APPENDIX B

NORTH DAKOTA RETIREMENT AND INVESTMENT OFFICE
Teachers' Fund for Retirement
State Investment Board

Segal Consulting

North Dakota Teachers' Fund for Retirement

Actuarial Valuation as of July 1, 2013

November 6, 2013

Presented By:

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Consulting Actuary

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Discussion Topics

Segal

- Overview of Valuation Process
- Summary of Valuation Highlights
- Membership and Demographics
- Valuation Results and Projections

Purposes of the Actuarial Valuation

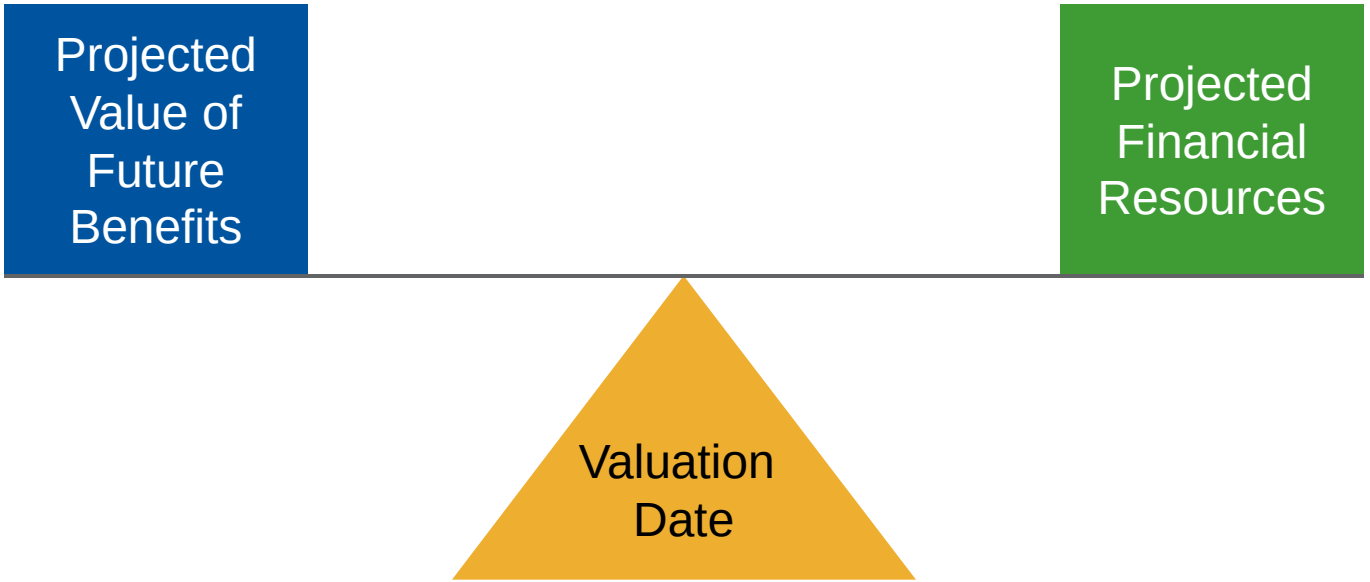
- Report the Fund's actuarial assets
- Calculate the Fund's liabilities
- Determine the Annual Required Contribution (ARC) for fiscal year 2014
  - Determine the funding policy Actuarially Determined Contribution (ADC)
- Provide information for annual financial statements
- Identify emerging trends

How is an Actuarial Valuation Performed?

The actuaries will:

- Gather data as of the valuation date
  - Participant data
  - Financial data
- Project a benefit for each member, for each possible benefit
- Apply assumptions about:
  - Economic (investment return, inflation, salary raises)
  - People or demographic (death, disability, retirement, turnover)
- Apply assumptions to benefits to determine a total liability and assign liabilities to service
- Apply the funding policy to determine ARC/ADC
  - Based on actuarial cost method and asset valuation method

Actuarial Balance



Over the life of a pension system,

Benefits + Expenses = Contributions + Investment Return

Contributions = Benefits + Expenses - Investment Return

Actuarial Assumptions

Two types:

Demographic	Economic
• Retirement • Disability • Death in active service • Withdrawal • Death after retirement	• Inflation • Interest rate (return on assets) • Salary increases • Payroll growth

Actuaries make assumptions as to when and why a member will leave active service, and estimate the amount and duration of the pension benefits paid.

Economic Assumptions

- **Interest Rate**
  - 8%
- **Salary Increase Rates**
  - Based on service
  - Ranges from 14.75% for new members to 4.5% for members with 25 or more years of service
- **Payroll Growth**
  - 3.25%

Actuarial Methods

➢ Asset valuation method (actuarial value of assets)

- Smoothing of investment gains or losses
- TFFR uses a five-year smoothing method
  - Investment returns above or below the expected return are recognized over five years
- 20% market value corridor is applied (e.g., actuarial value must fall within 80% to 120% of market value)

➢ Cost method

- Allocation of liability between past service and future service
  - TFFR uses the entry age normal cost method
  - Most retirement systems use the entry age normal cost method

➢ Amortization method

- 30-year “closed” period to pay off unfunded actuarial accrued liability
- Based on level percentage of payroll
- Governmental Accounting Standards Board requires 30-year maximum period to determine the Annual Required Contribution

Entry Age Normal Cost Method

Allocates Cost Between Past and Future service

- **Normal Cost:** Cost of annual benefit accrual as a level percent of salary
- **Actuarial Accrued Liability:** Represents accumulated value of past normal costs (or difference between total cost and future normal costs)
- **Unfunded Actuarial Accrued Liability:** Actuarial accrued liability minus actuarial value of assets
- **Annual Required Contribution:**
  - Normal cost plus
  - Amortization payment of unfunded accrued liability over a 30-year closed period as a percent of payroll
    - 30-year closed period began July 1, 2013

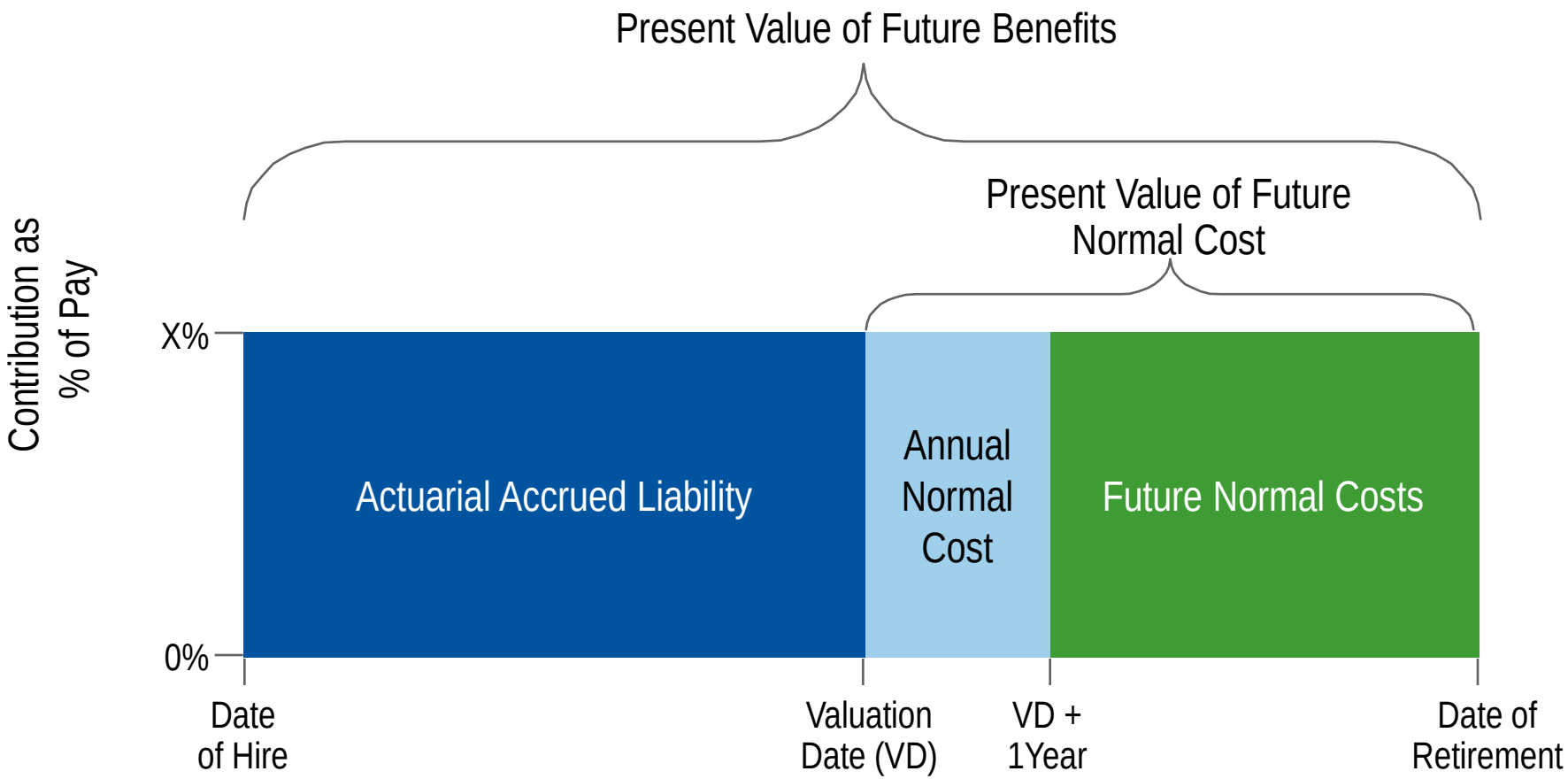
Actuarial Accrued Liability and Normal Cost

The **actuarial accrued liability** is the portion of the total liability that is allocated to members' past years of service

- **Retirees and beneficiaries:**
  - All years of service are in the past, so the **actuarial accrued liability** is equal to the total liability
- **Active members:**
  - The **actuarial accrued liability** represents the portion of the total liability that is attributable to the years of service that the members have already worked
  - The **normal cost** represents the anticipated growth in the accrued liability in the coming year

The actuarial accrued liability is compared to the assets as a measure of funding progress.

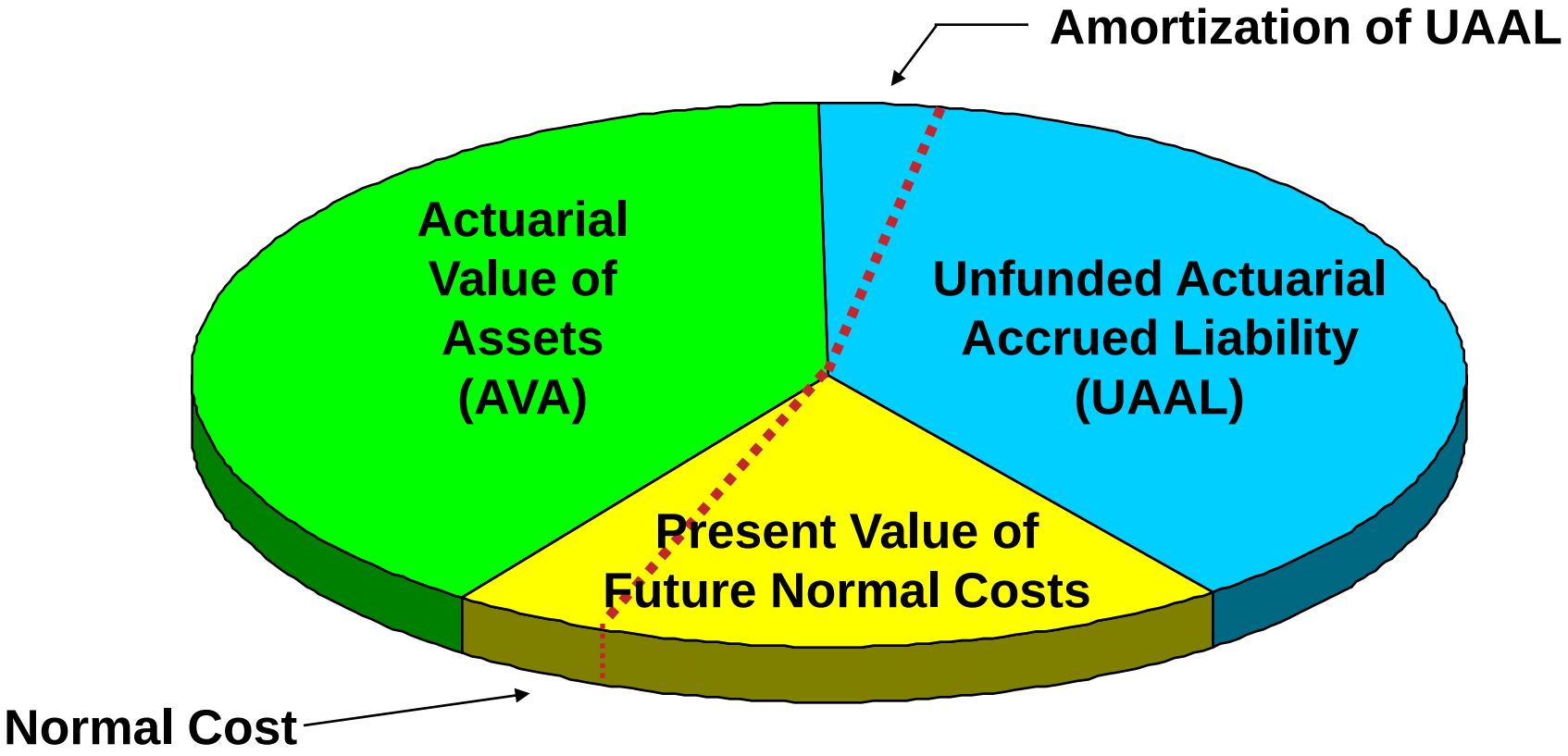
Funding Process



Actuarial Accrued Liability - Assets = Unfunded Actuarial Accrued Liability

Annual Required Contribution

Present Value of Future Benefits



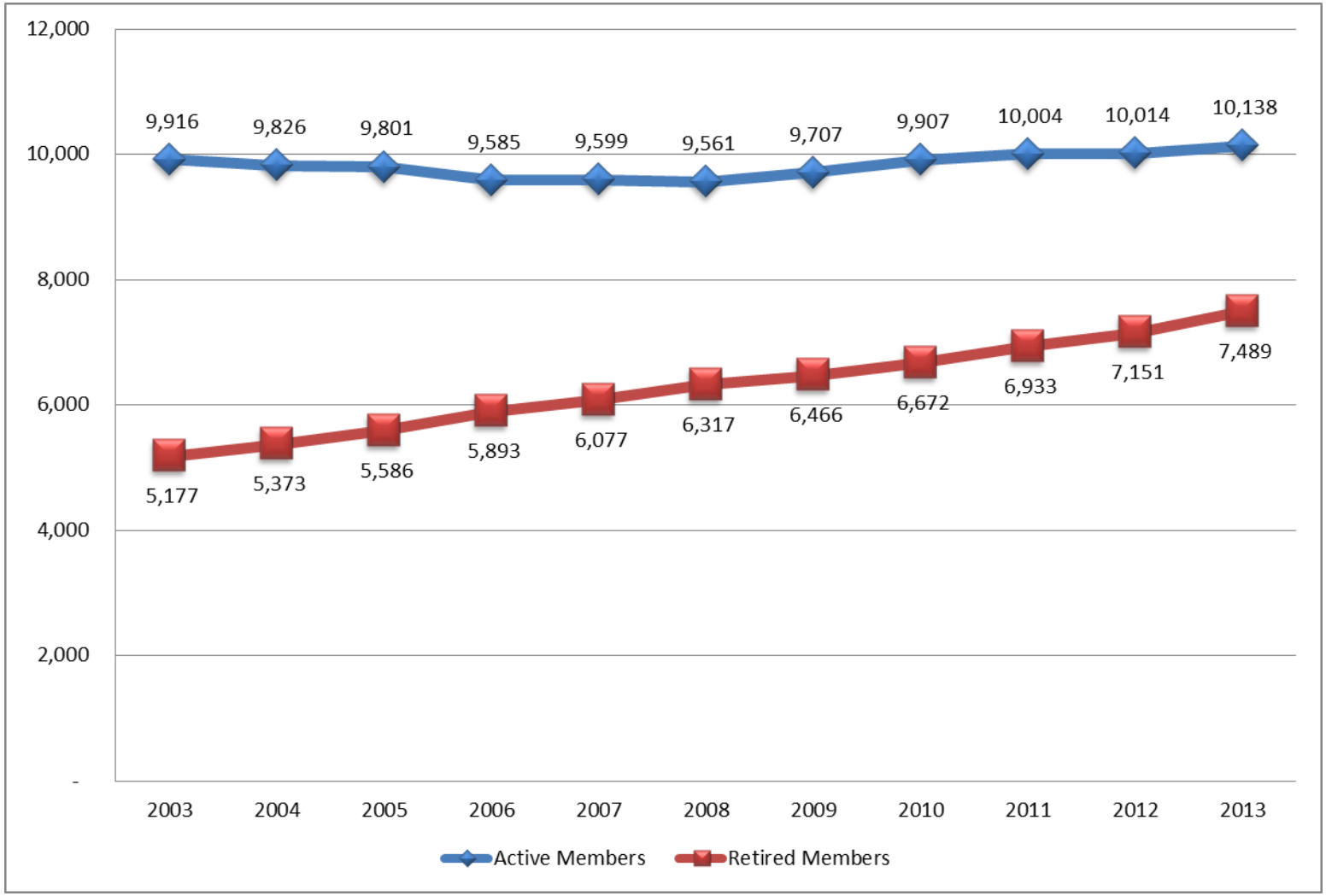
Summary of Valuation Highlights

- Valuation reflects increases in contribution rates contained in HB 1134
  - Member rate will increase from 9.75% to 11.75% on July 1, 2014
  - Employer rate will increase from 10.75% to 12.75% on July 1, 2014
  - Increases will revert to 7.75% for both members and employers once the funded ratio reaches 100% (measured using the actuarial value of assets)
  - ADC and GASB ARC reflect the actuarial present value of the increases as of July 1, 2013
- Market value of assets returned 13.4% for year ending 6/30/13 (Segal calculation)
  - Gradual recognition of deferred losses resulted in 2.7% return on actuarial value of assets
- Net impact on funded ratio was a decrease from 60.9% (as of 7/1/2012) to 58.8% (as of 7/1/2013)
- Effective amortization period increased from 25 years (as of 7/1/2012) to 28 years (as of 7/1/2013)
- Net impact on ARC/ADC was an increase from 9.49% of payroll (FY13) to 10.26% of payroll (FY14)
  - Based on the employer contribution rate for fiscal 2013 of 10.75%, there is a contribution sufficiency of 0.49% of payroll

Membership

	2013	2012	Change
Active:			
• Number	10,138	10,014	+1.2%
• Payroll	$526.7 mil	$505.3 mil	+4.2%
• Average Age	43.2 years	43.7 years	- 0.5 years
• Average Service	13.2 years	13.7 years	- 0.5 years
Retirees and Beneficiaries			
• Number	7,489	7,151	+4.7%
• Total Annual Benefits	$154.8 mil	$142.8 mil	+8.4%
• Average Monthly Benefit	$1,722	$1,664	+3.5%

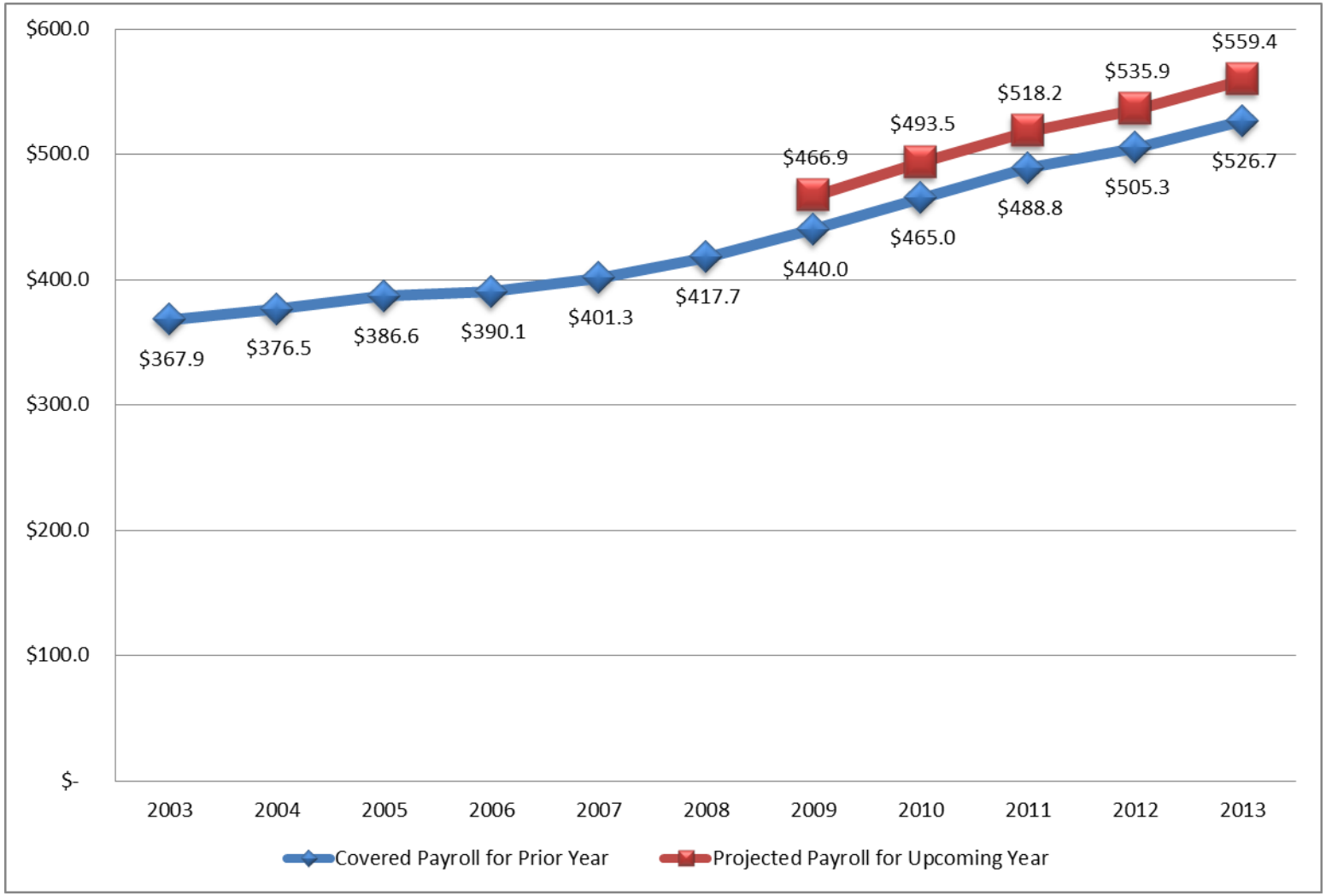
Active and Retired Membership



Since 2003, number of retirees and beneficiaries has increased 3.8% per year on average.

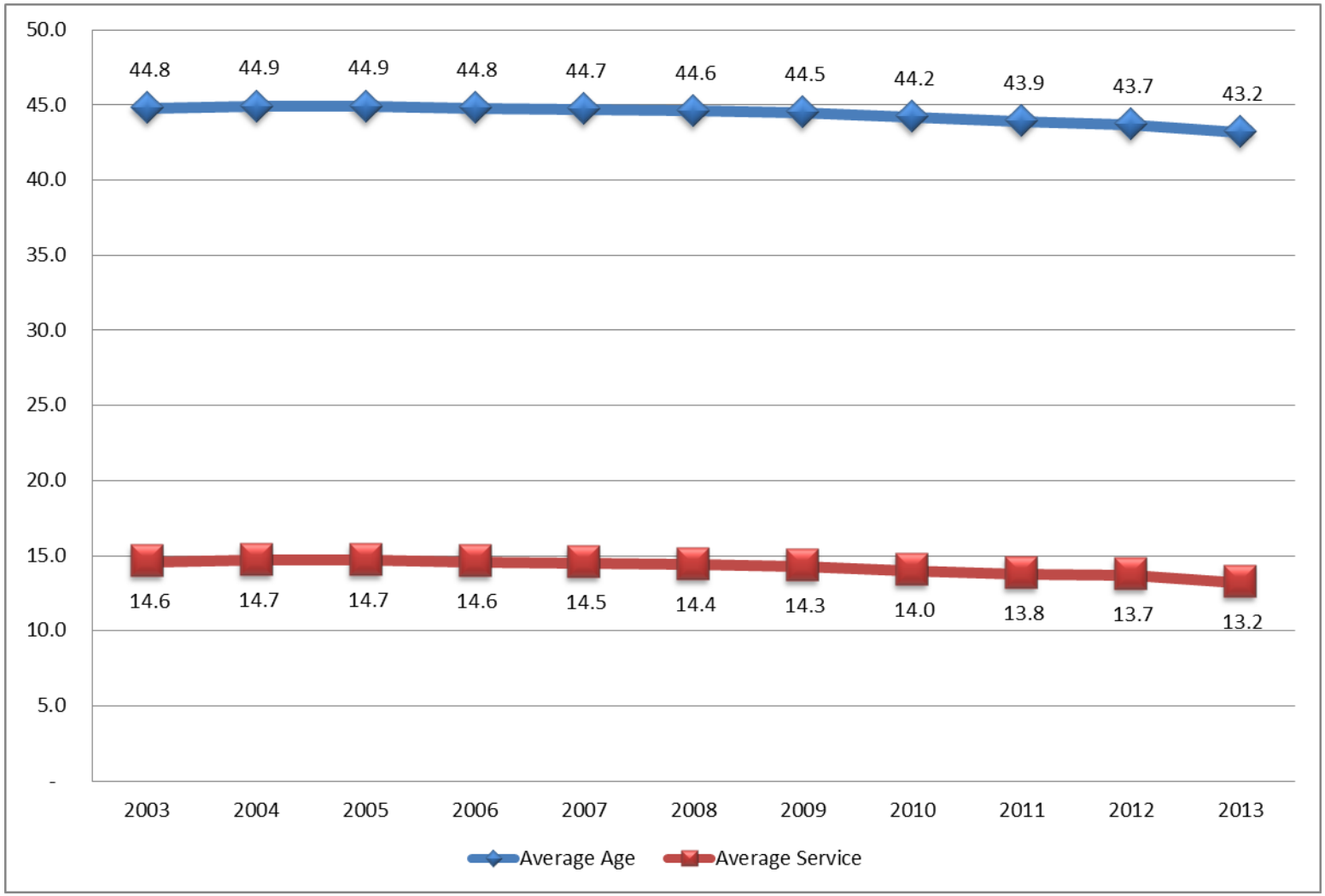
Active Payroll

$ Millions

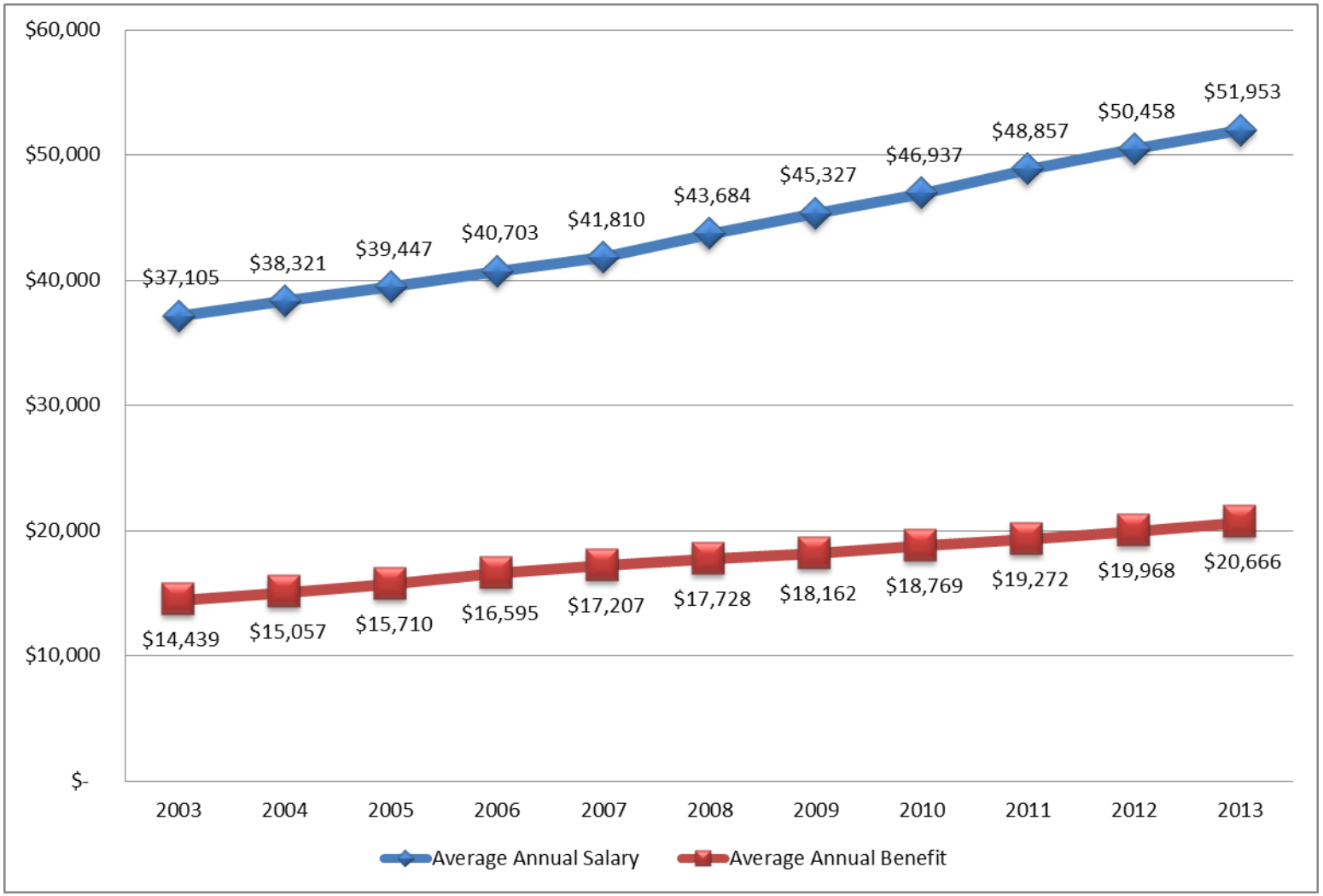


Since 2003, active payroll has increased, on average, 3.7% per year.

Average Age and Service of Active Members



Average Salary and Average Benefit



Since 2003, average salary has increased, on average, 3.4% per year. Average annual benefit has also increased by 3.7% per year.

Assets

- The market value of assets increased from $1.654 billion (as of June 30, 2012) to $1.839 billion (as of June 30, 2013)
  - Segal determined the investment return was 13.4%, net of investment and administrative expenses
- The actuarial value of assets – which smoothes investment gains and losses over five years – increased from $1.748 billion (as of June 30, 2012) to $1.762 billion (as of June 30, 2013)
  - Investment return of 2.7%, net of investment and administrative expenses
  - Actuarial value is 95.8% of market
  - There is a total of $77 million of deferred net investment gains that will be recognized in future years
- The average annual return on market assets over the past 10 years is 6.6%
  - 20-year average is 6.9%
- The average annual return on actuarial assets over the past 10 years is 4.1%
  - 20-year average is 6.6%

Market Value of Assets ($ in millions)

Fiscal Year Ending June 30, 2013	
Beginning of Year	$1,654
Contributions:	
• Employer	59
• Member	54
• Service Purchases	3
• Total	116
Benefits and Refunds	(149)
Investment Income (net)	218
End of Year	$1,839
Rate of Return	13.4%

Actuarial Value of Assets ($ in millions)

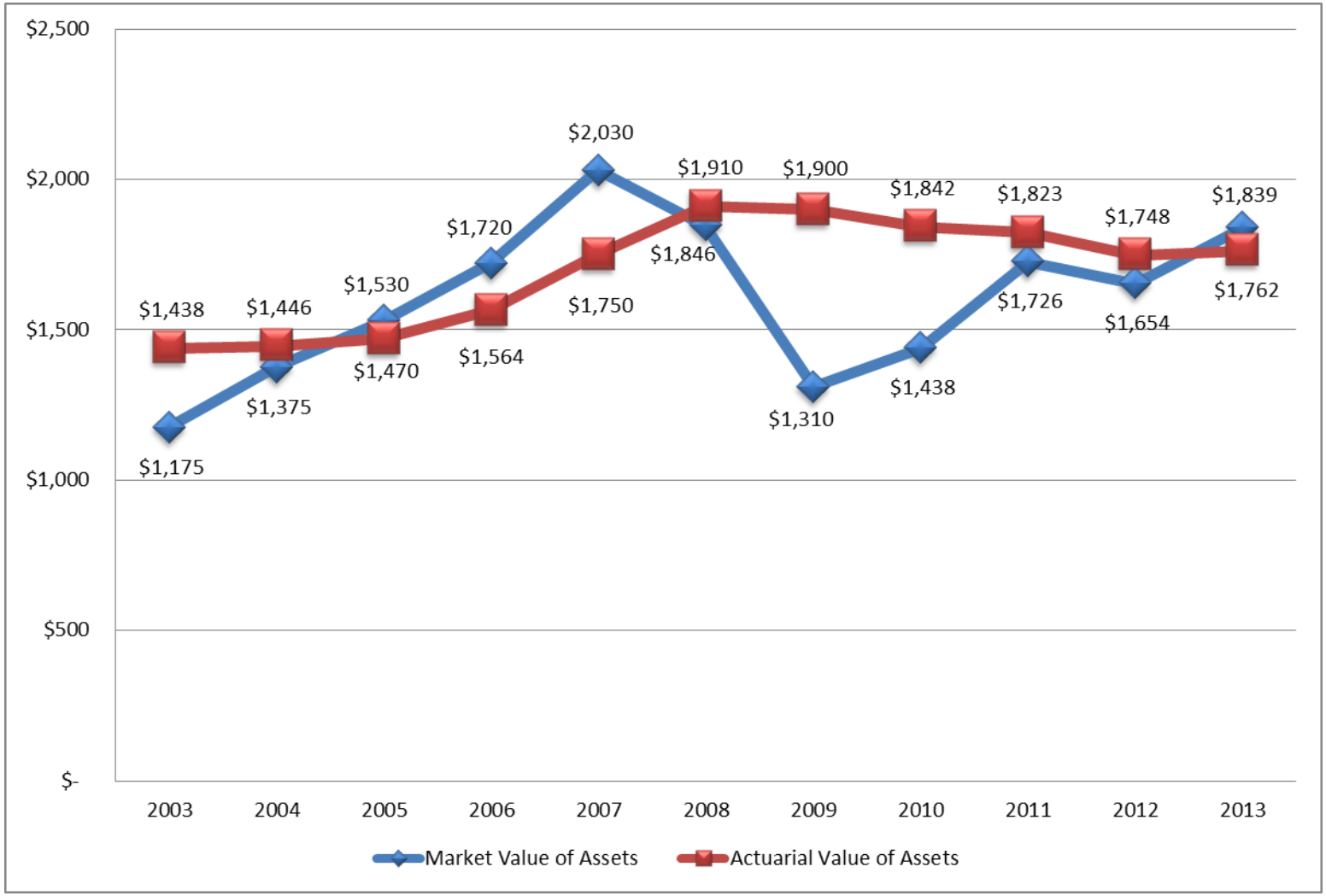
1. Market Value of Assets as of June 30, 2012	$1,654
2. Contributions and Benefits for FYE June 30, 2013	(33)
3. Expected Return	131
4. Expected Market Value of Assets (1) + (2) + (3)	$1,752
5. Actual Market Value of Assets on June 30, 2013	**1,839**
6. Excess/(Shortfall) for FYE June 30, 2013 (5) – (4)	87
Excess/(Shortfall) Returns:	

Year	Initial Amount	Deferral %	Unrecognized Amount
2013	$87	80%	$70
2012	(159)	60%	(96)
2011	220	40%	88
2010	74	20%	15
2009	(640)	0%	0
7. Total			**$77**

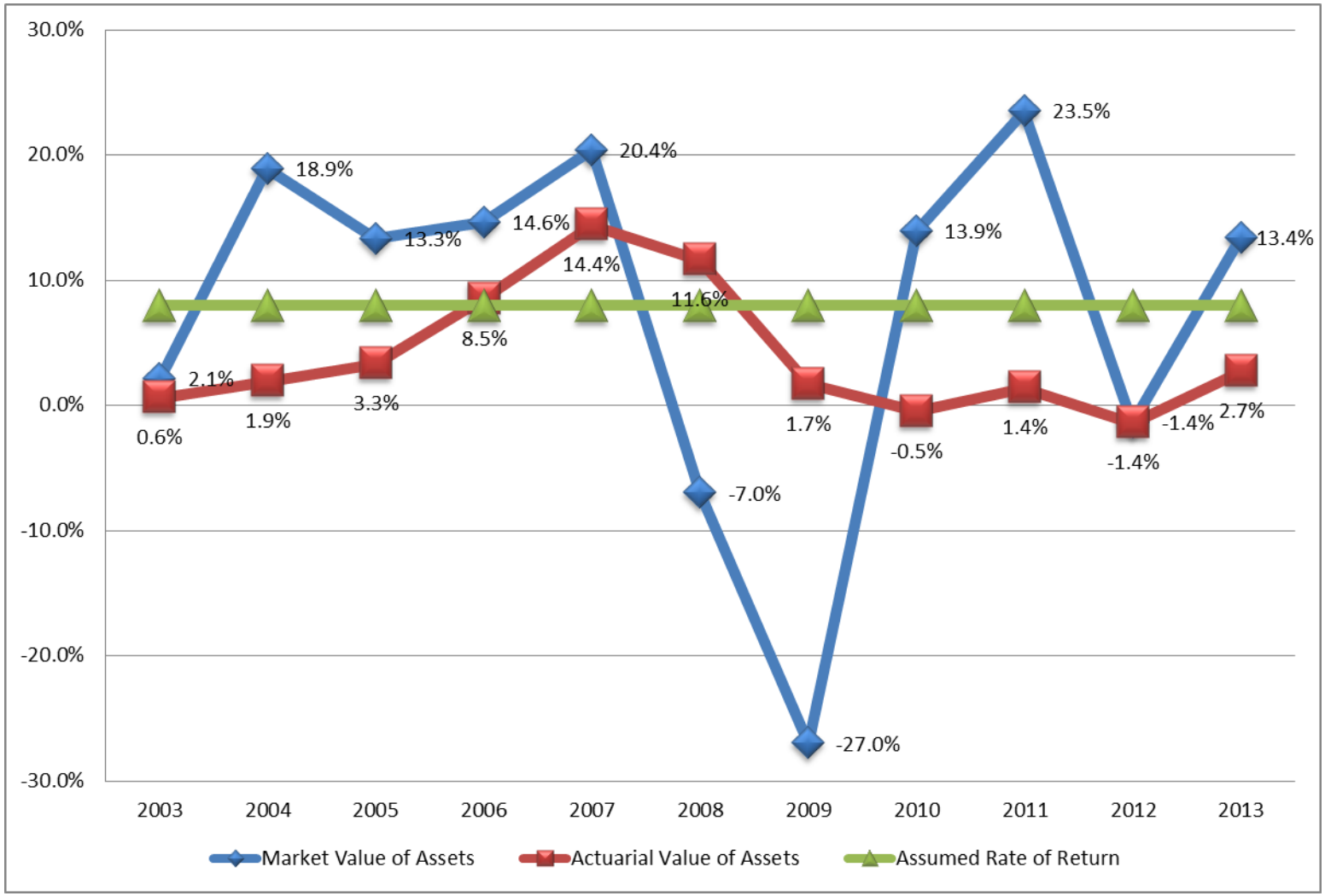
8. Actuarial Value of Assets as of June 30, 2013 (5) - (7)	**$1,762**
9. Actuarial Value of Assets as a % of Market Value of Assets	95.8%

Market and Actuarial Values of Assets

$ Millions

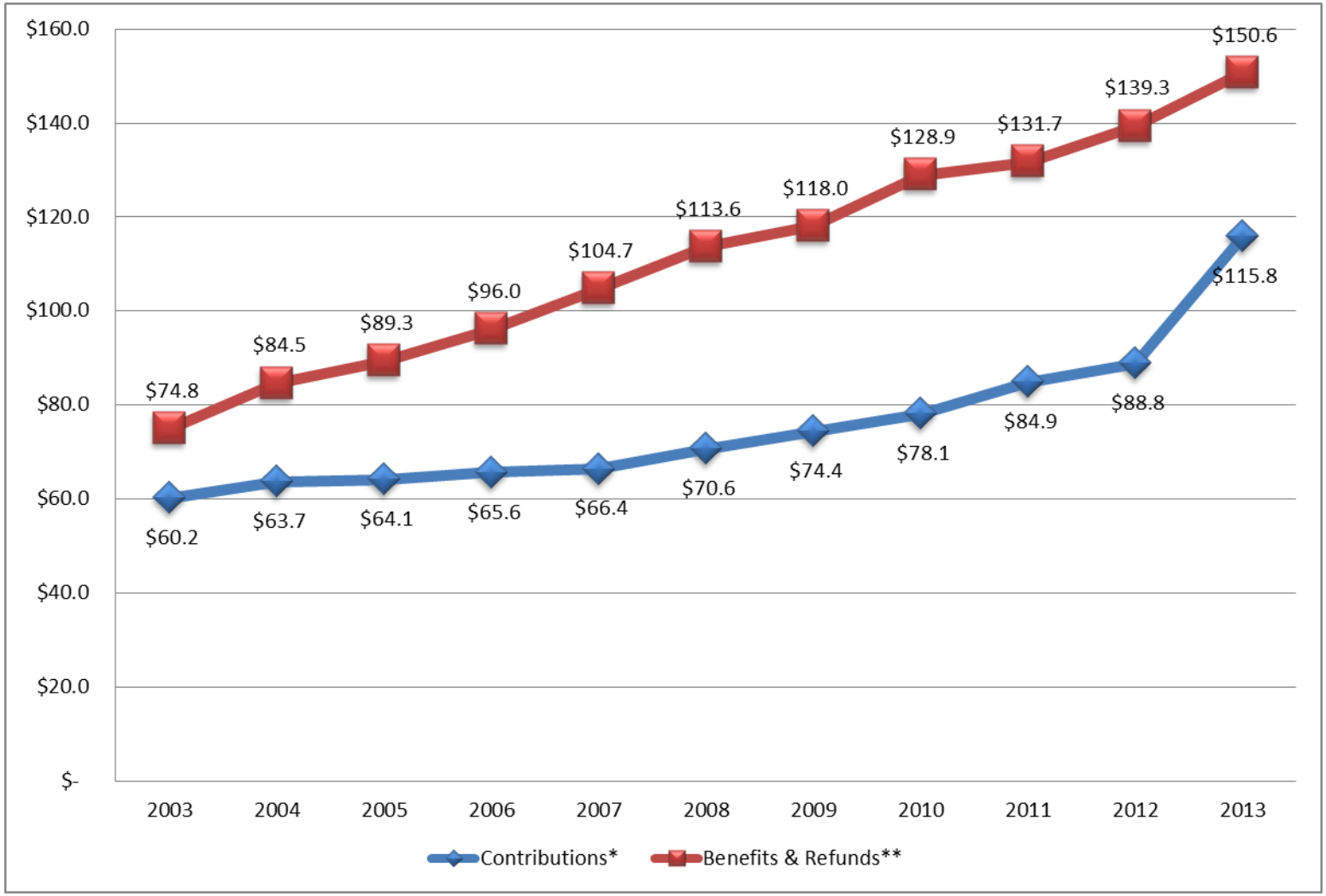


Asset Returns



Contributions vs. Benefits and Refunds

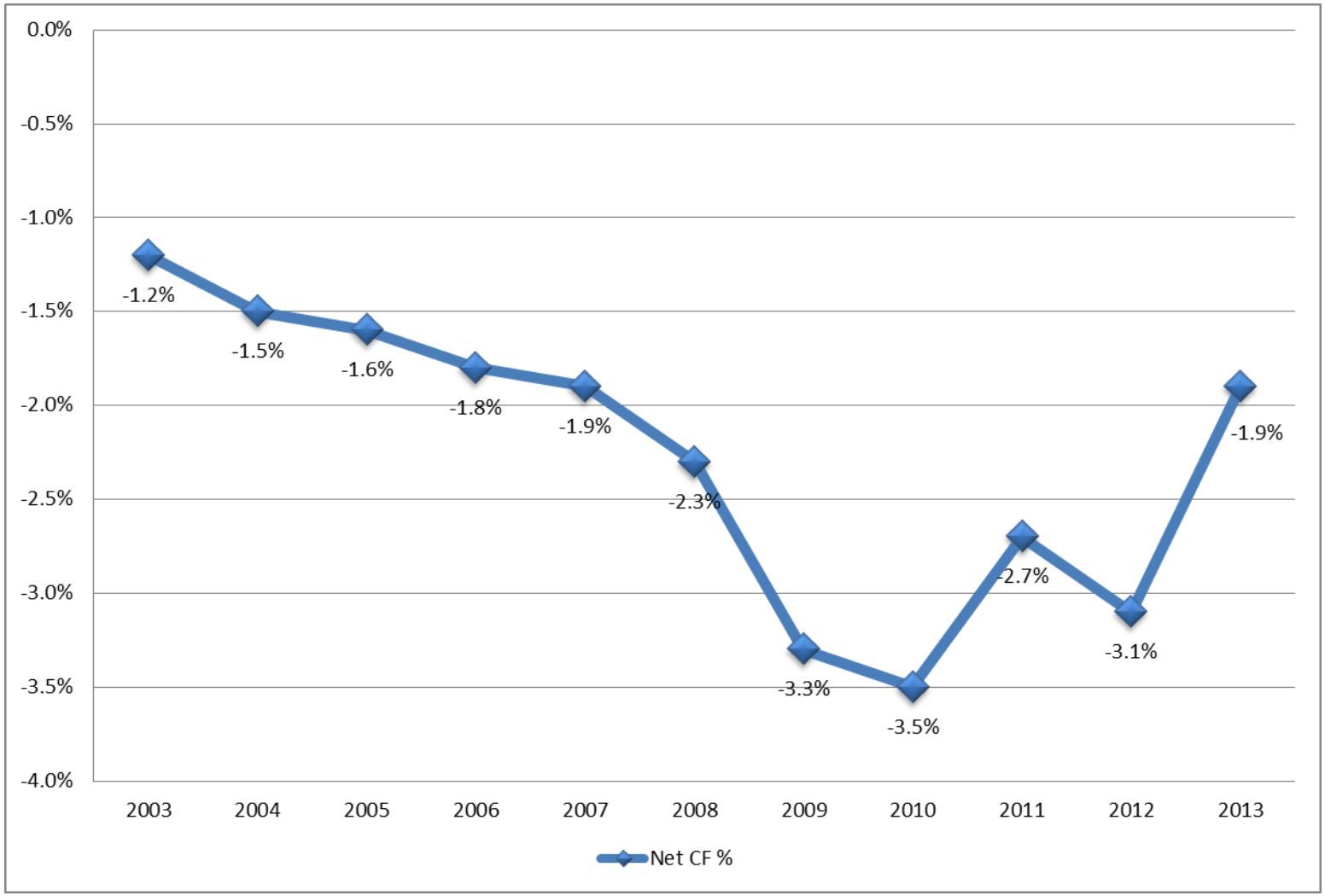
$ Millions



* Includes member and employer contributions, and service purchases

** Includes administrative expenses

Net Cash Flow as a % of Market Value



Valuation Results ($ in millions)

	July 1, 2013	July 1, 2012
Actuarial Accrued Liability:		
• Active Members	$1,371	$1,373
• Inactive Members	74	70
• Retirees and Beneficiaries	1,552	1,429
Total	**$2,997**	**$2,872**
Actuarial Assets	1,762	1,748
Unfunded Accrued Liability	$1,235	$1,124
Funded Ratio	58.8%	60.9%

Annual Required Contribution

	July 1, 2013	July 1, 2012
Normal Cost Rate	10.15%	9.83%
Member Rate	9.75%	9.75%
Employer Normal Cost Rate	0.40%	0.08%
Adjusted for Timing	0.41%	0.08%
Amortization of UAAL*	9.85%	9.41%
Annual Required Contribution	10.26%	9.49%
Employer Rate	10.75%	10.75%
Contribution Sufficiency/(Deficiency)	0.49%	1.26%

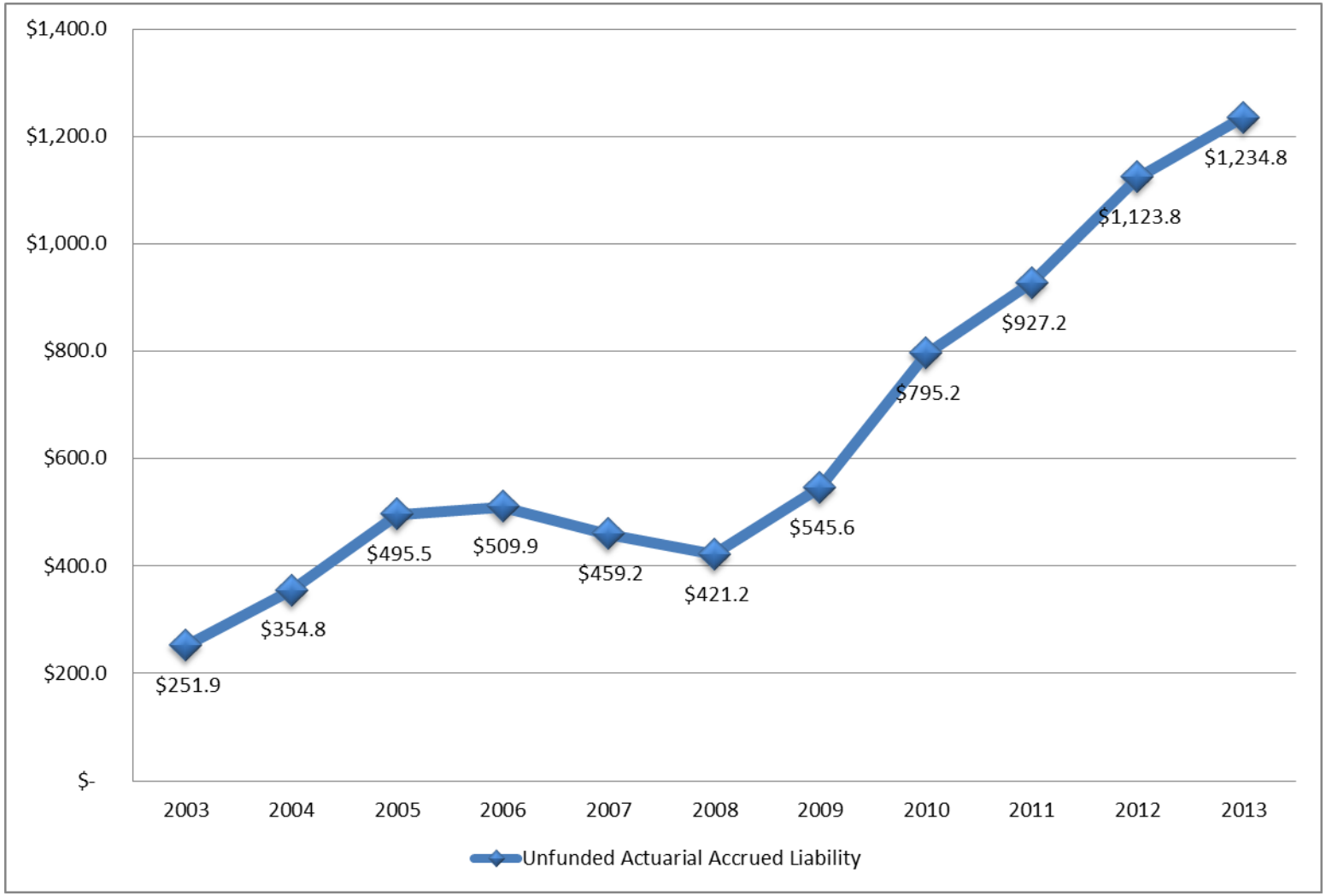
** Reflects the actuarial present value of the increased statutory contributions scheduled to occur July 1, 2014. The amount for 2012 has been restated from last year's valuation.*

Valuation Results - Comments

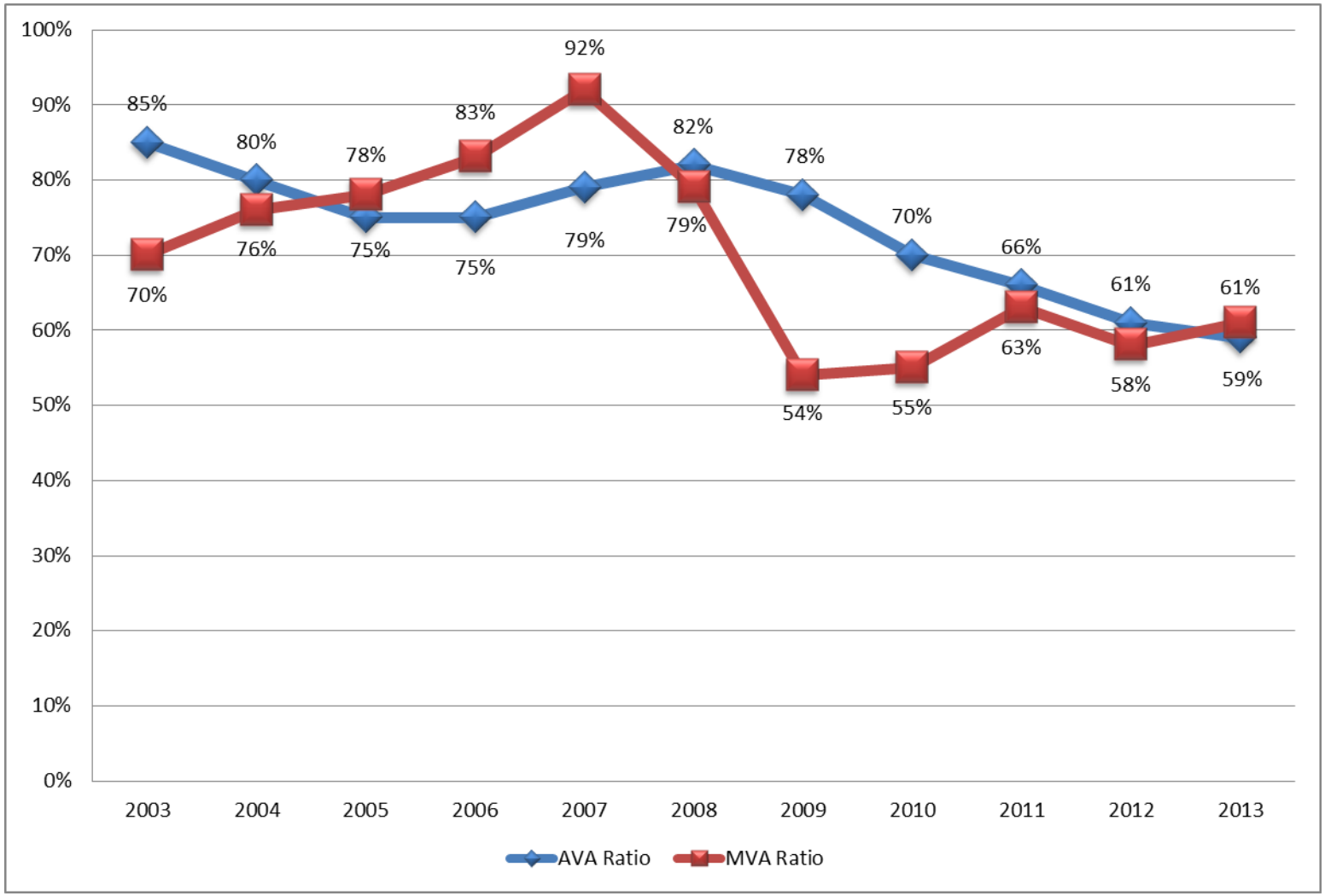
- The actuarial accrued liability increased from $2.872 billion (as of June 30, 2012) to $2.997 billion (as of June 30, 2013)
- The unfunded actuarial accrued liability (UAAL) increased from $1.124 billion to $1.235 billion
- The funded ratio on an AVA basis decreased from 61% to 59%
  - On a market value basis, the funded ratio increased from 58% to 61%
- The Annual Required Contribution (ARC) increased from 9.49% of payroll to 10.26% of payroll
  - Going forward, this will be referred to as the Actuarially Determined Contribution (ADC)
  - Compared to 10.75% employer contribution, results in a contribution sufficiency of 0.49%
  - The effective amortization period is 28 years

Unfunded Actuarial Accrued Liability

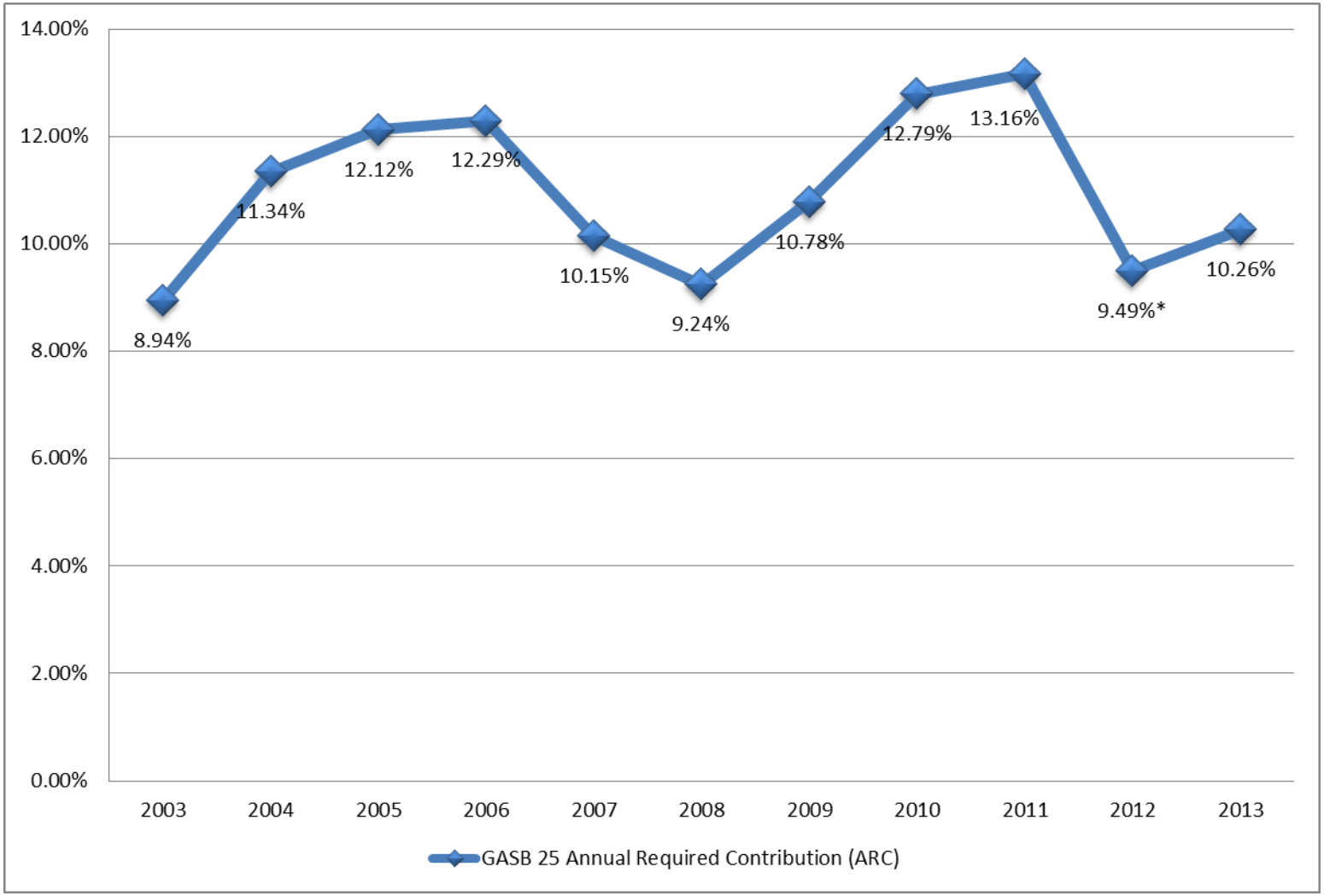
$ Millions



Funded Ratios



GASB 25 Annual Required Contribution (ARC)



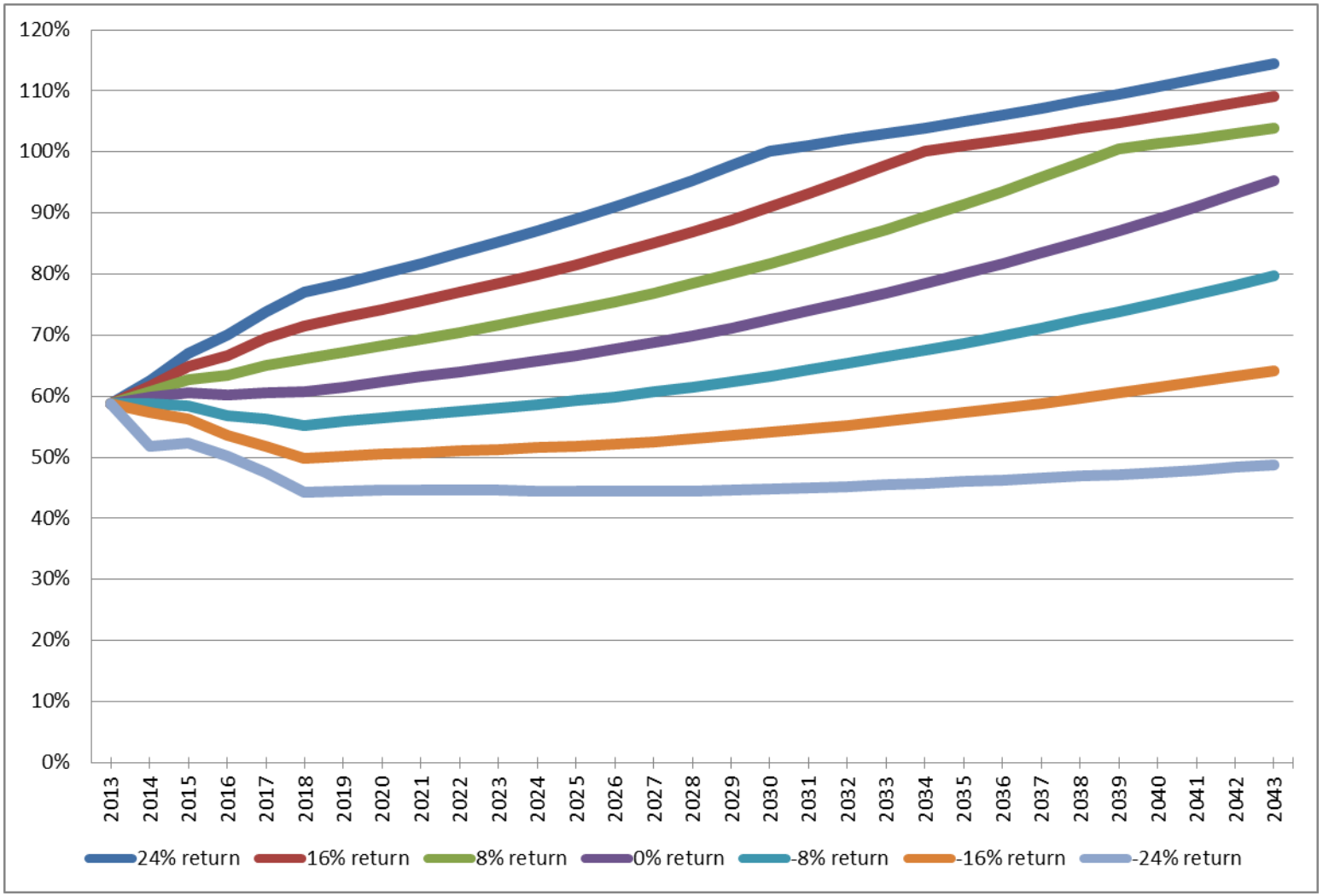
- Prior to 2005, the ARC calculation was based on a 20-year open amortization period.
- From 2005 - 2012, the calculation of the ARC was based on a 30-year open level percentage of payroll amortization.
- Beginning in 2013, the period is 30-year closed.

* Restated from last year's valuation to reflect the actuarial present value of contribution increases effective July 1, 2014.

Projections

- Projections of estimated funded ratios for 30 years
  - Based on FY14 investment return scenarios ranging from -24% to +24%
  - Assumes Fund earns 8% per year in FY15 and each year thereafter
  - Additional projections assuming Fund earns 7% or 9% per year every year
  - All other experience is assumed to emerge as expected
- Includes contribution rate increases from HB 1134
  - Member rate is 9.75% for FY14 and increases to 11.75% for FY15 and thereafter
  - Employer rate is 10.75% for FY14 and increases to 12.75% for FY15 and thereafter
  - Increases “sunset” back to 7.75% once the funded ratio reaches 100% (based on actuarial assets)

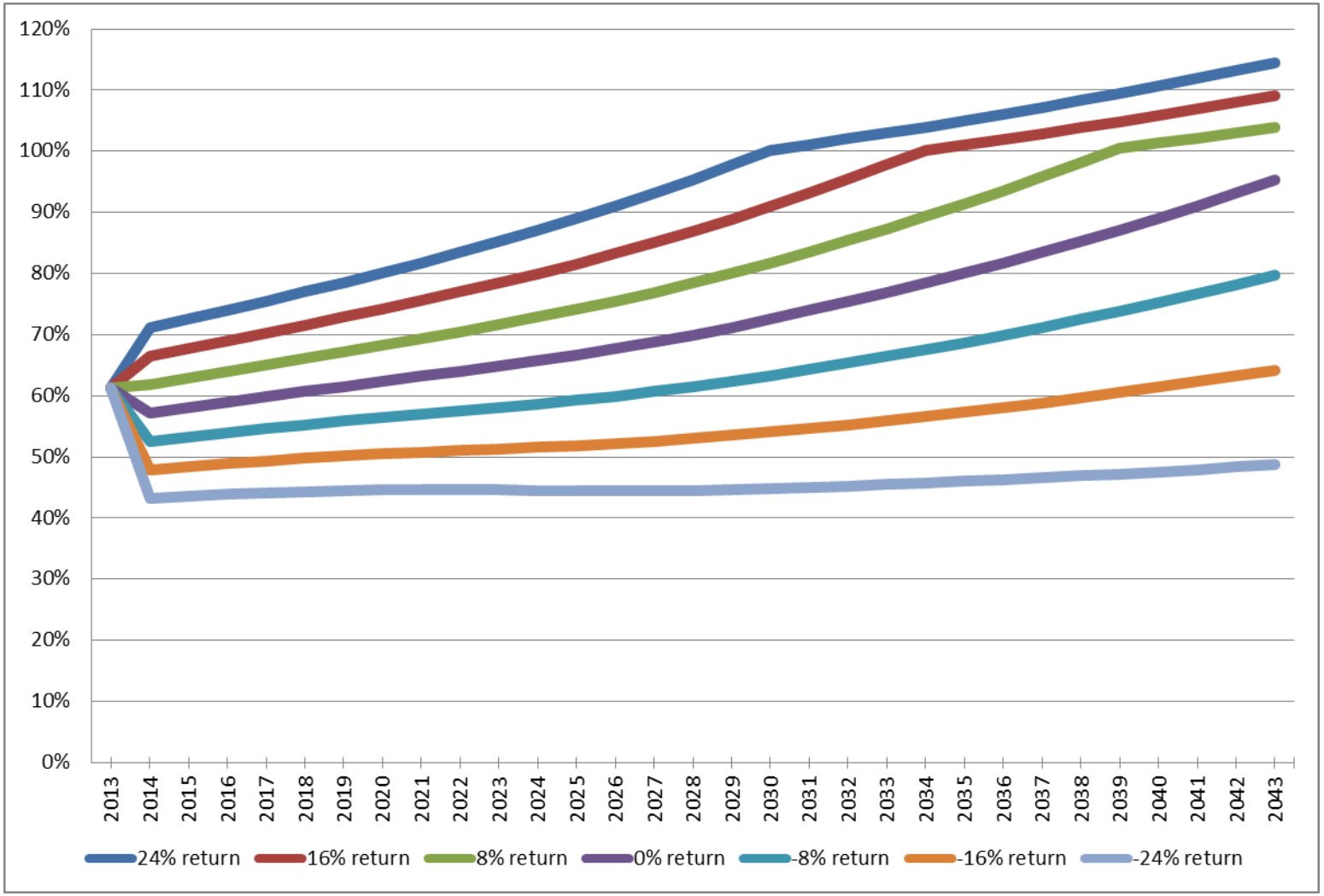
Projected Funded Ratios (AVA Basis)



Projected Funded Ratios (AVA Basis)

Valuation Year	24% for FY2014	16% for FY2014	8% for FY2014	0% for FY2014	-8% for FY2014	-16% for FY2014	-24% for FY2014
2013	59%	59%	59%	59%	59%	59%	59%
2014	63%	62%	61%	60%	59%	57%	52%
2015	67%	65%	63%	61%	58%	56%	52%
2016	70%	67%	63%	60%	57%	54%	50%
2017	74%	69%	65%	61%	56%	52%	47%
2018	77%	72%	66%	61%	55%	50%	44%
2023	85%	78%	72%	65%	58%	51%	45%
2028	95%	87%	78%	70%	61%	53%	45%
2033	103%	98%	87%	77%	66%	56%	45%
2038	108%	104%	98%	85%	72%	60%	47%
2043	114%	109%	104%	95%	80%	64%	49%

Projected Funded Ratios (MVA Basis)



Projected Funded Ratios (MVA Basis)

Valuation Year	24% for FY2014	16% for FY2014	8% for FY2014	0% for FY2014	-8% for FY2014	-16% for FY2014	-24% for FY2014
2013	61%	61%	61%	61%	61%	61%	61%
2014	71%	66%	62%	57%	52%	48%	43%
2015	73%	68%	63%	58%	53%	48%	44%
2016	74%	69%	64%	59%	54%	49%	44%
2017	75%	70%	65%	60%	55%	49%	44%
2018	77%	72%	66%	61%	55%	50%	44%
2023	85%	78%	72%	65%	58%	51%	45%
2028	95%	87%	78%	70%	61%	53%	45%
2033	103%	98%	87%	77%	66%	56%	45%
2038	108%	104%	98%	85%	72%	60%	47%
2043	114%	109%	104%	95%	80%	64%	49%

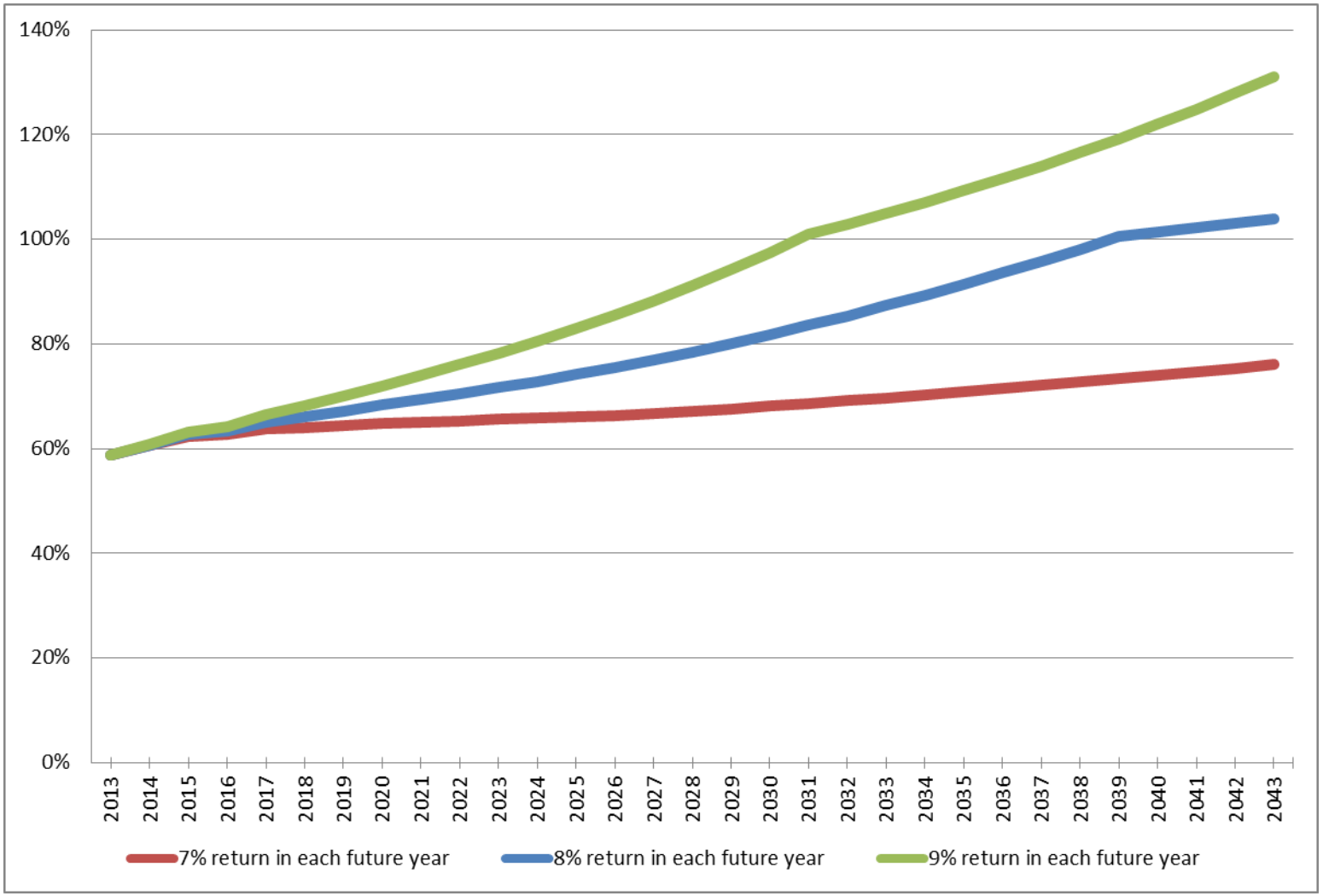
Projected Margin (AVA Basis)

Valuation Year	24% for FY2014	16% for FY2014	8% for FY2014	0% for FY2014	-8% for FY2014	-16% for FY2014	-24% for FY2014
2013	0.49%	0.49%	0.49%	0.49%	0.49%	0.49%	0.49%
2014	1.78%	1.47%	1.15%	0.84%	0.52%	0.03%	-1.86%
2015	3.01%	2.26%	1.52%	0.77%	0.03%	-0.72%	-2.13%
2016	3.76%	2.59%	1.41%	0.24%	-0.93%	-2.11%	-3.28%
2017	4.86%	3.26%	1.66%	0.06%	-1.54%	-3.14%	-4.75%
2018	5.79%	3.76%	1.73%	-0.31%	-2.34%	-4.37%	-6.40%
2023	7.99%	5.11%	2.23%	-0.65%	-3.53%	-6.41%	-9.29%
2028	11.91%	7.64%	3.38%	-0.89%	-5.15%	-9.42%	-13.68%
2033	5.98%	12.62%	5.47%	-1.68%	-8.83%	-15.97%	-23.12%
2038	7.70%	6.19%	12.70%	3.78%	-5.14%	-14.06%	-22.98%
2043	9.88%	7.99%	6.19%	10.54%	-0.64%	-11.82%	-23.00%

* The projected margin is based on a 30-year closed period starting July 1, 2013. Once the period declines to 10 years remaining, the projected margin is based on a 10-year open period.

** If an overfunding exists, the surplus is amortized over a 30-year open period.

Projected Funded Ratios (AVA Basis)
Actual Returns +1% or -1% of Assumed



Glossary

Actuarial Accrued Liability For Actives: The equivalent of the accumulated normal costs allocated to the years before the valuation date.

Actuarial Accrued Liability For Pensioners: The single-sum value of lifetime benefits to existing pensioners. This sum takes account of life expectancies appropriate to the ages of the pensioners and the interest that the sum is expected to earn before it is entirely paid out in benefits.

Actuarial Cost Method: A procedure allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability that are used to determine the Annual Required Contribution.

Actuarial Gain or Actuarial Loss: A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., The plan's assets earn more than projected, salary increases are less than assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results yield in actuarial liabilities that are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period

Actuarially Equivalent: Of equal actuarial present value, determined as of a given date and based on a given set of Actuarial Assumptions.

Actuarial Present Value (APV): The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. Each such amount or series of amounts is adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.), multiplied by the probability of the occurrence of an event (such as survival, death, disability, termination of employment, etc.) on which the payment is conditioned, and discounted according to an assumed rate (or rates) of return to reflect the time value of money.

Glossary

Actuarial Present Value of Future Plan Benefits: The Actuarial Present Value of benefit amounts expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age, anticipated future compensation, and future service credits. The Actuarial Present Value of Future Plan Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive members entitled to either a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would be provide sufficient assets to pay all projected benefits and expenses when due.

Actuarial Valuation: The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial Valuation for a governmental retirement system typically also includes calculations of items needed for compliance with GASB Statement No. 25, such as the funded ratio and the ARC.

Actuarial Value of Assets: The value of the Fund's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly plans use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the ARC.

Actuarially Determined: Values that have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.

Amortization Method: A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization Payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.

Amortization Payment: The portion of the pension plan contribution, or ARC, that is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

Glossary

Annual Required Contribution (ARC): The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation, determined under GASB Statement No. 25. The ARC consists of the Employer Normal Cost and the Amortization Payment.

Assumptions or Actuarial Assumptions: The estimates on which the cost of the Fund is calculated including:

(a) Investment return - the rate of investment yield that the Fund will earn over the long-term future;

(b) Mortality rates - the death rates of employees and pensioners; life expectancy is based on these rates;

(c) Retirement rates - the rate or probability of retirement at a given age;

(d) Turnover rates - the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement;

(e) Salary increase rates - the rates of salary increase due to inflation and productivity growth

Closed Amortization Period: A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example, if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Funding Period and Open Amortization Period.

Decrements: Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or termination.

Defined Benefit Plan: A retirement plan in which benefits are defined by a formula applied to the member's compensation and/or years of service.

Defined Contribution Plan: A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.

Employer Normal Cost: The portion of the Normal Cost to be paid by the employers. This is equal to the Normal Cost less expected member contributions.

Glossary

Experience Study: A periodic review and analysis of the actual experience of the Fund that may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.

Funded Ratio: The ratio of the actuarial value of assets (AVA) to the actuarial accrued liability (AAL). Plans sometimes calculate a market funded ratio, using the market value of assets (MVA), rather than the AVA, although GASB 25 reporting requires the use of the AVA.

Funding Period or Amortization Period: The term “Funding Period” is used in two ways. First, it is the period used in calculating the Amortization Payment as a component of the ARC. Second, it is a calculated item: the number of years in the future that will theoretically be required to amortize (i.e., pay off or eliminate) the Unfunded Actuarial Accrued Liability, based on the statutory employer contribution rate, and assuming no future actuarial gains or losses.

GASB: Governmental Accounting Standards Board.

GASB 25 and GASB 27: Governmental Accounting Standards Board Statements No. 25 and No. 27. These are the governmental accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 27 sets the accounting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 25 sets the rules for the systems themselves.

GASB 67 and GASB 68: The successor statements to GASB Statements No. 25 and No. 27. Statement No. 68 sets the accounting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 67 sets the rules for the systems themselves.

Investment Return: The rate of earnings of the Fund from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.

Margin: The difference, whether positive or negative, between the statutory employer contribution rate and the Annual Required Contribution (ARC) as defined by GASB 25.

Glossary

Normal Cost: That portion of the Actuarial Present Value of pension plan benefits and expenses allocated to a valuation year by the Actuarial Cost Method. Any payment in respect of an Unfunded Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits that are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated. Under the entry age normal cost method, the Normal Cost is intended to be the level cost (when expressed as a percentage of pay) needed to fund the benefits of a member from hire until ultimate termination, death, disability, or retirement.

Open Amortization Period: An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. If the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never completely disappear, but will become smaller each year, either as a dollar amount, or in relation to covered payroll, if the actuarial assumptions are realized.

Unfunded Actuarial Accrued Liability: The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus.

Valuation Date or Actuarial Valuation Date: The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.

Questions?

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North Dakota Public Employees Retirement System

Actuarial Valuation as of July 1, 2013

Discussion of Valuation Results and Projections

Brad Ramirez, FSA, MAAA, EA, FCA
Tammy Dixon, FSA, MAAA, EA

November 6, 2013

DRAFT

#5276809

Segal Consulting

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Discussion Topics

- Summary of Valuation Highlights
- Membership and Demographics
- Valuation Results and Projections

Actuarial Methods

- Asset valuation method (actuarial value of assets)
  - Smoothing of investment gains or losses
  - PERS uses a five-year smoothing method
    - Investment returns above or below the expected return are recognized over five years
  - No market value corridor is applied (i.e., actuarial value must fall within 80% to 120% of market value)
- Cost method
  - Allocation of liability between past service and future service
    - PERS uses the entry age normal cost method (as do most retirement systems)
    - Retiree Health Insurance Credit Fund uses the projected unit credit cost method
- Amortization method
  - 20-year “open” period to pay off unfunded actuarial accrued liability
  - Based on level percentage of payroll
  - Governmental Accounting Standards Board requires 30-year maximum period to determine the Annual Required Contribution
  - An open amortization period will yield contributions that reduce the unfunded actuarial accrued liability, but will not pay it off

Economic Assumptions

- Interest Rate
  - 8%
- Salary Increase Rates
  - Based on service
  - Ranges from 8.25% for new members to 4.86% for members with 5 or more years of service (5.0% for all years for Judges)
- Payroll Growth
  - 4.5% (4.0% for Judges)

Summary of Valuation Highlights – PERS and HPRS

- Market value of assets returned 13.4% for year ending 6/30/13 (Segal estimated calculation)
  - Gradual recognition of deferred gains resulted in 3.9% return on actuarial assets
  - Unrecognized investment **gains** represent about 14.0% of market assets
- Net impact on funded ratio was a decrease from 65.1% (as of 7/1/2012) to 62.0% (as of 7/1/2013)
- Market value of combined assets for PERS and HPRS was $2.015 billion vs. $1.785 billion last year
- Combined actuarial value of assets for PERS and HPRS was $1.732 billion vs. $1.675 billion last year
- Total actuarial value of assets is 86.0% of market value of assets
- All investment losses from 2008 and 2009 plan years are now fully recognized. Remaining years' unrecognized appreciation or depreciation will be recognized in subsequent valuations

Summary of Valuation Highlights

	Changes in Statutory Contribution Rates	
	Member	Employer
Main System Full-Time Employees	6.00%	6.12%
Effective January 2014	7.00	7.12
Main System Part-Time Employees	12.12	N/A
Effective January 2014	14.12	N/A
Judges	7.00	16.52
Effective January 2014	8.00	17.52
Highway Patrol	12.30	18.70
Effective January 2014	13.30	19.70
National Guard	4.00	6.50
Effective January 2014	4.50	7.00
Law Enforcement (without Prior Service)	5.00	N/A
Effective January 2014	5.50	N/A
	Member Rate for Employees of Political Subdivisions	**Member Rate for Employees of the BCI**
Law Enforcement (with Prior Service)	5.00	6.00
Effective January 2014	5.50	6.00

Summary of Valuation Highlights

- Some employer rates are determined by the Board of Retirement rather than set in statute

	Employer Contribution Rates Determined by the Board of Retirement
Law Enforcement without Prior Service	7.43%
Effective January 2014	7.93
Law Enforcement with Prior Service (Employees of Political Subdivisions)	9.31
Effective January 2014	9.81
Law Enforcement with Prior Service (Employees of the BCI)	10.31

Summary of Valuation Highlights

- Recommended employer contribution as a percent of payroll

	2013-2014	2012-2013	Statutory/ Approved 2013-2014
Main	12.14%	12.24%	6.12%-7.12%
Judges	16.66%	16.33%	16.52%-17.52%
National Guard	9.07%	7.40%	6.50%-7.00%
Law Enforcement (with Prior Service)	11.18%	10.69%	9.31%-9.81%*
Law Enforcement (without Prior Service)	8.11%	7.33%	7.43%-7.93%
Highway Patrol	25.11%	26.83%	18.70%-19.70%
Retiree Health	0.77%	0.90%	1.14%
Job Service	0.00%	0.00%	0.00%

*Rates shown are for employees of Political Subdivisions. The rate for employees of BCI is 10.31%.

- Funded Ratio (AVA)

	July 1, 2013	July 1, 2012
PERS	62.0%	65.1%
HPRS	68.2%	70.3%
Retiree Health	57.8%	51.9%
Job Service	114.9%*	104.3%

*Reflects a change in assumed investment return from 7.5% to 8.0%.

Membership – Main System

	2013	2012	Change
Active			
• Number	21,201	20,738	+2.2%
• Payroll*	$865.9 mil	$781.6 mil	+10.8%
• Average Age	47.1 years	47.1 years	+0.0 years
• Average Service	10.4 years	10.5 years	-0.1 years
Retirees and Beneficiaries**			
• Number	8,637	8,222	+5.0%
• Total Monthly Benefits	$8.5 mil	$ 7.9 mill	+7.6%
• Average Monthly Benefit	$985	$965	+2.1%

* This increase includes a change in our data processing methodology.

**Does not include 13 suspended retirees as of 2012 and 21 as of 2013.

Membership – Judges

	2013	2012	Change
Active			
• Number	49	49	+0.0%
• Payroll*	$6.6 mil	$6.1 mil	+8.2%
• Average Age	58.6 years	58.1 years	+0.5 years
• Average Service	18.3 years	17.6 years	+0.7 years
Retirees and Beneficiaries			
• Number	36	34	+5.9%
• Total Monthly Benefits	$127,563	$122,548	+4.1%
• Average Monthly Benefit	$3,543	$3,604	-1.7%

* This increase includes a change in our data processing methodology.

Membership – National Guard

	2013	2012	Change
Active			
• Number	39	32	+21.9%
• Payroll*	$1.7 mil	$1.3 mil	+30.8%
• Average Age	36.5 years	36.2 years	+0.3 years
• Average Service	5.5 years	5.4 years	+0.1 years
Retirees and Beneficiaries			
• Number	10	10	+0.0%
• Total Monthly Benefits	$9,727	$10,441	-6.8%
• Average Monthly Benefit	$973	$1,044	-6.8%

* This increase includes a change in our data processing methodology.

Membership – Law Enforcement with Prior Main System Service

	2013	2012	Change
Active			
• Number	229	207	+10.6%
• Payroll*	$11.7 mil	$9.5 mil	+23.2%
• Average Age	38.5 years	39.7 years	-1.2 years
• Average Service	7.3 years	8.0 years	-0.7 years
Retirees and Beneficiaries			
• Number	46	37	+24.3%
• Total Monthly Benefits	$79,915	$61,160	+30.7%
• Average Monthly Benefit	$1,737	$1,653	+5.1%

* This increase includes a change in our data processing methodology.

Law Enforcement without Prior Main System Service

	2013	2012	Change
Active			
• Number	70	65	+7.7%
• Payroll*	$2.6 mil	$2.4 mil	+8.3%
• Average Age	37.5 years	38.0 years	-0.5 years
• Average Service	3.3 years	3.3 years	+0.0 years
Retirees and Beneficiaries			
• Number	1	0	N/A
• Total Monthly Benefits	$816	N/A	N/A
• Average Monthly Benefit	$816	N/A	N/A

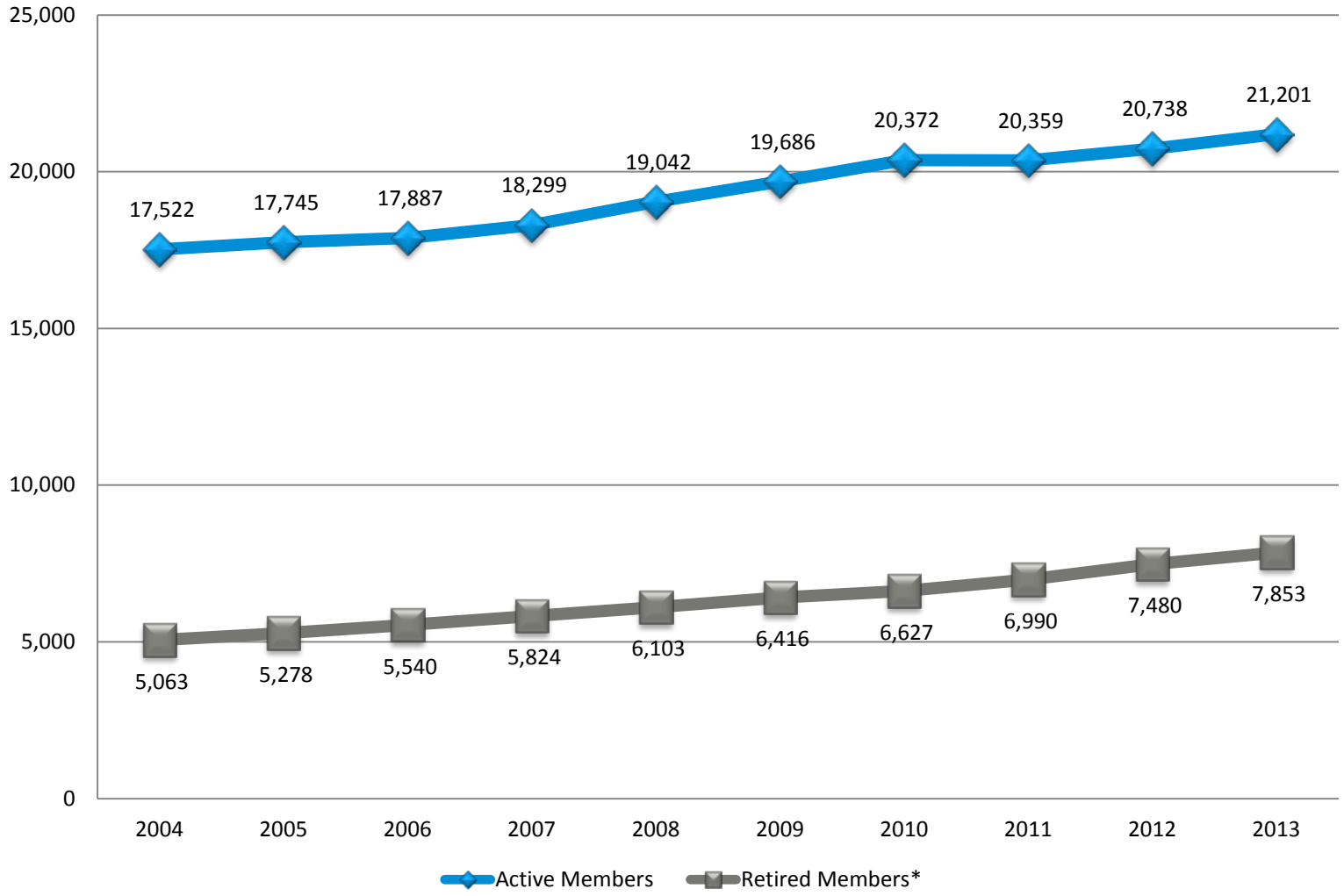
* This increase includes a change in our data processing methodology.

Membership – PERS

	2013	2012	Change
Active			
• Number	21,588	21,091	+2.4%
• Payroll*	$888.5 mil	$800.9 mil	+10.9%
• Average Age	47.0 years	47.0 years	+0.0 years
• Average Service	10.4 years	10.3 years	+0.1 years
Retirees and Beneficiaries			
• Number	8,730	8,303	+5.1%
• Total Monthly Benefits	$8.7 mil	$8.1 mil	+7.4%
• Average Monthly Benefit	$999	$979	+2.1%

* This increase includes a change in our data processing methodology.

Active and Retired Membership – Main System



*Retired Members excludes beneficiaries.

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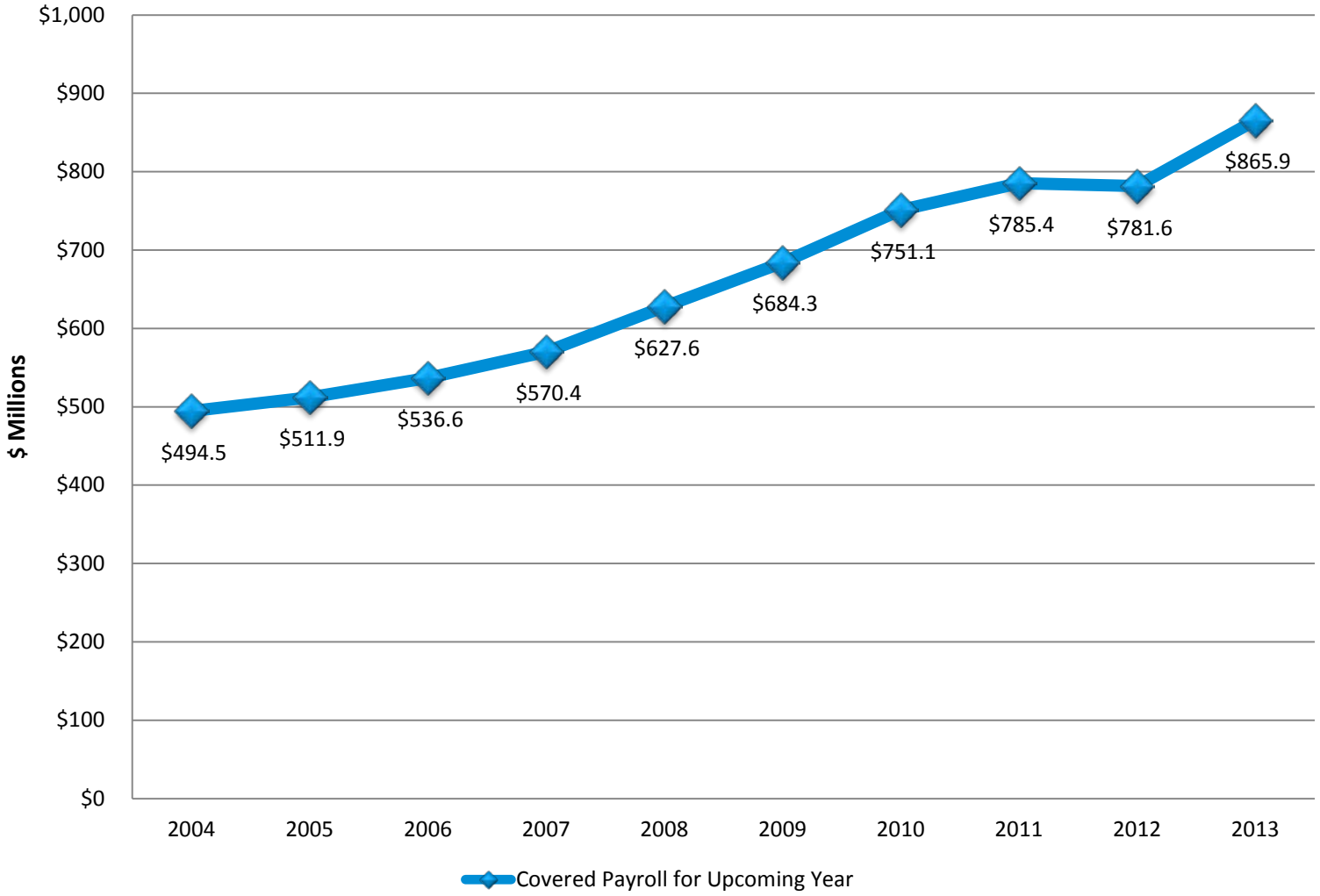
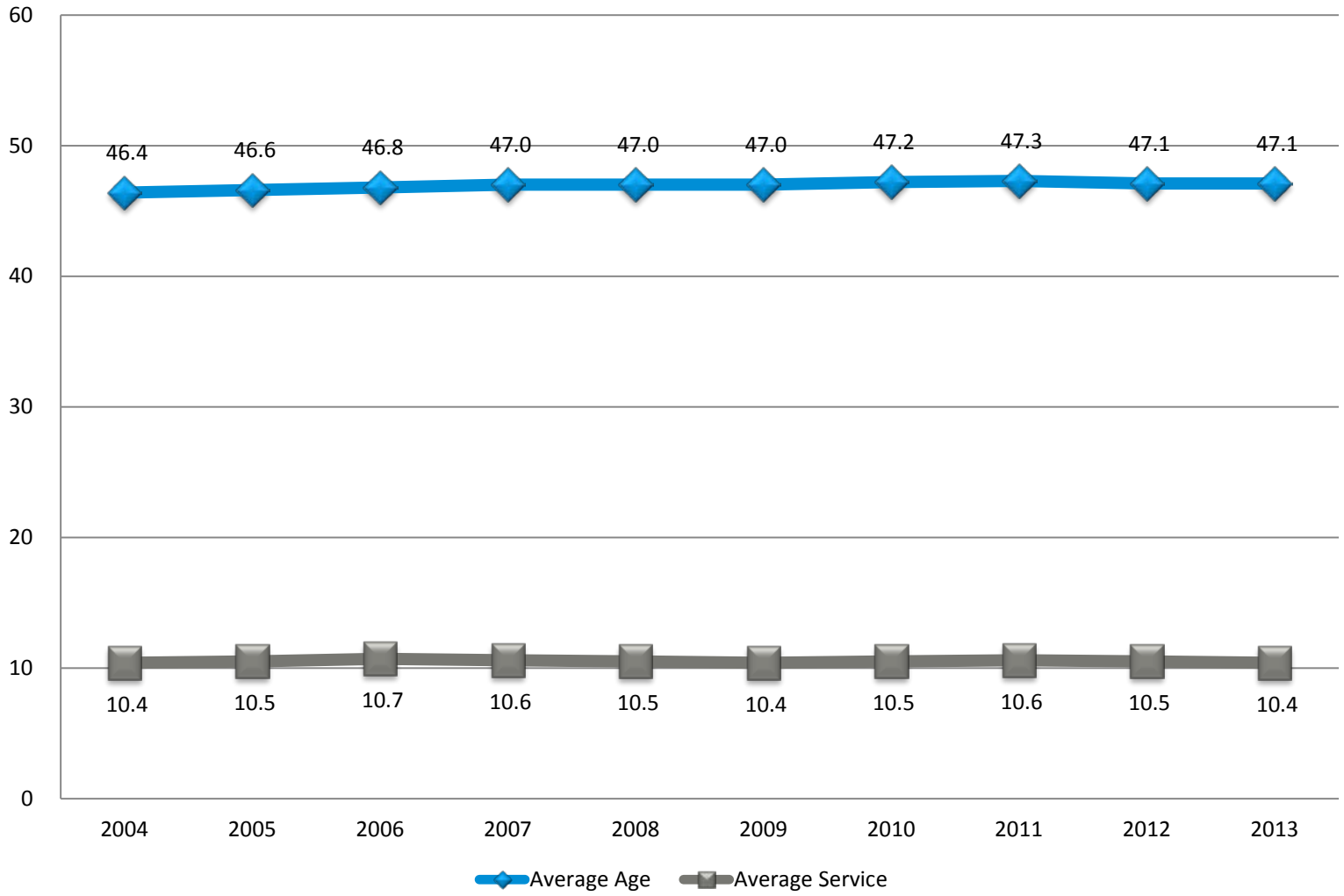
Active Payroll – Main System



Average Age and Service of Active Members – Main System



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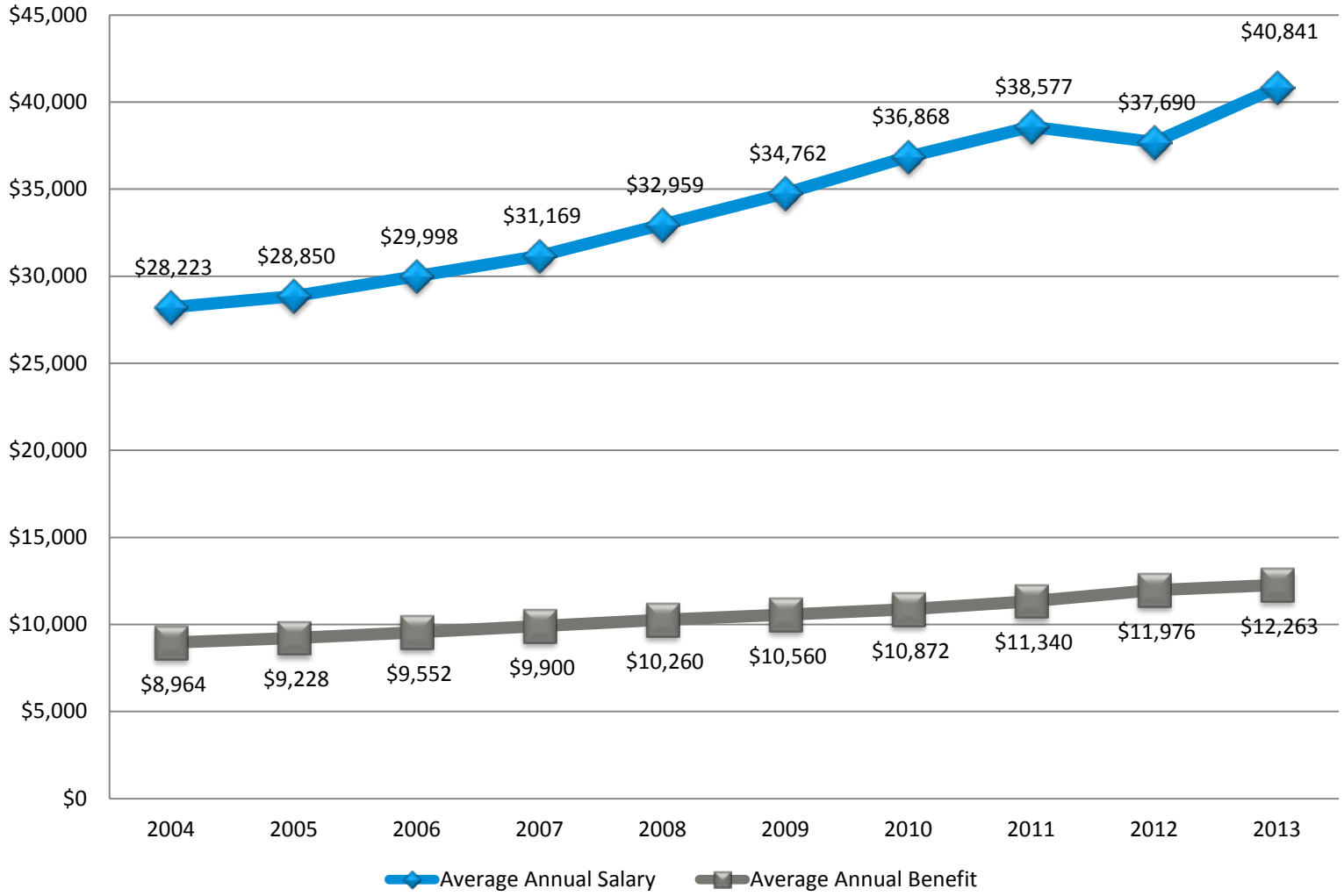
Average Salary and Average Benefit – Main System



Assets – PERS and HPRS

- The market value of assets increased from $1.785 billion (as of June 30, 2012) to $2.015 billion (as of June 30, 2013)
  - Segal determined the investment return was 13.41%, net of investment expenses
- The actuarial value of assets – which smooths investment gains and losses over five years – increased from $1.675 billion (as of June 30, 2012) to $1.732 billion (as of June 30, 2013)
  - Investment return of 3.93%, net of investment expenses
  - Actuarial value is 86.0% of market value
  - There is a total of $283 million of deferred investment gains that will be recognized in future years
- The average annual return on market assets over the past 10 years is 6.8%
- The average annual return on actuarial assets over the past 10 years is 4.7%

Market Value of Assets ($ in billions) – PERS and HPRS – Historical Returns

Year Ending June 30	Market Value	Actuarial Value
2004	16.65%	3.16%
2005	14.17	4.36
2006	12.04	7.79
2007	19.63	15.84
2008	(5.21)	8.51
2009	(24.05)	1.72
2010	13.25	1.48
2011	21.09	3.31
2012	(0.20)	(0.15)
2013	13.41	3.93

Market Value of Assets ($ in billions) – PERS and HPRS

Fiscal Year Ending June 30, 2013	
Beginning of Year	$1.785
Contributions:	
• Employer	0.050
• Member	0.048
• Service Purchases	0.008
• Total	0.106
Benefits, Expenses and Refunds	(0.115)
Investment Income (net)	0.239
End of Year	$2.015
Rate of Return	+13.41%

Actuarial Value of Assets ($ in billions) – PERS and HPRS

1. Market Value of Assets as of June 30, 2012	$1.785
2. Contributions, Interest, Dividends, Benefits and Expenses	0.029
3. Preliminary Market Value as of June 30, 2013	$1.814
4. Actual Market Value as of June 30, 2013	2.015
5. Excess/(Shortfall) Return for Year Ended June 30, 2013	$0.201

Excess/(Shortfall) Returns:

Year	Initial Amount	Deferral %	Unrecognized Amount
2013	$0.201	80%	$0.160
2012	(0.040)	60%	(0.024)
2011	0.289	40%	0.116
2010	0.153	20%	0.031
2009	(0.464)	0%	0.000
6. Total			$0.283

7. Actuarial Value of Assets as of June 30, 2013: (4) - (6)	$1.732
8. Actuarial Value of Assets as a % of Market Value of Assets	86.0%

Market Value of Assets ($ in billions) – Main System

Fiscal Year Ending June 30, 2013	
Beginning of Year	$1.683
Contributions	0.100
Benefits, Refunds and Expenses	(0.109)
Investment Income (net)	0.225
End of Year	$1.899
Rate of Return	+13.40%

Market Value of Assets ($ in millions) – Judges

Fiscal Year Ending June 30, 2013	
Beginning of Year	$32.218
Contributions	1.428
Benefits, Refunds and Expenses	(1.474)
Investment Income (net)	4.353
End of Year	$36.525
Rate of Return	+13.52%

Market Value of Assets ($ in millions) – National Guard

Fiscal Year Ending June 30, 2013	
Beginning of Year	$2.355
Contributions	0.160
Benefits, Refunds and Expenses	(0.139)
Investment Income (net)	0.319
End of Year	$2.695
Rate of Return	+13.49%

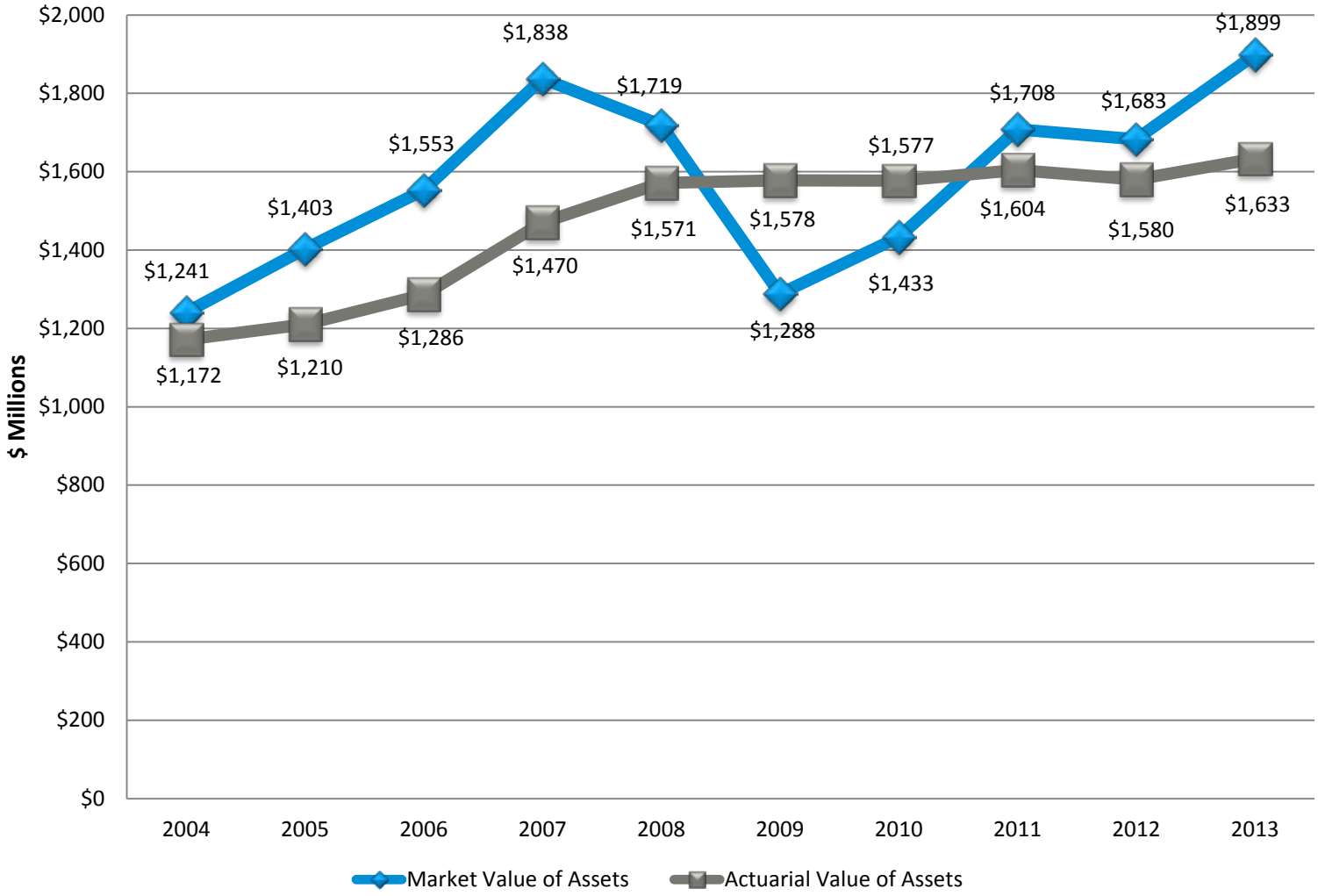
Market Value of Assets ($ in millions) – Law Enforcement with Prior Main System Service

Fiscal Year Ending June 30, 2013	
Beginning of Year	$15.219
Contributions	1.582
Benefits, Refunds and Expenses	(1.070)
Investment Income (net)	2.090
End of Year	$17.821
Rate of Return	+13.51%

Law Enforcement without Prior Main System Service

Fiscal Year Ending June 30, 2013	
Beginning of Year	$0.778
Contributions	0.308
Benefits, Refunds and Expenses	(0.038)
Investment Income (net)	0.122
End of Year	$1.170
Rate of Return	+13.39%

Market and Actuarial Values of Assets – Main System



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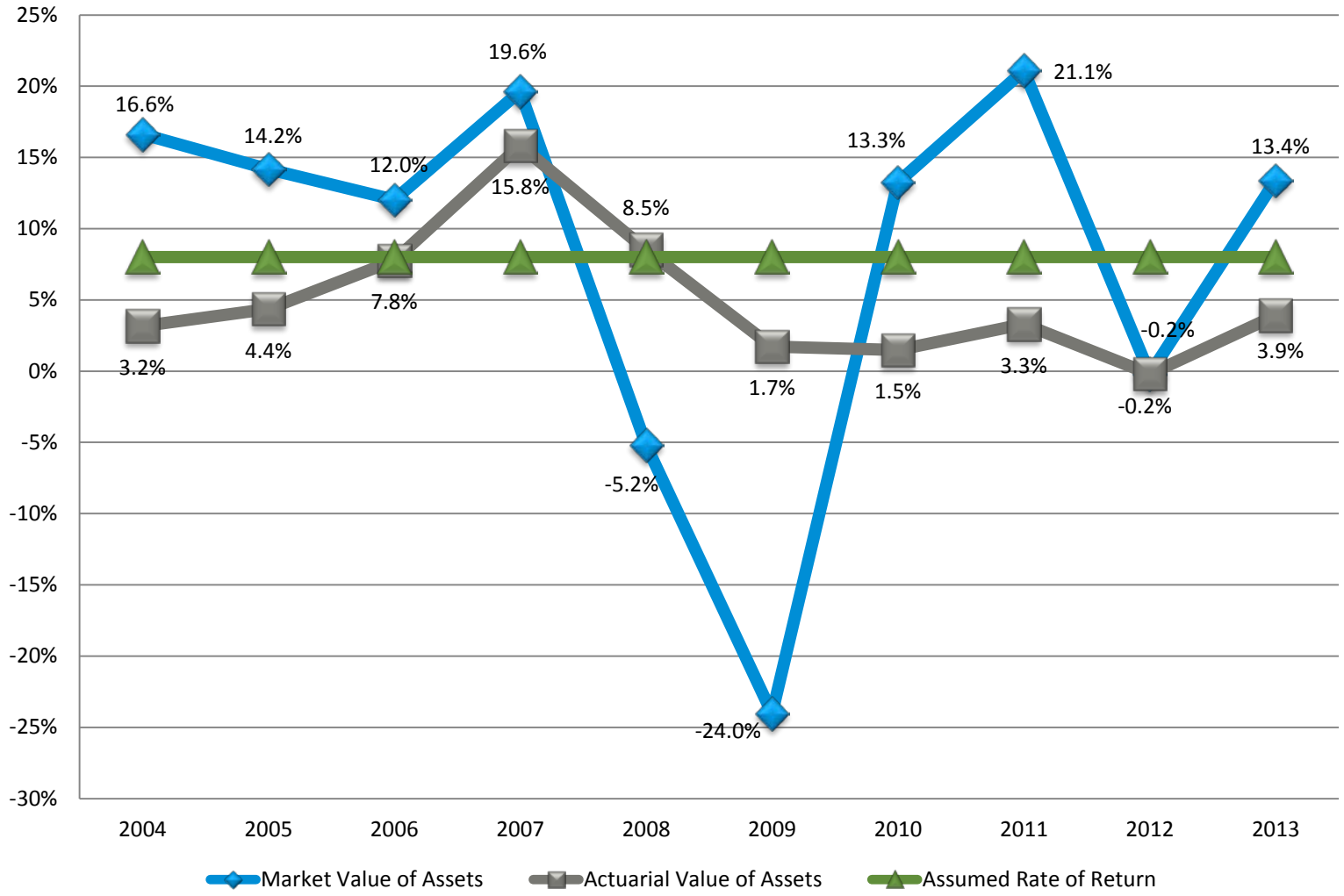
Asset Returns – PERS and HPRS



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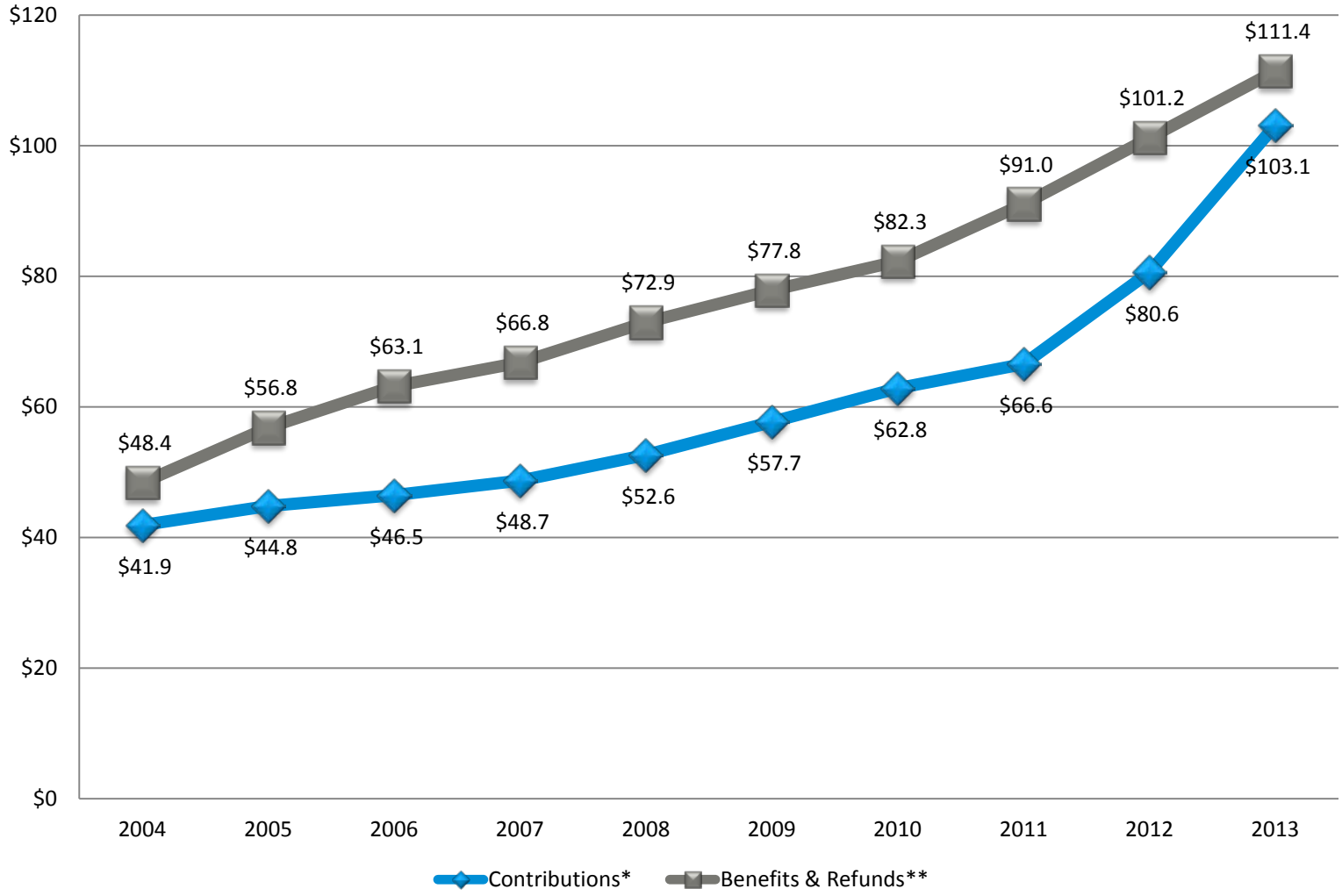
Contributions vs Benefits and Refunds – PERS



* Includes member and employer contributions, and service purchases

** Includes administrative expenses

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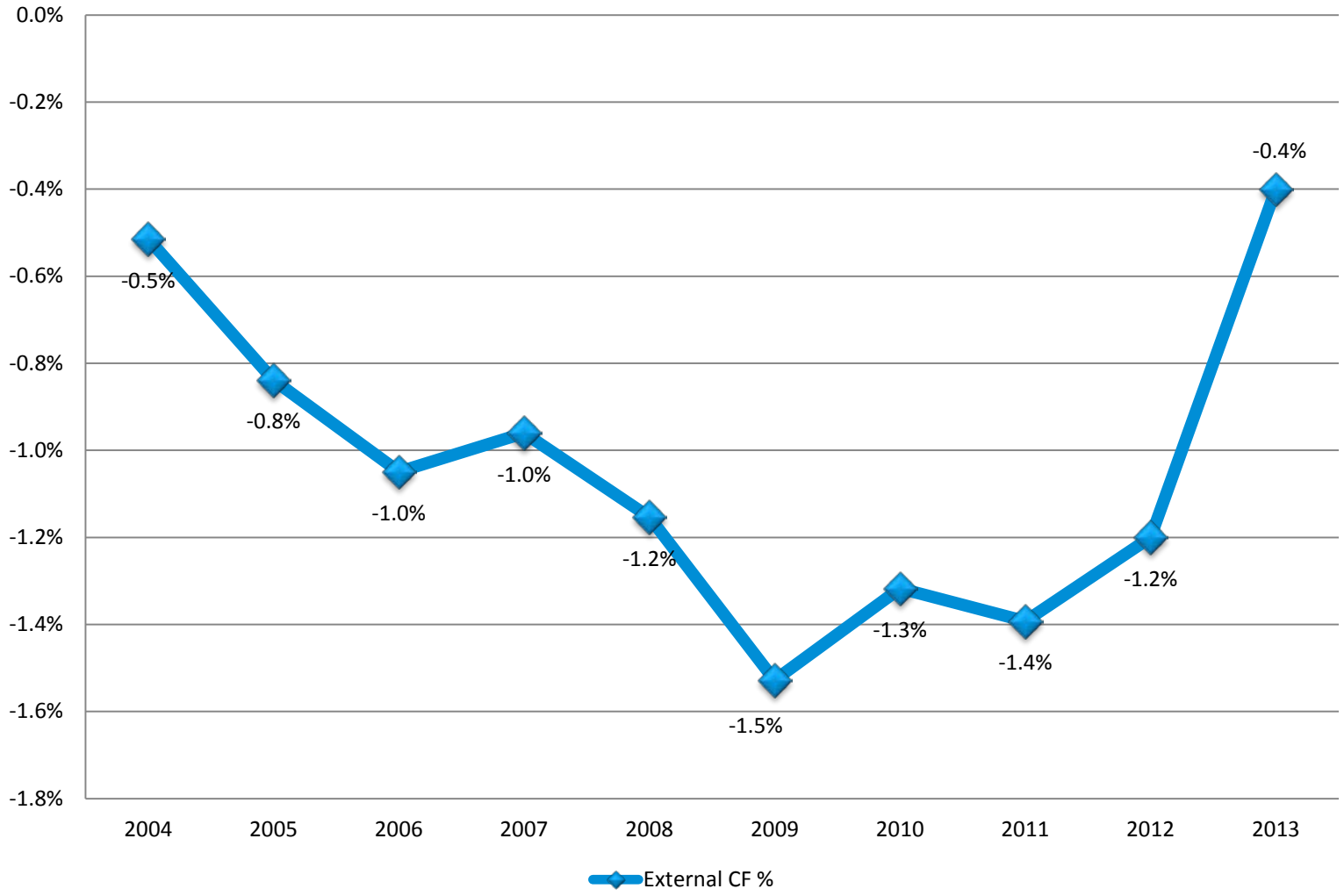
External Cash Flow as a % of Market Value – PERS



Valuation Results ($ in millions) – Main System

	July 1, 2013	July 1, 2012
Actuarial Accrued Liability:		
• Active Members	$1,552	$1,396
• Inactive Members	155	171
• Retirees and Beneficiaries	944	875
Total	**$2,651**	**$2,442**
Actuarial Assets	1,633	1,580
Unfunded Accrued Liability	$1,018	$862
Funded Ratio	61.6%	64.7%

Actuarially Recommended Contribution – Main System

	July 1, 2013	July 1, 2012
Normal Cost Rate	10.31%	10.04%
Member Rate	6.50%	5.50%
Employer Normal Cost Rate	3.81%	4.54%
Amortization of UAAL	8.33%	7.70%
Actuarially Recommended Contribution	12.14%	12.24%
Employer Rate	6.12-7.12%	5.12-6.12%
Contribution Sufficiency/(Deficiency)	(4.52%)	(5.62%)

If the actuarially recommended contribution is calculated using the market value of assets, the ultimate contribution sufficiency/(deficiency) is (2.37%).

Valuation Results ($ in millions) – Judges

	July 1, 2013	July 1, 2012
Actuarial Accrued Liability:		
• Active Members	$21.613	$19.455
• Inactive Members	0.382	0.355
• Retirees and Beneficiaries	14.217	13.873
Total	**$36.212**	**$33.683**
Actuarial Assets	31.400	30.238
Unfunded Accrued Liability	$4.812	$3.445
Funded Ratio	86.7%	89.8%

Actuarially Recommended Contribution – Judges

	July 1, 2013	July 1, 2012
Normal Cost Rate	18.75%	18.73%
Member Rate	7.50%	6.50%
Employer Normal Cost Rate	11.25%	12.23%
Amortization of UAAL	5.41%	4.10%
Actuarially Recommended Contribution	16.66%	16.33%
Employer Rate	16.52-17.52%	15.52-16.52%
Contribution Sufficiency/(Deficiency)	1.36%	0.69%

If the actuarially recommended contribution is calculated using the market value of assets, the ultimate contribution sufficiency/(deficiency) is 7.00%.

Valuation Results ($ in millions) – National Guard

	July 1, 2013	July 1, 2012
Actuarial Accrued Liability:		
• Active Members	$1.535	$1.073
• Inactive Members	0.315	0.369
• Retirees and Beneficiaries	1.110	0.973
Total	**$2.960**	**$2.415**
Actuarial Assets	2.317	2.211
Unfunded Accrued Liability	$0.643	$0.204
Funded Ratio	78.2%	91.6%

Actuarially Recommended Contribution – National Guard

	July 1, 2013	July 1, 2012
Normal Cost Rate	10.49%	10.31%
Member Rate	4.25%	4.00%
Employer Normal Cost Rate	6.24%	6.31%
Amortization of UAAL	2.83%	1.09%
Actuarially Recommended Contribution	9.07%	7.40%
Employer Rate	7.00%	6.50%
Contribution Sufficiency/(Deficiency)	(1.82%)	(0.90%)

If the actuarially recommended contribution is calculated using the market value of assets, the ultimate contribution sufficiency/(deficiency) is (0.26%).

Valuation Results ($ in millions) – Law Enforcement with Prior Main System Service

	July 1, 2013	July 1, 2012
Actuarial Accrued Liability:		
• Active Members	$14.271	$13.134
• Inactive Members	0.812	1.037
• Retirees and Beneficiaries	10.250	7.831
Total	**$25.333**	**$22.002**
Actuarial Assets	15.320	14.284
Unfunded Accrued Liability	$10.013	$7.718
Funded Ratio	60.5%	64.9%

Actuarially Recommended Contribution – Law Enforcement with Prior Main System Service

	July 1, 2013	July 1, 2012
Normal Cost Rate	10.60%	9.92%
Member Rate	5.41%	4.92%
Employer Normal Cost Rate	5.19%	5.00%
Amortization of UAAL	5.99%	5.69%
Actuarially Recommended Contribution	11.18%	10.69%
Employer Rate*	9.31-9.81%	8.81-9.31%
Contribution Sufficiency/(Deficiency)	(1.07%)	(0.85%)

If the actuarially recommended contribution is calculated using the market value of assets, the ultimate contribution sufficiency/(deficiency) is 0.42%.

*Rates shown are for employees of Political Subdivisions.
Rate for BCI employees is 10.31% as of July 1, 2013 and was 9.31-10.31% as of July 1, 2012.

Law Enforcement without Prior Main System Service

	July 1, 2013	July 1, 2012
Actuarial Accrued Liability:		
• Active Members	$1.149	$0.830
• Inactive Members	0.221	0.103
• Retirees and Beneficiaries	0.096	0.000
Total	**$1.466**	**$0.933**
Actuarial Assets	1.006	0.730
Unfunded Accrued Liability	$0.460	$0.203
Funded Ratio	68.6%	78.3%

Law Enforcement without Prior Main System Service

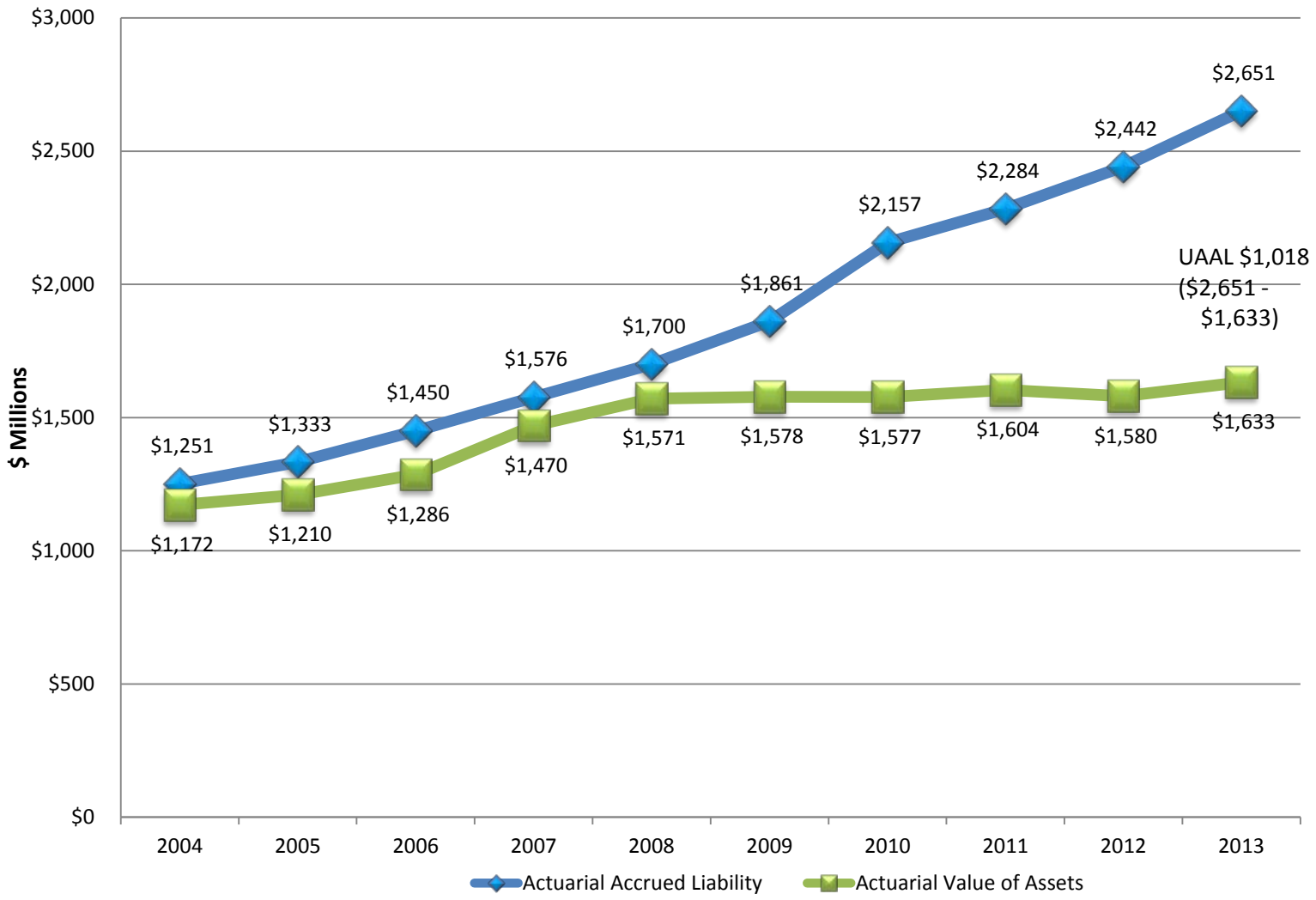
	July 1, 2013	July 1, 2012
Normal Cost Rate	11.83%	11.49%
Member Rate	5.25%	4.75%
Employer Normal Cost Rate	6.58%	6.74%
Amortization of UAAL	1.53%	0.59%
Actuarially Recommended Contribution	8.11%	7.33%
Employer Rate	7.43-7.93%	6.93-7.43%
Contribution Sufficiency/(Deficiency)	0.07%	0.35%

If the actuarially recommended contribution is calculated using the market value of assets, the ultimate contribution sufficiency/(deficiency) is 0.51%.

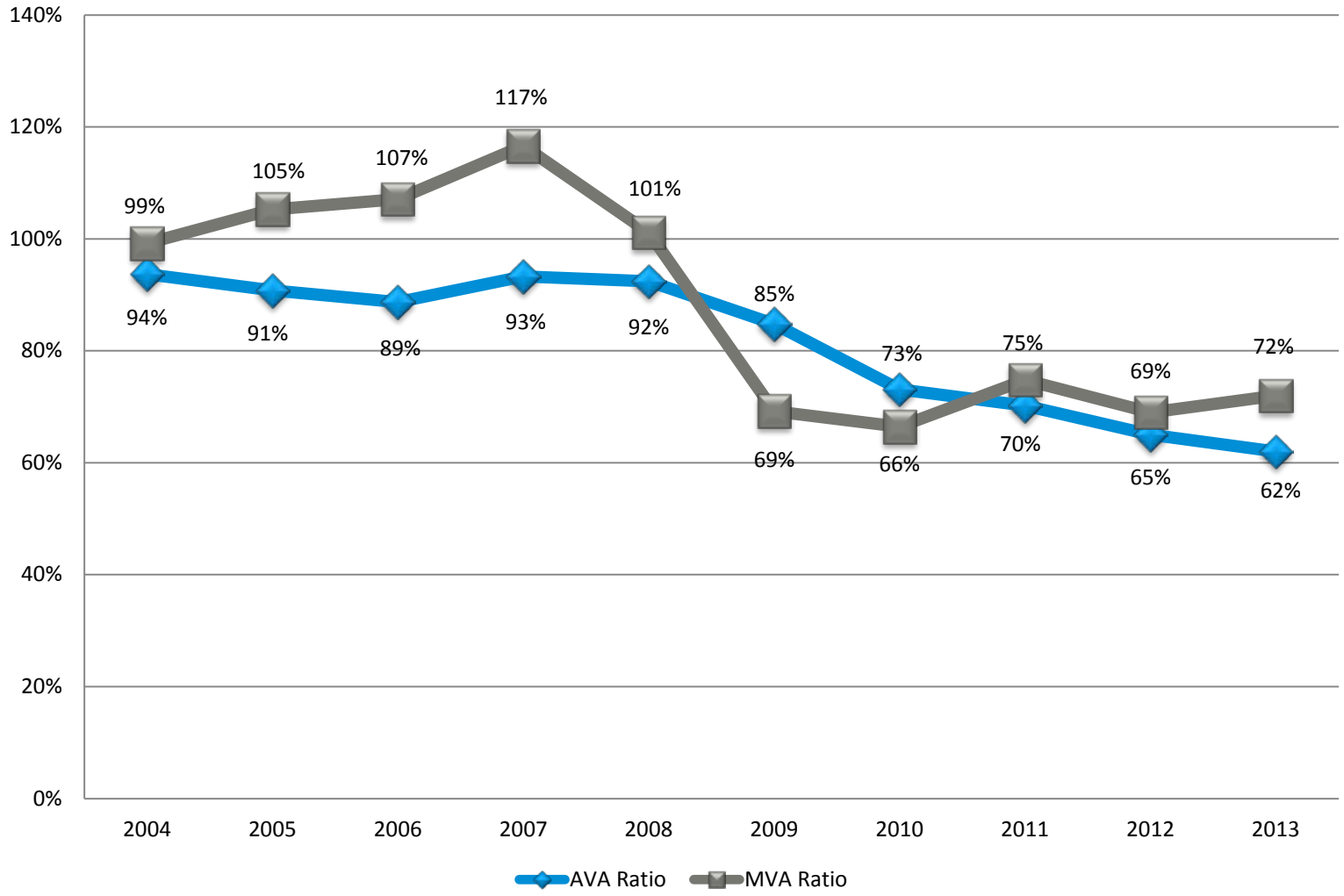
Valuation Results ($ in millions) – PERS

	July 1, 2013	July 1, 2012
Actuarial Accrued Liability:		
• Active Members	$1,591	$1,430
• Inactive Members	969	173
• Retirees and Beneficiaries	157	898
Total	**$2,717**	**$2,501**
Actuarial Assets	1,683	1,627
Unfunded Accrued Liability	$1,034	$874
Funded Ratio	62.0%	65.1%

Actuarial Value of Assets and Actuarial Accrued Liability – Main System



Funded Ratios – Main System



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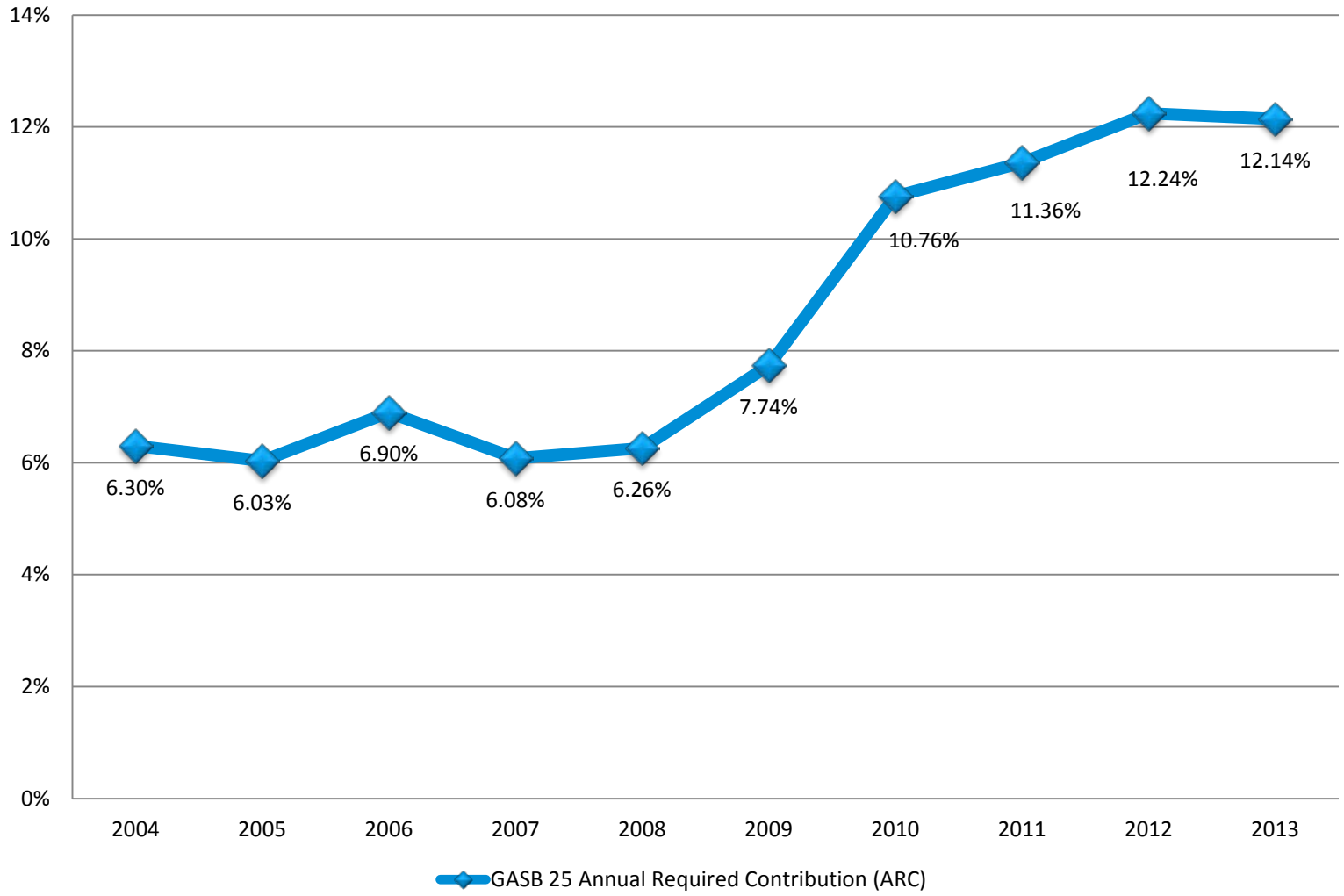
GASB 25 Annual Required Contribution (ARC) – Main System



Membership – Highway Patrol

	2013	2012	Change
Active			
• Number	149	145	+2.8%
• Payroll*	$9.3 mil	$8.2 mil	+14.5%
• Average Age	37.3 years	36.8 years	+0.5 years
• Average Service	10.8 years	10.5 years	+0.3 years
Retirees and Beneficiaries			
• Number	116	116	+0.0%
• Total Annual Benefits	$3.7 mil	$3.7 mill	+1.5%
• Average Monthly Benefit	$2,694	$2,654	+1.5%

* This increase includes a change in our data processing methodology.

Assets – Highway Patrol

- The market value of assets increased from $51.2 million (as of June 30, 2012) to $57.0 million (as of June 30, 2013)
  - Segal determined the investment return was 13.52%, net of investment expenses
- The actuarial value of assets – which smooths investment gains and losses over five years – increased from $48.1 million (as of June 30, 2012) to $49.0 million (as of June 30, 2013)
  - Investment return of 4.20%, net of investment expenses
  - Actuarial value is 86.0% of market
  - There is a total of $8.0 million of deferred investment gains that will be recognized in future years
- The average annual return on market assets for PERS and HPRS over the past 10 years is 6.8%
- The average annual return on actuarial assets for PERS and HPRS over the past 10 years is 4.7%

Valuation Results ($ in millions) – Highway Patrol

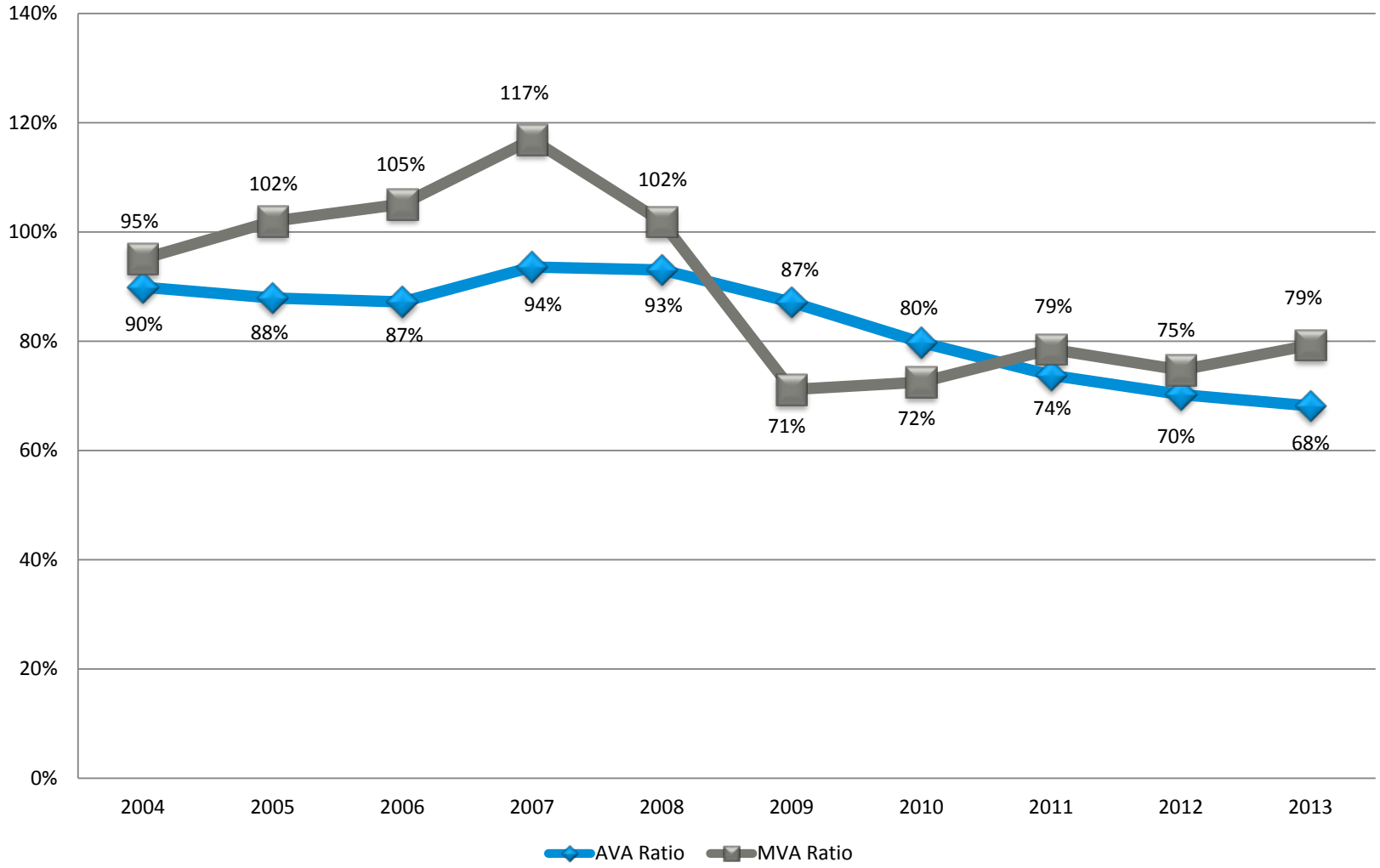
	July 1, 2013	July 1, 2012
Actuarial Accrued Liability:		
• Active Members	$31.412	$29.187
• Inactive Members	2.500	1.847
• Retirees and Beneficiaries	37.980	37.422
Total	**$71.892**	**$68.456**
Actuarial Assets	49,039	48.094
Unfunded Accrued Liability	$22,853	$20.362
Funded Ratio	68.2%	70.3%

Actuarially Recommended Contribution – Highway Patrol

	July 1, 2013	July 1, 2012
Normal Cost Rate	20.66%	21.23%
Member Rate	12.80%	11.80%
Employer Normal Cost Rate	7.86%	9.43%
Amortization of UAAL	17.25%	17.40%
Actuarially Recommended Contribution	25.11%	26.83%
Employer Rate	18.7-19.7%	17.7-18.7%
Contribution Sufficiency/(Deficiency)	(4.91%)	(7.63%)

If the actuarially recommended contribution is calculated using the market value of assets, the ultimate contribution sufficiency/(deficiency) is 1.06%.

Funded Ratios – Highway Patrol



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Membership – Job Service

	2013	2012	Change
Active:			
• Number	15	19	-21.1%
• Projected payroll	$0.8 mil	$1.0 mil	-19.2%
• Average Age	59.3 years	58.6 years	+0.7 years
• Average Service	36.5 years	35.7 years	+0.8 years
Retirees and Beneficiaries			
Non Travelers			
• Number	137	133	+3.0%
• Total Monthly Benefits	$313,664	$311,193	+0.8%
• Average Monthly Benefit	$2,290	$2,340	-2.2%
Travelers			
• Number	76	79	-3.8%
• Total Monthly Benefits	$53,983	$54,571	-1.1%
• Average Monthly Benefit	$710	$691	+2.8%

Assets – Job Service

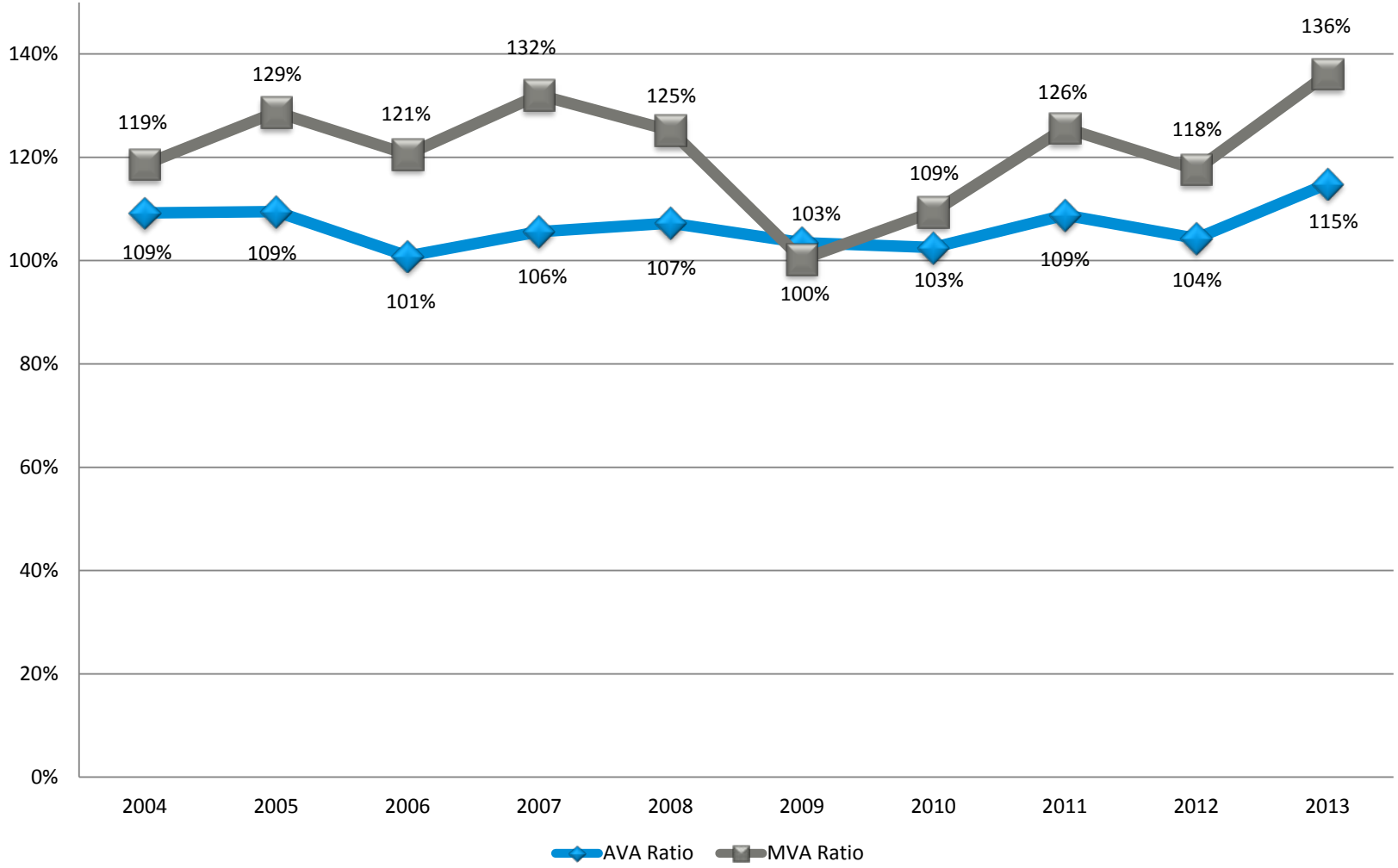
- The market value of assets increased from $84.7 million (as of June 30, 2012) to $90.4 million (as of June 30, 2013)
  - Segal determined the investment return was 12.06%, net of investment expenses
- The actuarial value of assets – which smooths investment gains and losses over five years – increased from $75.1 million (as of June 30, 2012) to $76.3 million (as of June 30, 2013)
  - Investment return of 7.52%, net of investment expenses
  - Actuarial value is 84.5% of market
  - There is a total of $14.1 million of deferred investment gains that will be recognized in future years
- The assumed rate of return on investments was increased from 7.5% to 8.0% to measure results on the basis under which the Plan was first established

Valuation Results ($ in millions) – Job Service

	July 1, 2013	July 1, 2012
Actuarial Accrued Liability:		
• Active Members	$7.858	$10.197
• Inactive Members	1.915	0.661
• Retirees and Beneficiaries	56.672	61.184
Total	**$66.445**	**$72.042**
Actuarial Assets	76.325	75.118
Unfunded/(Overfunded) Accrued Liability	$(9.880)	$(3.076)
Funded Ratio*	114.9%	104.3%

*No contributions are scheduled as long as the funded ratio exceeds 100%.

Funded Ratios – Job Service



Based on PVB.

Membership – Retiree Health Insurance Credit Fund

	2013	2012	Change
Active:			
• Number	21,955	21,462	+2.3%
• Payroll*	$914.4 mil	$824.9 mil	+10.8%
• Average Age	46.9 years	47.0 years	-0.1 years
• Average Service	10.3 years	10.3 years	0.0 years
Retirees and Beneficiaries			
• Number	4,635	4,442	+4.3%
• Total Annual Benefits	$6.6 mil	$6.3 mil	+4.8%
• Average Monthly Benefit	$119	$118	+0.8%

* This increase includes a change in our data processing methodology.

Assets – Retiree Health Insurance Credit Fund

- The market value of assets increased from $63.9 million (as of June 30, 2012) to $75.6 million (as of June 30, 2013)
  - Segal determined the investment return was 12.11%, net of investment expenses
- The actuarial value of assets – which smooths investment gains and losses over five years – increased from $58.3 million (as of June 30, 2012) to $66.0 million (as of June 30, 2013)
  - Investment return of 6.61%, net of investment expenses
  - Actuarial value is 87.3% of market
  - There is a total of $9.6 million of deferred investment gains that will be recognized in future years

Valuation Results ($ in millions) – Retiree Health Insurance Credit Fund

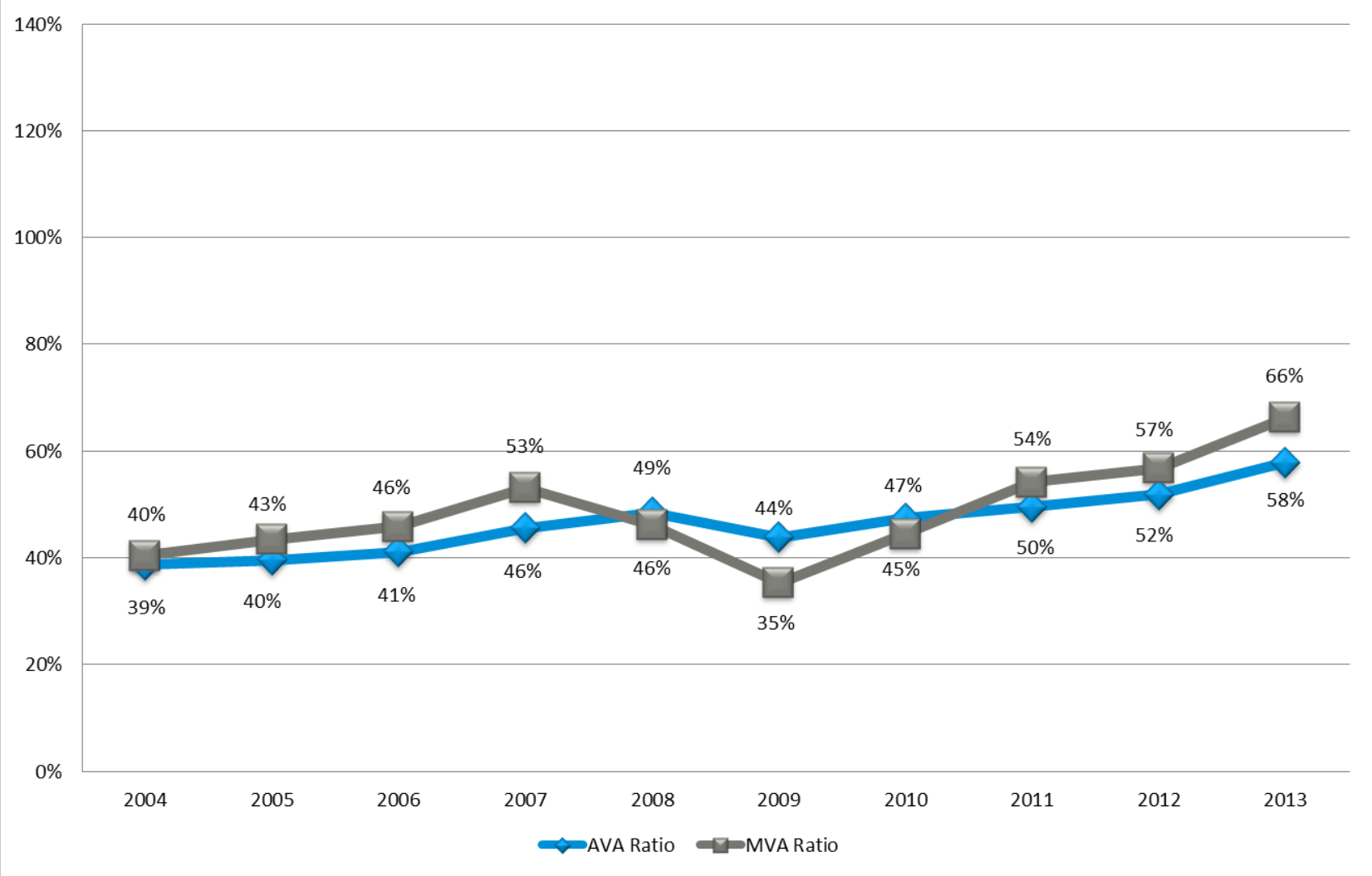
	July 1, 2013	July 1, 2012
Actuarial Accrued Liability:		
• Active Members	$57.098	$58.337
• Retirees and Beneficiaries	56.955	54.036
Total	**$114.053**	**$112.373**
Actuarial Assets	65.972	58.307
Unfunded Accrued Liability	$48.081	$54.066
Funded Ratio	57.8%	51.9%

Actuarially Recommended Contribution – Retiree Health Insurance Credit Fund

	July 1, 2013	July 1, 2012
Normal Cost Rate	0.35%	0.40%
Amortization of UAAL	0.42%	0.50%
Actuarially Recommended Contribution	0.77%	0.90%
Employer Rate	1.14%	1.14%
Contribution Sufficiency/(Deficiency)	0.37%	0.24%

If the actuarially recommended contribution is calculated using the market value of assets, the ultimate contribution sufficiency/(deficiency) is 0.46%.

Funded Ratios – Retiree Health Insurance Credit Fund



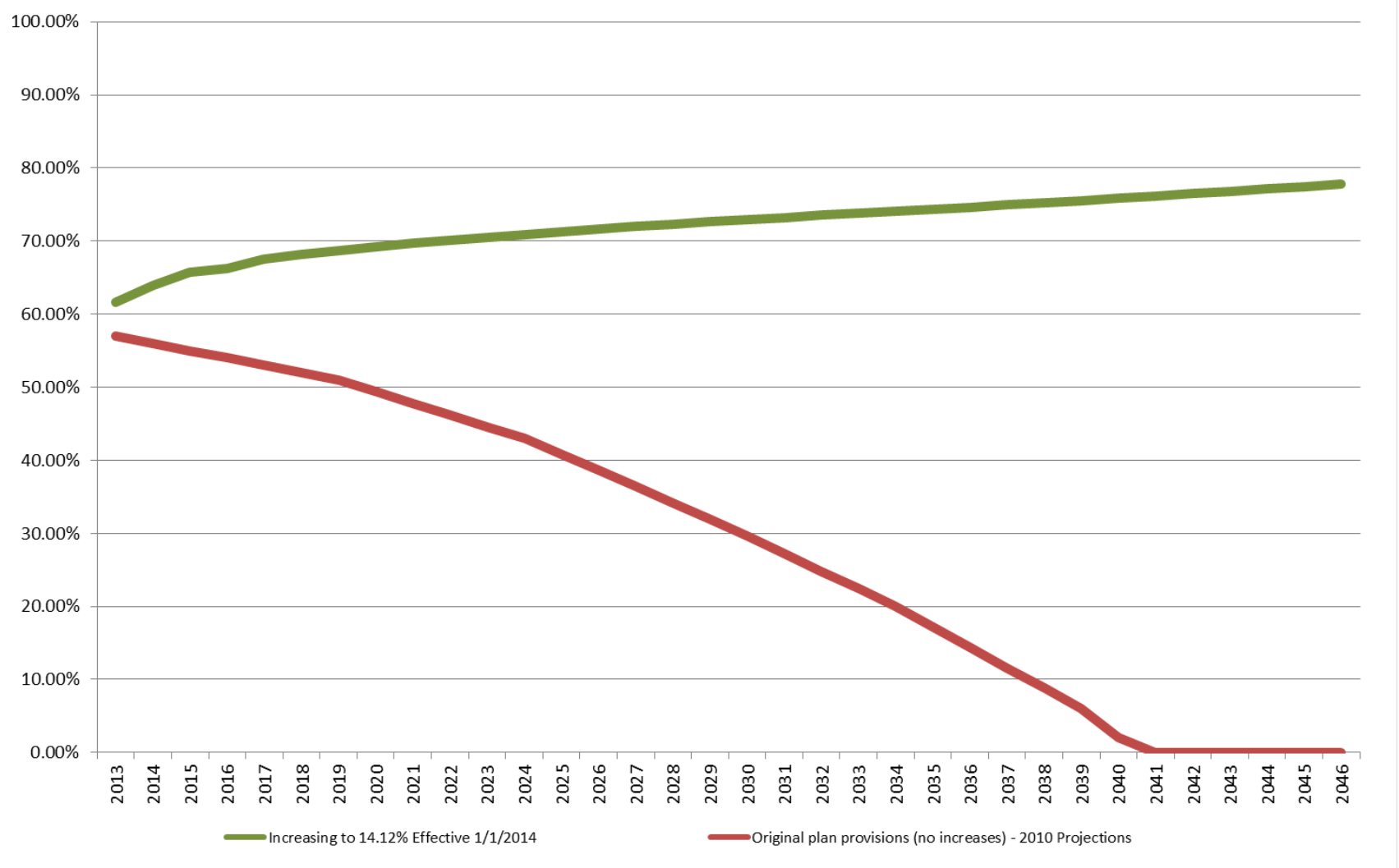
Valuation Results - Comments

- Potential risks to the system:
  - Continued aging of population
  - Unforeseen demographic “shocks”
  - Change in asset return environment
- Board should consider projections, studies, etc., to help quantify these risks, and make changes to the system, if appropriate
- The asset valuation and amortization methods should be reviewed to make sure that they are in line with the Board’s funding objectives
- Contributions are being made in accordance with the funding policy but the Plans remain unfunded. A change in the policy could accelerate an improvement of the funded ratios.

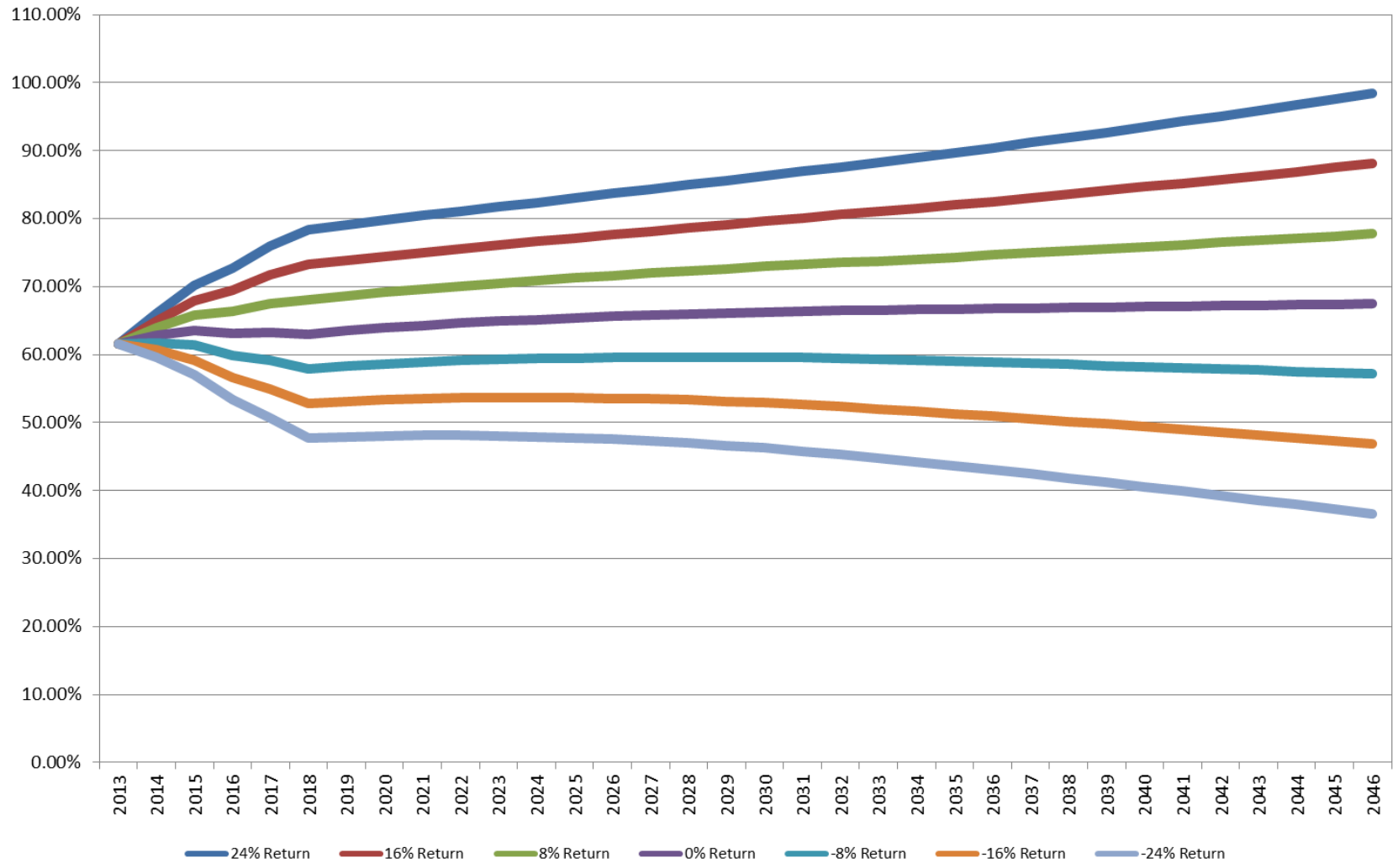
Projections

- Projections of estimated funded ratios for 30 years
  - Based on investment return scenarios ranging from -24% to +24% for 2013/2014
  - Assume Fund earns 8% per year thereafter
  - All other experience is assumed to emerge as expected
  - 10% of new entrants will elect DC Plan participation
- Target Funded Ratios
  - Based on investment return scenarios ranging from -24% to 24% for 2013/2014
  - Assume Fund earns indicated return thereafter
  - All other experience is assumed to emerge as expected
- Projections, by their nature, are not a guarantee of future results. The modeling projections are intended to serve as illustrations of future financial outcomes that are based on the information available to us at the time the modeling is undertaken and completed, and the agreed-upon assumptions and methodologies described herein. Emerging results may differ significantly if the actual experience proves to be different from these assumptions or if alternative methodologies are used. Actual experience may differ due to such variables as demographic experience, the economy, stock market performance and the regulatory environment.

System
Current Plan vs. Original Plan (2010 Projection)



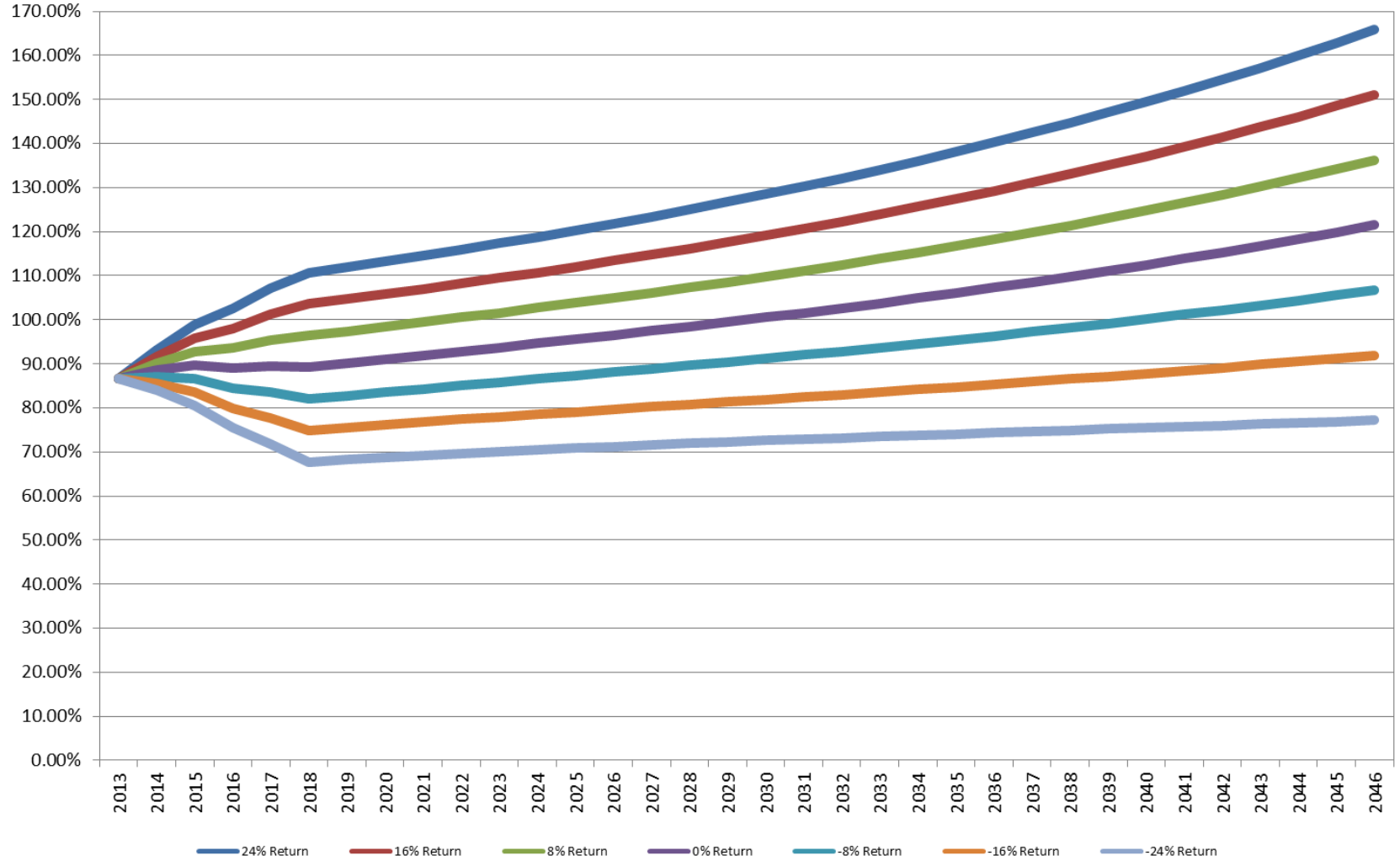
Projected Funded Ratios (AVA Basis) – Main System



Target Funded Ratios – Main System

Target Funded Ratio	Rate of Return Required for All Years Beginning on and after 2014/2015 To Achieve Target in 2033						
	Assumed 2013/2014 Return						
	24.0%	16.0%	8.0%	0.0%	-8.0%	-16.0%	-24.0%
70%	6.8%	7.3%	7.7%	8.3%	8.8%	9.5%	10.2%
80%	7.5%	7.9%	8.4%	9.0%	9.5%	10.2%	10.9%
90%	8.1%	8.6%	9.1%	9.6%	10.2%	10.8%	11.5%
100%	8.7%	9.1%	9.6%	10.1%	10.7%	11.4%	12.1%

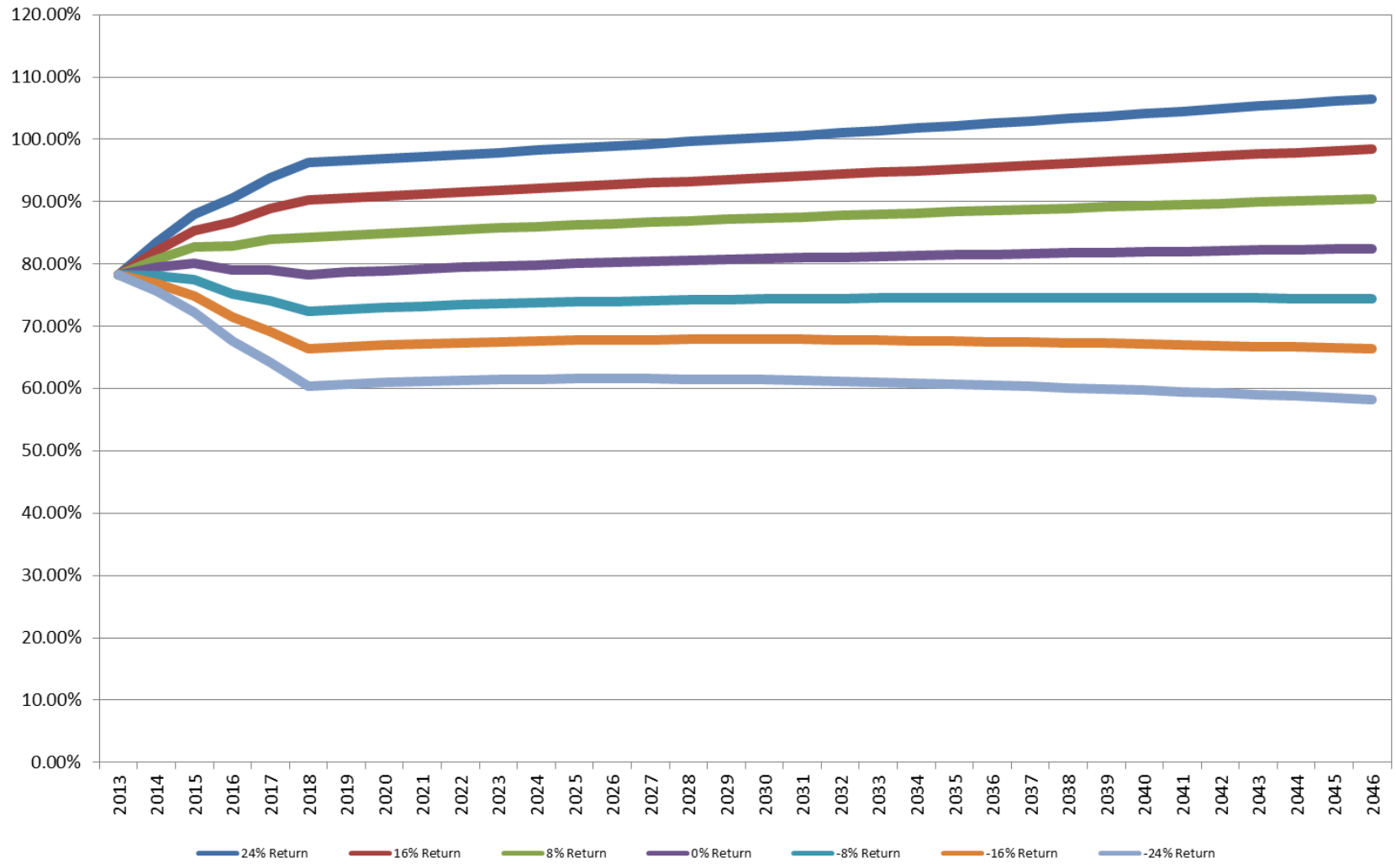
Projected Funded Ratios (AVA Basis) – Judges



Target Funded Ratios – Judges

Target Funded Ratio	Rate of Return Required for All Years Beginning on and after 2014/2015 To Achieve Target in 2033						
	Assumed 2013/2014 Return						
	24.0%	16.0%	8.0%	0.0%	-8.0%	-16.0%	-24.0%
70%	4.5%	4.9%	5.4%	5.9%	6.5%	7.1%	7.8%
80%	5.2%	5.6%	6.1%	6.6%	7.2%	7.8%	8.5%
90%	5.8%	6.3%	6.7%	7.2%	7.8%	8.4%	9.1%
100%	6.4%	6.8%	7.3%	7.8%	8.4%	9.0%	9.7%

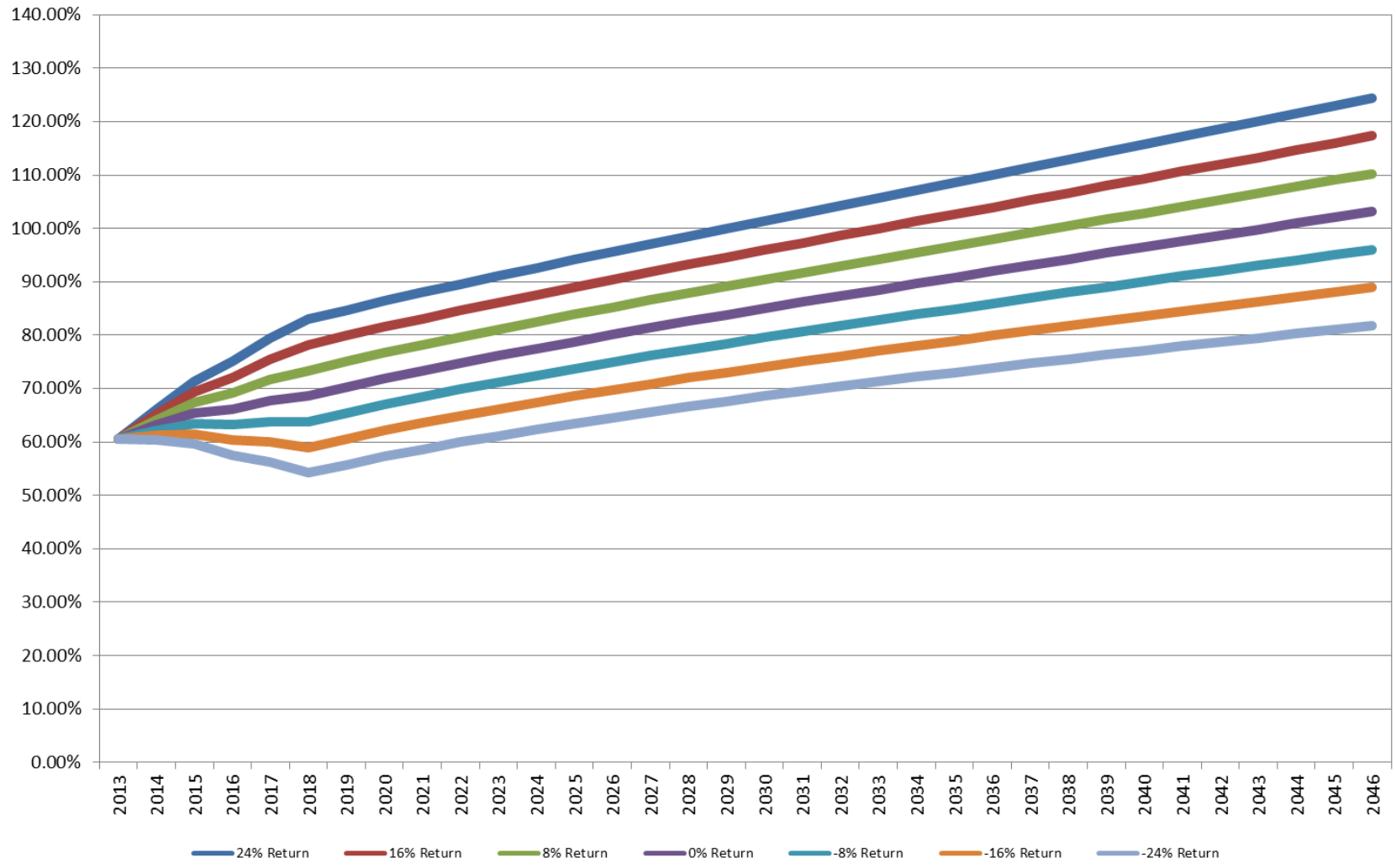
Projected Funded Ratios (AVA Basis) – National Guard



Target Funded Ratios – National Guard

Target Funded Ratio	Rate of Return Required for All Years Beginning on and after 2014/2015 To Achieve Target in 2033						
	Assumed 2013/2014 Return						
	24.0%	16.0%	8.0%	0.0%	-8.0%	-16.0%	-24.0%
70%	5.8%	6.2%	6.7%	7.1%	7.6%	8.2%	8.8%
80%	6.6%	7.0%	7.5%	7.9%	8.4%	9.0%	9.6%
90%	7.3%	7.7%	8.1%	8.6%	9.1%	9.7%	10.3%
100%	7.9%	8.3%	8.8%	9.2%	9.8%	10.3%	10.9%

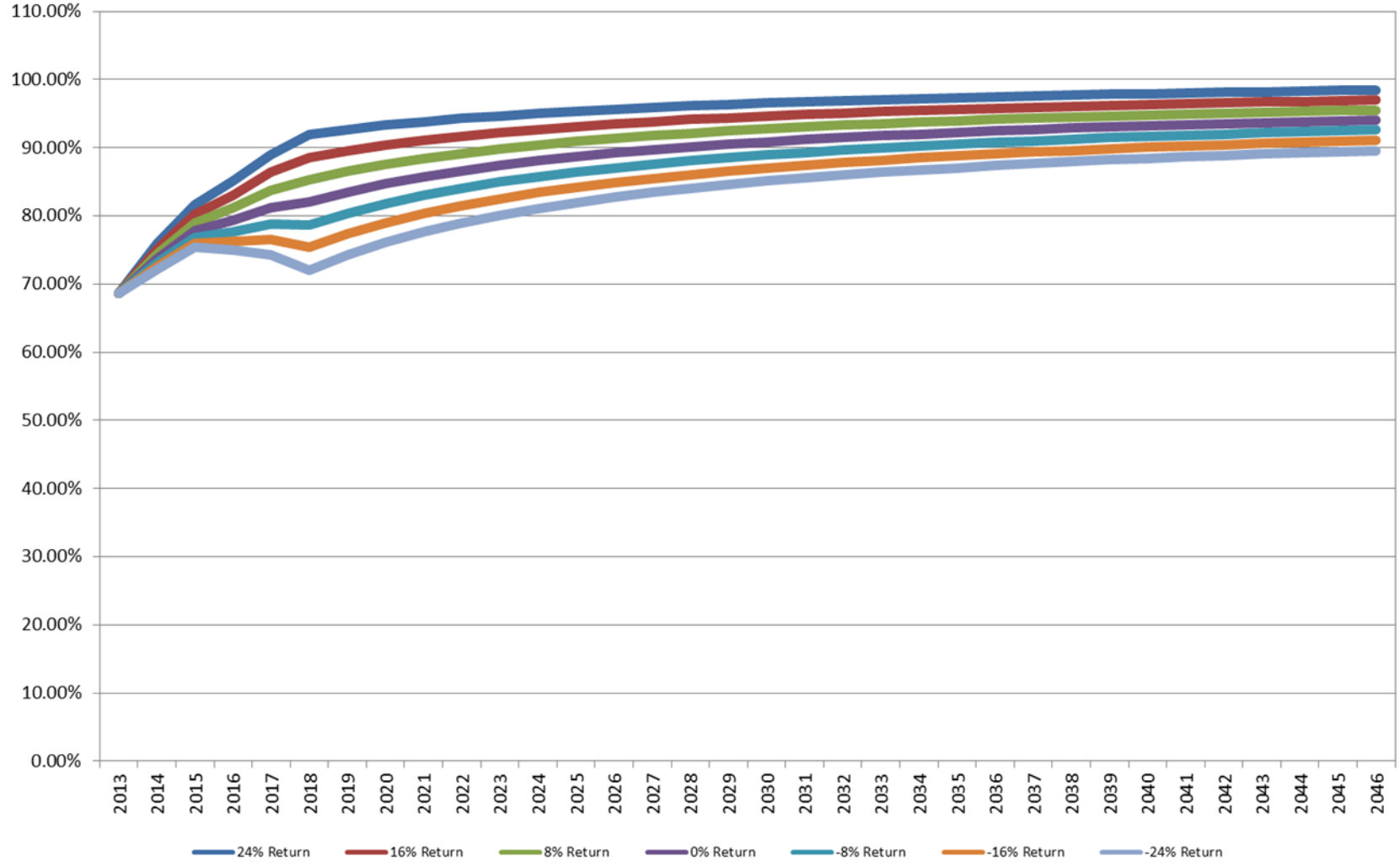
Projected Funded Ratios (AVA Basis) – Law Enforcement with Prior Main System Service



Target Funded Ratios – Law Enforcement with Prior Main System Service

Target Funded Ratio	Rate of Return Required for All Years Beginning on and after 2014/2015 To Achieve Target in 2033						
	Assumed 2013/2014 Return						
	24.0%	16.0%	8.0%	0.0%	-8.0%	-16.0%	-24.0%
70%	5.3%	5.7%	6.1%	6.5%	6.9%	7.4%	7.9%
80%	6.2%	6.6%	6.9%	7.3%	7.8%	8.3%	8.8%
90%	7.0%	7.3%	7.7%	8.1%	8.6%	9.0%	9.6%
100%	7.7%	8.0%	8.4%	8.8%	9.3%	9.7%	10.3%

Law Enforcement without Prior Main System Service



Law Enforcement without Prior Main System Service

Target Funded Ratio	Rate of Return Required for All Years Beginning on and after 2014/2015 To Achieve Target in 2033						
	Assumed 2013/2014 Return						
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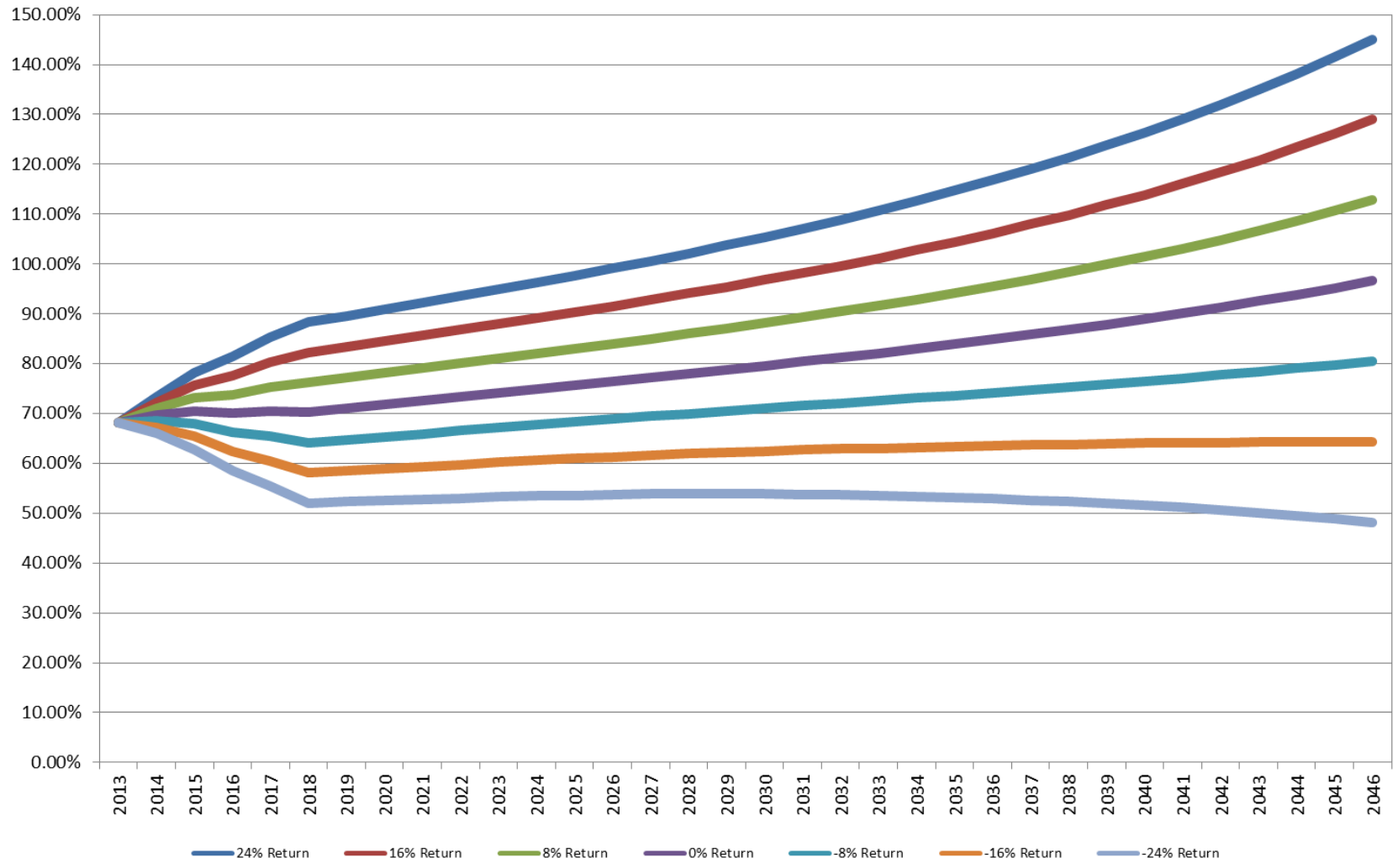
80%	6.1%	6.3%	6.5%	6.7%	6.8%	7.0%	7.2%
90%	7.3%	7.5%	7.6%	7.8%	8.0%	8.2%	8.4%
100%	8.3%	8.5%	8.7%	8.8%	9.0%	9.2%	9.5%

Projected Funded Ratios (AVA Basis) – Highway Patrol



Target Funded Ratios – Highway Patrol

Target Funded Ratio	Rate of Return Required for All Years Beginning on and after 2014/2015 To Achieve Target in 2033						
	Assumed 2013/2014 Return						
	24.0%	16.0%	8.0%	0.0%	-8.0%	-16.0%	-24.0%
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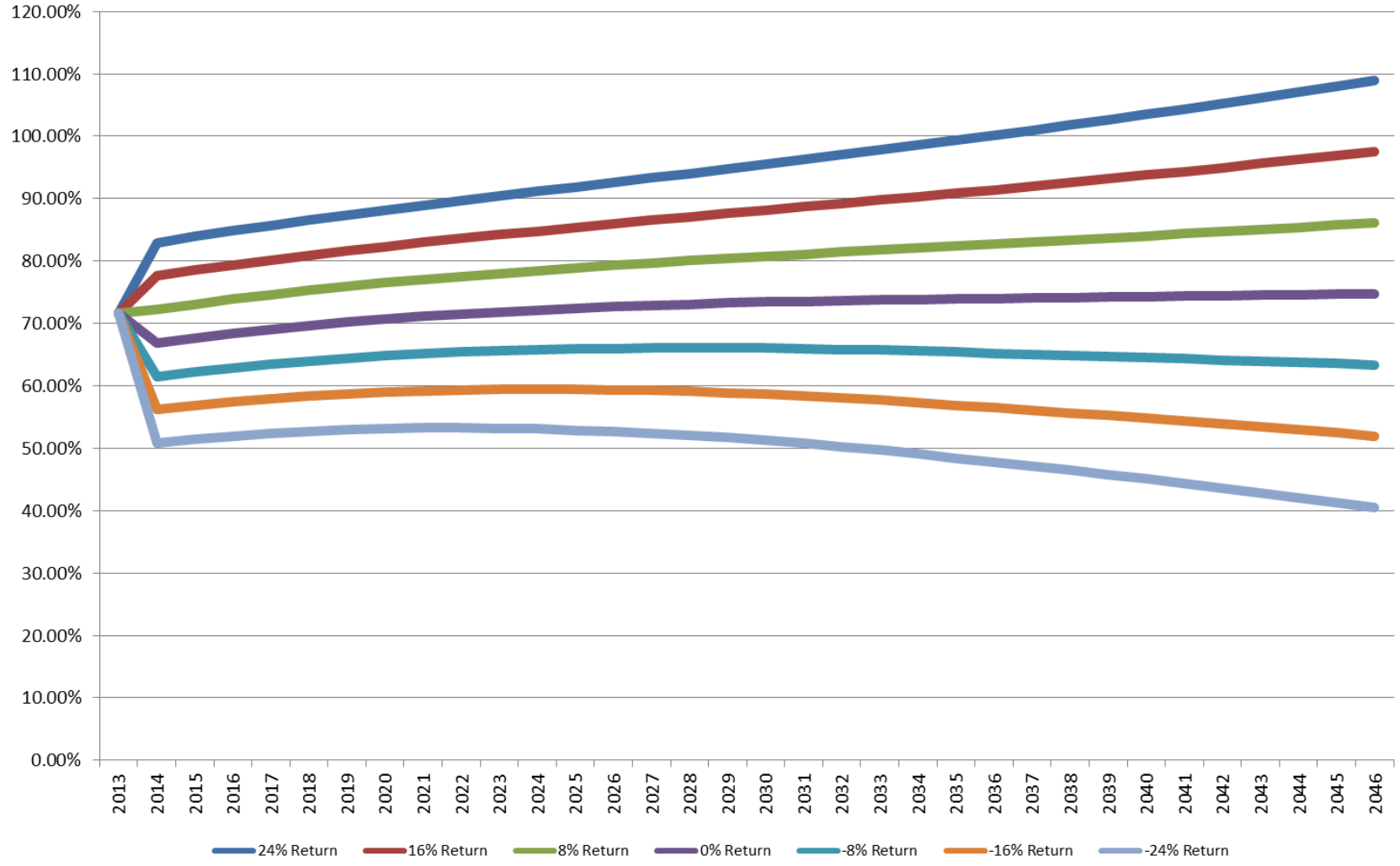
90%	6.9%	7.4%	7.9%	8.5%	9.1%	9.8%	10.5%
100%	7.5%	7.9%	8.5%	9.0%	9.6%	10.3%	11.1%

Projected Funded Ratios (MVA Basis) – Main System



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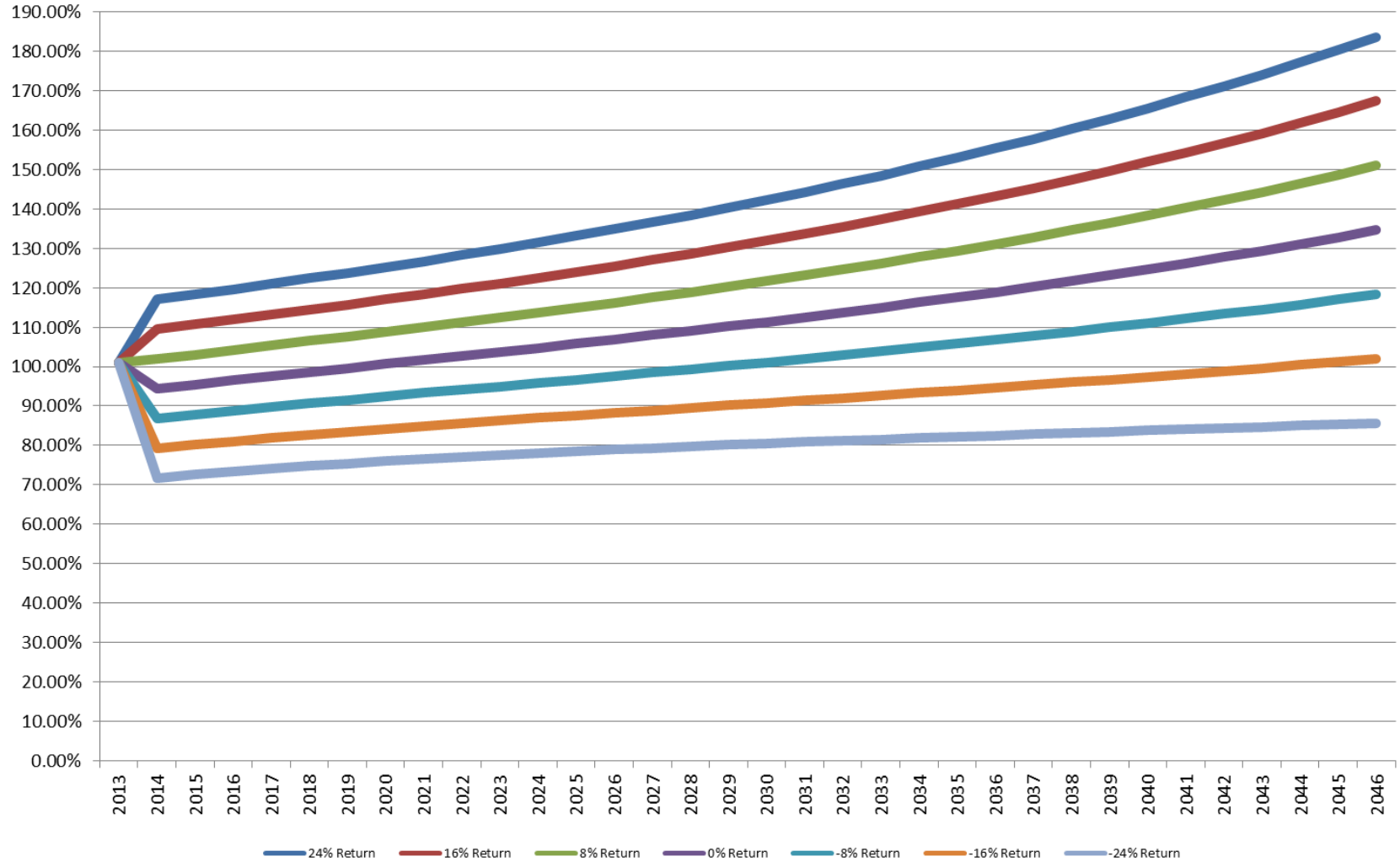
Projected Funded Ratios (MVA Basis) – Judges



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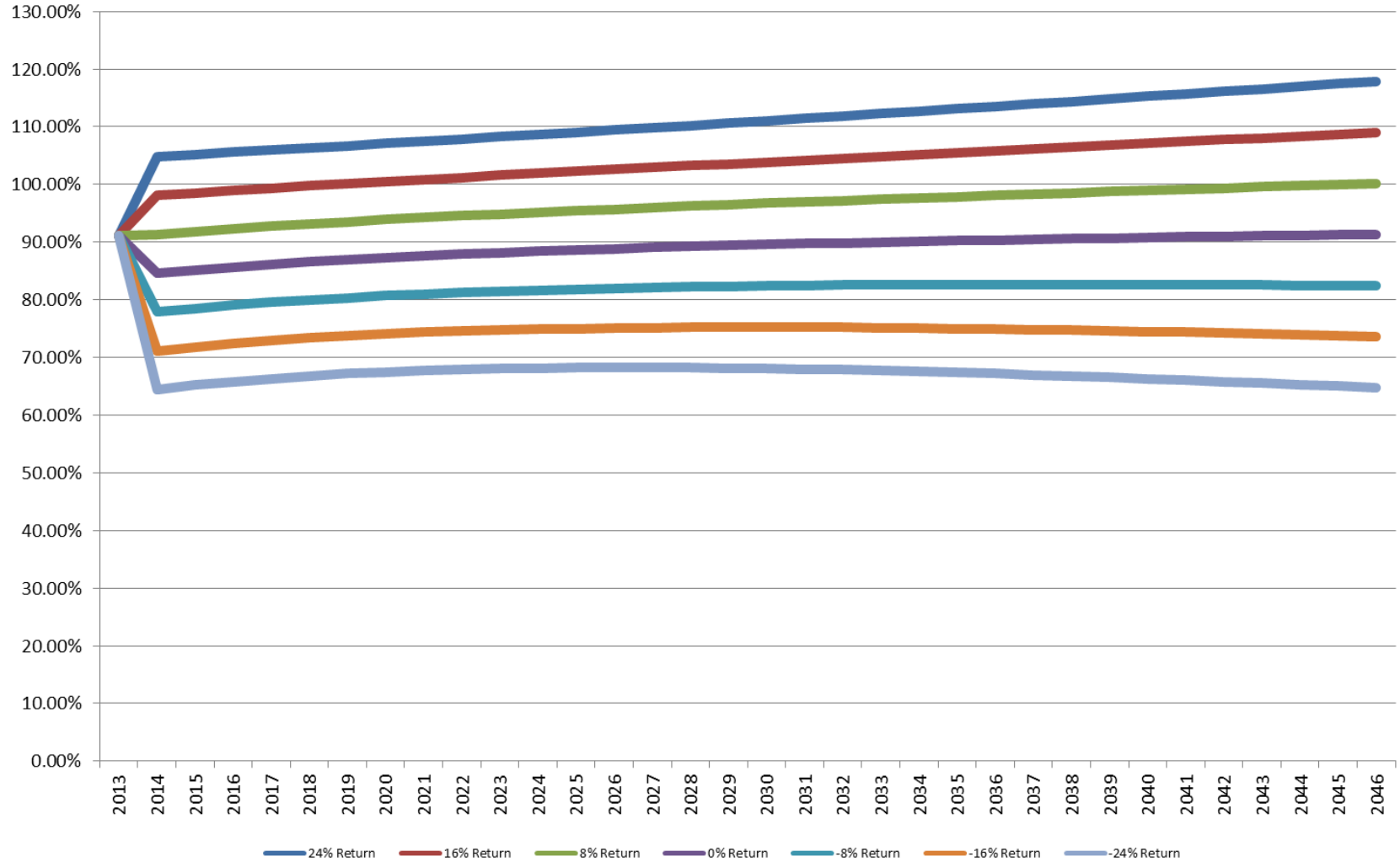
Projected Funded Ratios (MVA Basis) – National Guard



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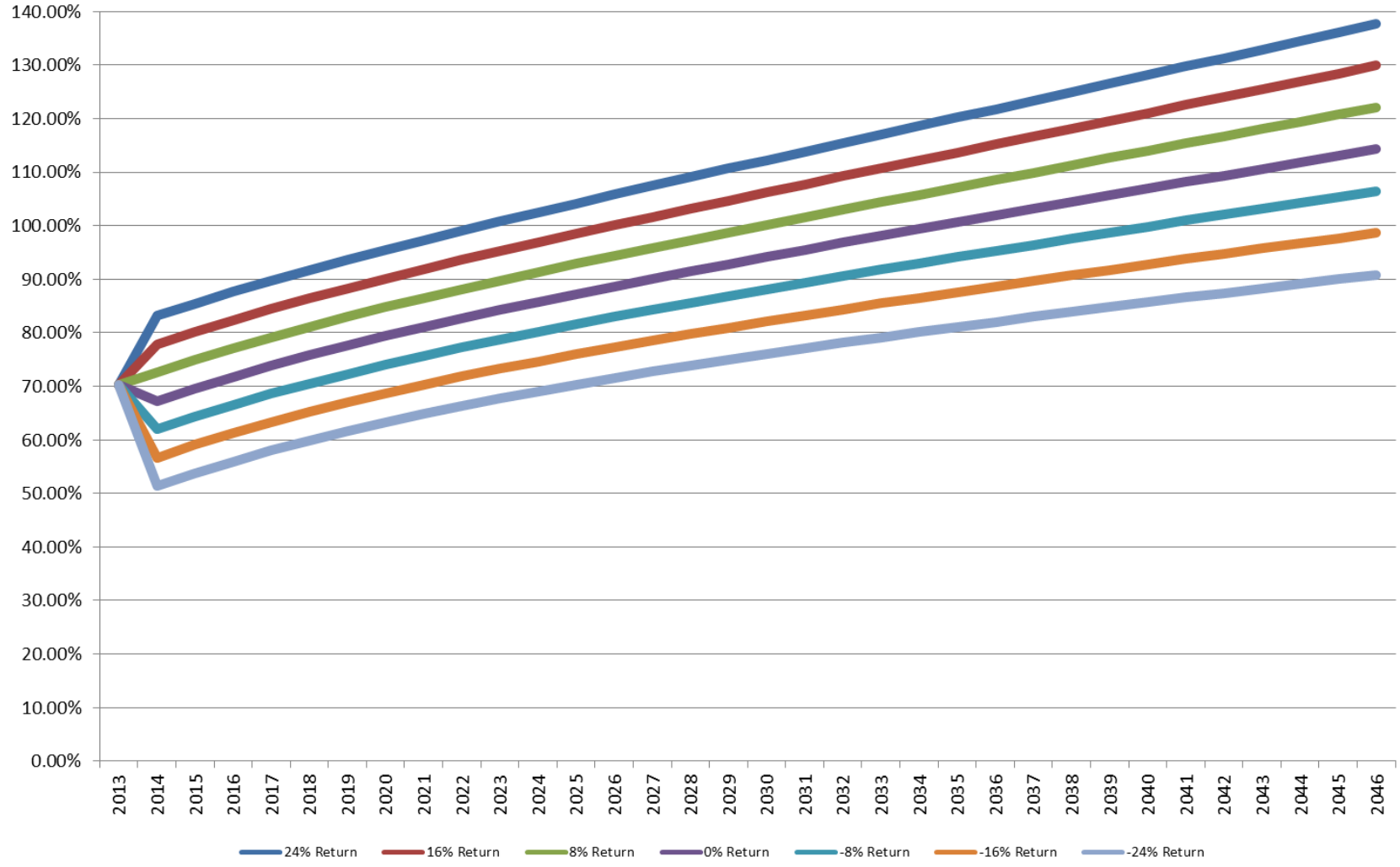
Projected Funded Ratios (MVA Basis) – Law Enforcement with Prior Main System Service



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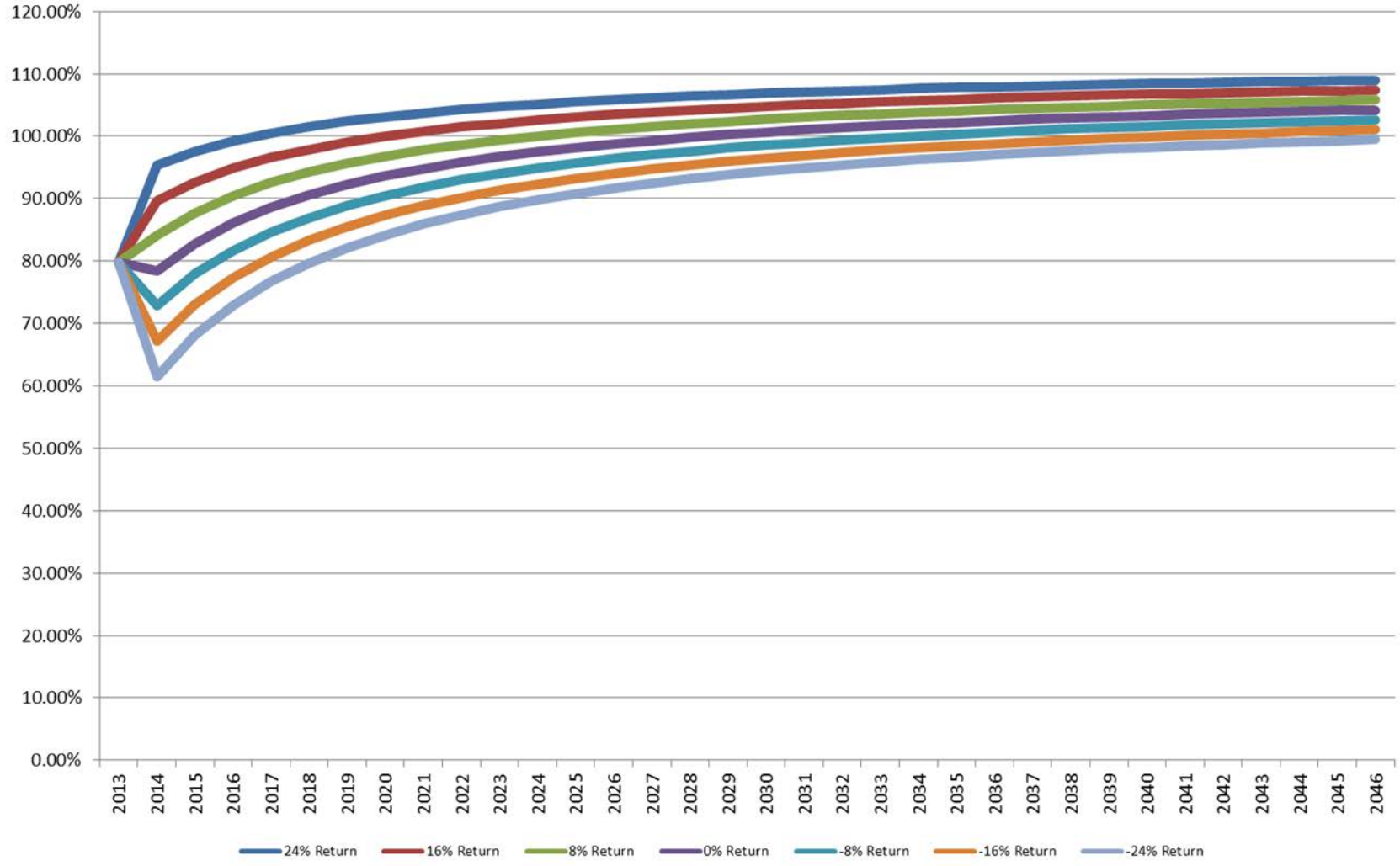
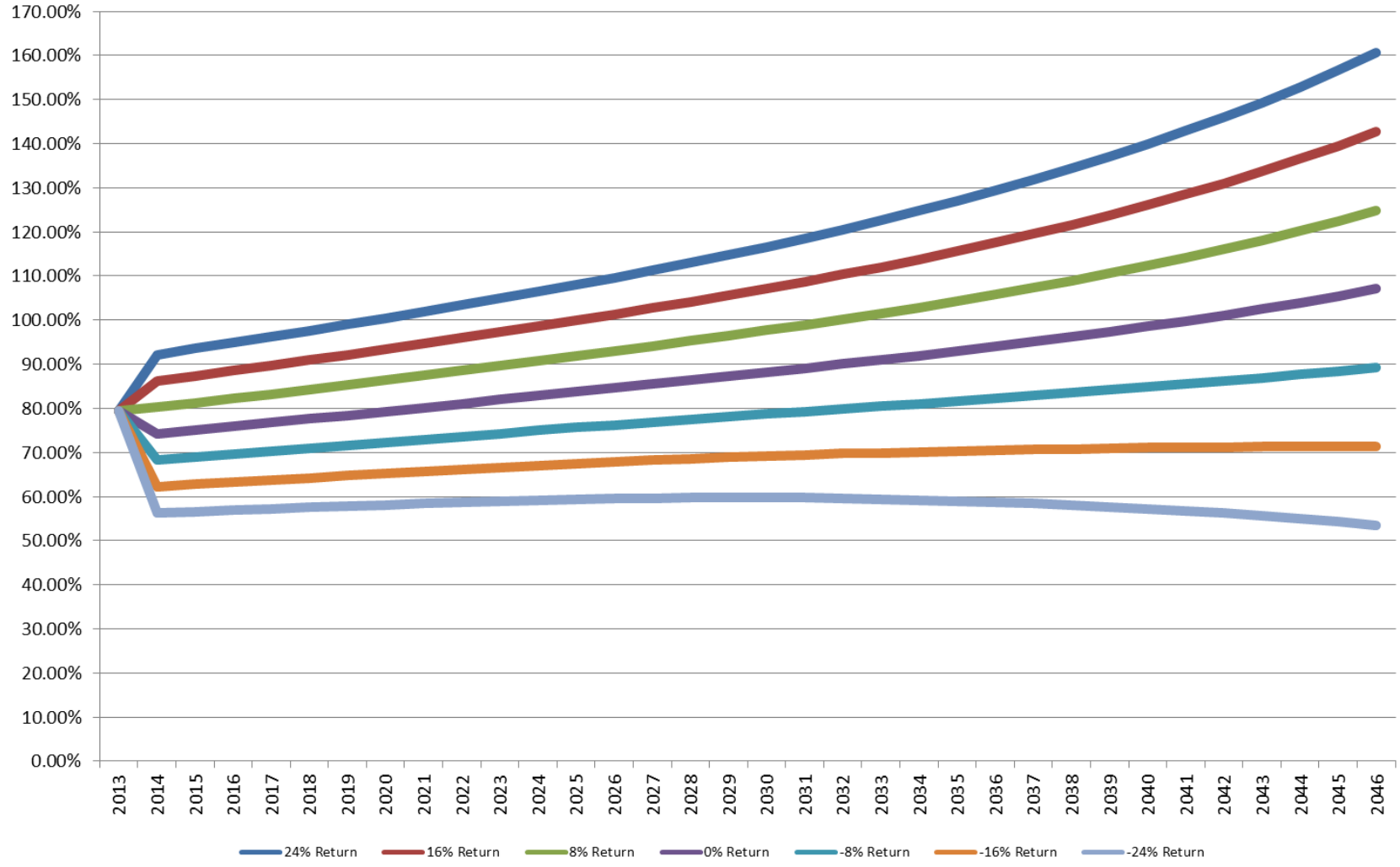
Law Enforcement without Prior Main System Service



Projected Funded Ratios (MVA Basis) – Highway Patrol



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Questions?

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Segal Consulting

North Dakota Legislative Employee Benefits Programs Committee

Hypothetical GASB 67/68 Illustrations for FY2013

November 6, 2013

Presented By:

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Vice President & Actuary

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Consulting Actuary

Matthew Strom, FSA, MAAA, EA
Consulting Actuary

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Overview of the New GASB Requirements

- GASB 67 provides for accounting with respect to Plans (replaces GASB 25)
  - “Plans” in this case are PERS and TFFR
  - Effective for fiscal year July 1, 2013 to June 30, 2014
- GASB 68 provides for financial reporting by employers (replaces GASB 27)
  - “Employers” are the entities making the contributions (e.g., State, Counties, School Districts, etc.)
  - Effective for fiscal year July 1, 2014 to June 30, 2015
- Net Pension Liability reported on each employer’s balance sheet and in each Plan’s notes to the financial statements
  - Entry age cost method
  - Market value of assets
  - Blended discount rate
- Accounting and financial reporting divorced from contribution requirements
- Annual pension expense (for employers) is essentially equal to change in Net Pension Liability during the year, with deferrals of certain items

Net Pension Liability Reported on Financials

- Net Pension Liability (NPL)
  - Total Pension Liability minus market value of assets (Component Plan Net Position)
- NPL is required to be reported in each Component Plan's footnotes and "proportionate share" of NPL reported on each employer's balance sheet
- NPL is calculated using:
  - A new blended discount rate
  - "Entry age normal" actuarial cost method
  - Market value of assets

Implications:

- Large liability must be recorded on employers' balance sheets
- Could affect credit rating and inhibit ability to borrow

Net Pension Liability Reported on Financials
continued

- Discount rate is based on projected benefits, current assets, and projected assets for current members
  - Projected assets include contributions on behalf of current members and **exclude** contributions intended to fund the service cost for future employees
- For projected benefits that are covered by projected assets
  - Discount using the long-term expected rate of return on assets
  - PERS/TFFR long-term rate of return is 8%
- For projected benefits that are **not** covered by projected assets
  - Discount using yield on 20-year AA/Aa tax-exempt municipal bond index
  - As of June 30, 2013, rate was 3.92%
- Solve for a single rate that gives the same total present value
  - Use that single equivalent rate to calculate the Total Pension Liability (TPL)

Implications:

- Both PERS and TFFR can use the 8% long-term rate

Net Pension Liability – Estimate as of June 30, 2013

$ Thousands

	PERS Main	TFFR
Total Pension Liability at 8.00%	$2,633,572	$2,997,139
Net Plan Position (i.e., MVA)	1,899,459	1,839,584
Net Pension Liability (NPL)	734,113	1,157,555
Sensitivity to changes in discount rate		
• 1% decrease (7.00%)	$1,050,948	$1,538,142
• Current discount rate (8.00%)	734,113	1,157,555
• 1% increase (9.00%)	522,938	833,648

- NPL is calculated for each Plan in total
- Each employer is assigned a share of the NPL

Expense and Funding Are Divorced

- New GASB pension expense is the change in NPL each year (with certain deferrals described below)
- Components of the new pension expense include:
  - Service cost (i.e., normal cost)
  - Interest on the Total Pension Liability (TPL) as of beginning of year
  - Changes in Total Pension Liability over the year (with certain deferrals)
    - Plan amendments recognized immediately
    - Changes in actuarial assumptions and actuarial gains and losses amortized over average expected remaining service lives of active **and** inactive members (including retirees)
    - Average expected remaining service for PERS Main is about 5.8 years
    - Average expected remaining service for TFFR is about 7 years
  - Differences between actual and projected earnings over the year recognized in expense over closed 5 year period
  - Projected investment returns over the year
  - Employee contributions
  - Administrative expenses

Expense and Funding Are Divorced *continued*

- Deferred items are recorded as "Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions"
  - Will be recognized through expense in future fiscal years
- Share of pension expense is reflected on employers' income/expense statement

Implications:

- Pension expense must be recognized in employers' financials
- Could result in confusion as pension expense will be different (and often greater) than contribution amount

Pension Expense for FYE June 30, 2013

$ Thousands

	PERS Main	TFFR
Service cost	$80,446	$60,724
Interest on the Total Pension Liability	191,120	222,712
Recognized portion of current-period difference between expected and actual experience	4,545	614
Member contributions	(49,371)	(53,825)
Projected earnings on plan investments	(134,311)	(132,578)
Recognized portion of current-period difference between projected and actual earnings on plan investments	(18,149)	(17,525)
Administrative expense	2,020	1,624
Recognition of deferred outflows of resources	0	0
Recognition of deferred inflows of resources	0	0
Pension expense for FYE 6/30/2013	$76,300	$81,746

Impact on Employers

- Each employer must disclose their proportionate share of:
  - Net Pension Liability (Asset)
  - Pension expense
  - Deferred outflows of resources and deferred inflows of resources related to pensions
- For both PERS Main and TFFR, the proportionate share can be allocated based on covered payroll
- For this hypothetical exercise, we consider the following two employers for PERS Main:
  - Employer 1, a relatively large employer (approximately 2% of total payroll)
  - Employer 2, a small employer (approximately 0.03% of total payroll)
- In addition, the State's portion of the PERS Main System is 56%
- For TFFR, we consider two sample school districts:
  - District 1, a large employer (approximately 10% of total payroll)
  - District 2, a small employer (approximately 1% of total payroll)

Proportionate Share of NPL – PERS Main System

$ Thousands

	Total	State Employees	Employer 1	Employer 2
Payroll	$865,868	$486,381	$21,224	$247
NPL/Proportionate Share	734,113	412,371	17,995	210
Sensitivity to changes in discount rate				
• 1% decrease (7.00%)	$1,050,948	$590,345	$25,761	$300
• Current discount rate (8.00%)	734,113	412,371	17,995	210
• 1% increase (9.00%)	522,938	293,748	12,818	143
Pension Expense/Proportionate Share	$76,300	$42,860	$1,870	$22
Deferred Outflows of Resources	21,771	12,230	534	6
Deferred Inflows of Resources	72,597	40,780	1,780	21

Proportionate Share of NPL - TFFR

$ Thousands

	Total	District 1	District 2
Payroll	$550,000	$55,000	$5,500
NPL/Proportionate Share	1,157,555	115,756	11,576
Sensitivity to changes in discount rate			
• 1% decrease (7.00%)	$1,538,142	$153,814	$15,381
• Current discount rate (8.00%)	1,157,555	115,756	11,576
• 1% increase (9.00%)	833,648	83,365	8,336
Pension Expense/Proportionate Share	$81,746	$8,175	$817
Deferred Outflows of Resources	3,686	369	37
Deferred Inflows of Resources	70,102	7,010	701

Required Supplementary Information – PERS Main

$ Thousands

	State Employees	Employer 1	Employer 2
State/Employer proportion of NPL	56%	2%	0.03%
State/Employer proportionate share of the NPL	$412,371	$17,995	$210
State/Employer covered employee payroll	$486,381	$21,224	$247
State/Employer proportionate share of the NPL as a percentage of its covered employee payroll	84.8%	84.8%	84.8%
Plan fiduciary net position as a percentage of the total pension liability	72.1%	72.1%	72.1%
Statutory employer contribution	$32,198	$1,405	$16
Contributions in relation to the statutory employer contribution	(32,198)	(1,405)	(16)
Contribution deficiency (excess)	$0	$0	$0
State/Employer covered employee payroll	$486,381	$21,224	$247
Statutory employer contributions as a percentage of covered employee payroll	6.62%	6.62%	6.62%

Required Supplementary Information - TFFR

$ Thousands

	District 1	District 2
District's proportion of NPL	10.0%	1.0%
District's proportionate share of the NPL	$115,756	$11,576
District's covered employee payroll	$55,000	$5,500
District's proportionate share of the NPL as a percentage of its covered employee payroll	210.5%	210.5%
Plan fiduciary net position as a percentage of the total pension liability	61.4%	61.4%
Actuarially determined contribution	$5,083	$508
Contributions in relation to the actuarially determined contribution	(5,913)	(591)
Contribution deficiency (excess)	($830)	($83)
District's covered employee payroll	$55,000	$5,500
Contributions as a percentage of covered employee payroll	10.75%	10.75%

Questions?

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