7.51%	7.85%	7.40%	6.30%
<b>Current allocation to discretionary healthcare benefits:</b>					
<b>Allocation</b>	3.50%	4.00%	4.00%	4.00%	4.00%

This preliminary analysis indicates that it may be possible to develop a less severe package of benefit reductions than those summarized above that would enable both HPRS and PERS to comply with the 30-year funding period limit required by law while

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maintaining their current contribution rates and continuing to allocate the current portion of the contributions to discretionary healthcare benefits.

The current benefit provisions and possible benefit reductions are summarized in Appendix D and the modifications to the actuarial assumptions and methods made to prepare these rough estimates are summarized in Appendix E.

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**Capital Market Assumptions and Asset Allocations used in the actuarial projections\***

Expected:	Inflation Component of Wage Growth	US/Priv Equities	International/ Emerging Mkt Equities	Fixed Income	High Yield	Real Estate	Cash
Annual Return (Arithmetic)	2.50%	9.10%	9.00%	5.40%	7.65%	8.10%	3.80%
10-Year Annualized Return	2.48%	7.82%	6.95%	5.18%	6.99%	6.96%	3.77%
Standard Deviation	2.10%	17.75%	22.60%	7.20%	12.60%	16.70%	2.70%
Asset Allocation:							
<b>OP&amp;F</b>	n/a	49.00%	20.00%	18.00%	5.00%	8.00%	--
<b>STRS</b>	n/a	47.00%	20.00%	23.00%	--	9.00%	1.00%
<b>SERS</b>	n/a	49.00%	16.00%	23.00%	--	10.00%	2.00%
<b>OPERS</b>	n/a	48.00%	20.00%	23.00%	--	9.00%	--
<b>HPRS</b>	n/a	48.00%	15.00%	25.00%	--	12.00%	--
<u>Correlation:</u>							
Inflation p/o Wage growth	1.00	0.09	0.23	-0.32	-0.17	0.08	0.26
US/Priv Equity		1.00	0.57	0.32	0.59	0.52	0.09
Intern/Emerg Equity			1.00	0.05	0.35	0.23	-0.04
Fixed Income				1.00	0.64	0.32	0.15
High Yield					1.00	0.59	0.04
Real Estate						1.00	0.07
Cash							1.00

\* Expected returns for each asset class were set equal to the average of the expected returns provided by OP&F, STRS, and SERS. The expected returns provided by OPERS and HPRS were similar or slightly lower than the averages of the other three systems.

Standard deviations and correlation estimated by Milliman using historical return data from 1970 through 2002 from representative indices.

The inflation component of wage growth based on the annual increases in the Social Security average annual wage index.

A blended return assumption was developed for US and Private Equity.

A blended return assumption was developed for International and Emerging Market Equity.

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**Capital Market Assumptions provided by HPRS**

Projected:	Broad Domestic Equity	Large Cap	Small Cap	Intern'l Equity	Domestic Fixed	Non-US Fixed	Real Estate	Alternative Investments	Cash	Inflation
Annual Return (Arithmetic Mean)	9.00%	8.70%	10.30%	9.60%	4.75%	4.65%	7.60%	12.00%	3.00%	2.60%
10-Year Annualized Return - Estimated by Milliman	7.79%	7.63%	7.84%	7.75%	4.66%	4.26%	6.48%	7.64%	3.00%	2.60%
Standard Deviation	17.30%	16.20%	25.00%	21.50%	4.50%	9.60%	16.50%	34.00%	0.70%	1.00%
Correlation:										
Broad Domestic Equity	1.00	0.96	0.92	0.72	0.25	0.01	0.62	0.64	-0.12	NP
Large Cap		1.00	0.82	0.73	0.27	0.03	0.63	0.63	-0.10	NP
Small Cap			1.00	0.60	0.16	-0.03	0.52	0.59	-0.15	NP
Intern'l Equity				1.00	0.22	0.20	0.50	0.63	-0.25	NP
Domestic Fixed					1.00	0.32	0.20	0.20	0.30	NP
Non-US Fixed						1.00	0.03	0.10	-0.05	NP
Real Estate							1.00	0.45	-0.06	NP
Alternatives								1.00	0.07	NP
Cash									1.00	NP
Inflation										NP

"NP" means the assumption was not provided

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**Capital Market Assumptions provided by OP&F**  
2003 Asset Allocation Return and Risk Assumptions

Expected:	US Stocks	Non-US Stocks	US Bonds Lehman Aggregate	High Yield Debt	Reits/ Real Estate	Emerging Markets	Private Markets Portfolio	Cash	Inflation
10-Year Annualized Return	8.00%	8.00%	4.75%	7.00%	6.75%	8.00%	11.00%	3.00%	2.25%
Arithmetic Mean - Estimated by Milliman	9.17%	9.60%	4.86%	7.67%	7.80%	10.84%	14.37%	3.25%	2.26%
Annual Standard Deviation	17.00%	20.00%	5.00%	10.00%	16.00%	27.00%	30.00%	1.00%	1.30%
<u>Correlation:</u>									
US Stocks	1.00	0.65	0.30	0.50	0.45	0.60	0.77	0.00	NP
Non-US Stocks		1.00	0.20	0.30	0.35	0.75	0.52	-0.10	NP
Lehman Aggregate			1.00	0.40	0.30	0.10	0.29	0.10	NP
High Yield				1.00	0.50	0.20	0.35	-0.10	NP
Reits/RE					1.00	0.20	0.42	0.00	NP
Emerging Markets						1.00	0.10	0.00	NP
Private Markets							1.00	0.00	NP
Cash								1.00	NP
Inflation									1.00

Assumption for other asset classes were provided; Milliman selected these based on OP&F's current investment policy

"NP" means the assumption was not provided

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**Capital Market Assumptions provided by OPERS**

Expected:	US Equity	Non-US Equity	Real Estate	Private Equity	Fixed Income	Inflation
Return (Arithmetic Mean)	8.30%	8.30%	6.40%	11.30%	4.50%	2.50%
10-Year Annualized Return - Estimated by Milliman	7.16%	6.88%	5.79%	7.58%	4.25%	
Annual Standard Deviation	16.70%	18.70%	12.10%	31.20%	7.70%	NP
<u>Correlation:</u>						
US Equity	1.00	0.68	0.62	0.90	0.25	NP
Non-US Equity		1.00	0.46	0.61	0.25	NP
Real Estate			1.00	0.46	0.60	NP
Private Equity				1.00	0.08	NP
Fixed Income					1.00	NP
Inflation						NP

"NP" means the assumption was not provided

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**Capital Market Assumptions provided by SERS**  
10-Year Average from 1/1/2003

Expected:	US Equity	Non-US Equity	Aggregate Fixed Income	Intermediate Fixed Income	Long Bonds	Inflation	Public Real Estate	Private Real Estate	Private Equity
10-Year Annualized Return	7.50%	7.50%	5.30%	4.50%	4.80%	2.40%	6.30%	8.30%	12.50%
Arithmetic Mean - Estimated by Milliman	8.83%	8.97%	5.33%	4.54%	4.86%	2.41%	7.23%	8.78%	18.36%
Annual Standard Deviation	18.10%	19.10%	2.80%	3.00%	3.60%	3.70%	15.00%	10.80%	40.90%
<u>Correlation:</u>									
US Equity	1.00	0.56	0.25	0.20	0.08	0.10	0.34	0.04	0.32
Non-US Equity		1.00	0.21	0.18	0.09	0.13	0.29	0.00	0.19
Agg Fixed Income			1.00	0.90	0.76	0.50	0.38	-0.12	0.08
Interm Fixed Income				1.00	0.61	0.68	0.42	-0.15	0.07
Long Bonds					1.00	0.18	0.10	-0.15	0.01
Inflation						1.00	0.33	-0.05	0.05
Public Real Estate							1.00	0.12	0.13
Private Real Estate								1.00	0.05
Private Equity									1.00

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**Capital Market Assumptions provided by STRS**

Expected:	Domestic Equities	International Equities	Fixed Income	Real Estate	Alternative Investments	Liquidity Reserves	Inflation
Annual Return (Arithmetic)	8.40%	8.40%	6.00%	7.80%	13.40%	4.30%	2.75%
10-Year Annualized Return - Estimated by Milliman	7.08%	6.78%	5.79%	7.10%			2.73%
Annual Standard Deviation	18.00%	20.00%	7.00%	13.00%	NP	NP	2.00%
<b><u>Correlation:</u></b>							
Domestic Equity	1.00	0.60	0.35	0.30	NP	NP	NP
International Equity		1.00	0.25	0.15	NP	NP	NP
Fixed Income			1.00	0.15	NP	NP	NP
Real Estate				1.00	NP	NP	NP
Alternative Investments					1.00	NP	NP
Liquidity Reserves						1.00	NP
Inflation							1.00

"NP" means the assumption was not provided

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## Appendix B

### CHANGES IN EMPLOYER CONTRIBUTION RATES (AS PERCENT OF PAYROLL)

#### NON-UNIFORMED EMPLOYEE SYSTEMS

YEAR CHANGE OCCURRED	PERS STATE	PERS NON-STATE	STRS	SERS
1920			5.57	
1923			4.70	
1924			3.70	
1926			3.60	
1927			3.57	
1930			3.45	
1935	4.80			
1937				5.57
1938			3.82	
1939		4.80	4.44	5.50
1941			4.00	
1942		4.30		5.00
1943	4.30			
1945			5.00	5.50
1946		5.40	4.75	
1947	5.40		5.75	6.50
1948		5.70	7.50	7.00
1949	6.05		7.25	
1950		5.90		
1951	6.95		8.50	8.00
1952		7.00	8.00	7.75
1953	7.10			7.50
1955			9.25	8.00
1956		7.25		

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<b>YEAR CHANGE OCCURRED</b>	<b>PERS STATE</b>	<b>PERS NON-STATE</b>	<b>STRS</b>	<b>SERS</b>
1957	7.35			
1958			9.33	
1959	7.41	7.31	10.41	
1960		8.51		9.22
1961	8.61			
1963	7.91	7.27		
1964		7.37	11.00	
1965	8.03		11.27	10.00
1966	9.00		11.50	
1967		8.00		
1969	10.00	9.00	12.90	11.40
1973	10.40	9.40		
1974			12.55	12.50
1975	12.00	11.20		
1976		11.90		
1977	13.71	13.95	13.50	
1983				14.00*
1984			14.00	
1991	13.31	13.55		
2000**				

\*In addition to the 14% employer contribution rate, the SERS board was authorized by H.B. 290 effective 9/9/88 to impose an employer surcharge on the salaries of members earning below a minimum compensation amount in order to fund health care benefits. S.B. 270 (eff. 4/9/01) limited the maximum employer surcharge amount to no more than 2% of an individual employer's payroll for employees covered under SERS and limited the aggregate amount collected through the employer surcharge to no more than 1.5% of the total SERS active member payroll.

\*\*In 2000, the PERS board adopted a temporary employer contribution rate rollback for July 2000 through December 2000. The PERS State rollback rate was 7.99% for that period; the PERS Non-State rollback rate was 8.13% for that period.

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**CHANGES IN EMPLOYER CONTRIBUTION RATES  
(AS PERCENT OF PAYROLL)**

**UNIFORMED EMPLOYEE SYSTEMS**

<b>YEAR CHANGE OCCURRED</b>	<b>OP&amp;F POLICE</b>	<b>OP&amp;F FIRE</b>	<b>HPRS</b>	<b>PERS-LE</b>
1941			4.00	
1950			5.00	
1966			9.00	
1967	13.55	13.13		
1968	13.66	13.50		
1969	14.68	14.48		
1970	15.52	15.52		
1971	12.81	12.96	10.00	
1972	12.96	13.26		
1973	12.85	13.41		
1974	12.88	13.60		
1975	12.49	13.78	13.00	18.10
1976	14.02	15.57		
1977	15.34	16.77	13.25	
1978	17.53	18.90		
1979	18.40	20.11	18.00	
1980	15.70	19.87		
1981	15.60	20.72	22.00	
1982	16.62	22.39		
1983	18.45	23.57	24.80	
1985	20.03	24.59	24.66	
1986	19.50	24.00		
1989			24.39	
1991			24.53	16.00
1994				16.70
1996			24.00	
1999			23.50	
2000*				
2003			24.50	

\*In 2000, the PERS board adopted a temporary employer contribution rate rollback for July 2000 through December 2000. The PERS-LE rollback rate was 14.70% for that period.

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**CHANGES IN EMPLOYEE CONTRIBUTION RATES  
(AS PER CENT OF SALARY)**

**NON-UNIFORMED EMPLOYEE SYSTEMS**

YEAR CHANGE OCCURRED	PERS STATE	PERS NON-STATE	STRS	SERS	MODIFICATION
1920			4.00		\$2,000 earnings limit
1935	4.00				\$2,000 earnings limit
1937				4.00	\$2,000 earnings limit
1938		4.00			\$2,000 earnings limit
1945	5.00	5.00	5.00	5.00	\$3,000 earnings limit
1951	6.00	6.00	6.00	6.00	Based on total salary
1959			7.00	7.0	Optional on salary over \$18,000*
1960	7.00	7.00			Optional on salary over \$18,000*
1965	7.00	7.00	7.00	7.00	Optional on salary over \$25,000
1968	7.70	7.70	7.80	7.90	Based on total salary
1974	8.00	8.00	8.00	8.00	
1977	8.50	8.50	8.50	8.00	
1983			8.75		
1984				8.75	
1988			8.77		
1989				9.00	
1990			9.25		
1994			9.30		
2003			10.00	10.0	

\*Until 1959-60, members were charged an operational expense fee, initially set by law at one dollar, then \$1.50 and finally \$3.00. In 1959-60 the systems discontinued the fee charges and charged all expenses to earnings on investments.

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**CHANGES IN EMPLOYEE CONTRIBUTION RATES  
(AS PERCENT OF SALARY)**

**UNIFORMED EMPLOYEE SYSTEMS**

<b>YEAR CHANGE OCCURRED</b>	<b>OP&amp;F</b>	<b>HPRS</b>	<b>PERS-LE Group A<sup>1</sup></b>	<b>PERS-LE Group B<sup>2</sup></b>	<b>MODIFICATION</b>
1937	2.0 <sup>3</sup>				Firefighters-based on total salary; Police officers-\$3,000 earnings limit
1941		4.0			Based on total salary
1947	4.0 <sup>4</sup>				Based on total salary
1950		5.0			
1967 <sup>5</sup>	6.0	7.0			
1968	7.0				
1975 <sup>6</sup>			8.5		
1977		8.0			
1980	8.5				
1981		9.0			
1982			9.5		
1986	9.5				
1988	10. 0				
1989		10.5			
1991			9.0		
1996		10.0			
2000 <sup>7</sup>		9.5		10.1	
2003		10.0			

<sup>1</sup>PERS-LE Group A consists of Hamilton County Municipal Court Bailiffs.

<sup>2</sup>PERS-LE Group B consists of LE members other than Hamilton County Municipal Court Bailiffs.

<sup>3</sup>Until 1967, police officer's and firefighter's pensions were administered locally by 454 independent boards.

<sup>4</sup>Rate set for all locally administered systems receiving a state subsidy.

<sup>5</sup>OP&F was established in 1967.

<sup>6</sup>The plan for law enforcement persons in PERS was established in 1975.

<sup>7</sup>The separate contribution rates for Group A and Group B were established in 2000.

Milliman does not intend to benefit and assumes no duty or liability to any parties other than the ORSC who receive this report.

## Appendix C

### Medicare Part B Premium Reimbursements

#### Actuarial Assumptions

Rate of Increase in future premiums: We assumed that Part B premiums would increase at the annual rate of 8% per year. The actual rate of increase over the past 20 years was 7.9%.

## Appendix D

### Comparison of Current Plan Provisions and Possible Reduced Provisions

#### HPRS and PERS uniformed divisions

Provision	HPRS Current Plan	PERS Law Current Plan	PERS Public Safety Current Plan	Reduced Plan
Eligibility for Normal Retirement with Unreduced Benefit	Age 48 with 25 years of service or age 52 with 20 years of service. Mandatory retirement at age 55 with 20 years of service.	Age 48 with 25 years of service or age 62 with 15 years of service	Age 52 with 25 years of service or age 62 with 15 years of service	No change if currently eligible; otherwise for HPRS, age 52 with 20 years of service with mandatory retirement at age 55 with 20 years of service. For PERS Law, same as PERS Public Safety. For PERS Public Safety, no change.
Eligibility for Early Retirement with Reduced Benefit	Age 48 with 20 years of service	Not available	Age 48 with 25 years of service	No change if currently eligible; otherwise for PERS Law, age 48 with 25 years of service. No change for HPRS or PERS Public Safety.
Early Retirement Benefit	Same benefit as for Normal Retirement, reduced for early commencement. (75% @ 48, 80% @ 49, 86% @ 50, 93% @ 51)	Not available	Same benefit as for Normal Retirement, reduced for early commencement. (75% @ 48, 80% @ 49, 86% @ 50, 93% @ 51)	No change for HPRS and PERS Public Safety. For PERS Law, the same provisions as for HPRS and PERS Public Safety

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Provision	HPRS Current Plan	PERS Law Current Plan	PERS Public Safety Current Plan	Reduced Plan
Disability Allowance Continuation	Not applicable	For disability “allowance” members – disability benefit reverts to service retirement benefit at age 65 (or later if disability occurs after age 60)	For disability “allowance” members – disability benefit reverts to service retirement benefit at age 65 (or later if disability occurs after age 60)	For disability “allowance” members – disability benefit reverts to a service retirement benefit at age 67 (or later if disability occurs after age 64) (This change does not shorten the period participants who are disabled after age 60 receive a disability allowance.)
Disability benefit for HPRS / Disability Allowance for PERS	The larger of (i) the Normal Retirement accrued benefit or (ii) 61.25% if on-duty or 50% if off-duty of final average salary	2.2% accrual for each year of service; minimum of 45% of average pay, maximum of 60% of average pay	2.2% accrual for each year of service; minimum of 45% of average pay, maximum of 60% of average pay	No change for HPRS. For PERS Law and Public Safety, 2.0% accrual for each year of service; minimum of 45% of average pay, maximum of 60% of average pay

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Provision	HPRS Current Plan	PERS Law Current Plan	PERS Public Safety Current Plan	Reduced Plan
Medicare Part B premium reimbursement	100% of actual premium during year	100% of actual premium during year	100% of actual premium during year	\$58.70 per month
Cost of Living Adjustments	Fixed 3.0% of base benefit each year	Fixed 3.0% of base benefit each year	Fixed 3.0% of base benefit each year	The lesser of actual CPI-W increase during year and 3.0%. Increases in the CPI-W greater than 3% would be credited to COLA accounts. The COLA accounts would be used to increase the actual COLA to up to 3.0% if the CPI-W increase in future years is less than 3.0%. Prior COLA accounts reinstated and updated.

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## PERS

Provision	PERS State and Local Current Plan	Reduced Plan
Eligibility to Normal Retirement with Unreduced Benefit	Age 65 with 5 years of service, or 30 years of service with no age requirement	No change if currently eligible; otherwise age 67 with 5 years of service, or 32 years of service with no age requirement.
Normal Retirement Benefit	2.2% accrual for 1 <sup>st</sup> 30 years; 2.5% accrual for each year after 30 years.	Prior accrual rates for all past service; 2.0% accrual for all future years
Eligibility for Early Retirement with Reduced Benefit	Age 55 with 25 years of service, or Age 60 with 5 years of service	No change if currently eligible; otherwise age 57 with 27 years of service, or Age 62 with 5 years of service
Early Retirement Benefit	Reduced by an age and service related reduction factor. The reduction factor is based on years earlier than age 65 or 30 years of service	Reduced by an age and service related reduction factor. The reduction factor is based on years earlier than age 67 or 32 years of service
Disability Allowance Continuation	For disability “allowance” members – disability benefit reverts to service retirement benefit at age 55 (or later if disability occurs after age 60)	For disability “allowance” members – disability benefit reverts to service retirement benefit at age 67 (or later if disability occurs after age 64) (This change does not shorten the period participants who are disabled after age 60 receive a disability allowance.)
Disability Allowance	2.2% accrual for each year of service; minimum of 45% of average pay, maximum of 60% of average pay.	2.0% accrual for each year of service; minimum of 65% of average pay, maximum of 60% of average pay
Medicare Part B Premium Reimbursement	100% of actual premium during year	\$58.70 per month

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Provision	PERS State and Local Current Plan	Reduced Plan
Cost of Living Adjustments	Fixed 3.0% base benefit each year	The lesser of actual CPI-W increase during year and 3.0%. Increases in the CPI-W greater than 3% would be credited to COLA accounts. The COLA accounts would be used to increase the actual COLA up to 3.0% if the CPI-W increase in future years is less than 3.0%. Prior COLA accounts reinstated and updated.

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## Appendix E

### Actuarial Assumptions and Methods for Benefit Reductions

#### HPRS

##### Actuarial Assumptions

Retirement Rates: No change in the rates of normal retirement, except that for members not yet 48 with 20 years of service (a) the normal retirement rates prior to age 52 were eliminated and (b) the rate at age 52 was increased to 40% (the current rate at age 48, 1<sup>st</sup> eligibility, is 40%).

Future COLAs: Based on the assumption of 3% increases in the rate of increase in the CPI-W, COLAs were assumed to average 2.6% per year. Retired members since December 1, 1988 were assumed to have exhausted their COLA accounts. Members who retired earlier were assumed to have COLA accounts adequate to increase the COLA adjustment to 3% in each future year of retirement.

##### Actuarial Cost Method

The Entry Age Normal Cost was developed assuming that all employees were covered by the new reduced benefits from their date of hire. Thus the Entry Age Normal Cost should be relatively stable over time. The Present Value of Benefits was developed reflecting the transition provisions (i.e., the historical benefit accrual rates applicable to past service and the protection of normal or early retirement eligibility for those already eligible). Thus the Actuarial Accrued Liability includes all liabilities associated with the transition provisions.

#### PERS

##### Actuarial Assumptions

Retirement Rates: No change in the rates of retirement, except to increase by 2 years the eligibility criteria for PERS State and Local. For PERS Law, no change in the rates of normal retirement, except that for members not yet 48 with 25 years of service, the rates prior to age 52 were eliminated. In addition for PERS Law, the same early retirement rates as for PERS Public Safety were used.

Future COLAs: Based on the assumption of 3% increases in the rate of increase in the CPI-W, COLAs were assumed to average 2.6% per year. Retired members since July 1, 1988 were assumed to have exhausted their COLA accounts. Members who retired earlier were assumed to have COLA accounts adequate to increase the COLA adjustment to 3% in each future year of retirement.

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## Actuarial Cost Method

The Entry Age Normal Cost was developed assuming that all employees were covered by the new reduced benefits from their date of hire. Thus the Entry Age Normal Cost should be relatively stable over time. The Present Value of Benefits was developed reflecting the transition provisions (i.e., the higher benefit accrual rates applicable to past service and the protection of normal or early retirement eligibility for those already eligible). Thus the Actuarial Accrued Liability includes all liabilities associated with the transition provisions.