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# STATE OF IOWA PEACE OFFICERS' RETIREMENT, ACCIDENT AND DISABILITY SYSTEM

## Actuarial Valuation Report as of July 1, 2017

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Cavanaugh Macdonald
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October 12, 2017

Board of Trustees
Iowa Peace Officers' Retirement, Accident
and Disability System
215 East 7th Street
Des Moines, IA 50319

Dear Members of the Board:

At your request, we have performed an actuarial valuation of the Iowa Peace Officers' Retirement, Accident and Disability System as of July 1, 2017. The purpose of this report is to provide: (1) a summary of the funded status of the System as of July 1, 2017 and (2) determine the normal contribution rate as defined in Iowa Code Chapter 97A.8. There have been no changes to the plan provisions since last year's valuation. However, an experience study of the System's demographic assumptions was performed in June, 2017. At the recommendation of the actuary, the Board adopted a new set of demographic assumptions. The Board also modified the asset valuation method to smooth returns over five years rather than four and moved to a layered amortization method for the unfunded actuarial accrued liability, effective with the July 1, 2018 valuation.

In preparing our report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, statutory provisions, member data and financial information. We found this information to be reasonably consistent and comparable with information provided in prior years. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete, our results may be different and our calculations may need to be revised.

We further certify that all costs, liabilities, rates of interest and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer our best estimate of anticipated experience affecting the System.

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Nevertheless, the emerging costs will vary from those presented in this report to the extent actual experience differs from that projected by the actuarial assumptions. The Board of Trustees has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in Appendix C.

Future actuarial results may differ significantly from the current results presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of results is not presented herein.

Actuarial computations presented in this report are for purposes of determining the recommended funding amounts for the System. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes. Actuarial computations for purposes of fulfilling financial accounting requirements for the System under Governmental Accounting Standards No. 67 and No. 68 are provided in a separate report.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

We respectfully submit the following report and look forward to discussing it with you.

Patrice Beckham

Patrice A. Beckham, FSA, EA, FCA, MAAA
Principal and Consulting Actuary

Bryan K. Hoge, FSA, EA, FCA, MAAA
Senior Actuary

## Purpose of the Report

This report presents the results of the July 1, 2017 actuarial valuation of the Iowa Peace Officers' Retirement, Accident and Disability System (PORS). The primary purposes of performing the valuation are as follows:

- to determine the normal contribution rate payable by the State under Chapter 97A.8(1)(b) of the Code of Iowa (referred to in this report as the "actuarial contribution rate");
- to evaluate the sufficiency of the statutory contribution rates to fund the System over the long term;
- to satisfy the reporting requirements under Chapter 97A.8 of the Code of Iowa;
- to disclose asset and liability measures indicating the current funded status of the System as of the valuation date; and
- to analyze and report on trends in System contributions, assets, and liabilities over the past several years.

While there have been no changes to the plan provisions since last year's valuation, an experience study on the System's demographic assumptions was performed in June, 2017. As a result, the Board adopted the following changes to the System's demographic assumptions and actuarial methods:

- The mortality assumption was changed to the RP-2014 Mortality Table, with a one-year age setback for males. Generational mortality improvements are modeled using the MP-2016 scale.
- Retirement rates were modified for employees with less than 30 years of service.
- Accidental and Ordinary Disability rates were adjusted to better reflect actual experience.
- Termination rates were adjusted to better reflect actual experience.
- The salary increase assumption was adjusted to better reflect actual experience.
- The amortization of the UAAL was changed to a "layered" approach with new pieces of UAAL amortized over a closed 20-year period, beginning with the July 1, 2018 valuation. The legacy UAAL (at July 1, 2017) continues to be amortized on its current schedule.
- The asset smoothing method was modified to recognize investment gains and losses over a five-year period rather than four.

As a result of the assumption and method changes, the actuarial accrued liability (AAL) increased by $33.5 million, the actuarial value of assets (AVA) decreased by $4.7 million and the total actuarial contribution rate increased by 4.05% of pay.

The impact of these changes on the July 1, 2017 valuation results is summarized in the following table (in millions):

| | Old Assumptions and Methods | New Assumptions and Methods | Difference |
|---|---|---|---|
| Actuarial Accrued Liability (AAL) | $602.5 | $636.1 | $33.5 |
| Actuarial Value of Assets (AVA) | 457.8 | 453.1 | (4.7) |
| Unfunded AAL (UAAL) | $144.7 | $182.9 | $38.2 |
| Funded Ratio | 75.98% | 71.24% | (4.74%) |
| Normal Cost Rate | 28.71% | 26.51% | (2.20%) |
| Administrative Expenses | 0.54% | 0.54% | 0.00% |
| UAAL Rate | 23.64% | 29.89% | 6.25% |
| Actuarial Required Contribution Rate | 52.89% | 56.94% | 4.05% |

Note: Numbers may not add due to rounding.

The valuation results provide a "snapshot" view of the System's financial condition on July 1, 2017. The unfunded actuarial accrued liability (UAAL) increased from $152.0 million on July 1, 2016 to $182.9 million on July 1, 2017, primarily as a result of the changes to the demographic assumptions noted previously. A more detailed discussion of actual experience is included later in this section of the report.

The experience of both the System's assets and liabilities impacts the System's funding and the actuarial contribution rate. Experience that is more favorable than anticipated, based on actuarial assumptions, will generally lower the UAAL and the actuarial contribution rate, while experience that is less favorable than expected will generally increase the UAAL and the actuarial contribution rate. The State's actuarial contribution rate increased from 42.04% in last year's valuation to 45.54% this year, based on the member contribution rate of 11.40%. The State's actuarial contribution rate exceeds the fixed payroll-related contribution rate for FY 2018 of 37.00% by 8.54%. However, by statute the State is required to make supplemental contributions of $5.0 million per year until the System is at least 85% funded. When the State's supplemental contribution for FY 2018 is included in the analysis, the contribution shortfall is eliminated and the expected contributions exceed the actuarial contribution rate for the year.

Several key factors impacted the actuarial contribution rate from last valuation:

- The rate of return on the market value of assets was 18.4%, which is much higher than the assumed rate of return of 7.5% for fiscal year 2017. However, due to the use of an asset smoothing method, only part of the actuarial gain on assets for this year is recognized in the current valuation. Coupled with the recognition of the current year's portion of the deferred investment experience from prior years, the rate of return on the actuarial value of assets was 9.2%. This produced an actuarial gain that decreased the UAAL by $7.0 million and lowered the actuarial contribution rate by 1.10% of pay. The market value of assets is now 3.3% greater than the actuarial (smoothed) value of assets, reflecting a net deferred investment gain.

- Actual contributions below the full actuarial contribution rate for FY 2017 resulted in an increase in the UAAL of $0.7 million which increased the actuarial contribution rate by 0.11% of pay.
- There was a liability gain, largely due to actual salary increases and post-retirement escalator increases that were lower than anticipated by the actuarial assumptions. As a result, the UAAL decreased by $1.9 million and the actuarial contribution rate declined by 0.30% of pay.
- There were a number of actuarial assumption and actuarial method changes since last year's valuation that increased the UAAL by $38.2 million and the actuarial contribution rate by 4.05% of pay.

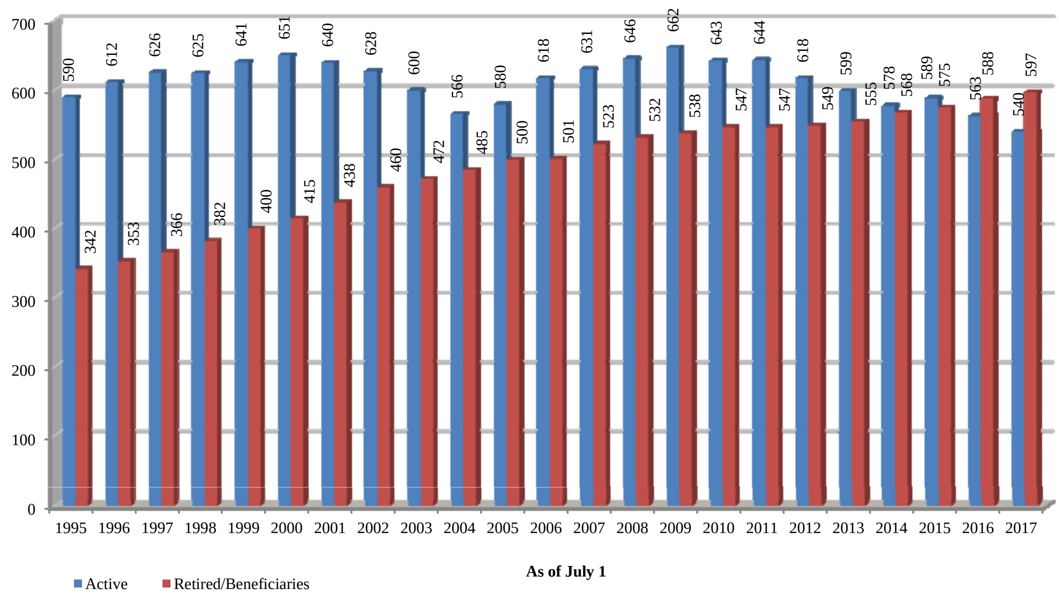
The statutory contribution rate for the State is 37.0% of pay in FY 2018. In addition, by statute the State is to make a supplemental contribution of $5.0 million per year beginning July 1, 2013 until the System is 85% funded. The supplemental contribution of $5.0 million is an important component of strengthening PORS' long-term funding, as it represents an additional funding source of approximately 11% of payroll. If contributions are made as scheduled, the System's long-term funding is expected to improve. If the State annual supplemental contribution remains at $5 million until the System is 85% funded and all assumptions are met in the future, the System is estimated to reach a funded ratio of 100% in about 22 years (in the 2039 valuation).

## Membership

The number of active members in the current valuation (540) decreased by 4.1% from the number in the prior valuation (563). As a result, the covered payroll of the System remained flat rather than increasing 3.0% as expected. The decline in the active membership payroll has an adverse impact on the funding of the System because fewer contribution dollars flow into the System to help fund the UAAL.

As the following graph indicates, the number of active members in the System is the lowest number in recent years. Over this period, the number of retirees has continually grown to the point where the number of retirees is now larger than the number of actives. This is not necessarily problematic and such growth in the number of retirees is expected and factored into the valuation process. However, this demographic characteristic can create a funding challenge because the volatility in investment returns has a greater impact on the actuarial contribution rate.

**Peace Officers' Retirement Membership**



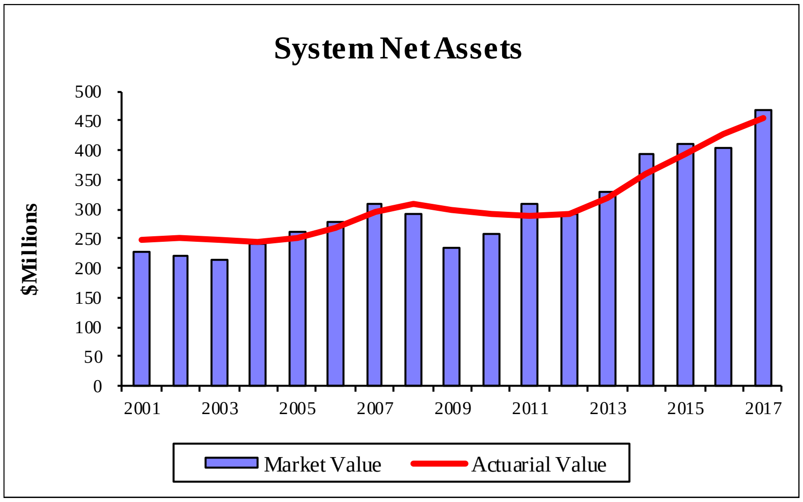

## <u>Assets</u>

As of July 1, 2017, the System had total funds, measured on a market value basis, of $468,300,420. This is an increase of $65,215,908 from last year's market value of $403,084,512. The market value of assets is not used directly in the calculation of the actuarial contribution rate. The System uses an asset valuation method to smooth the effects of market fluctuations. The actuarial value of assets spreads the difference between the actual return and the expected return (based on the actuarial assumption) on the market value of assets evenly over five years (four years prior to the 2017 valuation). See Tables 3 and 4 for a detailed development of the actuarial value of assets. The components of the change in the asset values are shown in the following table:

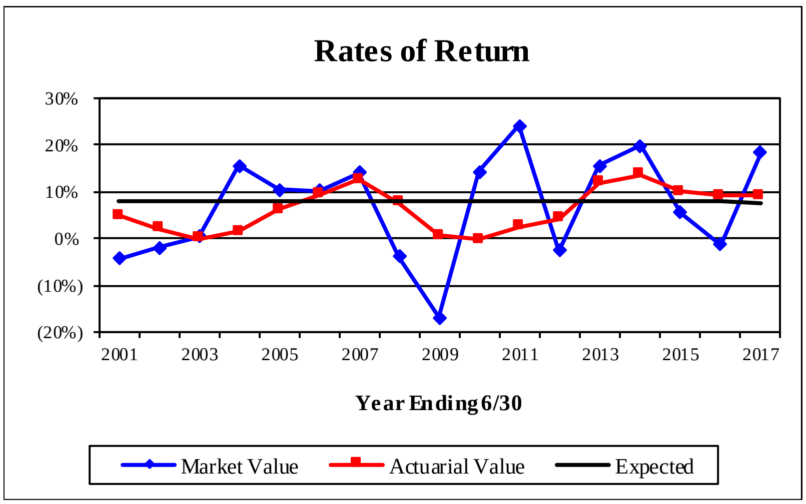
| | Market Value | Actuarial Value |
|---|---|---|
| Net Assets, July 1, 2016 | $403,084,512 | $426,398,446 |
| • Member Contributions | 5,052,916 | 5,052,916 |
| • Employer Contributions | 14,774,144 | 14,774,144 |
| • Supplemental State Appropriations | 2,500,000 | 2,500,000 |
| • Benefit Payments | (29,361,783) | (29,361,783) |
| • Administrative Expenses | (237,318) | (237,318) |
| • Investment Income | 72,487,949 | 34,002,502 |
| Net Assets, July 1, 2017 | $468,300,420 | $453,128,907 |

The dollar-weighted rate of return on the market value of assets for FY 2017, net of investment expenses, was 18.4%. Measured on the actuarial value of assets, the rate of return was 9.2% which resulted in an actuarial gain of $7.0 million.

The market value of assets is currently $15.2 million, or 3.3%, greater than the actuarial value of assets. This deferred asset gain will be recognized over the next four years, resulting in a decrease in the actuarial contribution rate, unless offset by unfavorable experience in future years.




*During this period, the actuarial value of assets has been both above and below the market value of assets, which is expected when using an asset smoothing method.*




*Rates of return on the market value of assets have been extremely volatile, while the return on the actuarial value of assets has been more stable. This illustrates the advantage of using an asset smoothing method.*

## System Liabilities

The actuarial accrued liability is that portion of the present value of future benefits that will not be paid by future employer normal costs or member contributions. The difference between this liability and asset values at the same date is referred to as the unfunded actuarial accrued liability (UAAL). The unfunded actuarial accrued liability will be reduced if the employer's contributions exceed the employer's normal cost for the year, after allowing for interest on the previous balance of the unfunded actuarial accrued liability. Benefit improvements, experience gains and losses, and changes in actuarial assumptions and methods will also impact the total actuarial accrued liability (AAL) and the unfunded portion thereof.

The unfunded actuarial accrued liability as of July 1, 2017 is as follows:

| | |
|---|---|
| Actuarial Accrued Liability | $636,058,890 |
| Actuarial Value of Assets | 453,128,907 |
| Unfunded Actuarial Accrued Liability | $182,929,983 |

See Table 7 for the detailed development of the Actuarial Accrued Liability and Table 11 for the calculation of the Unfunded Actuarial Accrued Liability.

Other factors influencing the UAAL from year to year include actual experience versus that expected based on the actuarial assumptions (for both assets and the actuarial accrued liability), changes in actuarial assumptions, procedures or methods and any changes in benefit provisions. The actual experience measured in this valuation is that which occurred during the prior plan year (FY 2017). There was a $7.0 million experience gain on the actuarial value of assets and a $1.9 million net experience gain on the actuarial accrued liability, primarily due to salary increases and post-retirement escalator increases that were less than expected. The combined result of both asset and liability experience was a decrease in the UAAL of $8.9 million.

Between July 1, 2016 and July 1, 2017 the change in the unfunded actuarial accrued liability for the System was as follows (in millions):

| | **$ millions** |
|---|---|
| Unfunded Actuarial Accrued Liability, July 1, 2016 | $152.0 |
| • effect of contributions below the actuarial rate | 0.7 |
| • expected increase due to amortization method | 0.2 |
| • investment experience | (7.0) |
| • liability experience* | (1.9) |
| • assumption changes | 33.5 |
| • asset valuation method change | 4.7 |
| • other experience | 0.7 |
| Unfunded Actuarial Accrued Liability, July 1, 2017 | $182.9 |

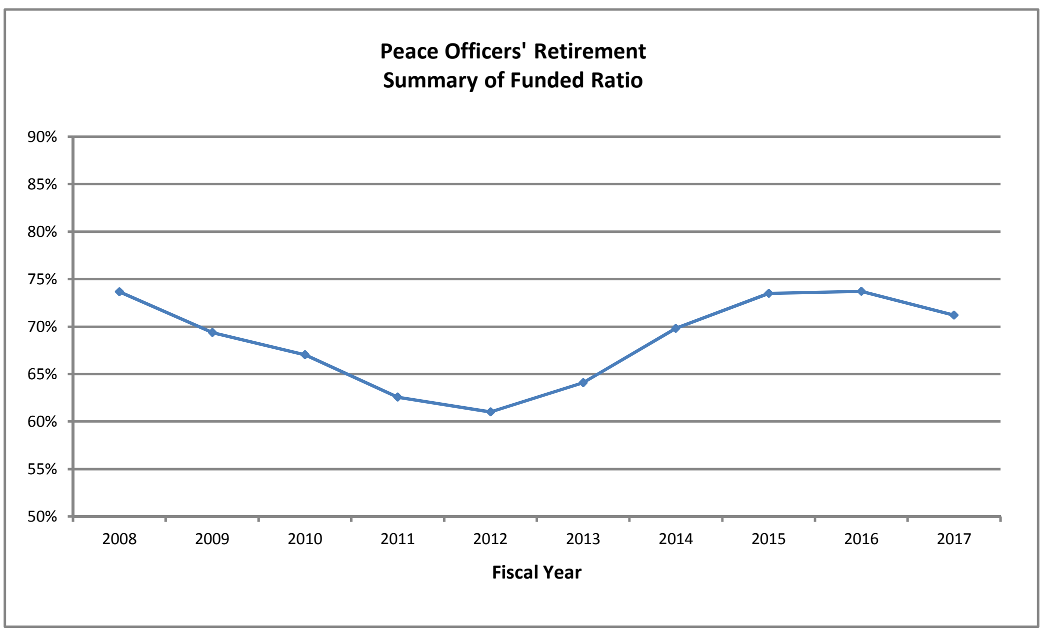
* Liability gain is about 0.3% of total actuarial accrued liability.

An evaluation of the unfunded actuarial accrued liability on a pure dollar basis may not provide a complete analysis since only the difference between the assets and liabilities (which are both very large numbers) is reflected. Another way to evaluate the unfunded actuarial accrued liability and the progress made in its funding is to track the funded status, the ratio of the actuarial value of assets to the actuarial accrued liability. The funded status information, on both an actuarial and a market value basis, is shown on the following table (in millions). Note that the funded ratio does not indicate whether or not the System has sufficient funds to settle all current obligations, nor is it necessarily indicative of the need for future funding.

| | 7/1/2013 | 7/1/2014 | 7/1/2015 | 7/1/2016 | 7/1/2017 |
|---|---|---|---|---|---|
| ***Using Actuarial Value of Assets:*** | | | | | |
| Funded Ratio | 64.1% | 69.8% | 73.5% | 73.7% | 71.2% |
| Unfunded Actuarial Accrued Liability (UAAL) | $179 | $156 | $142 | $152 | $183 |
| ***Using Market Value of Assets:*** | | | | | |
| Funded Ratio | 66.2% | 76.0% | 76.8% | 69.7% | 73.6% |
| Unfunded Actuarial Accrued Liability (UAAL) | $169 | $124 | $124 | $175 | $168 |

Note: assumptions were changed in the 2016 and 2017 valuations.

The funded status of the System since 2008 (when the current Entry Age Normal cost method was first adopted) is shown in the following graph. Due to the asset smoothing method, the impact of the Great Recession was not fully recognized until the 2012 valuation at which point the funded ratio was 61%. Since that time, strong investment returns and increasing contributions have strengthened the funded status of the System.



## Contribution Rates

Under the Entry Age Normal cost method, the actuarial contribution rate consists of:

- a "normal cost" for the portion of projected liabilities allocated by the actuarial cost method to service of members during the current year;
- an "administrative expense" for the expenses expected to be paid from the trust for the year; and
- an "unfunded actuarial accrued liability contribution" for the excess of the actuarial accrued liability over the actuarial value of assets.

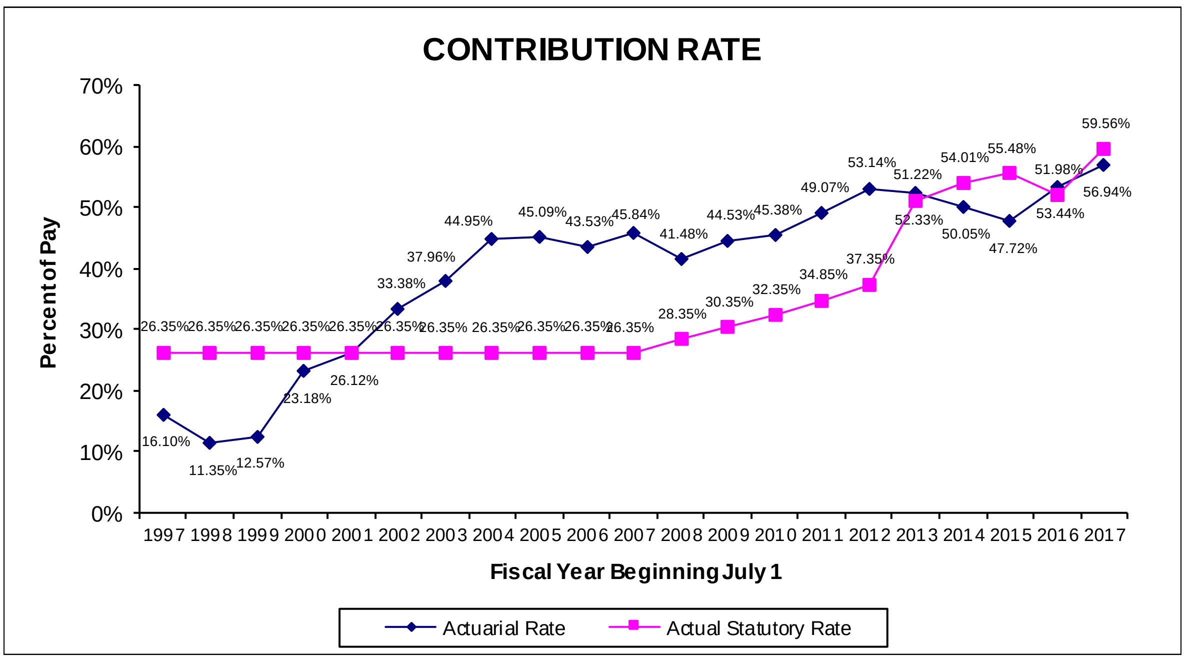
The Board elected to amortize the UAAL using a "layered" approach with new pieces of UAAL amortized over a closed 20-year period, beginning with the July 1, 2018 valuation. The legacy UAAL (amount as of July 1, 2017) continues to be amortized on its current schedule (21 years remaining). As a result, this change did not impact the valuation results in this valuation.

The total contribution rate for the Plan Year beginning July 1, 2017 is 56.94% of covered payroll. Based on the member contribution rate of 11.40%, the State's portion of the actuarial contribution rate is 45.54%. The sources of change are shown in the following table:

| | Plan Year Beginning | |
|---|---|---|
| | **July 1, 2017** | **July 1, 2016** |
| Prior year total contribution rate | 53.44% | 47.72% |
| • change due to asset (gains)/losses | (1.10%) | (0.75%) |
| • change due to liability experience | (0.30%) | (0.84%) |
| • change due to other actuarial experience | 0.73% | 0.81% |
| • change due to assumption changes | 3.29% | 7.06% |
| • change due to asset valuation method change | 0.76% | 0.00% |
| • change due to actual contribution rate (above)/below the actuarial rate | 0.11% | (0.55%) |
| • change in normal cost rate | 0.01% | (0.01%) |
| Current year total actuarial contribution rate | 56.94% | 53.44% |
| Members' contribution rate | (11.40%) | (11.40%) |
| State's actuarial contribution rate | 45.54% | 42.04% |

Contributions to the System are made by both the members and the State. Historically, members contributed 9.35% of pay, but the member contribution rate increased to 9.85% for FY 2012, 10.35% for FY 2013, 10.85% for FY 2014 and to an ultimate rate of 11.35% in FY 2015 (changed to 11.40% in conjunction with a benefit change by the 2014 legislature). The State's contribution rate was 17.00% of pay for many years, but began increasing 2.00% per year commencing July 1, 2008. In 2010, the Legislature passed a bill that continued the 2.00% annual increase with an ultimate contribution rate of 37.00% in FY 2018. It also provided for a supplemental State appropriation of $5.0 million per year beginning July 1, 2013 (originally July 1, 2012, but extended by the 2012 legislature) and ending June 30 of the fiscal year during which the System's funded ratio is at least 85%. However, HF 2459 in the 2016 session reduced the supplemental contribution for FY 2017 to $2.5 million. The supplemental contribution returned to $5.0 million for FY 2018 and is expected to remain at that level. Current projections estimate that the supplemental contributions of $5.0 million will be needed for 8 more years, if all actuarial assumptions are met in the future. The State's statutory fixed contribution rate for FY 2018 is 37.00%. The State's fixed contribution rate of 37% and the supplemental contributions until the funded ratio is 85%, along with the member contribution rate, are expected to address the long-term funding concerns of the System if all actuarial assumptions are met in the future.

The following graph shows the total actuarial contribution rate compared to the actual contribution rate in each year.




Following an eleven-year period in which actual contributions scheduled to be paid to the System were significantly less than the actuarial contribution rate, the contribution shortfall has been largely eliminated in the last five valuations, with a contribution margin occurring in three of the last five valuations. Had the full amount of the supplemental contribution of $5.0 million been paid for FY 2017, a contribution margin would also have existed for that year. The additional increase in the State contribution rate for FY 2018 to 37%, along with the State's annual supplemental contribution of $5.0 million until the System is 85% funded, is expected to continue the positive trend for the System's funded status, absent adverse experience in future years.

**Summary**

While there have been no changes to the plan provisions since last year's valuation, an experience study on the System's demographic assumptions and actuarial methods was performed in June, 2017. The Board adopted the recommended changes to the demographic assumptions and actuarial methods. These changes included an updated mortality table, as well as adjustments to the retirement, disability, termination and salary increase assumptions. In addition, the Board adopted two changes to the actuarial methods:

(1) the asset smoothing period was increased from four to five years; and
(2) the amortization of the UAAL was changed to a "layered" approach, effective with the July 1, 2018 valuation.

As a result of the changes to the set of demographic assumptions and the actuarial methods, the UAAL increased by $38.2 million and the total actuarial contribution rate increased by 4.05%.

Although the System's funded ratio remains fairly low (71%), the outlook for the long-term health and sustainability of the System is positive. The combined contribution rate for members and the State is 48.40% of pay, which is well above the System's normal cost rate of 26.51%. In addition, the State is scheduled to make supplemental contributions until the System reaches a funded ratio of 85%.

It takes many years for the impact of additional contributions to materially improve the System's funded ratios. However, these changes result in a much healthier future outlook for the System and are expected to move the System toward fully funded status in the coming years, <u>if all actuarial assumptions are met.</u>

The State's actuarial contribution rate for FY 2017 was 42.04%, but the State's statutory fixed contribution rate was only 35.00% of covered payroll. The $2.5 million supplemental contribution by the State for FY 2017 represented about 6% of payroll so the total expected contribution for FY 2017 was 40.58%. This resulted in a contribution shortfall of 1.46% of payroll, or $0.7 million. The supplemental contribution is expected to return to $5.0 million for FY 2018 and thereafter. To the extent the supplemental contributions of $5.0 million continue to be paid by the State, they will either more rapidly fund the System, if all actuarial assumptions are met, or provide some cushion for the impact of adverse experience on the System's funding. Based on the current valuation results, the $5.0 million supplemental contribution for FY 2018 will offset the shortfall between the State's actuarial contribution rate and the fixed State contribution of 37.00% of payroll for FY 2018. As a result, the contribution shortfall of 8.54% of pay will become a contribution margin of 2.62% of pay.

The long-term financial health of this, and all retirement systems, is heavily dependent on two key items: (1) future investment returns and (2) contributions to the System. The net investment experience for the past five years has been above the expected return on a market basis and, as a result, the System has $15.2 million in deferred asset gains that will be recognized over the next few years. In addition, total contributions to the System have increased which is expected to improve the long-term funding outlook of the System. While the impact of increased contributions on the System's long-term funding will be significant, the improvement in the funded ratio and UAAL resulting from these changes will not be apparent in the funding results for many years.

A summary of key data elements and valuation results as of July 1, 2017 and July 1, 2016 are presented on the following page. More detail on each of these elements can be found in the following Sections of this report.

## IOWA PEACE OFFICERS' RETIREMENT, ACCIDENT AND DISABILITY SYSTEM

## SUMMARY OF PRINCIPAL RESULTS

| | July 1, 2017 Valuation | July 1, 2016 Valuation | % Change |
|---|---|---|---|
| **PARTICIPANT DATA** | | | |
| Number of | | | |
| Active Members | 540 | 563 | (4.1) |
| Retirees/Beneficiaries/Disabled Members | 597 | 588 | 1.5 |
| Inactive Vested Members | 48 | 47 | 2.1 |
| Inactive Nonvested Members | 7 | 8 | (12.5) |
| Total Members | 1,192 | 1,206 | (1.2) |
| Projected Annual Salaries of Active Members | $ 44,820,732 | $ 44,775,765 | 0.1 |
| Average Annual Salary | $ 83,001 | $ 79,531 | 4.4 |
| Average Annual Benefit for Retired Members, Disabled Members and Beneficiaries | $ 50,596 | $ 48,875 | 3.5 |
| **ASSETS AND LIABILITIES** | | | |
| Total Actuarial Accrued Liability | $636,058,890 | $578,388,848 | 10.0 |
| Actuarial Value of Assets | 453,128,907 | 426,398,446 | 6.3 |
| Unfunded Actuarial Accrued Liability | $182,929,983 | $151,990,402 | 20.4 |
| Funded Ratio (Actuarial Value of Assets) | 71.2% | 73.7% | (3.4) |
| Market Value of Assets | $468,300,420 | $403,084,512 | 16.2 |
| Funded Ratio (Market Value of Assets) | 73.6% | 69.7% | 5.6 |
| **CONTRIBUTION RATES** | | | |
| Normal Cost Rate | 26.51% | 28.70% | (7.6) |
| Administrative Expenses | 0.54% | 0.57% | (5.3) |
| Amortization of Unfunded Actuarial Accrued Liability (Level Percent of Payroll) | 29.89% | 24.17% | 23.7 |
| Actuarial Required Contribution Rate | 56.94% | 53.44% | 6.5 |
| Member Contribution Rate | (11.40%) | (11.40%) | 0.0 |
| Employer Actuarial Required Contribution Rate | 45.54% | 42.04% | 8.3 |
| Statutory State Fixed Contribution Rate | (37.00%) | (35.00%) | 5.7 |
| State Supplemental Contribution* | (11.16%) | (5.58%) | 100.0 |
| Contribution Shortfall/(Margin) | (2.62%) | 1.46% | (279.5) |

* The supplemental contribution is $5 million annually (except for FY 2017) until the System is at least 85% funded. For FY 2017 only, the supplemental contribution was $2.5 million.

In many respects, an actuarial valuation can be thought of as an inventory process. The inventory is taken as of the actuarial valuation date, which for this valuation is July 1, 2017. On that date, the assets available for the payment of benefits are appraised. The assets are compared with the liabilities of the System, which are generally in excess of assets. The actuarial process leads to a method of determining the contributions needed by members and the employer in the future to balance the System assets and liabilities.

**Market Value of Assets**

The current market value represents the "snapshot" or "cash-out" value of System assets as of the valuation date. In addition, market values of assets provide a basis for measuring investment performance from time to time. At July 1, 2017 the market value of assets for the Retirement System was $468,300,420. Table 1 is a comparison, at market values, of System assets as of July 1, 2016 and July 1, 2017, in total and by investment category. Table 2 summarizes the change in the market value of assets from July 1, 2016 to July 1, 2017.

**Actuarial Value of Assets**

Neither the market value of assets, representing a "cash-out" value of System assets, nor the book value of assets, representing the cost of investments, may be the best measure of the System's ongoing ability to meet its obligations. To arrive at a suitable value for the actuarial valuation, a technique for determining the actuarial value of assets is used which dampens swings in the market value while still indirectly recognizing market values. The actuarial value of assets is equal to the market value of assets less a five year phase-in of the excess (shortfall) between expected investment return (based on the actuarial assumption) and actual investment return.

Tables 3 and 4 show the development of the actuarial value of assets (AVA) as of the valuation date.

**TABLE 1**

**IOWA PEACE OFFICERS' RETIREMENT, ACCIDENT AND DISABILITY SYSTEM**

**ANALYSIS OF NET ASSETS AT MARKET VALUE**

| | July 1, 2017 | | | July 1, 2016 | | |
|---|---|---|---|---|---|---|
| | **Amount** | **% of Total** | | **Amount** | **% of Total** | |
| Pooled Cash | $ 6,378,153 | 1.3 | % | $ 8,844,264 | 2.0 | % |
| Receivables | 2,011,139 | 0.4 | | 8,840,947 | 2.0 | |
| Common Stocks | 307,221,030 | 63.7 | | 247,425,621 | 56.4 | |
| Securities on Loan | 8,944,090 | 1.9 | | 23,977,572 | 5.5 | |
| Bonds | 103,968,101 | 21.5 | | 100,525,775 | 22.9 | |
| Real Estate | 54,034,964 | 11.2 | | 49,247,104 | 11.2 | |
| **Subtotal** | $482,557,477 | 100.0 | % | $438,861,283 | 100.0 | % |
| Payables | (14,257,057) | | | (35,776,771) | | |
| **NET ASSETS** | $468,300,420 | | | $403,084,512 | | |

## TABLE 2

## IOWA PEACE OFFICERS' RETIREMENT, ACCIDENT AND DISABILITY SYSTEM

### SUMMARY OF FUND ACTIVITY
(Market Value)

| | | |
|---|---|---|
| **1.** | **NET ASSETS ON JULY 1, 2016** | **$ 403,084,512** |
| **2.** | **CONTRIBUTIONS** | |
| | a. Member Contributions | 5,052,916 |
| | b. Employer Contributions | 14,774,144 |
| | c. Supplemental State Appropriations | 2,500,000 |
| | **d. Total Contributions** | **$ 22,327,060** |
| **3.** | **BENEFIT PAYMENTS** | 29,361,783 |
| **4.** | **ADMINISTRATIVE EXPENSE** | 237,318 |
| **5.** | **INVESTMENT INCOME** | 72,487,949 |
| **6.** | **NET ASSETS ON JULY 1, 2017**<br>**(1) + (2d) - (3) - (4) + (5)** | **$ 468,300,420** |

# TABLE 3

## IOWA PEACE OFFICERS' RETIREMENT, ACCIDENT AND DISABILITY SYSTEM

## CALCULATION OF EXCESS (SHORTFALL) INVESTMENT INCOME FOR ACTUARIAL VALUE OF ASSETS

| | | | Plan Year Ending | | | | |
|---|---|---|---|---|---|---|---|
| | | | **2017** | **2016** | **2015** | **2014** | **2013** |
| 1. | Market value of assets, beginning of year | | $403,084,512 | $410,598,719 | $392,194,960 | $329,920,144 | $292,823,296 |
| 2. | Contributions during year | | | | | | |
| | a. | Member | 5,052,916 | 5,079,754 | 4,991,460 | 4,754,916 | 4,512,096 |
| | b. | Employer | 17,274,144 | 20,519,243 | 18,600,759 | 17,715,097 | 11,777,661 |
| | c. | Total | 22,327,060 | 25,598,997 | 23,592,219 | 22,470,013 | 16,289,757 |
| 3. | Benefits paid during year | | 29,361,783 | 28,283,554 | 26,692,954 | 25,432,467 | 24,076,895 |
| 4. | Expected net investment income* | | | | | | |
| | a. | Market value of assets, beginning of year | 30,231,338 | 32,847,898 | 31,375,597 | 26,393,612 | 23,425,864 |
| | b. | Contributions | 822,129 | 1,004,261 | 925,534 | 881,509 | 639,055 |
| | c. | Benefits | (1,081,162) | (1,109,578) | (1,047,178) | (997,728) | (944,548) |
| | d. | Total | 29,972,305 | 32,742,581 | 31,253,953 | 26,277,393 | 23,120,371 |
| 5. | Expected Value of Assets (1) + (2c) - (3) + (4d) | | 426,022,094 | 440,656,743 | 420,348,178 | 353,235,083 | 308,156,529 |
| 6. | Market value of assets, end of year | | 468,300,420 | 403,084,512 | 410,598,719 | 392,194,960 | 329,920,144 |
| 7. | Excess (shortfall) of investment income for Year (6) - (5) | | 42,278,326 | (37,572,231) | (9,749,459) | 38,959,877 | 21,763,615 |

* Expected return is 8.0% for plan years ending in 2016 and earlier, and 7.5% for plan year's ending in 2017 or later.

## TABLE 4

## IOWA PEACE OFFICERS' RETIREMENT, ACCIDENT AND DISABILITY SYSTEM

## DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS

| | Plan Year Ending June 30 | |
|---|---|---|
| | **2017** | **2016** |
| Item | | |
| 1. Excess (Shortfall) of investment income for current and previous 3 years | | |
| a. Current year | $ 42,278,326 | ($37,572,231) |
| b. One year ago | (37,572,231) | (9,749,459) |
| c. Two years ago | (9,749,459) | 38,959,877 |
| d. Three years ago | 38,959,877 | N/A |
| 2. Deferral of excess (shortfall) of investment income | | |
| a. Current year (80%) | 33,822,661 | (28,179,173) |
| b. One year ago (60%) | (22,543,339) | (4,874,730) |
| c. Two years ago (40%) | (3,899,784) | 9,739,969 |
| d. Three years ago (20%) | 7,791,975 | N/A |
| e. Total | 15,171,513 | (23,313,934) |
| 3. Market value of plan net assets, end of year | 468,300,420 | 403,084,512 |
| 4. Actuarial value of plan assets, end of year (3) - (2e) | $453,128,907 | $426,398,446 |
| 5. Actuarial value divided by market value | 96.8% | 105.8% |

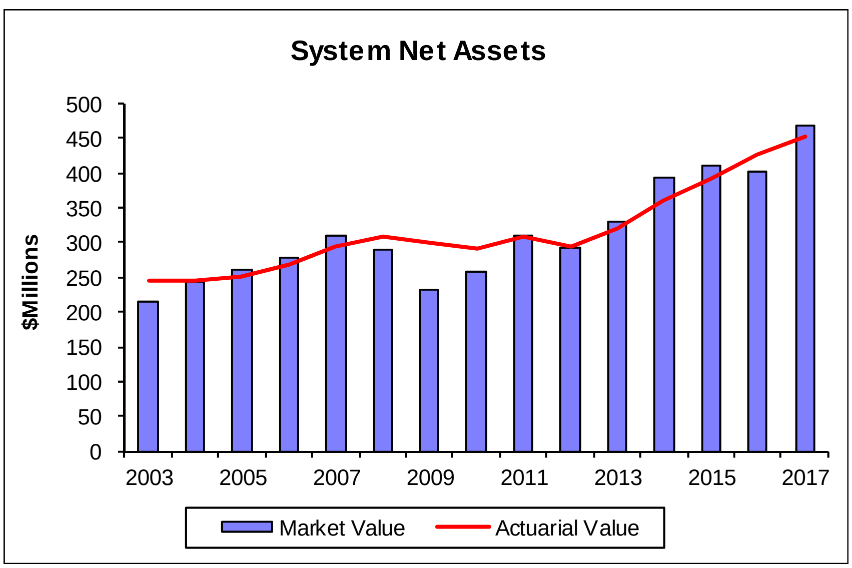
## TABLE 5

## IOWA PEACE OFFICERS' RETIREMENT, ACCIDENT AND DISABILITY SYSTEM

## HISTORICAL COMPARISON

| Value As of | Market Value of Net Assets | Estimated Rate of Return (MVA)* | Actuarial Value of Assets | Estimated Rate of Return (AVA) |
|---|---|---|---|---|
| July 1, 2003 | 215,454,491 | 0.4% | $246,443,660 | 0.1% |
| July 1, 2004 | 242,279,998 | 15.6% | 244,161,533 | 1.6% |
| July 1, 2005 | 260,104,910 | 10.4% | 251,828,813 | 6.1% |
| July 1, 2006 | 278,940,737 | 10.3% | 267,813,445 | 9.4% |
| July 1, 2007 | 310,489,530 | 14.2% | 293,374,805 | 12.6% |
| July 1, 2008 | 290,306,257 | (3.8%) | 307,291,608 | 7.8% |
| July 1, 2009 | 233,187,738 | (16.9%) | 300,262,337 | 0.6% |
| July 1, 2010 | 256,873,773 | 14.4% | 290,558,596 | (0.2%) |
| July 1, 2011 | 308,607,733 | 24.1% | 309,330,330 | 2.5% |
| July 1, 2012 | 292,823,296 | (2.5%) | 292,909,884 | 4.3% |
| July 1, 2013 | 329,920,144 | 15.5% | 319,441,635 | 11.9% |
| July 1, 2014 | 392,194,960 | 19.9% | 360,063,755 | 13.7% |
| July 1, 2015 | 410,598,719 | 5.5% | 392,989,970 | 10.0% |
| July 1, 2016 | 403,084,512 | (1.2%) | 426,398,446 | 9.2% |
| July 1, 2017 | 468,300,420 | 18.4% | 453,128,907 | 9.2% |

* Net of Expenses



In the previous section, an actuarial valuation was compared with an inventory process, and an analysis was given of the inventory of assets of the System as of the valuation date, July 1, 2017. In this section, the discussion will focus on the commitments of the System, which are referred to as its liabilities.

Table 6 contains an analysis of the actuarial present value of all future benefits (PVFB) for contributing members, inactive members, retirees and their beneficiaries. The analysis is provided for each group.

The liabilities summarized in Table 6 include the actuarial present value of all future benefits expected to be paid with respect to each member. For an active member, this value includes measures of both benefits already earned and future benefits expected to be earned. For all members, active and retired, the value extends over benefits earnable and payable for the rest of their lives and for the lives of the surviving beneficiaries.

The actuarial assumptions used to determine liabilities are based on the results of an Experience Study. The economic assumptions were reviewed in June, 2016 and the demographic assumptions were evaluated in June, 2017. This set of assumptions, as adopted by the Board, is shown in Appendix C and was first used in the current valuation. The Board's election to change the actuarial cost method from Aggregate to Entry Age Normal was first reflected in the July 1, 2008 valuation.

**Actuarial Liabilities**

A fundamental principle in financing the liabilities of a retirement program is that the cost of its benefits should be related to the period in which benefits are earned, rather than to the period of benefit distribution. An actuarial cost method is a mathematical technique that allocates the present value of future benefits into annual costs. In order to do this allocation, it is necessary for the funding method to "breakdown" the present value of future benefits into two components:

(1) that which is attributable to the past and

(2) that which is attributable to the future.

Actuarial terminology calls the part attributable to the past the "past service liability" or the "actuarial accrued liability". The portion allocated to the future is known as the present value of future normal costs, with the specific piece of it allocated to the current year being called the "normal cost". Table 7 contains the calculation of actuarial accrued liability.

# TABLE 6

## IOWA PEACE OFFICERS' RETIREMENT, ACCIDENT AND DISABILITY SYSTEM

## PRESENT VALUE OF FUTURE BENEFITS AS OF JULY 1, 2017

| | | |
|---|---|---|
| 1. | Active employees | |
| | a. Retirement Benefit | $337,543,289 |
| | b. Withdrawal Benefit | 1,363,936 |
| | c. Pre-Retirement Death Benefit | 5,996,734 |
| | d. Disability Benefit | 24,247,615 |
| | e. Total | $369,151,574 |
| 2. | Inactive Vested Members | 6,888,272 |
| 3. | Inactive Nonvested Members | 134,345 |
| 4. | Disability Retirees | 55,609,575 |
| 5. | Retirees and Beneficiaries | 312,710,182 |
| 6. | Total Present Value of Future Benefits (1e) + (2) + (3) + (4) + (5) | $744,493,948 |

## TABLE 7

## IOWA PEACE OFFICERS' RETIREMENT, ACCIDENT AND DISABILITY SYSTEM

## ACTUARIAL ACCRUED LIABILITY AS OF JULY 1, 2017

| | | | |
|---|---|---|---|
| 1. | Present Value of Future Benefits for Active Members | | |
| | a. Retirement Benefit | $337,543,289 | |
| | b. Withdrawal Benefit | 1,363,936 | |
| | c. Pre-Retirement Death Benefit | 5,996,734 | |
| | d. Disability Benefit | 24,247,615 | |
| | e. Total | | $369,151,574 |
| 2. | Present Value of Future Normal Costs | | |
| | a. Retirement Benefit | $ 82,786,408 | |
| | b. Withdrawal Benefit | 3,188,886 | |
| | c. Pre-Retirement Death Benefit | 5,950,781 | |
| | d. Disability Benefit | 16,508,983 | |
| | e. Total | | 108,435,058 |
| 3. | Present Value of Future Benefits for Inactive Members | | 375,342,374 |
| 4. | Total Actuarial Accrued Liability (1e) - (2e) + (3) | | $636,058,890 |

## TABLE 8

## IOWA PEACE OFFICERS' RETIREMENT, ACCIDENT AND DISABILITY SYSTEM
## CALCULATION OF ACTUARIAL GAIN/(LOSS)

The actuarial gain/(loss) is comprised of both the liability gain/(loss) and the actuarial asset gain/(loss). Each of these represents the difference between the expected and actual values as of July 1, 2017.

| | | | | |
|---|---|---|---|---|
| 1. | Expected actuarial accrued liability | | | |
| | a. | Actuarial accrued liability at July 1, 2016 | $ | 578,388,848 |
| | b. | Normal cost for year ending June 30, 2017 | | 12,159,434 |
| | c. | Benefit payments for fiscal year ending June 30, 2017 | | (29,361,783) |
| | d. | Interest on (a), (b), and (c) | | 43,209,960 |
| | e. | Assumption changes | | 33,549,102 |
| | f. | Expected actuarial accrued liability at July 1, 2017 | $ | 637,945,561 |
| 2. | Actuarial accrued liability at July 1, 2017 | | $ | 636,058,890 |
| 3. | Actuarial accrued liability gain/(loss) (1f) - (2) | | $ | 1,886,671 |
| 4. | Expected actuarial value of assets | | | |
| | a. | Actuarial value of assets at July 1, 2016 | $ | 426,398,446 |
| | b. | Contributions for fiscal year ending June 30, 2017 | | 22,327,060 |
| | c. | Benefit payments and administrative expenses for fiscal year ending June 30, 2017 | | (29,599,101) |
| | d. | Interest on (a), (b), and (c) | | 31,712,112 |
| | e. | Asset valuation method change | | (4,686,249) |
| | f. | Expected actuarial value of assets at July 1, 2017 | $ | 446,152,268 |
| 5. | Actuarial value of assets at July 1, 2017 | | $ | 453,128,907 |
| 6. | Actuarial value of assets gain/(loss) (5) - (4f) | | $ | 6,976,639 |
| 7. | Net actuarial gain/(loss) (3) + (6) | | $ | 8,863,310 |

## TABLE 9

## ACTUARIAL GAIN/(LOSS) BY SOURCE

The purpose of conducting an actuarial valuation of a retirement plan is to estimate the costs and liabilities for the benefits expected to be paid from the plan, to determine the annual level of contribution for the current plan year that should be made to support these benefits and, finally, to analyze the plan's experience. The costs and liabilities of this retirement plan depend not only upon the benefit formula and plan provisions but also upon factors such as the investment return on the Fund, mortality rates among active and retired members, withdrawal and retirement rates among active members, rates at which salaries increase and the rate at which the cost of living increases.

The actuarial assumptions employed as to these and other contingencies in the current valuation are set forth in Appendix C of this report.

Since the overall results of the valuation will reflect the choice of assumptions made, periodic studies of the various components of the plan's experience are conducted in which the experience for each component is analyzed in relation to the assumption used for that component (called an experience study). This summary is not intended to be an actual "experience study" but rather an analysis of sources of gain and loss in the past plan year.

**Gain/(Loss) By Source**

The System experienced a net actuarial gain on liabilities of $1,886,000 during the plan year ended June 30, 2017, and an actuarial gain on assets of $6,977,000. The net actuarial gain was $8,863,000. The major components of this net actuarial experience loss are shown below:

| **Liability Sources** | | **Gain/(Loss)** |
|---|---|---|
| Salary Increases | $ | 1,788,000 |
| Retirements | | (1,019,000) |
| Terminations | | 487,000 |
| Disabilities | | (114,000) |
| Deaths | | (888,000) |
| New Entrants/Rehires | | 0 |
| Cost of Living Adjustment | | 1,670,000 |
| Miscellaneous | | (38,000) |
| **Total Liability Gain/(Loss)** | $ | 1,886,000 |
| | | |
| **Asset Gain/(Loss)** | $ | 6,977,000 |
| | | |
| **Net Actuarial Gain/(Loss)** | $ | 8,863,000 |

## TABLE 10

## IOWA PEACE OFFICERS' RETIREMENT, ACCIDENT AND DISABILITY SYSTEM

## ACTUARIAL BALANCE SHEET
## AS OF JULY 1, 2017

### ASSETS

| | |
|---|---|
| Actuarial value of assets | $453,128,907 |
| Present value of future normal costs | 108,435,058 |
| Unfunded actuarial accrued liability | 182,929,983 |
| Total Net Assets | $744,493,948 |

### LIABILITIES

| | | |
|---|---|---|
| Present Value of Future Benefits | | |
| Retired Members, Disabled Members and Beneficiaries | | $368,319,757 |
| Active Members | | |
| Retirement | $337,543,289 | |
| Withdrawal | 1,363,936 | |
| Death | 5,996,734 | |
| Disability | 24,247,615 | |
| Total | | 369,151,574 |
| Inactive Members | | 7,022,617 |
| Total Liabilities | | $744,493,948 |

The previous two sections were devoted to a discussion of the assets and liabilities of the System. A comparison of Tables 4 and 6 indicates that current assets fall short of meeting the present value of future benefits (total liability). This is expected in all but a fully closed down fund, where no further contributions are anticipated.

In an active system, there will almost always be a difference between the actuarial value of assets and total liabilities. This deficiency has to be made up by future contributions and investment returns. An actuarial valuation sets out a schedule of future contributions that will deal with this deficiency in an orderly fashion.

The method used to determine the incidence of the contributions in various years is called the actuarial cost method. Under an actuarial cost method, the contributions required to meet the difference between current assets and current liabilities are allocated each year between two elements: (1) the normal cost, (2) administrative expenses and (3) the payment on the unfunded actuarial accrued liability.

The term "fully funded" is often applied to a system in which contributions at the normal cost rate are sufficient to pay for the benefits of existing employees as well as for those of new employees. More often than not, systems are not fully funded, either because of past benefit improvements that have not been completely funded and/or because of actuarial deficiencies that have occurred because experience has not been as favorable as anticipated. Under these circumstances, an unfunded actuarial accrued liability (UAAL) exists.

**Description of Rate Components**

Effective with the July 1, 2008 valuation, the actuarial cost method used by the System changed from Aggregate to the traditional Entry Age Normal (EAN) – level percent of pay cost method. Under the EAN cost method, the actuarial present value of each member's projected benefit is allocated on a level basis over the member's compensation between the entry age of the member and the assumed exit ages. The portion of the actuarial present value allocated to the valuation year is called the normal cost. The actuarial present value of benefits allocated to prior years of service is called the actuarial accrued liability. The unfunded actuarial accrued liability represents the difference between the actuarial accrued liability and the actuarial value of assets as of the valuation date. The unfunded actuarial accrued liability is calculated each year and reflects experience gains/losses.

The UAAL is amortized as a level percent of payroll over a closed 30-year period commencing July 1, 2008. Given a stable active workforce, the level percent of payroll amortization method is expected to produce a payment stream that is constant as a percent of covered payroll.

**Contribution Rate Summary**

The normal cost rate is developed in Table 10. Table 11 develops the contribution rate for amortization of the unfunded actuarial accrued liability. Table 12 develops the total actuarial contribution rate.

**TABLE 11**

**IOWA PEACE OFFICERS' RETIREMENT, ACCIDENT AND DISABILITY SYSTEM**

**NORMAL COST RATE**
**AS OF JULY 1, 2017**

| | | | % of Pay |
|---|---|---|---|
| 1. | Normal Cost | | |
| | a. Retirement Benefit | $ 8,583,032 | 20.20% |
| | b. Withdrawal Benefit | 334,807 | 0.79% |
| | c. Pre-Retirement Death Benefit | 639,166 | 1.50% |
| | d. Disability Benefit | 1,707,170 | 4.02% |
| | e. Total | $11,264,175 | 26.51% |
| 2. | Expected Payroll in FY18 for Current Actives | $42,483,124 | |
| 3. | Normal Cost Rate [(1e)/(2)] | 26.51% | |

## TABLE 12

## IOWA PEACE OFFICERS' RETIREMENT, ACCIDENT AND DISABILITY SYSTEM

## UNFUNDED ACTUARIAL ACCRUED LIABILITY CONTRIBUTION RATE AS OF JULY 1, 2017

| Amortization Bases | Original Amount | July 1, 2017 Remaining Payments | Date of Last Payment | Outstanding Balance as of July 1, 2017 | Annual Contribution* |
|---|---|---|---|---|---|
| 2017 UAAL Base | $ 182,929,983 | 21 | 7/1/2037 | $ 182,929,983 | $ 13,397,378 |
| **Total** | | | | **$ 182,929,983** | **$ 13,397,378** |

* Contribution amount reflects mid-year timing.

| | | |
|---|---|---|
| 1. Total UAAL Amortization Payments | $ | 13,397,378 |
| 2. Projected Payroll for plan year ending June 30, 2018 | $ | 44,820,732 |
| 3. UAAL Amortization Payment Rate | | 29.89% |

## TABLE 13

## IOWA PEACE OFFICERS' RETIREMENT, ACCIDENT AND DISABILITY SYSTEM

## ACTUARIAL CONTRIBUTION RATE
## FOR FISCAL YEAR ENDING JUNE 30, 2018

| | | |
|---|---|---|
| 1. | Total Normal Cost Rate | 26.51% |
| 2. | Administrative Expenses | 0.54% |
| 3. | Amortization of UAAL* | 29.89% |
| 4. | Total Actuarial Contribution Rate<br>(1) + (2) + (3) | 56.94% |
| 5. | Member Contribution Rate | (11.40%) |
| 6. | State Actuarial Contribution Rate<br>(4) - (5) | 45.54% |

*Amortization of UAAL is as a level percent of payroll assuming a 3.00% annual increase in payroll.

In this section, we have included some exhibits that reflect the historical funding of the System (reflecting some information formerly disclosed under GASB 25) and the expected benefit payments for the next 30 years.

## TABLE 14

## IOWA PEACE OFFICERS' RETIREMENT, ACCIDENT AND DISABILITY SYSTEM

## SCHEDULE OF FUNDING PROGRESS

| Actuarial Valuation Date | Actuarial Value of Assets (a) | Actuarial Accrued Liability (AAL) (b) | Unfunded AAL (UAAL) (b-a) | Funded Ratio (a/b) | Covered Payroll (P/R) (c) | UAAL as a Percentage of Covered P/R [(b-a)/(c)] |
|---|---|---|---|---|---|---|
| 7/1/2006 | $267,813,495 | $358,844,655 | $ 91,031,160 | 74.63% | $ 36,231,639 | 251.25% |
| 7/1/2007 | 293,374,805 | 392,022,773 | 98,647,968 | 74.84% | 37,268,060 | 264.70% |
| 7/1/2008 | 307,193,608 | 417,176,049 | 109,982,441 | 73.64% | 40,829,801 | 269.37% |
| 7/1/2009 | 300,262,337 | 432,894,495 | 132,632,158 | 69.36% | 41,862,395 | 316.83% |
| 7/1/2010 | 290,558,596 | 433,402,131 | 142,843,535 | 67.04% | 41,954,599 | 340.47% |
| 7/1/2011 | 288,851,354 | 461,594,916 | 172,743,562 | 62.58% | 43,493,715 | 397.17% |
| 7/1/2012 | 292,909,884 | 480,157,072 | 187,247,188 | 61.00% | 43,902,429 | 426.51% |
| 7/1/2013 | 319,441,635 | 498,468,989 | 179,027,354 | 64.08% | 43,984,577 | 407.02% |
| 7/1/2014 | 360,063,755 | 515,859,721 | 155,795,966 | 69.80% | 43,070,315 | 361.72% |
| 7/1/2015 | 392,989,970 | 534,626,780 | 141,636,810 | 73.51% | 45,128,506 | 313.85% |
| 7/1/2016 | 426,398,446 | 578,388,848 | 151,990,402 | 73.72% | 44,775,765 | 339.45% |
| 7/1/2017 | 453,128,907 | 636,058,890 | 182,929,983 | 71.24% | 44,820,732 | 408.14% |

Note: Results for valuations prior to 2010 were prepared by the prior actuary.

## TABLE 15

## IOWA PEACE OFFICERS' RETIREMENT, ACCIDENT AND DISABILITY SYSTEM

## SCHEDULE OF EMPLOYER CONTRIBUTIONS

| Fiscal Year Ending | Annual Required Contribution | Actual Employer Contribution | Percentage of ARC Contribution |
|---|---|---|---|
| 6/30/2006 | $12,231,109 | $5,817,819 | 47.57% |
| 6/30/2007 | 12,592,216 | 6,262,951 | 49.74% |
| 6/30/2008 | 14,373,922 | 6,696,538 | 46.59% |
| 6/30/2009 | 13,356,536 | 7,898,356 | 59.13% |
| 6/30/2010 | 14,237,049 | 8,498,523 | 59.69% |
| 6/30/2011 | 14,966,571 | 9,554,014 | 63.84% |
| 6/30/2012 | 16,623,087 | 10,741,204 | 64.62% |
| 6/30/2013 | 18,665,412 | 11,777,661 | 63.10% |
| 6/30/2014 | 18,186,973 | 17,715,097 | 97.41% |
| 6/30/2015 | 16,957,075 | 18,600,759 | 109.69% |
| 6/30/2016 | 17,080,573 | 20,519,243 | 120.13% |
| 6/30/2017 | 17,745,858 | 17,274,144 | 97.34% |

## TABLE 16

## IOWA PEACE OFFICERS' RETIREMENT, ACCIDENT AND DISABILITY SYSTEM

## PROJECTED BENEFIT PAYMENTS

| Fiscal Year End | Actives at 6/30/2017 | Inactives at 6/30/2017 | Total |
|---|---|---|---|
| 2018 | $ 503,000 | $30,313,000 | $30,816,000 |
| 2019 | 1,627,000 | 30,517,000 | 32,144,000 |
| 2020 | 3,115,000 | 30,686,000 | 33,801,000 |
| 2021 | 4,827,000 | 30,845,000 | 35,672,000 |
| 2022 | 6,692,000 | 31,007,000 | 37,699,000 |
| 2023 | 8,553,000 | 31,063,000 | 39,616,000 |
| 2024 | 10,499,000 | 31,078,000 | 41,577,000 |
| 2025 | 12,639,000 | 31,121,000 | 43,760,000 |
| 2026 | 15,029,000 | 31,118,000 | 46,147,000 |
| 2027 | 17,932,000 | 31,038,000 | 48,970,000 |
| 2028 | 20,954,000 | 30,933,000 | 51,887,000 |
| 2029 | 24,122,000 | 30,779,000 | 54,901,000 |
| 2030 | 27,467,000 | 30,508,000 | 57,975,000 |
| 2031 | 30,912,000 | 30,234,000 | 61,146,000 |
| 2032 | 34,211,000 | 29,876,000 | 64,087,000 |
| 2033 | 36,902,000 | 29,469,000 | 66,371,000 |
| 2034 | 39,390,000 | 28,981,000 | 68,371,000 |
| 2035 | 41,723,000 | 28,460,000 | 70,183,000 |
| 2036 | 43,912,000 | 27,866,000 | 71,778,000 |
| 2037 | 46,531,000 | 27,242,000 | 73,773,000 |
| 2038 | 49,664,000 | 26,555,000 | 76,219,000 |
| 2039 | 52,830,000 | 25,833,000 | 78,663,000 |
| 2040 | 55,785,000 | 25,061,000 | 80,846,000 |
| 2041 | 58,390,000 | 24,220,000 | 82,610,000 |
| 2042 | 60,849,000 | 23,337,000 | 84,186,000 |
| 2043 | 63,202,000 | 22,414,000 | 85,616,000 |
| 2044 | 65,366,000 | 21,475,000 | 86,841,000 |
| 2045 | 67,342,000 | 20,485,000 | 87,827,000 |
| 2046 | 69,070,000 | 19,469,000 | 88,539,000 |
| 2047 | 70,573,000 | 18,430,000 | 89,003,000 |

Note: Cash flows are the expected future non-discounted payments to current members. These numbers exclude refund payouts to current nonvested inactives and assume future retirees elect the normal form of payment and future withdrawals elect refunds according to valuation assumptions.

# APPENDIX A

# SYSTEM MEMBERSHIP

# INFORMATION

## IOWA PEACE OFFICERS' RETIREMENT, ACCIDENT AND DISABILITY SYSTEM

### RECONCILIATION OF MEMBER STATUS
### FROM JULY 1, 2016 TO JULY 1, 2017

| | Active Members | Inactive Vested | Inactive Nonvested | Retired Members | Disabled Members | Spouses Receiving Benefits | Children Receiving Benefits | Total |
|---|---|---|---|---|---|---|---|---|
| **Members as of July 1, 2016** | 563 | 47 | 8 | 375 | 92 | 121 | 0 | 1,206 |
| Service Retirement | (17) | (1) | 0 | 18 | 0 | 0 | 0 | 0 |
| Disabled Retirement | (2) | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| Cashed Out | (1) | (2) | (1) | 0 | 0 | 0 | 0 | (4) |
| Terminated with a Refund Due | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Terminated Vested | (4) | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| Returned to Active Status | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Deceased without a Beneficiary | 0 | 0 | 0 | (3) | 0 | (8) | 0 | (11) |
| Deceased with a Beneficiary | 0 | 0 | 0 | (5) | 0 | 5 | 0 | 0 |
| Benefits Ended | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Newly Hired | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Adjustments | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Members as of July 1, 2017** | 540 | 48 | 7 | 385 | 94 | 118 | 0 | 1,192 |

## IOWA PEACE OFFICERS' RETIREMENT, ACCIDENT AND DISABILITY SYSTEM

## AGE AND SERVICE DISTRIBUTION FOR ACTIVE PARTICIPANTS AS OF JULY 1, 2017

**Years of Service**

| Age | 0 to 4 No. | 0 to 4 Avg. Salary | 5 to 9 No. | 5 to 9 Avg. Salary | 10 to 14 No. | 10 to 14 Avg. Salary | 15 to 19 No. | 15 to 19 Avg. Salary | 20 to 24 No. | 20 to 24 Avg. Salary | 25 to 29 No. | 25 to 29 Avg. Salary | 30 to 34 No. | 30 to 34 Avg. Salary | 35 & over No. | 35 & over Avg. Salary | Total No. | Total Avg. Salary |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Under 25 | 8 | 51,821 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 51,821 |
| 25-29 | 14 | 55,216 | 11 | 61,767 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 58,098 |
| 30-34 | 9 | 58,981 | 19 | 64,286 | 35 | 72,084 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 63 | 67,860 |
| 35-39 | 0 | 0 | 9 | 66,837 | 53 | 76,443 | 16 | 87,980 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 78 | 77,701 |
| 40-44 | 0 | 0 | 0 | 0 | 24 | 77,093 | 51 | 86,158 | 38 | 89,959 | 0 | 0 | 0 | 0 | 0 | 0 | 113 | 85,511 |
| 45-49 | 0 | 0 | 2 | 69,049 | 10 | 77,442 | 18 | 88,744 | 84 | 92,192 | 11 | 89,942 | 0 | 0 | 0 | 0 | 125 | 89,947 |
| 50-54 | 0 | 0 | 0 | 0 | 1 | 72,169 | 2 | 77,855 | 38 | 88,978 | 48 | 90,439 | 14 | 99,222 | 0 | 0 | 103 | 90,672 |
| 55-59 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 91,169 | 9 | 92,681 | 4 | 98,492 | 2 | 116,323 | 25 | 94,897 |
| 60-64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 65-69 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70 & over | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Totals | 31 | 55,433 | 41 | 64,402 | 123 | 75,376 | 87 | 86,837 | 170 | 90,914 | 68 | 90,655 | 18 | 99,060 | 2 | 116,323 | 540 | 83,001 |

Average Age: 42.9
Average Years of Service: 17.7

# IOWA PEACE OFFICERS' RETIREMENT, ACCIDENT AND DISABILITY SYSTEM

## ANALYSIS OF INACTIVE PARTICIPANTS AS OF JULY 1, 2017

### Number of Participants

| Age | Service Retirement | Accidental Disability | Ordinary Disability | Vested Retirement | Child Beneficiary | Contingent Beneficiary | Inactive Vested | Total |
|---|---|---|---|---|---|---|---|---|
| Under 40 | 0 | 0 | 1 | 0 | 0 | 0 | 12 | 13 |
| 40 to 44 | 0 | 4 | 0 | 0 | 0 | 0 | 10 | 14 |
| 45 to 49 | 0 | 5 | 0 | 0 | 0 | 0 | 16 | 21 |
| 50 to 54 | 1 | 9 | 0 | 0 | 0 | 2 | 8 | 20 |
| 55 to 59 | 50 | 6 | 1 | 5 | 0 | 3 | 2 | 67 |
| 60 to 64 | 59 | 7 | 1 | 3 | 0 | 7 | 0 | 77 |
| 65 to 69 | 70 | 9 | 5 | 3 | 0 | 12 | 0 | 99 |
| 70 to 74 | 59 | 12 | 3 | 6 | 0 | 18 | 0 | 98 |
| 75 to 79 | 52 | 16 | 0 | 6 | 0 | 18 | 0 | 92 |
| 80 to 84 | 42 | 11 | 2 | 1 | 0 | 29 | 0 | 85 |
| 85 to 89 | 17 | 2 | 0 | 0 | 0 | 19 | 0 | 38 |
| 90 to 94 | 10 | 0 | 0 | 0 | 0 | 9 | 0 | 19 |
| 95 to 99 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 100 & over | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| Totals | 360 | 81 | 13 | 24 | 0 | 119 | 48 | 645 |

# IOWA PEACE OFFICERS' RETIREMENT, ACCIDENT AND DISABILITY SYSTEM

## ANALYSIS OF INACTIVE PARTICIPANTS
## AS OF JULY 1, 2017

### Average Annual Benefits of Participants

| Age | Service Retirement | Accidental Disability | Ordinary Disability | Vested Retirement | Child Beneficiary | Contingent Beneficiary | Inactive Vested |
|---|---|---|---|---|---|---|---|
| Under 40 | 0 | 0 | 34,952 | 0 | 0 | 0 | 10,049 |
| 40 to 44 | 0 | 42,802 | 0 | 0 | 0 | 0 | 18,982 |
| 45 to 49 | 0 | 46,229 | 0 | 0 | 0 | 0 | 19,150 |
| 50 to 54 | 68,662 | 47,959 | 0 | 0 | 0 | 29,641 | 23,895 |
| 55 to 59 | 75,934 | 56,448 | 38,928 | 21,534 | 0 | 21,176 | 66,962 |
| 60 to 64 | 72,575 | 48,615 | 37,086 | 28,852 | 0 | 37,181 | 0 |
| 65 to 69 | 69,824 | 50,831 | 49,937 | 11,657 | 0 | 29,843 | 0 |
| 70 to 74 | 60,506 | 49,905 | 49,036 | 10,282 | 0 | 24,532 | 0 |
| 75 to 79 | 53,661 | 45,251 | 0 | 13,572 | 0 | 23,901 | 0 |
| 80 to 84 | 46,389 | 44,130 | 35,161 | 6,350 | 0 | 22,643 | 0 |
| 85 to 89 | 40,276 | 44,132 | 0 | 0 | 0 | 21,755 | 0 |
| 90 to 94 | 40,655 | 0 | 0 | 0 | 0 | 23,215 | 0 |
| 95 to 99 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 100 & over | 0 | 0 | 0 | 0 | 0 | 27,590 | 0 |
| Totals | 62,319 | 47,741 | 44,468 | 15,778 | 0 | 24,765 | 19,623 |

# APPENDIX B

# SUMMARY OF PLAN PROVISIONS

Chapter 97A of the Iowa code sets out the benefit provisions of the Iowa Peace Officers' Retirement, Accident and Disability System, which are briefly summarized as follows:

**Retirement Benefit**

***Eligibility*** Age 55 with 22 years of service.

***Average Final Compensation*** Average of the member's regular compensation, including longevity and per diem, during the high three (3) years of service.

***Monthly Annuity*** The sum of (1) and (2):

(1) a. For retirement prior to July 1, 1990, 50% of average final compensation at retirement. Average final compensation equals average of highest three years of compensation.

b. For retirement after June 30, 1990 and before July 1, 1992, 54% of average final compensation at retirement.

c. For retirement after June 30, 1992 and before July 1, 1993, 56% of average final compensation at retirement.

d. For retirement after June 30, 1993 and before July 1, 1994, 58% of average final compensation at retirement.

e. For retirement after June 30, 1994, and before July 1, 2000, 60% of average final compensation at retirement.

f. For retirement after July 1, 2000, 60.5% of average final compensation at retirement.

(2) For members who do not withdraw member contributions:

a. For retirement after June 30, 1990 and before July 1, 1991, 0.3% of average final compensation for each year of service over 22 years (up to 8 years). Service after age 55 is excluded.

b. For retirement after June 30, 1991 and before October 16, 1992, 0.6% of average final compensation for each year of service over 22 years (up to 8 years). Service after age 55 is excluded.

c. For retirement after October 15, 1992 and before July 1, 1996, 0.6% of average final compensation for each year of service over 22 years (up to 8 years).

d. For retirement after June 30, 1996, 1.5% of average final compensation for each year of service over 22 years (up to 8 years).

e. For retirement after June 30, 1998, 1.5% of average final compensation for each year of service over 22 years (up to 10 years).

f. For retirement after June 30, 2000, 2.75% of average final compensation for each year of service over 22 years (up to 10 years).

**Early Retirement Benefit**

***Eligibility*** — Effective July 1, 1996, age 50 (but not age 55) with 22 years of service.

***Monthly Annuity*** — The benefit provided as a retirement benefit actuarially reduced for commencement prior to age 55.

**Deferred Vested Benefit**

***Eligibility*** — Four years of service.

***Monthly Annuity*** — At age 55. The benefit provided as a retirement benefit at termination times a service ratio. The service ratio equals service at termination divided by 22 (not greater than 1.0).

**Ordinary Disability Benefit**

***Eligibility*** — None.

***Benefit***

(1) If service at disability is greater than or equal to 5 years, the greater of 50% of average final compensation at disability or the benefit amount calculated under a service retirement.

(2) If service at disability is less than 5 years, 25% of average final compensation at disability.

## Accidental Disability Benefit

***Eligibility*** None.

***Benefit***

(1) For retirement prior to July 1, 1990, 66-2/3% of average final compensation at disability.

(2) For retirement after June 30, 1990, but before July 1, 1998, 60% of average final compensation at disability. If the service amount at disability is greater than or equal to 22 years, the greater of 60% of average final compensation at disability or the benefit amount calculated under a service retirement.

(3) For retirement after July 1, 1998, the greater of 60% of average final compensation at disability or the benefit amount calculated under a service retirement.

## Ordinary Death Benefit

***Eligibility*** For member in service: None.
For member not in service: Four years of service.

***Benefit***

(1) A lump sum equal to 50% of compensation during the last year of employment, or

(2) A pension based on 40% of average final compensation but not less than 25% of compensation paid to an active member having the rank of senior patrol officer of the state patrol. For members not in service, benefit is multiplied by the ratio of service at termination to 22 years (not greater than 1.0).

(3) Additional benefit for members in service of 6% of compensation payable to an active member having the rank of senior patrol officer of the state patrol for each child.

***Payment Date***

(1) For members in service: Immediately upon death of member.

(2) For member not in service: Payable when member would have been age 55. If there are children of the member, payable commencing at the member's death until children reach age 18 or 22. Pension resumes when member would have been age 55.

**Accidental Death Benefit**

***Eligibility*** In actual performance of duty.

***Benefit***

(1) 50% of average final compensation payable to surviving spouse, children or dependent parents.

(2) If there is not surviving spouse, children or dependent parents, or if accidental death occurs while not in the actual performance of duty, an Ordinary Death Benefit is payable.

(3) Additional benefit for members in service of 6% of compensation payable to an active member having the rank of senior patrol officer of the state patrol, for each child.

(4) If the death meets specified criteria, a lump sum of $100,000 payable to surviving spouse, children, dependent parents, or estate.

**Death After Retirement**

***Benefit***

(1) 50% of retirement allowance of retired member but not less than 25% of compensation paid to an active member having the rank of senior patrol officer of the state patrol.

(2) Additional benefit of 6% of compensation payable to an active member having the rank of senior patrol officer of the state patrol, for each child.

**Adjustments to Pensions**

Each July 1 and January 1, if applicable, the following adjustments are made: Monthly earnable compensation payable to an active member, of the same rank and position in the salary scale as was held by the retired or deceased member at the time of the member's retirement or death, for July of the current year less that of the preceding July, times the following percentages:

(1) 40% for members receiving a service retirement allowance and for beneficiaries receiving an accidental death benefit.

(2) 40% for members with five or more years of membership who are receiving an ordinary disability benefit.

(3) 40% for member receiving an accidental disability benefit.

(4) 24% for members with less than five years of membership who are receiving an ordinary disability benefit and for beneficiaries receiving an ordinary death benefit.

(5) 50% of the amount which would have been added to the benefit of the retired member, for surviving spouses, but not less than 25% of the monthly earnable compensation paid to an active member having the rank of senior patrol officer.

Additionally, the following amounts will be added to a member or beneficiary monthly pension as follows:

| Years Since Retired* | Amount |
|---|---|
| 0-4 | $15 |
| 5-9 | 20 |
| 10-14 | 25 |
| 15-19 | 30 |
| 20 or more | 35 |

*Measured in whole years.

There was a change in the way the flat escalator was applied effective July 1, 2010. Prior to 2010, the amount increased for each year after retirement.

Surviving children's pensions are adjusted each July to equal 6% of monthly earnable compensation payable to an active member having the rank of senior patrol officer of the state patrol.

No pension adjustments are granted to members who retired with less than 22 years of membership.

**State Contributions**

For FY 2018 and thereafter, the State will contribute the ultimate rate of 37% of pay. Prior to FY 2018, the State had been making scheduled increases to its contribution rate of 2% of pay per year for ten years. The State also provides for a supplemental appropriation of $5 million per year beginning July 1, 2013 (originally July 1, 2012 but extended by the 2012 legislature) and ending June 30 of the fiscal year during which the System's funded ratio is at least 85%. For FY 2017, the supplemental contribution was reduced to $2.5 million, but it returned to $5.0 million for FY 2018 and thereafter.

**Member Contributions**

The following percentage of earnable compensation will be paid as member contributions:

| Period | Member Contribution Rate |
|---|---|
| January 1, 1995 - June 30, 1995 | 8.35% |
| July 1, 1995 – June 20, 2011 | 9.35% |
| July 1, 2011 – June 30, 2012 | 9.85% |
| July 1, 2012 – June 30, 2013 | 10.35% |
| July 1, 2013 – June 30, 2014 | 10.85% |
| July 1, 2014 forward | 11.40% |

**Withdrawal of Member Contributions**

Effective July 1, 1990, members who terminate service, other than by death or disability, can elect to withdraw their accumulated contributions with interest in lieu of any benefits to which the member may be entitled from the System.

**Transfers With Statewide Fire and Police Retirement System**

Beginning July 1, 1996, vested members of an eligible retirement system who terminate employment and, within one year, commences covered employment under another eligible retirement system, may elect to transfer the average accrued benefit or the refund liability earned from the former system to the current system. Once such transfer is completed, service under the former system shall be treated as membership service under the current system.

# APPENDIX C

# ACTUARIAL ASSUMPTIONS AND METHODS

## Actuarial Cost Method

Liabilities and contributions shown in this report are computed using the Individual Entry Age method of funding.

Sometimes called "funding method," this is a particular technique used by actuaries for establishing the amount of the annual actuarial cost of pension System benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily the annual contribution to the System is comprised of (1) the normal cost and (2) an amortization payment on the unfunded actuarial accrued liability.

Under the Entry Age Actuarial Cost Method, the **Normal Cost** is computed as the level percentage of pay which, if paid from the earliest time each member would have been eligible to join the System if it then existed (thus, entry age) until his retirement or termination, would accumulate with interest at the rate assumed in the valuation to a fund sufficient to pay all benefits under the System.

The **Actuarial Accrued Liability** under this method at any point in time is the theoretical amount of the fund that would have accumulated had annual contributions equal to the normal cost been made in prior years (it does not represent the liability for benefits accrued to the valuation date). The **Unfunded Actuarial Accrued Liability (UAAL)** is the excess of the actuarial accrued liability over the actuarial value of System assets on the valuation date.

Under this method experience gains or losses, i.e. decreases or increases in accrued liabilities attributable to deviations in experience from the actuarial assumptions, adjust the unfunded actuarial accrued liability.

## UAAL Amortization Method

The Board has elected to amortize the legacy unfunded actuarial accrued liability as of July 1, 2017, as a level percent of payroll, over a closed 30-year period beginning July 1, 2008. New layers of unfunded actuarial accrued liability will be created on each actuarial valuation date and will be amortized, as a level percent of payroll, over a closed 20-year period. Changes in the unfunded actuarial accrued liability that are created by a change in assumptions or changes in benefit structure will be amortized over a reasonable time period as selected by the Board after consultation with their actuary.

## Asset Valuation Method

The System uses an asset valuation method to smooth the effects of market fluctuations. The actuarial value of assets spreads the difference between the actual return and the expected return (based on the actuarial assumption of 7.5%, effective July 1, 2016) evenly over five years.

## Actuarial Assumptions

***Investment Return:*** 7.50% per year, net of investment expenses.

***Price Inflation:*** 2.75% per year.

***Payroll Growth:*** 3.00% per year, including price inflation.

***Active Members:***

1. Ordinary death rate — RP-2014 Total Dataset Mortality Table with a one-year age set-back for males and Generational Projection, using MP-2016.

2. Accidental death rate — 8.5 deaths per 10,000 exposed for one year.

3. Disability rates

| Age | Accidental Disability | Ordinary Disability |
|---|---|---|
| 22 | 0.06% | 0.02% |
| 27 | 0.14% | 0.04% |
| 32 | 0.22% | 0.06% |
| 37 | 0.30% | 0.08% |
| 42 | 0.38% | 0.10% |
| 47 | 0.48% | 0.12% |
| 52 | 0.62% | 0.15% |

4. Withdrawal rate — The following table is used:

| Service | Rate |
|---|---|
| 0-3 | 6.00% |
| 4 | 4.75% |
| 5 | 3.50% |
| 6 | 2.25% |
| 7-9 | 2.00% |
| 10 | 1.50% |
| 11 | 1.00% |
| 12 | 0.80% |
| 13 | 0.60% |
| 14-19 | 0.40% |
| 20 | 0.00% |

5. Retirement age

**30 or More Years of Service**

| Age | Probability of Retirement |
|---|---|
| 55-61 | 60% |
| 62 | 100% |

**Less than 30 Years of Service**

| Age | Probability of Retirement |
|---|---|
| 55-61 | 33% |
| 62 | 100% |

Inactive vested members are assumed to begin receiving benefits at age 55.

6. Salary scale

| Year | Increase |
|---|---|
| 1 | 8.50% |
| 5 | 7.00% |
| 10 | 7.00% |
| 15 | 4.50% |
| 20+ | 4.00% |

7. Post-retirement adjustments — Same as for retired members.

***Retired Members and Other Beneficiaries:***

1. Mortality rate - Service retirees — Service retirements and beneficiaries: RP-2014 Total Dataset Mortality Table with a one-year age set-back for males and Generational Projection, using MP-2016.

2. Mortality rate - Disabled retirees — Disability retirements: RP-2014 Total Dataset Mortality Table with a four-year age set-forward for males and Generational Projection, using MP-2016.

3. Annual readjustment of pensions — Wages for the same rank are assumed to increase 3.50%.

***Dependency Ratios:***

| | | |
|---|---|---|
| 1. | Ordinary death benefit | Alternate benefits payable to widow and minor children in 90% of cases. |
| 2. | Pension to spouse and children of deceased pensioned member | In 90% of cases, with 1 child per member. |

***Interest Credited to Member Contributions:*** 4.00% per year.

***Marriage Assumption:*** 90% married, with males 4 years older than females.

***Administrative Expenses:*** Based on actual amount for the prior year increased with inflation.

**IOWA PEACE OFFICERS' RETIREMENT, ACCIDENT AND DISABILITY SYSTEM CERTIFICATION**

We have prepared an actuarial valuation of the Iowa Peace Officers' Retirement, Accident and Disability System as of July 1, 2017, for the fiscal year ending June 30, 2018. The results of the valuation are set forth in this addendum, which reflects the benefit provisions in effect on July 1, 2017.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, statutory provisions, employee data, and financial information. In our examination of these data, we have found them to be reasonably consistent and comparable with data used for other purposes. Since the valuation results are dependent on the integrity of the data supplied, the results can be expected to differ if the underlying data is incomplete, or missing. It should be noted that if any data or other information is inaccurate or incomplete, our calculations may need to be revised.

The results in this Addendum have been prepared for the sole purpose of providing the information required under Chapter 97 D.5 of the Iowa code. Calculations are based on the following prescribed methods:

Actuarial cost method: Entry Age Normal
Amortization method: Level percent of payroll
Amortization period: 30 years, open period

All other assumptions, methodologies, and System provisions used are consistent with those used in the regular July 1, 2017 valuation for the Iowa Peace Officers' Retirement, Accident and Disability System.

The results shown in this Addendum may not be consistent with those in the regular July 1, 2017 valuation. The July 1, 2017 valuation results were determined in accordance with generally accepted actuarial principles and practices that are consistent with the Actuarial Standards of Practice promulgated by the Actuarial Standards Board and the applicable Guides to Professional Conduct, amplifying opinion and supporting recommendations of the American Academy of Actuaries. The results shown in this Addendum are not necessarily based on the methodologies adopted by the System.

We are available to answer any questions on the material contained in this report, or to provide explanations or further details as may be appropriate.

The undersigned credentialed actuaries meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained in this report.

Patrice Beckham

Patrice A. Beckham, FSA, EA, FCA, MAAA

October 12, 2017
Date

Bryan K. Hoge, FSA, EA, FCA, MAAA

October 12, 2017
Date

## IOWA PEACE OFFICERS' RETIREMENT, ACCIDENT AND DISABILITY SYSTEM

## SUMMARY OF VALUATION RESULTS UNDER PRESCRIBED METHODOLOGY

This addendum report has been prepared to present the results of a valuation of the Iowa Peace Officers' Retirement, Accident and Disability System as of July 1, 2017, based on the prescribed methodology under current statutes and regulations issued thereunder.

The unfunded actuarial accrued liability has been amortized as a level percent of payroll over 30 years. The payroll growth assumption used was 3.00%.

A summary of principal valuation results from the current and the prior valuation follows.

| | Actuarial Valuation as of | |
|---|---|---|
| | **July 1, 2017** | **July 1, 2016** |
| **Summary of Costs** | | |
| Normal cost | 26.51% | 28.70% |
| Administrative Expenses | 0.54% | 0.57% |
| UAAL amortization | 24.51% | 20.38% |
| Total | 51.56% | 49.65% |
| Less Employee Contribution Rate | (11.40%) | (11.40%) |
| State Required Contribution | 40.16% | 38.25% |
| **Funded Status** | | |
| Actuarial accrued liability | $636,058,890 | $578,388,848 |
| Actuarial value of assets | 453,128,907 | 426,398,446 |
| Unfunded actuarial accrued liability | $182,929,983 | $151,990,402 |
| Funded Ratio | 71.24% | 73.72% |
| **Asset Values** | | |
| Market value of assets (MVA) | $468,300,420 | $403,084,512 |
| Actuarial value of assets (AVA) | 453,128,907 | 426,398,446 |
| MVA/AVA | 103.35% | 94.53% |