

**JOINT MEETING OF THE
MONTANA BOARD OF INVESTMENTS,
PUBLIC EMPLOYEE RETIREMENT ADMINISTRATION AND
TEACHERS' RETIREMENT SYSTEM**

**2401 Colonial Drive, 3rd Floor
Helena, Montana**

Thursday, May 13, 2010

AGENDA

- | | | |
|--------------|---|-------------------|
| | CALL TO ORDER | 8:30 a.m. |
| | A. Roll Call | |
| | B. Public Comment – Public Comment on issues with BOI,
TRs and PERA Jurisdiction | |
| Tab 1 | TEACHERS' RETIREMENT SYSTEM – Dave Senn | 8:35 a.m. |
| | A. Actuary Presentation - Cavanaugh Macdonald Consulting, LLC | |
| Tab 2 | PUBLIC EMPLOYEE RETIREMENT ADMINISTRATION -
Roxanne Minnehan | 9:35 a.m. |
| | A. Actuary Presentation – Cheiron | |
| | BREAK – 15 min. | |
| Tab 3 | BOARD OF INVESTMENTS – Carroll South | 10:50 a.m. |
| | A. Consultant Presentation – RV Kuhns & Associates, Inc. (handout) | |
| | B. Calendar Year 2010 Outlook | |
| | C. Pension Fund Investment Process | |
| | STATE ADMINISTRATION AND VETERANS' AFFAIRS
COMMITTEE UPDATE | 11:50 a.m. |
| | ADJOURNMENT | 12:00 p.m. |

Lunch will be brought in upon Adjournment.

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Teachers' Retirement System

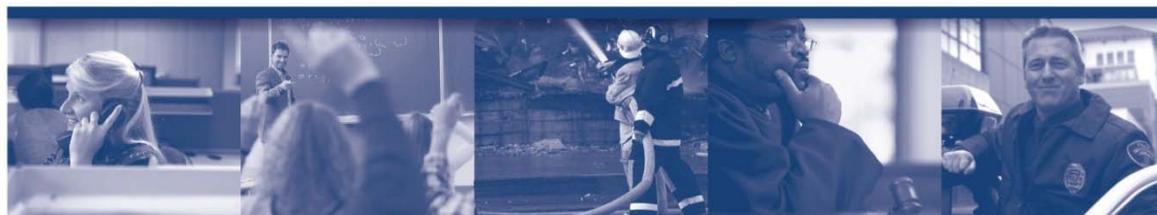


Cavanaugh Macdonald
CONSULTING, LLC

The experience and dedication you deserve



**Montana Teachers' Retirement System
Joint Board Meeting
May 13, 2010**





Actuaries



Actuaries



Work on Problems in Business and Finance Involving

- Payment of money in the future that is contingent upon occurrence of future events
- Risk management



Actuaries' Work for Retirement System



Actuarial Valuation

- Calculate Contribution Rates
- Determine funded status
- Prepare GASB Reporting Information
- Special studies on proposed legislation
- Opinion on actuarial soundness



Cash Flow Characteristics and Need for Actuarial Valuations



Basic Retirement Funding Equation



$$C + I = B + E$$

C = Contributions

I = Investment Income

B = Benefits Paid

E = Expenses (administration)



Two Fundamentally Different Methods of Financing Retirement Benefits



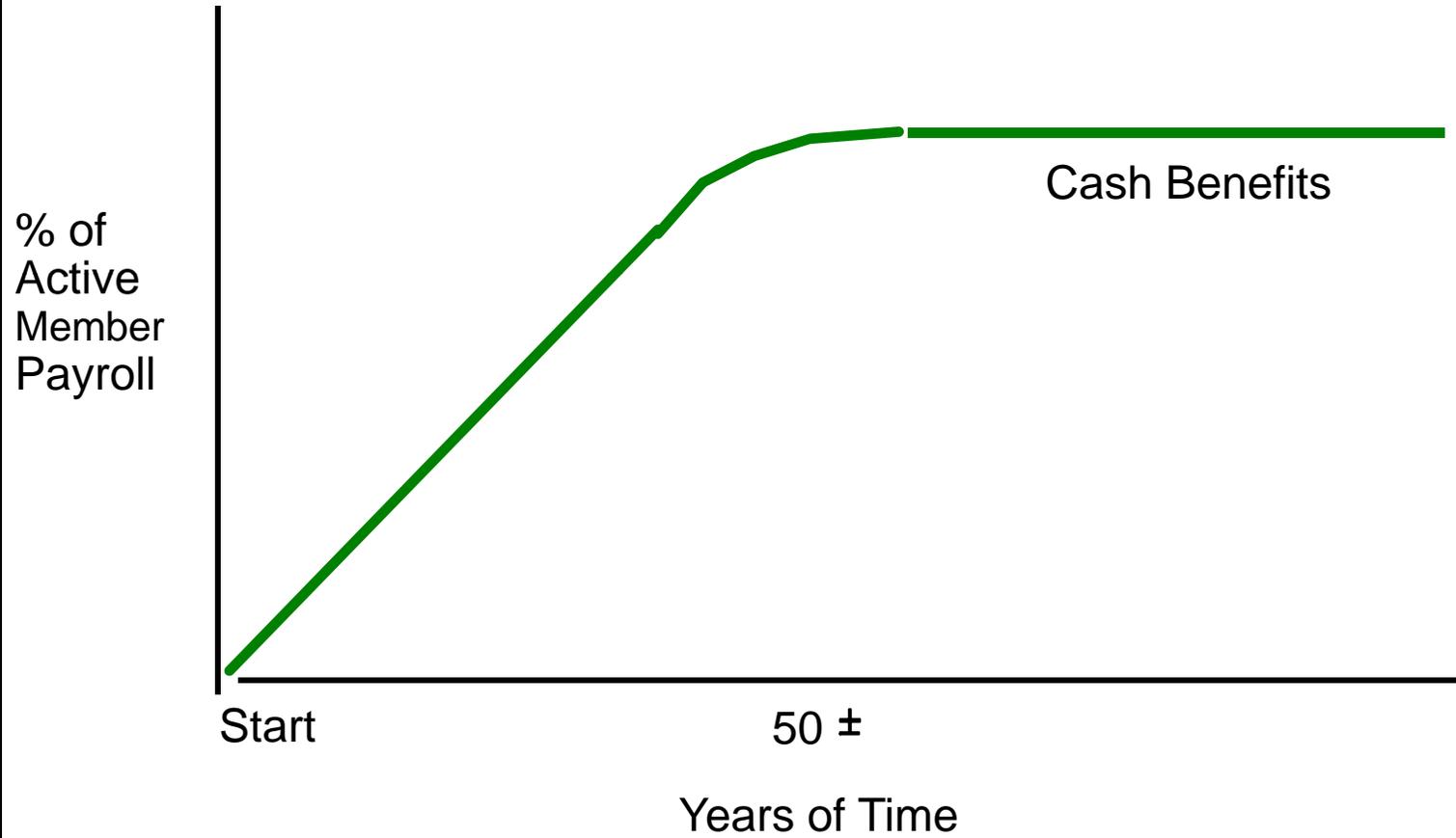
Social Security: Pay-As-You-Go

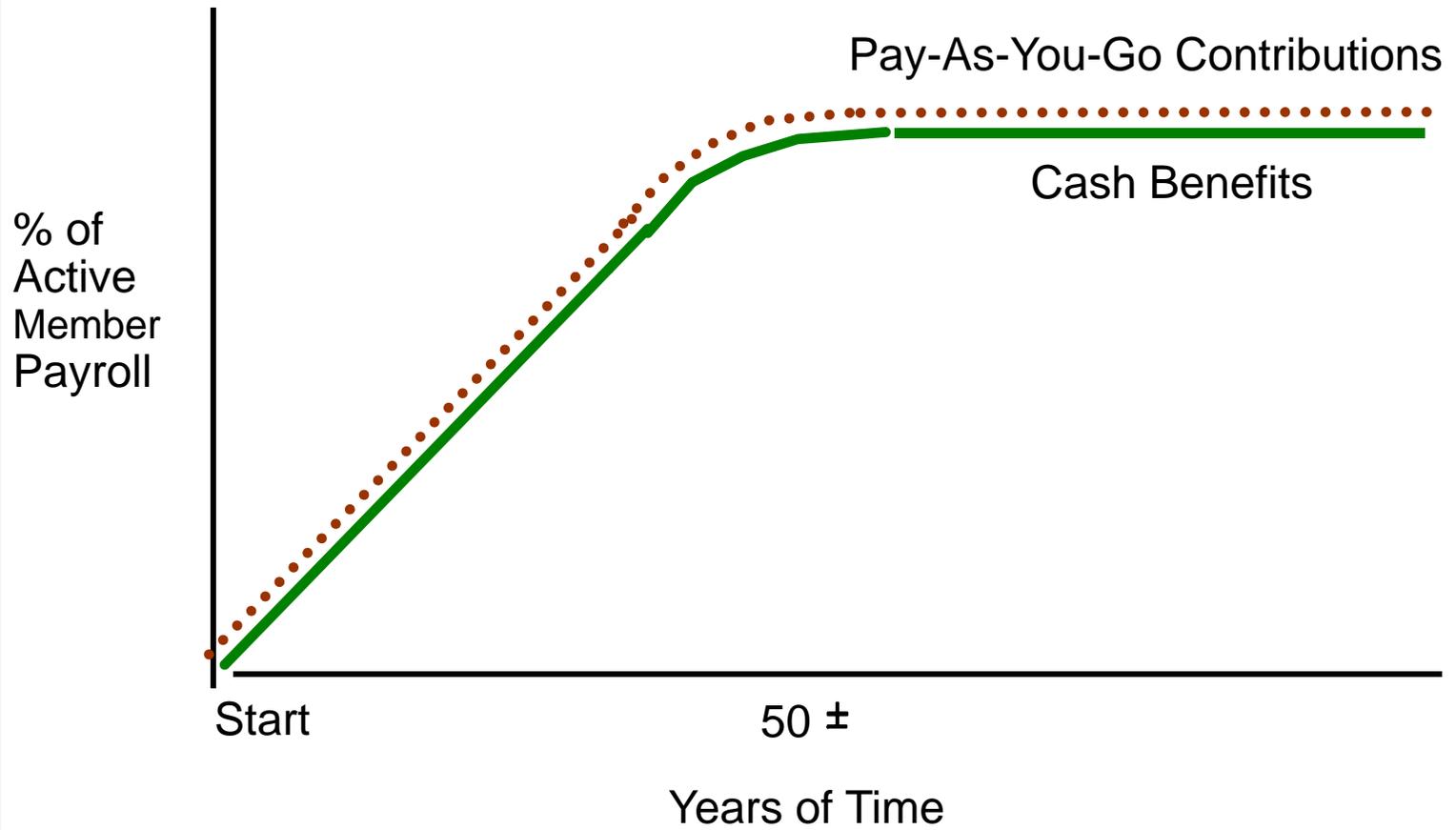
Current generation pays benefits
of prior generation.

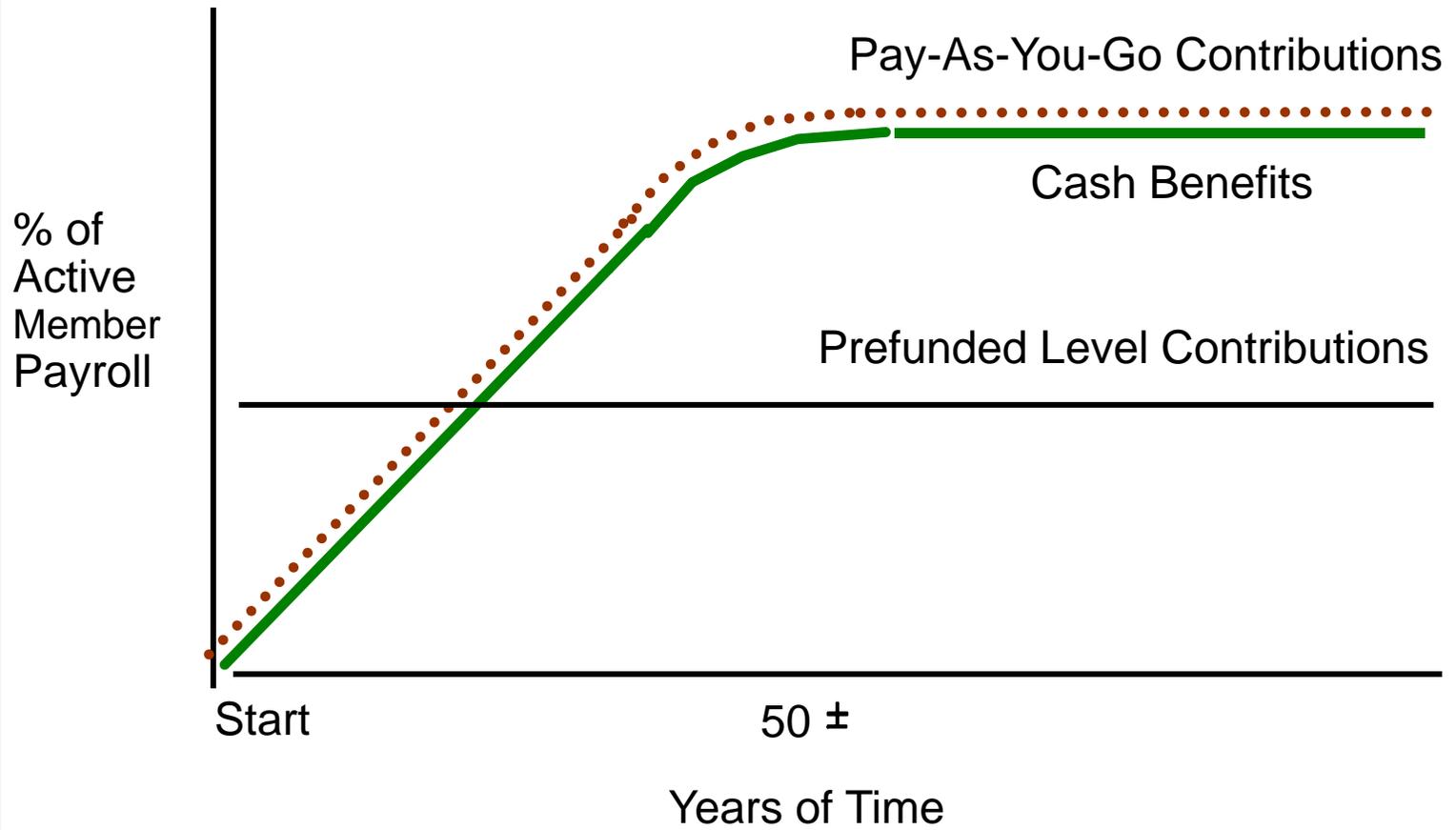
Most Public
Systems:

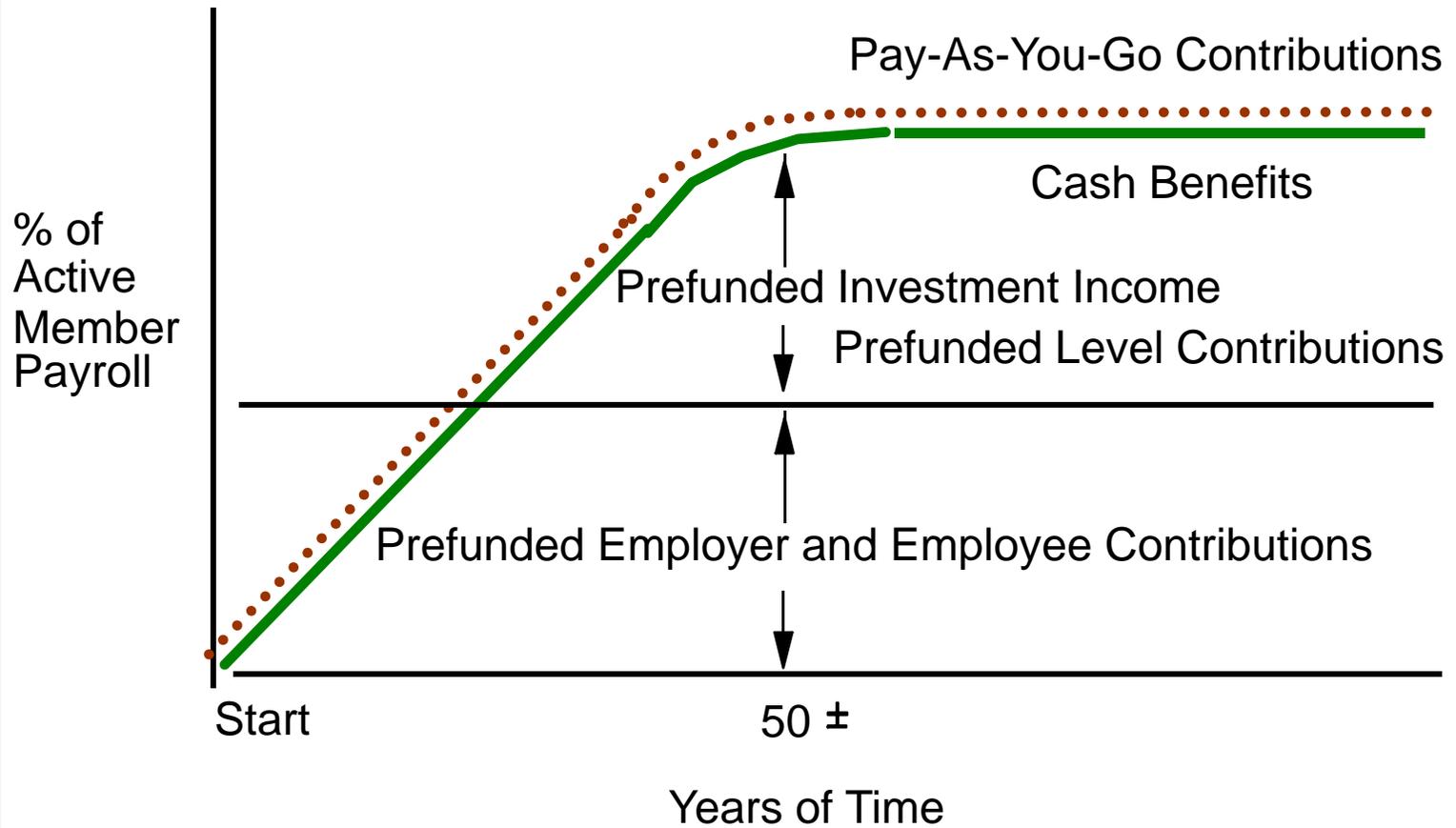
Prefunded

Current generation saves money for
its own retirement; prior generation
did the same.











Selecting Assumptions About Future Events



Decremental



- Withdrawal
- Death while active
- Disability
- Retirement
- Death after retirement



Economic



- Inflation
- Real return for assets
- Salary increases
- COLA's



Economic Adjustments



- Inflation should be consistently applied
- Real returns should reflect asset mix



Understanding Economic Assumptions



$$\begin{aligned} & \text{Interest Rate} \\ & - \text{Inflation Rate} \\ & = \text{Real Rate of Return} \end{aligned}$$

Interest rate determines how much money we think we'll have.

Inflation rate tells us what we think it will buy.



Actuarial Check-Ups (Experience Investigations)



Purpose



- To compare actual plan experience with actuarial assumptions used in the valuation



Decremental Adjustments



- Follow experience
- Watch trends (e.g., improving mortality)
- Factor in special events during investigation period (e.g., re-employment legislation)



Fundamentals of Actuarial Valuations & Plan Sponsor Liabilities



Present Value



The present value of an amount of money payable in the future is the amount of money that, if we had it today, would accumulate to the amount that will be payable considering

- Investment Return
- Probability that money will be paid



Valuation Results



Contribution For

Description

Normal Cost

Value of this year's expected benefit accruals

UAL

Unfunded Liability =
Accrued Liability - Assets

"Unfunded Liabilities" are a natural part of retirement system funding, comparable to a mortgage on a home. A plan which is 100% funded is required to contribute the normal cost.



Causes of Unfunded Actuarial Accrued Liabilities



1. Granting initial benefits or granting benefit increases for service already rendered.
2. Actual experience which is less favorable than assumed. Examples follow:
 - a. Lower rates of investment earnings
 - b. Higher salary increases
 - c. Earlier retirement date(s)
 - d. Lower death rates
 - e. Lower rates of non-death terminations



Changes in Major Assumptions Effect on Liabilities and Contributions



<u>Assumption</u>	<u>Action</u>	<u>Usual Effect</u>
Interest Rate	Increase	Decrease
Retirement Rate	Retire younger	Increase
Turnover Rate	More Terminations	Decrease



Asset Valuation Methods for Public Retirement Systems



Asset Valuation Methods



- Market
- Smoothed Market



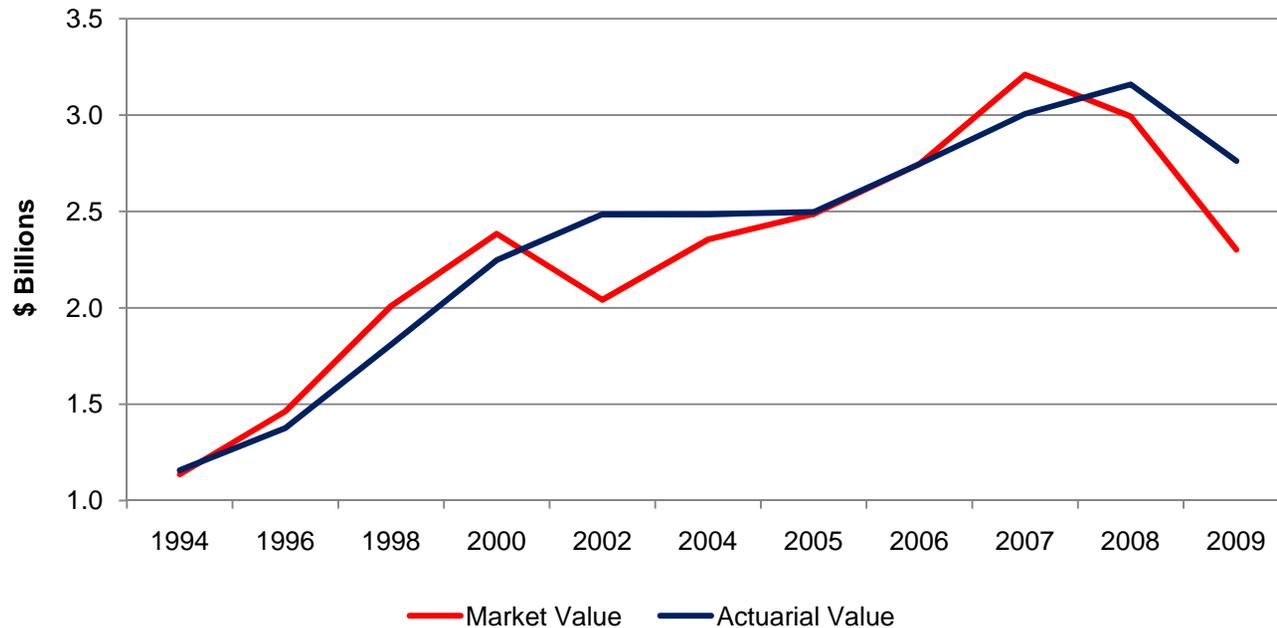
❖ Market Price on one day is not a reliable measure of long term value

- Short term factors obscure long term value
- Sharp ups and downs
- Misleading



Funding Value of Assets

Actuarial Value vs. Market Value



Actuarial Value is expected to be:

- ◆ Below Market when market is doing well
- ◆ Above Market when market is doing poorly



Projections



- Based on
 - Estimated June 30, 2010 market value of assets based on March 31, 2010 market value of assets
 - Estimated return of 20.73%
 - Current Assumptions



Estimated 2010 Results



	Actuarial Value of Assets Basis July 1, 2009	Market Value of Assets Basis July 1, 2009	Actuarial Value of Assets Basis Estimated July 1, 2010	Market Value of Assets Basis Estimated July 1, 2010
Assets and Liabilities (millions)				
Actuarial Accrued Liability (AAL)	4,331.0	4,331.0	4,512.1	4,512.1
Assets	2,762.2	2,301.8	2,988.0	2,685.7
Unfunded AAL	1,568.8	2,029.2	1,524.1	1,826.4
Less: Future ORP Contributions	157.2	157.2	161.1	161.1
Net Unfunded AAL	1,411.6	1,872.6	1,363.0	1,665.3
Funded Ratio	66.2%	55.2%	68.7%	61.7%
Annual Required Contributions				
Statutory Funding	17.11%	17.11%	17.11%	17.11%
Normal Cost Rate	10.69%	10.69%	10.69%	10.69%
Available for Amortization of UAL	6.42%	6.42%	6.42%	6.42%
Amortization Period	*	*	*	*
30-Year Funding Rate	21.22%	24.65%	20.28%	22.41%
Shortfall	4.11%	7.54%	3.17%	5.30%

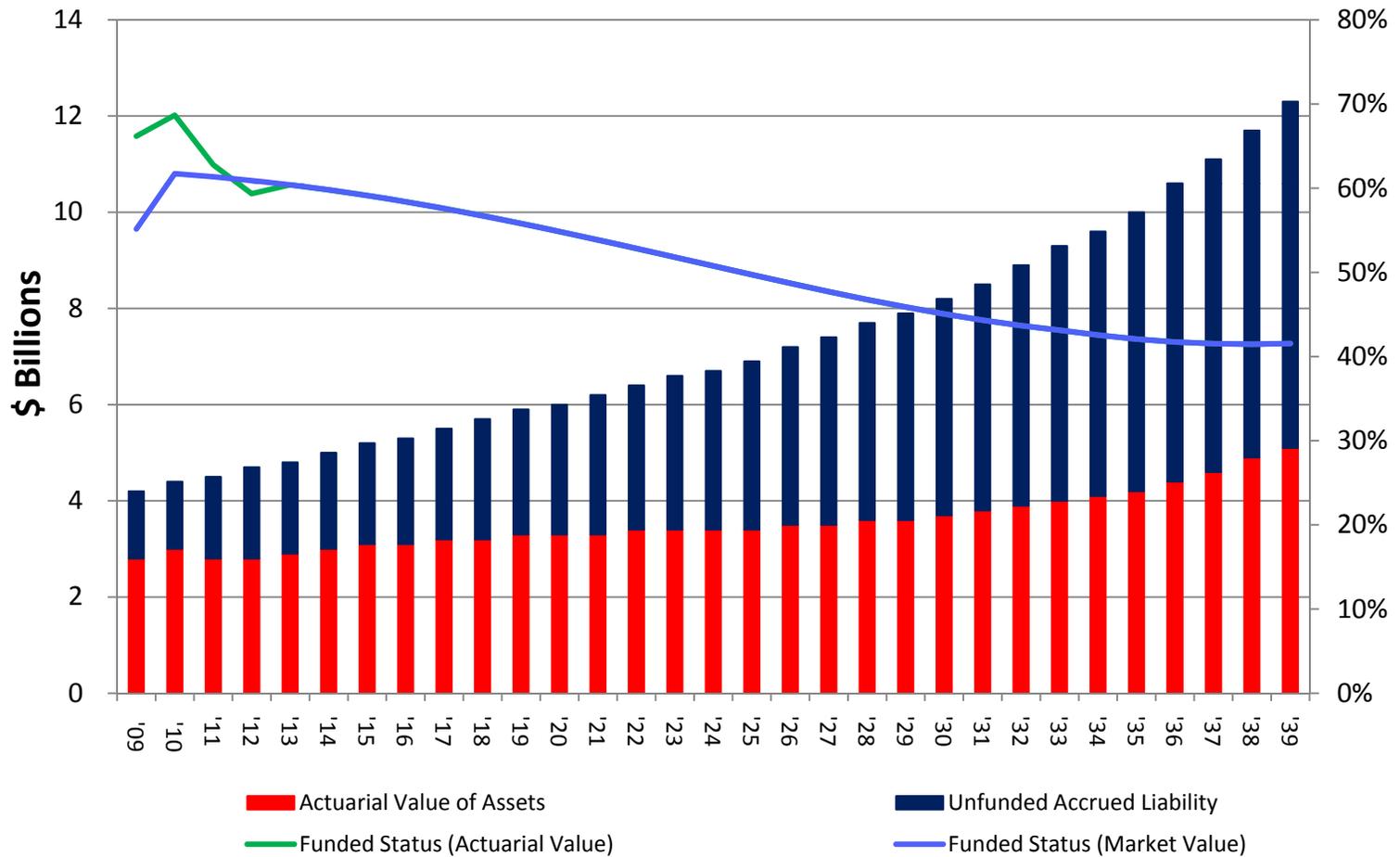
* Does not meet minimum funding standards



Based On Estimated July 1, 2010 Assets



30 Year Projection of System Assets and Liabilities

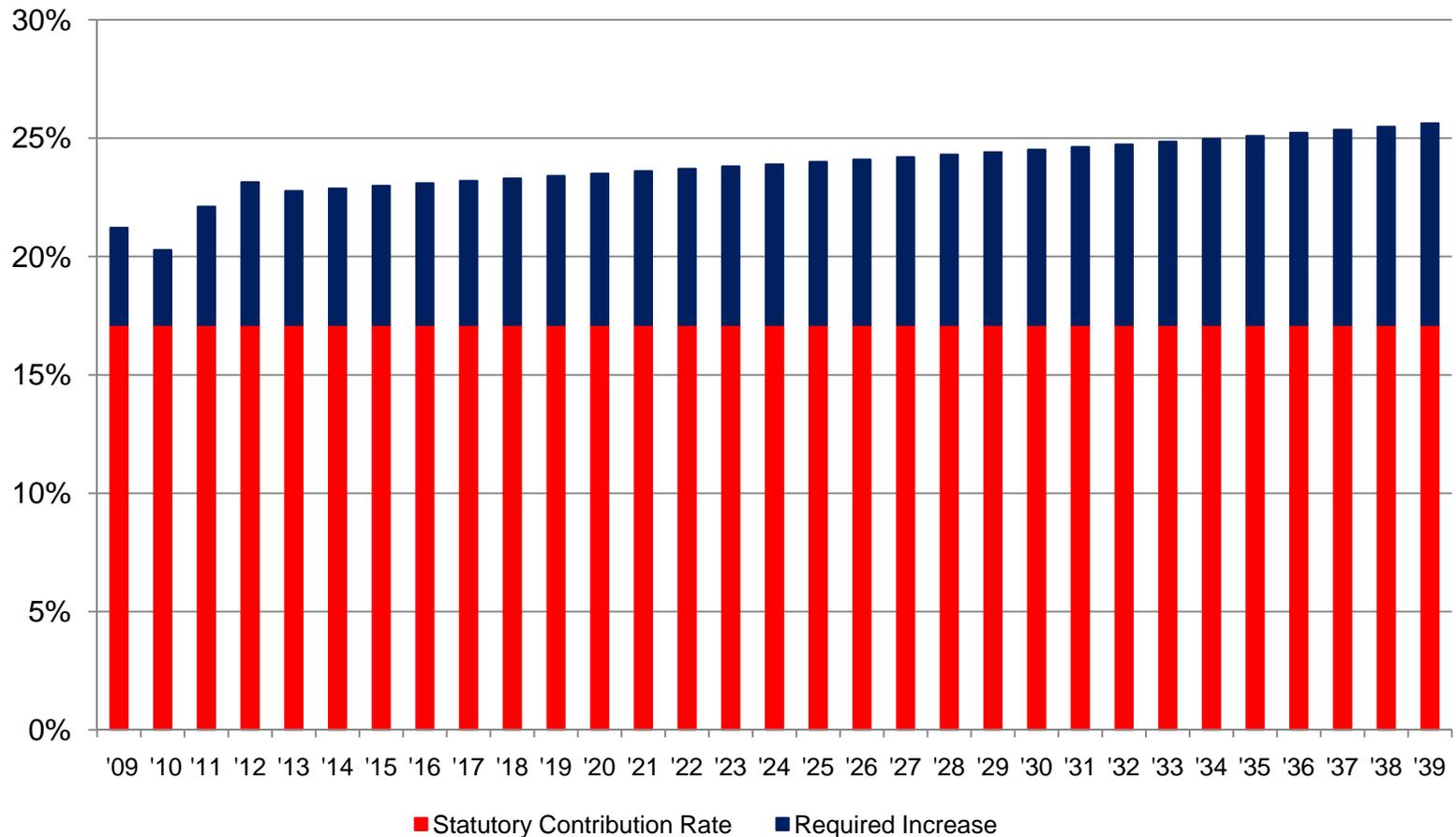




Based On Estimated July 1, 2010 Assets



30 Year Projection of System Annual Required Contribution

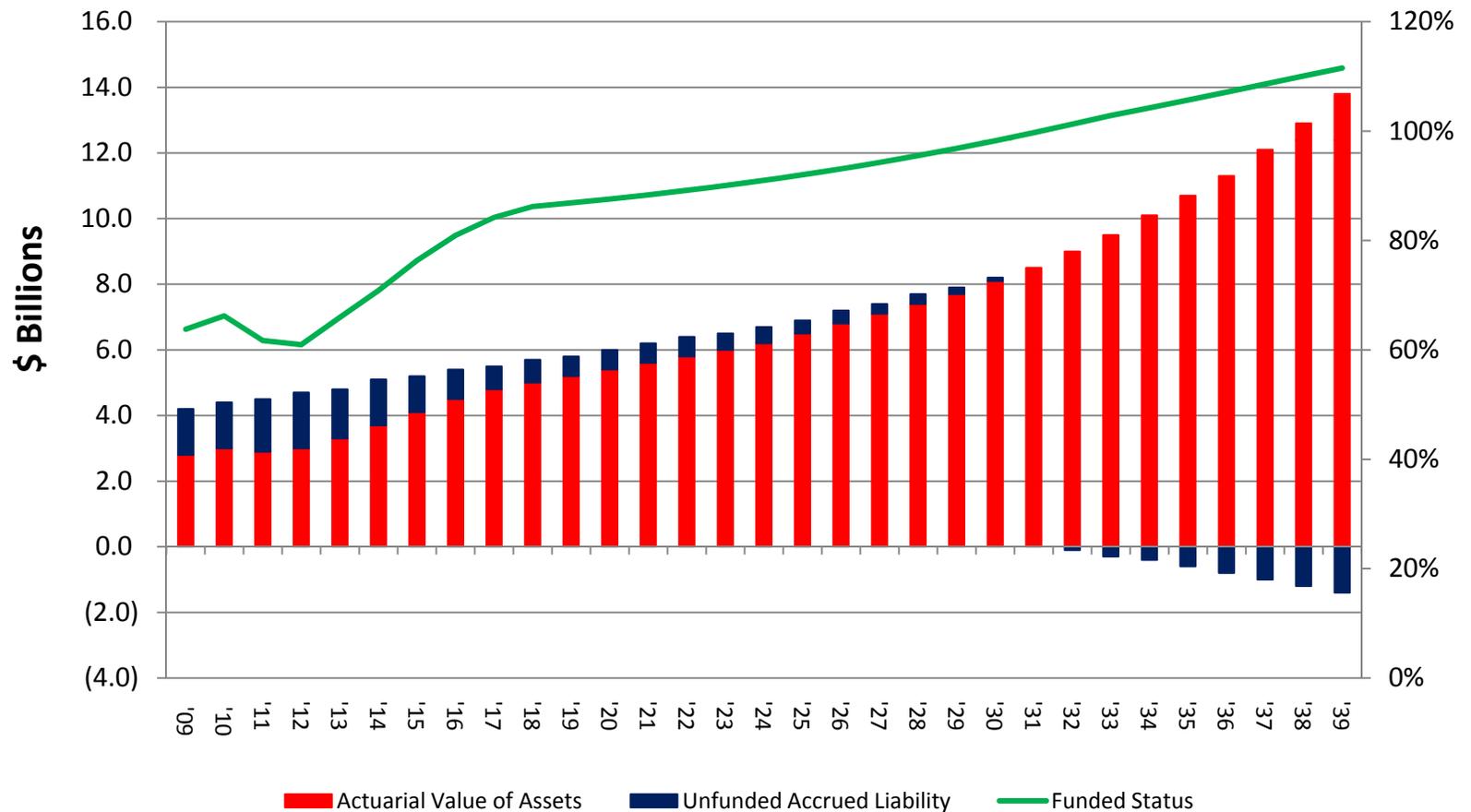




Return Necessary to Meet Minimum Funding After 5 Years



**15.43% Return on Market Value of Assets for 2010 – 2015
(Based on March 31, 2010 Market Value Projected to July 1, 2010)**

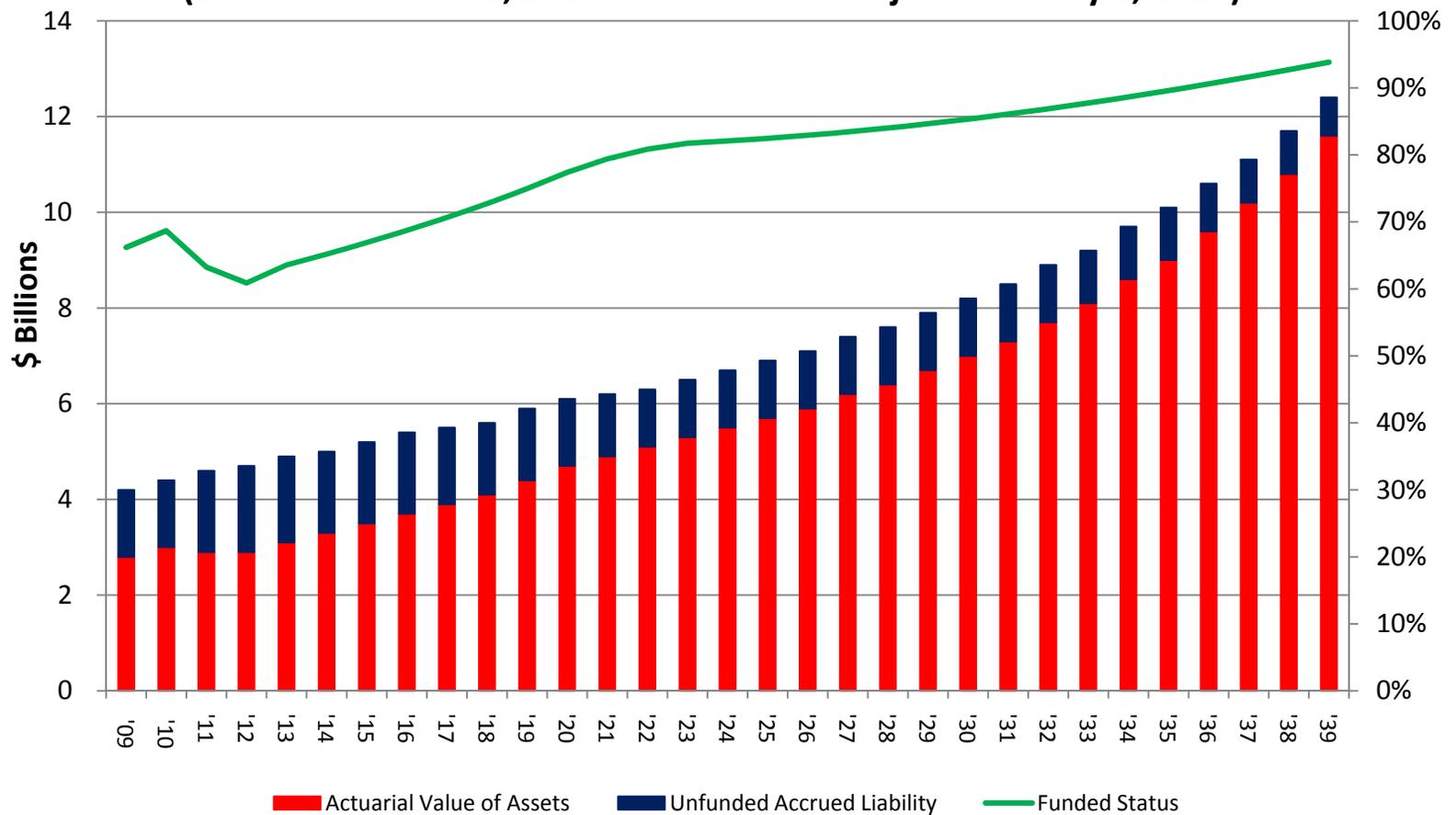




Return Necessary to Meet Minimum Funding After 10 Years



**11.00% Return on Market Value of Assets for 2010 – 2020
(Based on March 31, 2010 Market Value Projected to July 1, 2010)**

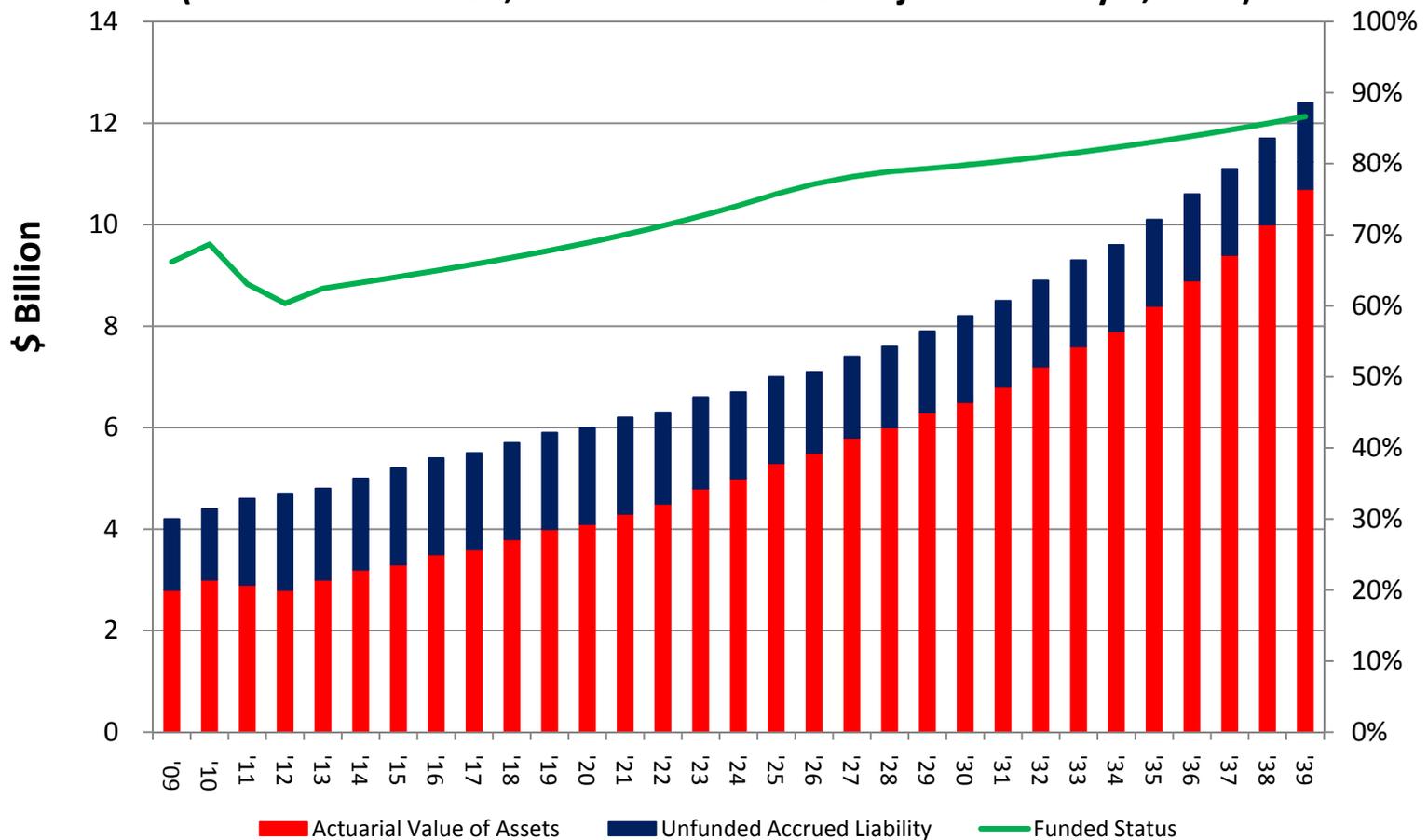




Return Necessary to Meet Minimum Funding After 15 Years



**9.86% Return on Market Value of Assets for 2010 – 2025
(Based on March 31, 2010 Market Value Projected to July 1, 2010)**

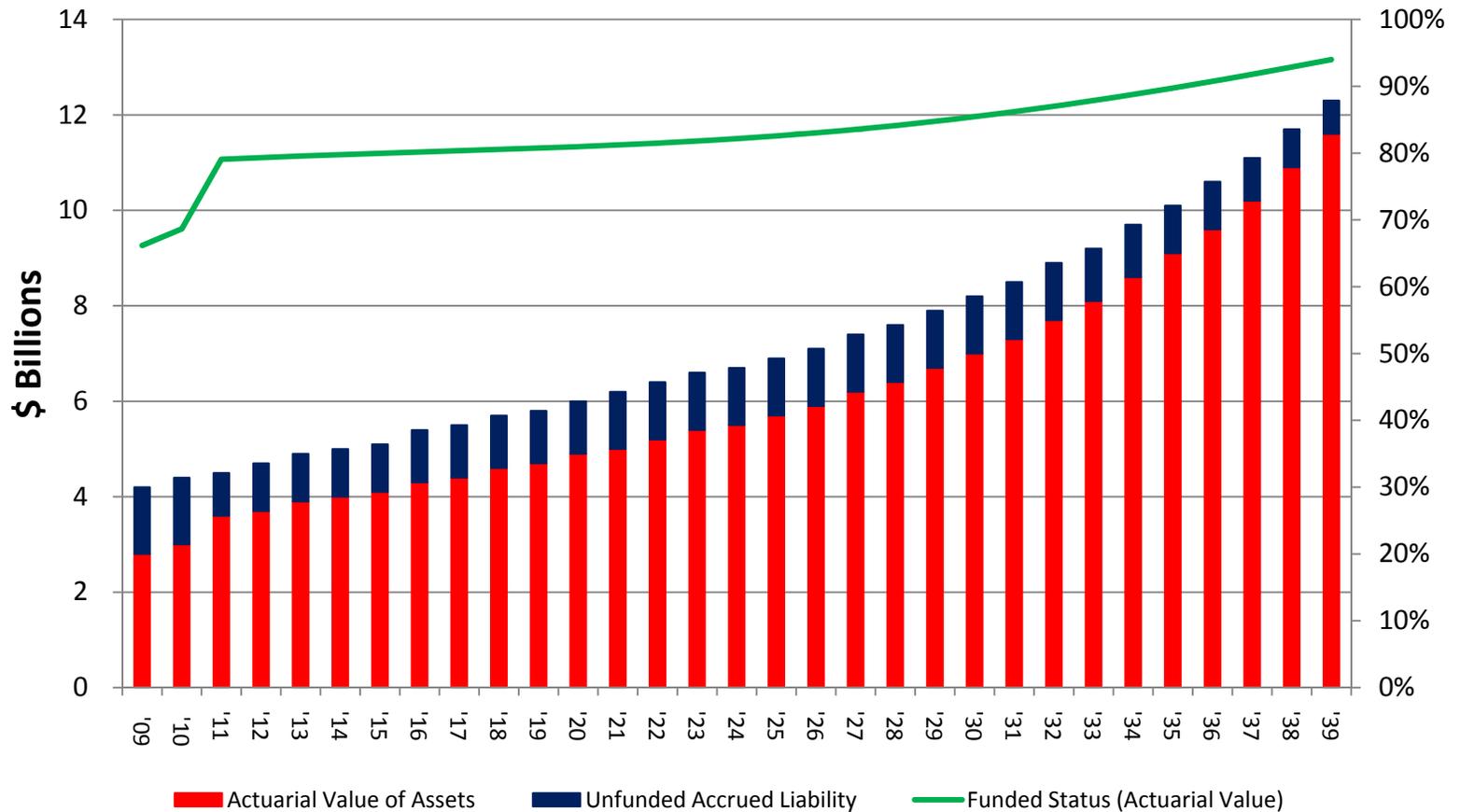




One Time Cash Infusion On July 1, 2011 To Meet Minimum Funding Requirement



**One Time Cash Infusion of \$801.6 million
(Based on March 31, 2010 Market Value Projected to July 1, 2010)**

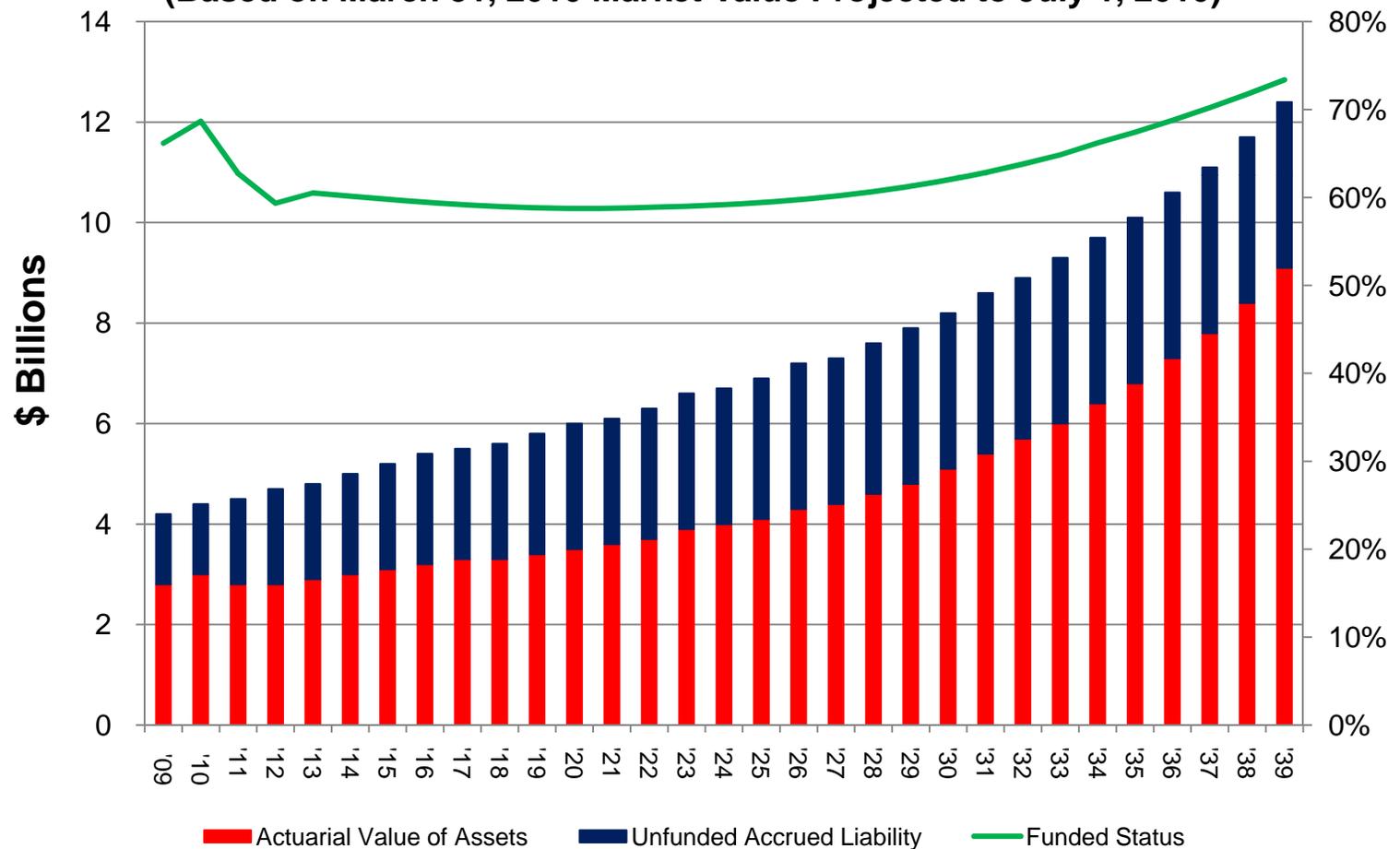




Additional Contributions Necessary to Meet Minimum Funding Requirement



**0.5% Incremental Increase to Statutory Rate up to 2020
(Based on March 31, 2010 Market Value Projected to July 1, 2010)**

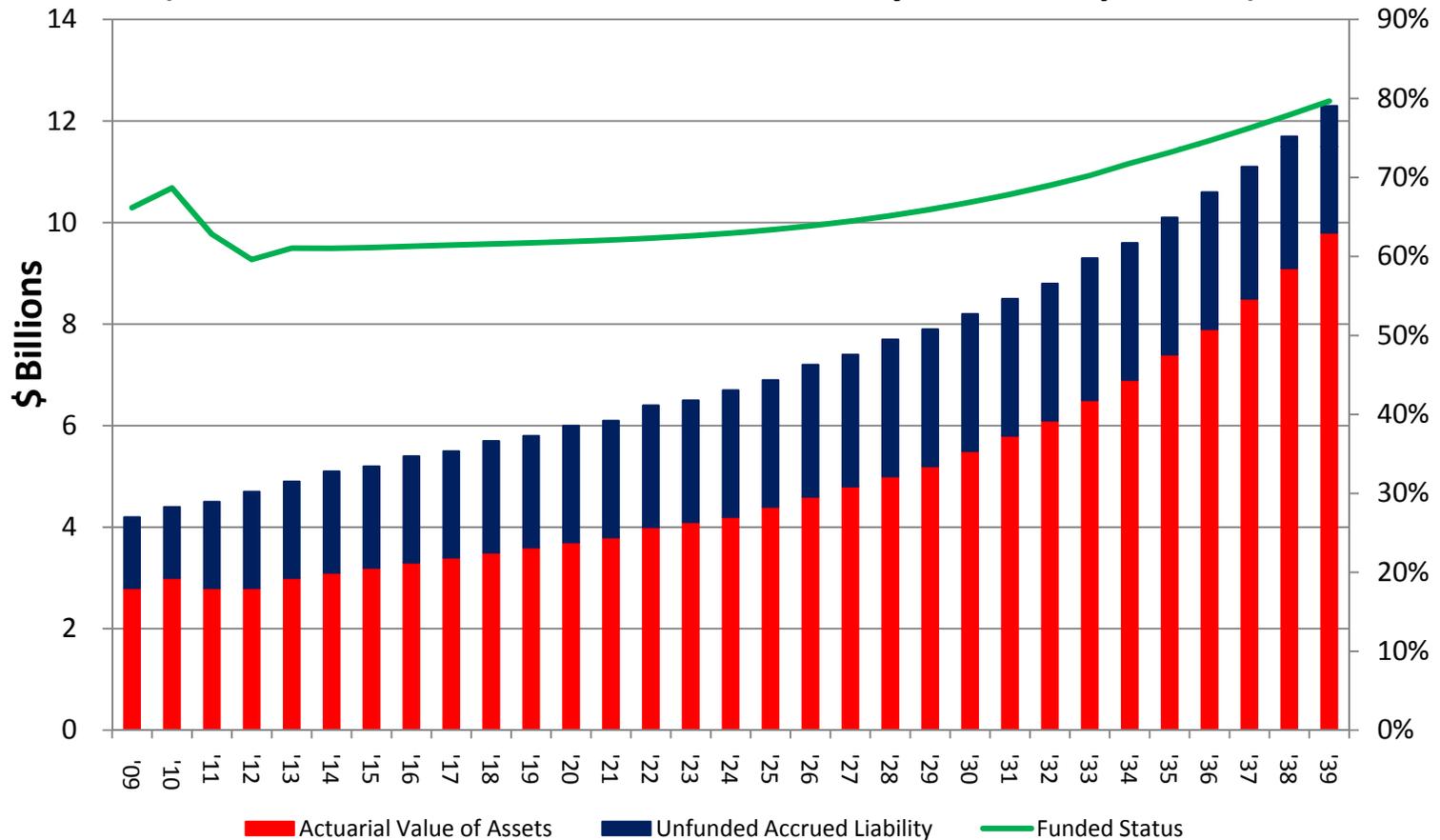




Additional Contributions Necessary to Meet Minimum Funding Requirement



**1.0% Incremental Increase to Statutory Rate up to 2015
(Based on March 31, 2010 Market Value Projected to July 1, 2010)**





Experience Study



- Experience Study for the period 7/1/2004 to 7/1/2009
- Analyze
 - Demographic Assumptions
 - Economic Assumptions
 - Actuarial Methods



Demographic Assumptions



- Assumptions Reviewed
 - Rates of Withdrawal
 - Rates of Disability Retirement
 - Rates of Retirement
 - Rates of Post-Retirement Mortality
 - Rates of Salary Increase for Merit and Promotion
- Actuarial Standard of Practice (ASOP) No. 35, “*Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations*”, which provides guidance to actuaries in selecting demographic assumptions for measuring obligations under defined benefit plans.



Demographic Assumptions



- Study compares what actually happened during the study period (7/1/2004 through 7/1/2009)
- Assumption changes recommended if actual experience differs significantly from expected.
- Judgment required to extrapolate future experience from past experience.



Demographic Assumptions



- Recommendations
 - Increase rates of withdrawal
 - Decrease rates of disability retirements
 - Adjust rates of service retirements



Economic Assumptions



- Assumptions reviewed
 - Price Inflation
 - Investment Return
 - Wage Inflation
- Actuarial Standards of Practice (ASOP) No. 27, “*Selection of Economic Assumptions for Measuring Pension Obligations*” provides guidance to actuaries in selecting economic assumptions for measuring obligations under defined benefit plans.



Economic Assumptions



➤ Recommendation

Item	Current	Proposed
Price Inflation	3.50%	3.50%
Real Rate of Return	<u>4.25%</u>	<u>4.25%</u>
Investment Return	7.75%	7.75%
Price Inflation	3.50%	3.50%
Real Wage Growth	<u>1.00%</u>	<u>1.00%</u>
Wage Inflation	4.50%	4.50%



Method Changes



- Calculation of the Normal Rate
- Present Value of Future ORP Contributions



Financial Impact



	Valuation 7/1/2009	Assumption Changes	Normal Rate & Assumption Changes	All Changes
Employer Contribution Rate				
Normal Rate	3.54%	3.17%	2.59%	2.59%
UAAL	<u>6.42%</u>	<u>6.79%</u>	<u>7.37%</u>	<u>7.37%</u>
Total Statutory Employer Rate	9.96%	9.96%	9.96%	9.96%
Actuarial accrued liability*	\$4,330,996	\$4,328,608	\$4,328,608	\$4,328,608
Actuarial value of assets*	\$2,762,194	\$2,762,194	\$2,762,194	\$2,762,194
UAAL*	\$1,568,802	\$1,566,414	\$1,566,414	\$1,566,414
Future ORP Contributions*	\$157,219	\$158,279	\$158,279	\$0
Net UAAL*	\$1,411,583	\$1,408,135	\$1,408,135	\$1,566,414
Amortization Period	**	**	**	**
Required increase in statutory rate to maintain 30-year funding period	4.11	3.71%	2.54%	2.54%

*In Thousands

** Does not meet minimum funding standards

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Public Employee Retirement Administration

Presentation of 2009 Actuarial Valuation Results

Systems Administered by Public
Employees' Retirement Board



Presented By
Stephen McElhaney, FSA

May 13, 2010



Discussion Topics

- Covered Systems
- Historical Trends
- 2009 Actuarial Valuation Results
- Projections



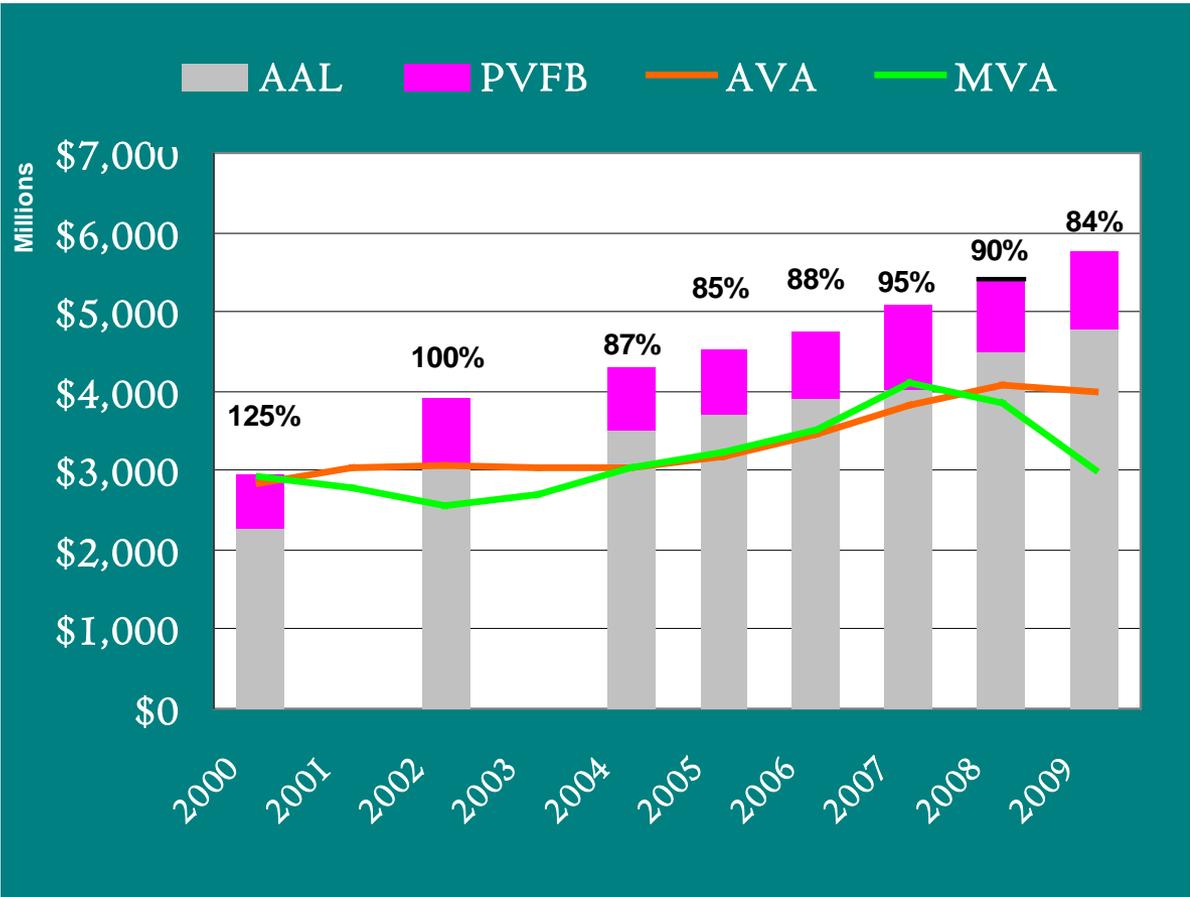
PERB Systems

System Name	June 2009 Assets (\$ Millions)	March 2010 Assets (\$ Millions)
Public Employees' Retirement System	\$2,999	\$3,494
Judges' Retirement System	47	55
Highway Patrol Retirement System	75	87
Sheriffs' Retirement System	151	181
Game Wardens' and Peace Officers' Retirement System	62	77
Municipal Police Officers' Retirement System	162	187
Firefighters' United Retirement System	159	184
Volunteer Firefighters' Compensation Act	20	23



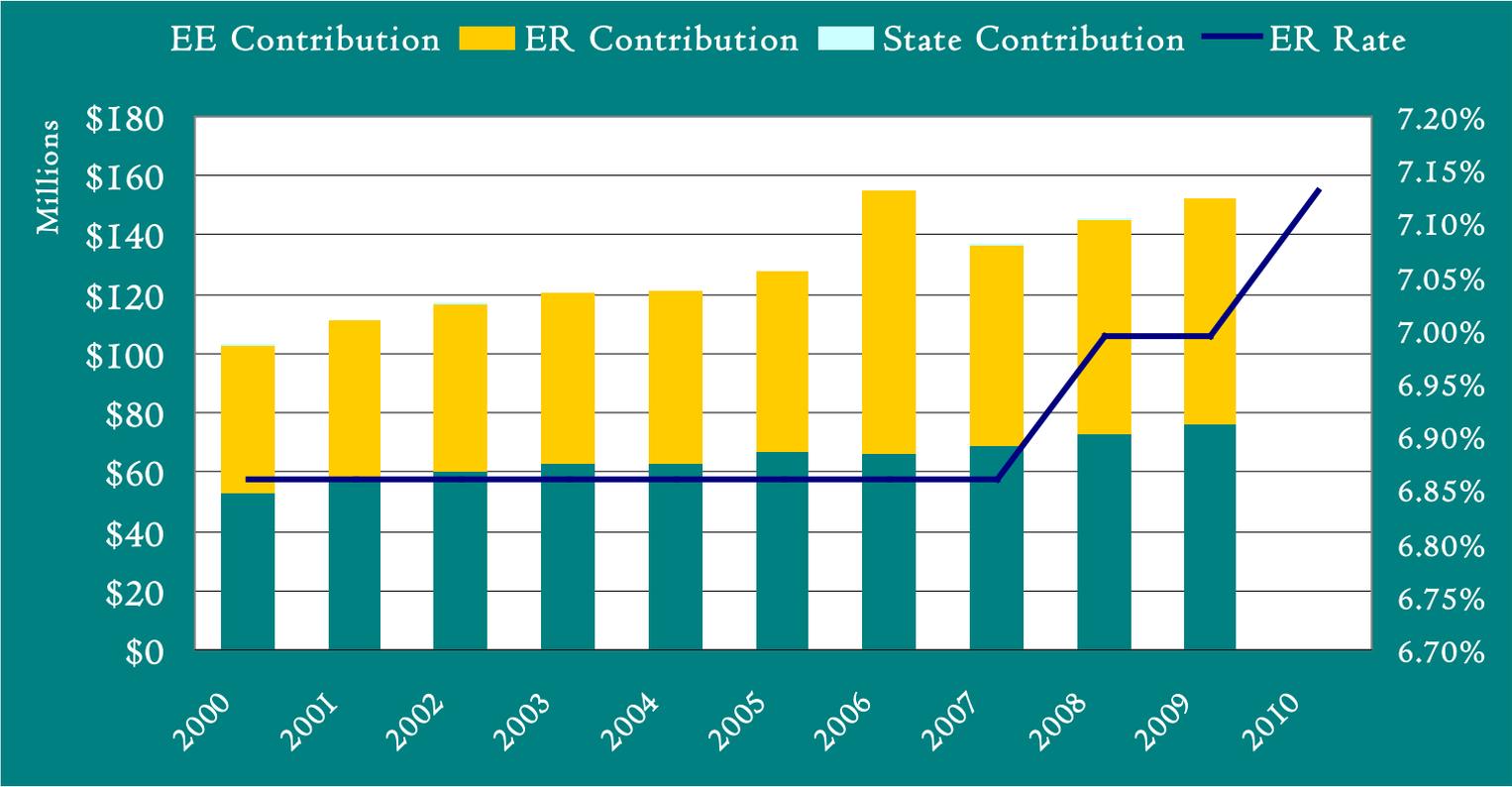
PERS Historical Trends

Assets and Liabilities





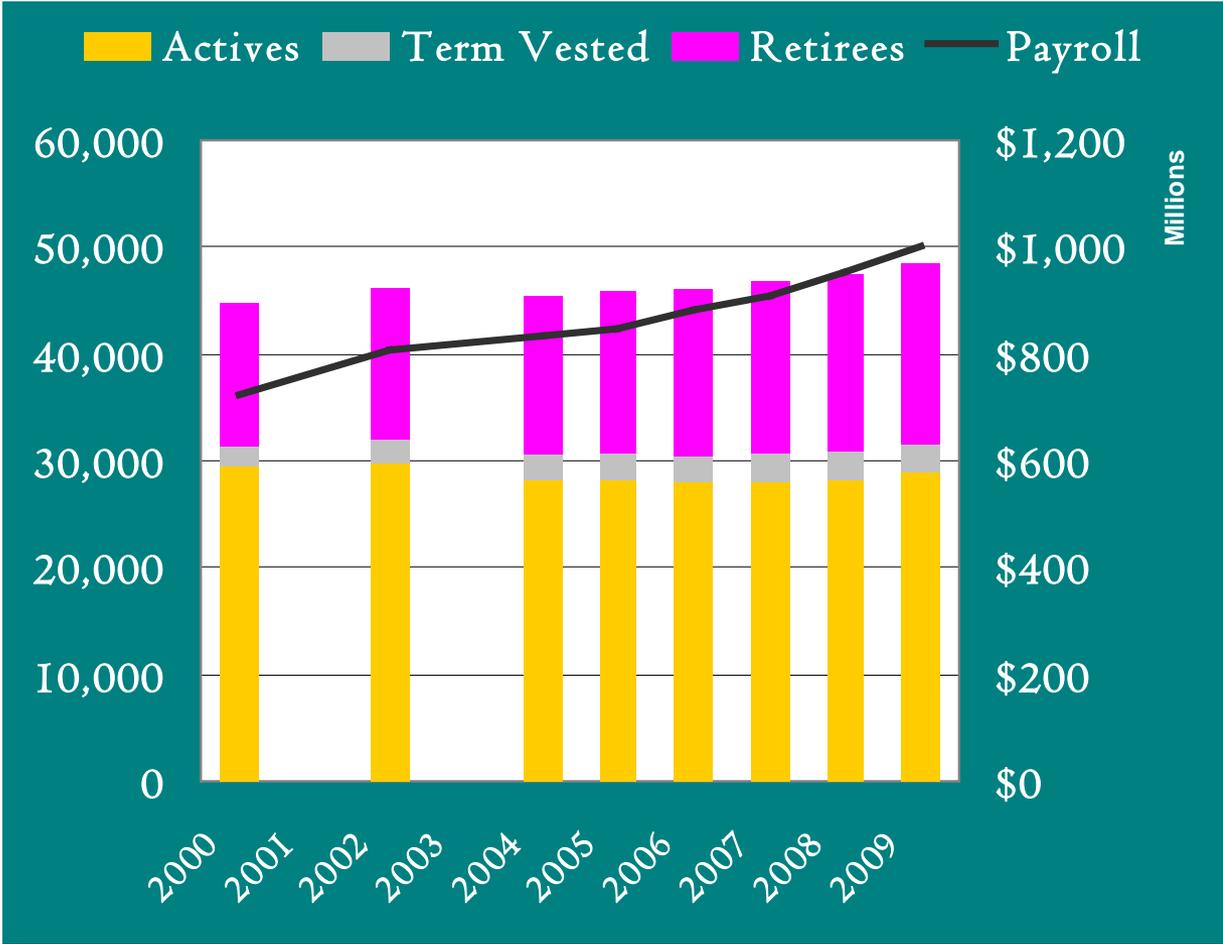
PERS Historical Trends Contributions





PERS Historical Trends

Participation



PERS Summary of Valuation Results

Montana Public Employees' Retirement System Summary of Principal System Results			
Valuation as of:	June 30, 2008***	June 30, 2009	% Change
<u>Participant Counts</u>			
Active Members	28,293	28,983	2.4%
Disabled Members*	290	279	-3.8%
Retirees and Beneficiaries*	16,337	16,796	2.8%
Terminated Vested Members	2,579	2,476	-4.0%
Terminated Non-Vested Members	<u>6,268</u>	<u>5,670</u>	-9.5%
Total**	53,767	54,204	0.8%
Annual Salaries of Active Members	\$ 994,314,000	\$ 1,053,173,964	5.9%
Average Annual Salary	\$ 35,143	\$ 36,338	3.4%
Annual Retirement Allowances for Retired Members and Beneficiaries	\$ 185,155,000	\$ 201,412,083	8.8%
<u>Assets and Liabilities</u>			
Actuarial Accrued Liability (AAL)	\$ 4,504,743,000	\$ 4,792,819,291	6.4%
Actuarial Value of Assets (AVA)	<u>4,065,307,000</u>	<u>4,002,212,253</u>	-1.6%
Unfunded AAL (AVA/AAL)	\$ 439,436,000	\$ 790,607,038	79.9%
Less: PCR-UAL	<u>17,500,000</u>	<u>16,188,870</u>	-7.5%
Net Unfunded AAL	\$ 421,936,000	\$ 774,418,168	83.5%
Funded Ratio	90.25%	83.50%	
Present Value of Accrued Benefits (PVAB)	N/A	\$ 4,060,778,783	
Market Value of Assets	\$ 3,852,532,000	<u>2,998,626,255</u>	-22.2%
Unfunded PVAB	N/A	\$ 1,062,152,528	
Accrued Benefit Funding Ratio	N/A	73.84%	
Ratio of Actuarial Value to Market Value	105.52%	133.47%	

(See following page for footnotes)

PERS Summary of Valuation Results

Montana Public Employees' Retirement System Summary of Principal System Results			
Valuation as of:	June 30, 2008***	June 30, 2009	% Change
<u>Contributions as a Percentage of Payroll</u>			
Statutory Funding Rate	13.935%	14.070%	
Less: Transfer to DB Ed Fund	0.040%	0.040%	
Net Statutory Funding Rate	13.895%	14.030%	
Normal Cost Rate	12.130%	12.160%	
Available for Amortization of UAL	1.765%	1.870%	
Period to Amortize	24.8 years	Does not amortize	
Projected 30-year Level Funding Rate	13.750%	16.420%	
Projected Shortfall (Surplus)	(0.185%)	2.350%	

* Based on PERA categorization for the annual report. For actuarial valuation purposes, 793 members in 2008 and 784 members in 2009 were valued as disabled members with offsetting reductions to the number of retired members.

** The total number of members processed in the 2009 valuation was 54,130 compared to 54,204 above being used for the annual report. A reconciliation of this difference will appear in the full actuarial valuation report.

*** All results reported under heading June 30, 2008 were produced by the prior actuary.



Projection of 2010 Valuation Results

- Market values for all PERB systems as of March 31, 2009 have increased considerably since the last valuation
- SAVA requested projections to next valuation date based on these market values
- Liabilities were projected from June 30, 2009 valuation results and do not reflect any potential changes in assumptions based on the current actuarial experience study



PERS Projection of 2010 Results

Projecting March 31, 2010 Market Value

(Does not reflect any assumptions potentially changed due to experience study)

Montana Public Employees' Retirement System			
Projection of Valuation Results			
Valuation as of:	June 30, 2009	June 30, 2010 (est)	% Change
<u>Assets and Liabilities</u>			
Actuarial Accrued Liability (AAL)	\$4,792,819,291	\$5,086,000,000	6.12%
Actuarial Value of Assets (AVA)	<u>4,002,212,253</u>	<u>\$3,947,000,000</u>	-1.38%
Unfunded AAL (AVA/AAL)	\$790,607,038	\$1,139,000,000	44.07%
Less: PCR-UAL	<u>16,188,870</u>	<u>\$15,000,000</u>	-7.34%
Net Unfunded AAL	\$774,418,168	\$1,124,000,000	45.14%
Funded Ratio	83.50%	78.00%	
Market Value of Assets	<u>2,998,626,255</u>	<u>3,545,000,000</u>	18.22%
Ratio of Actuarial Value to Market Value	133.47%	111.00%	



PERS Projection of 2010 Results

Projecting March 31, 2010 Market Value

(Does not reflect any assumptions potentially changed due to experience study)

Montana Public Employees' Retirement System			
Projection of Valuation Results			
Valuation as of:	June 30, 2009	June 30, 2010 (est)	% Change
<u>Contributions as a Percentage of</u>			
<u>Payroll</u>			
Statutory Funding Rate	14.07%	14.07%	
Less: Transfer to DB Ed Fund	0.04%	0.04%	
Net Statutory Funding Rate	14.03%	14.03%	
Normal Cost Rate	12.16%	12.16%	
Available for Amortization of UAL	1.87%	1.87%	
Period to Amortize	Does not amortize	Does not amortize	
Projected 30-year Level Funding Rate	16.42%	17.94%	
Projected Shortfall (Surplus)	2.35%	3.87%	



Twenty-year Projections

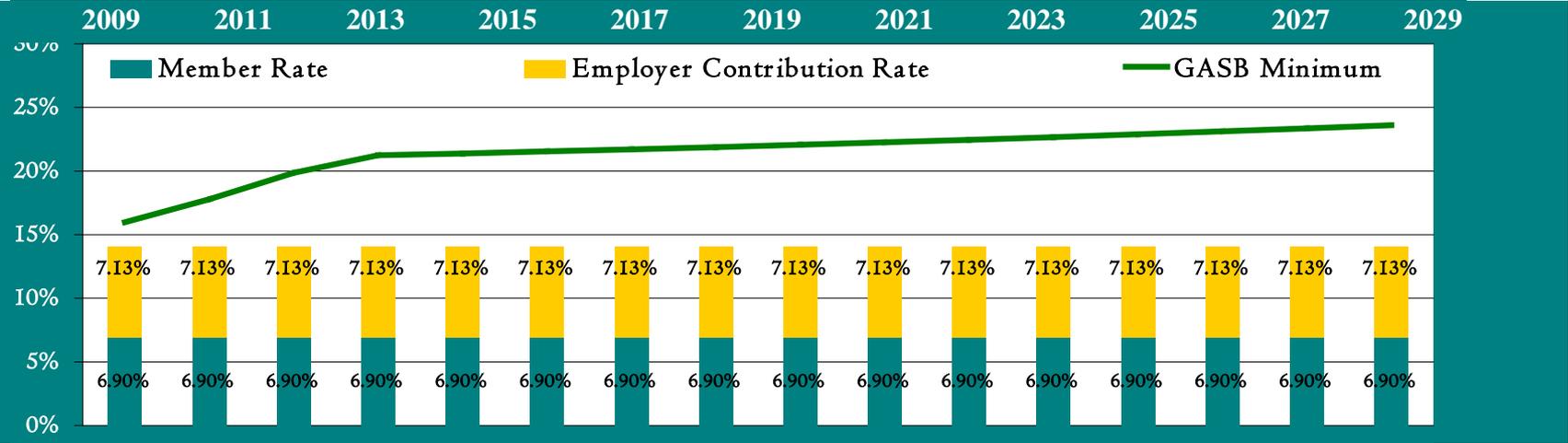
- Charts shown in this presentation are the same as were included in 2009 actuarial valuation reports
- Projections have not been updated for actual market value earnings since June 30, 2009, and do not reflect any assumptions potentially changed due to the experience study



PERS Projections - Contributions

Assuming Statutory Contributions

Asset Returns at 8%

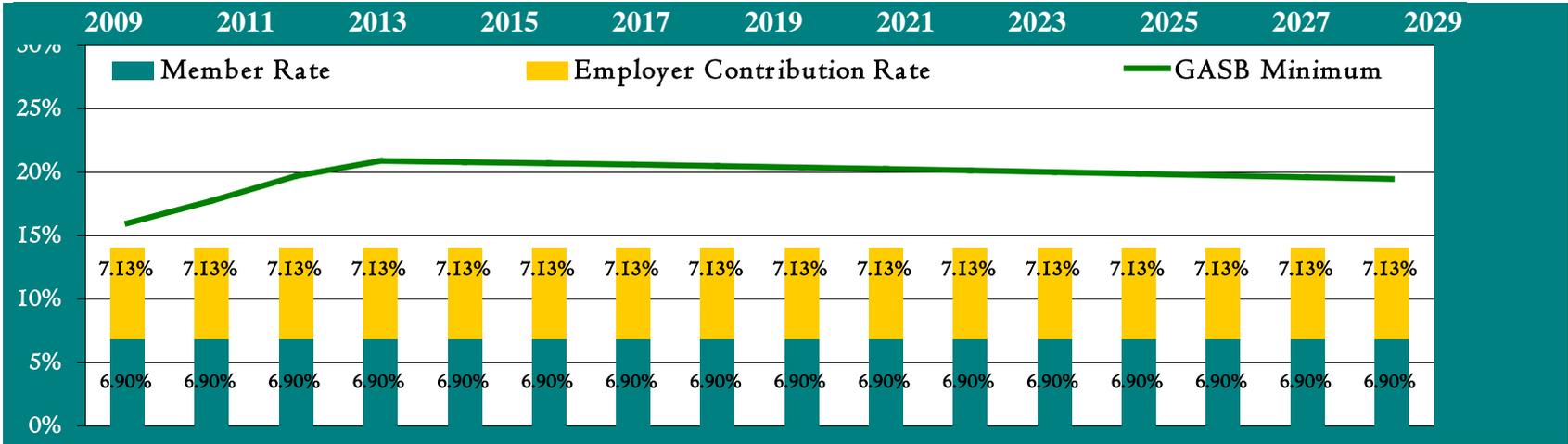




PERS Projections - Contributions

Assuming Statutory Contributions

Asset Returns at 9.5%

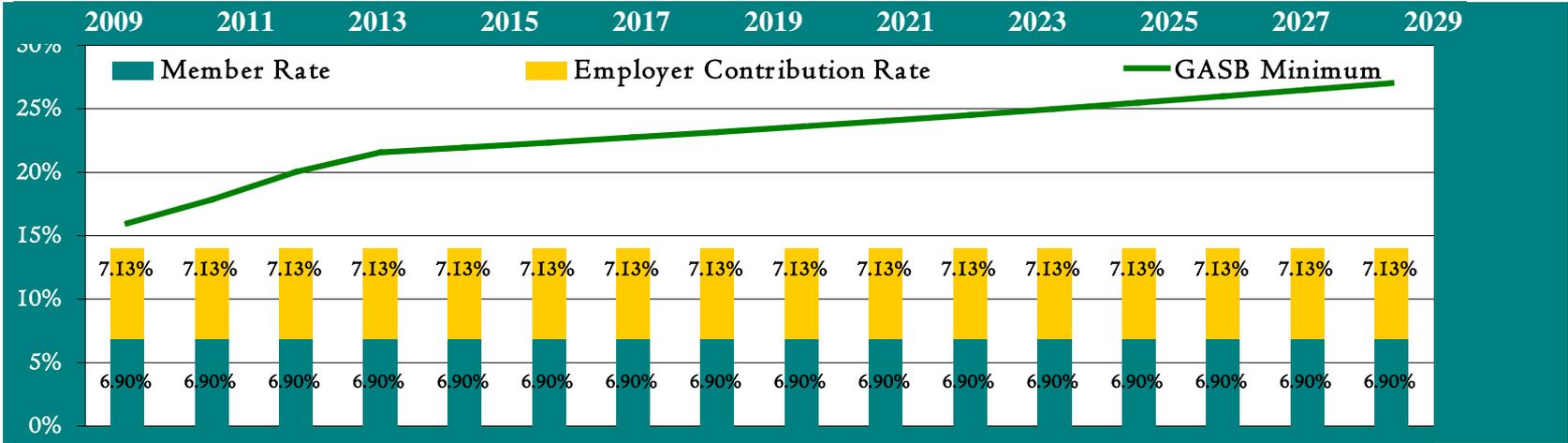




PERS Projections - Contributions

Assuming Statutory Contributions

Asset Returns at 6.5%

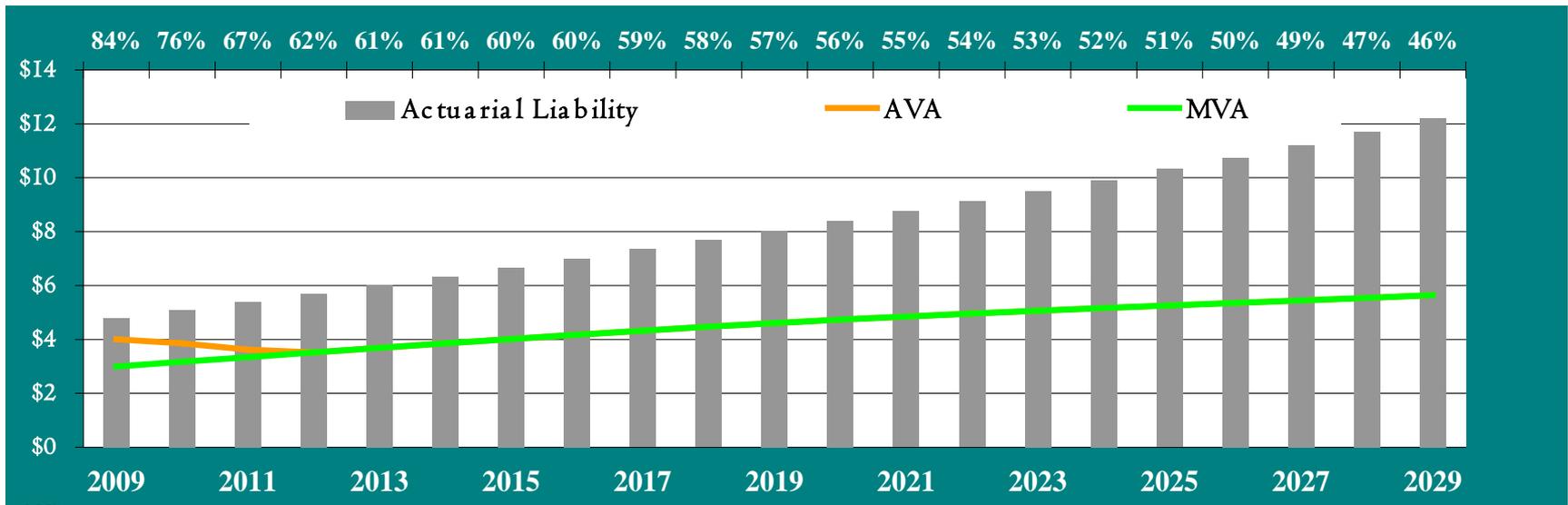




PERS Projections - Assets and Liabilities

Assuming Statutory Contributions

Asset Returns at 8%

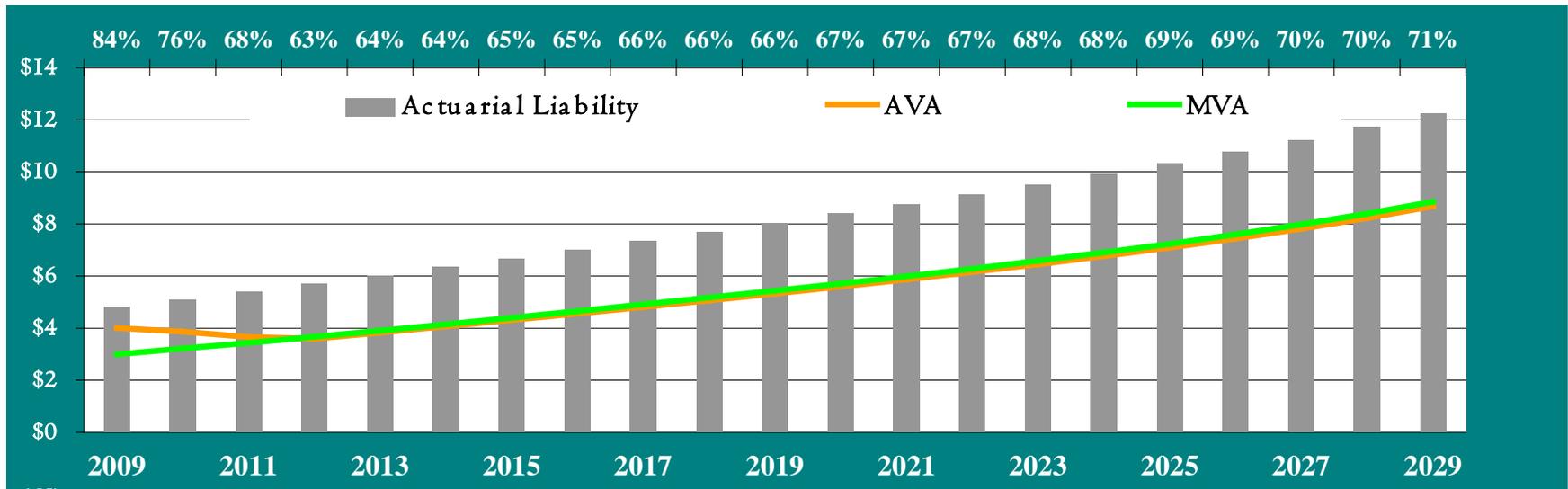




PERS Projections - Assets and Liabilities

Assuming Statutory Contributions

Asset Returns at 9.5%

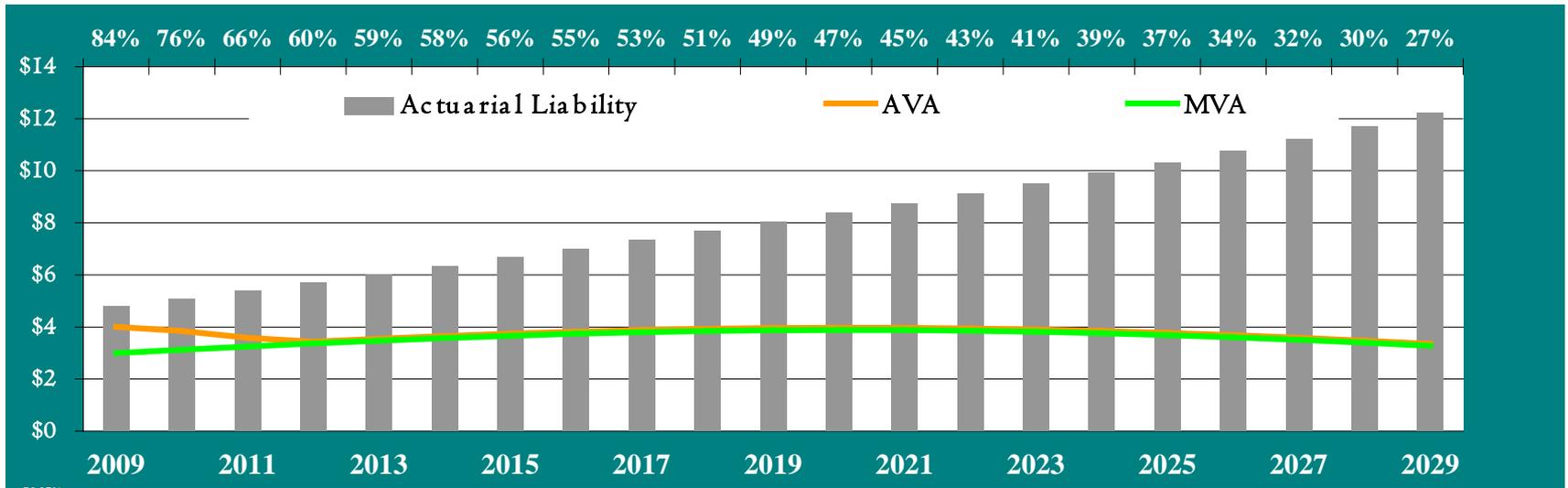




PERS Projections - Assets and Liabilities

Assuming Statutory Contributions

Asset Returns at 6.5%





Valuation Results – Other Plans

	2008 Funded Ratio	2009 Funded Ratio	2008 Amortization Period	2009 Amortization Period
JRS	157%	148%	0.0	0.0
HPORS	75%	72%	17.4	21.5
SRS	98%	90%	16.3	Does not amortize
GWPORS	93%	88%	13.0	Does not amortize
MPORS	65%	62%	18.6	22.1
FURS	72%	69%	11.3	12.7
VFCA	84%	81%	5.0	6.8



Projected Results – Other Plans

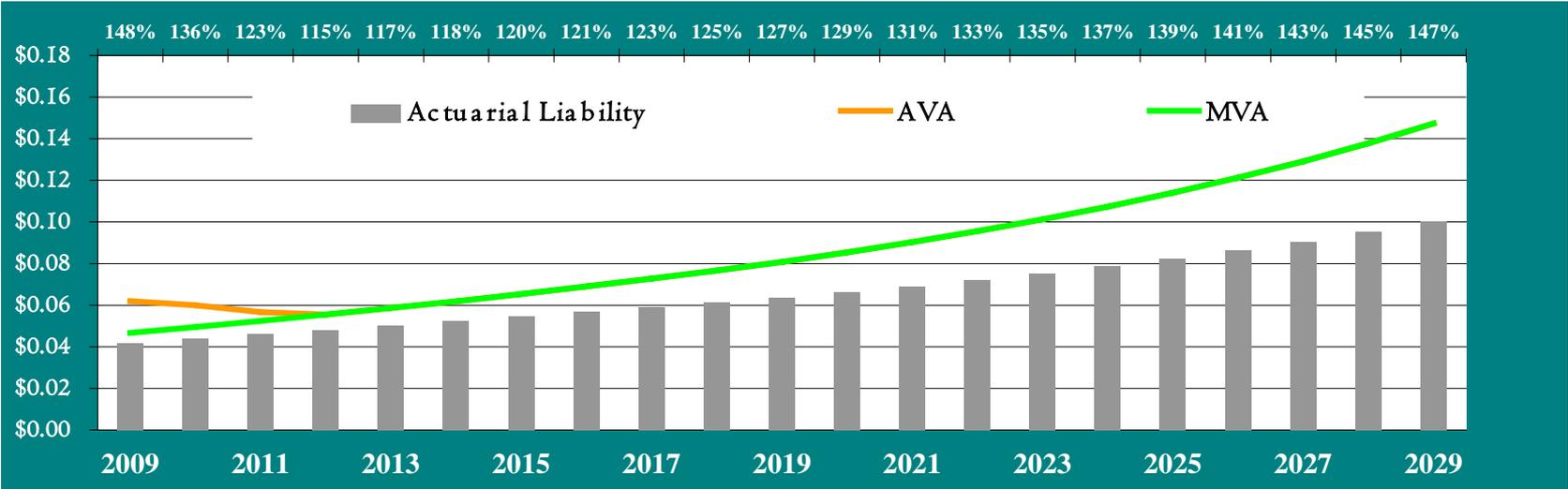
Projecting March 31, 2010 Market Values

(Does not reflect any assumptions potentially changed due to experience study)

	2009 Funded Ratio	2010 Funded Ratio (est)	2009 Amortization Period	2010 Amortization Period (est)
JRS	148%	140%	0.0	0.0
HPORS	72%	68%	21.5	26.9
SRS	90%	84%	Does not amortize	Does not amortize
GWPORS	88%	83%	Does not amortize	Does not amortize
MPORS	62%	59%	22.1	25.3
FURS	69%	66%	12.7	14.4
VFCA	81%	77%	6.8	9.3

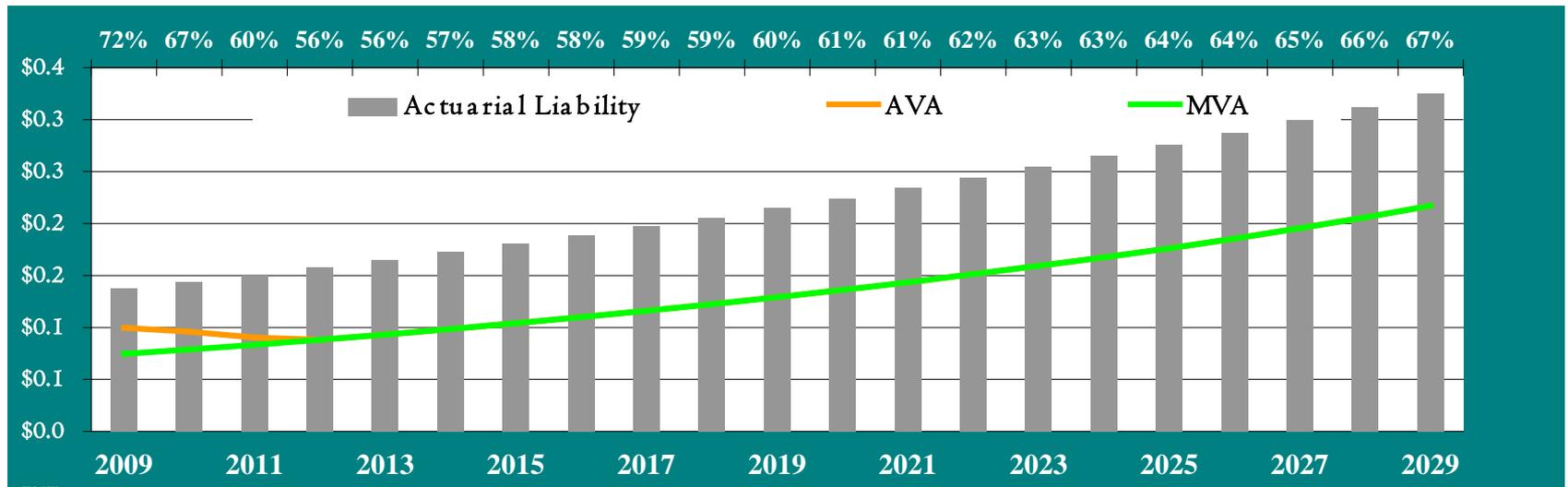


JRS Projections - Assets and Liabilities Assuming Statutory Contributions Asset Returns at 8%



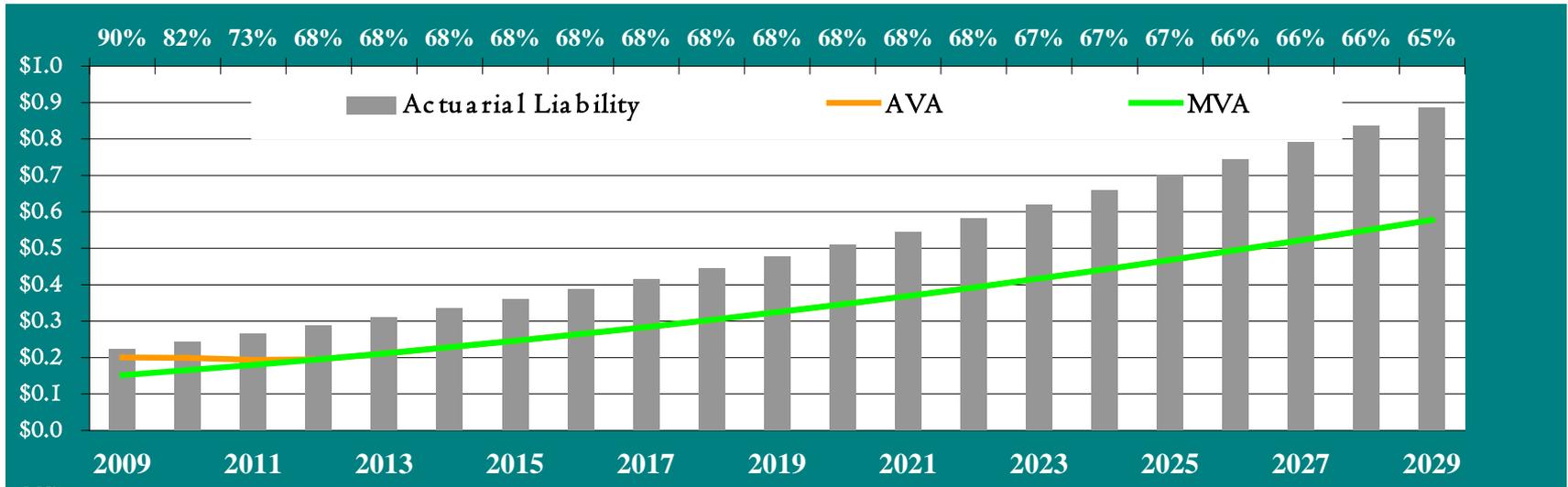


HPORS Projections - Assets and Liabilities Assuming Statutory Contributions Asset Returns at 8%



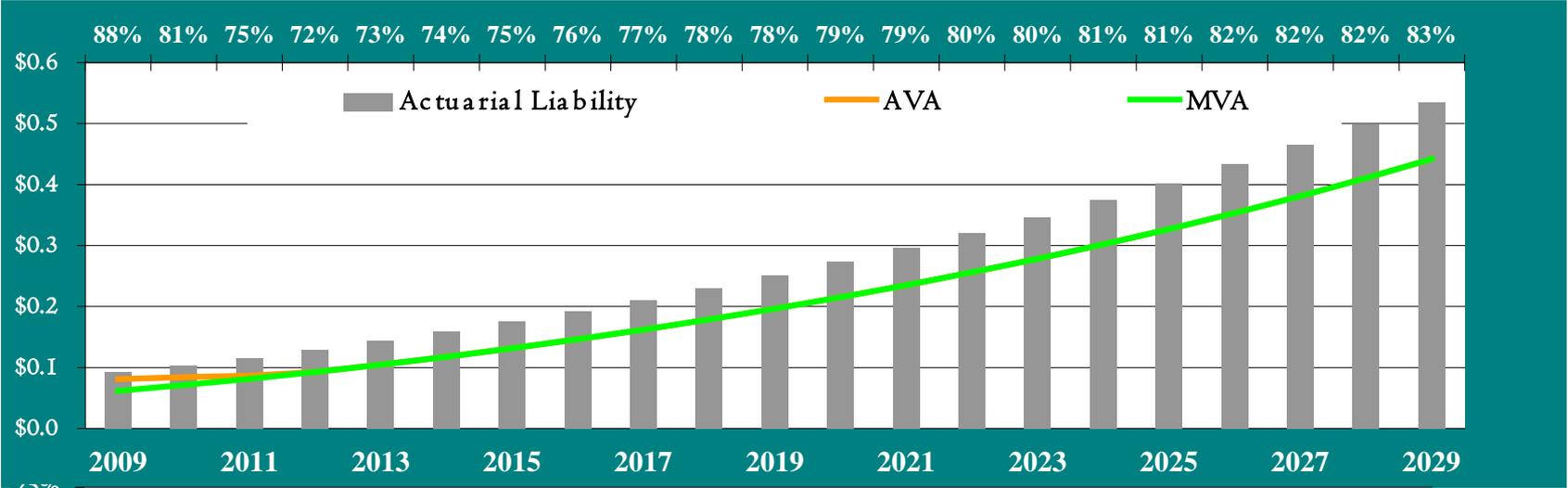


SRS Projections - Assets and Liabilities Assuming Statutory Contributions Asset Returns at 8%



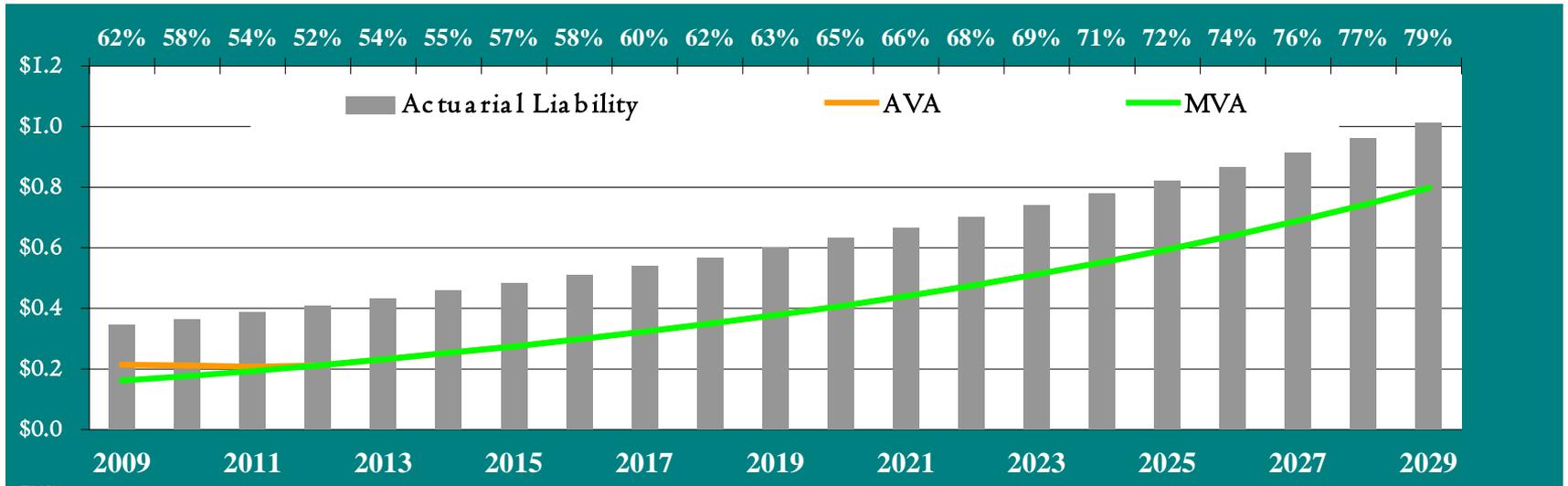


GWPORS Projections - Assets and Liabilities Assuming Statutory Contributions Asset Returns at 8%



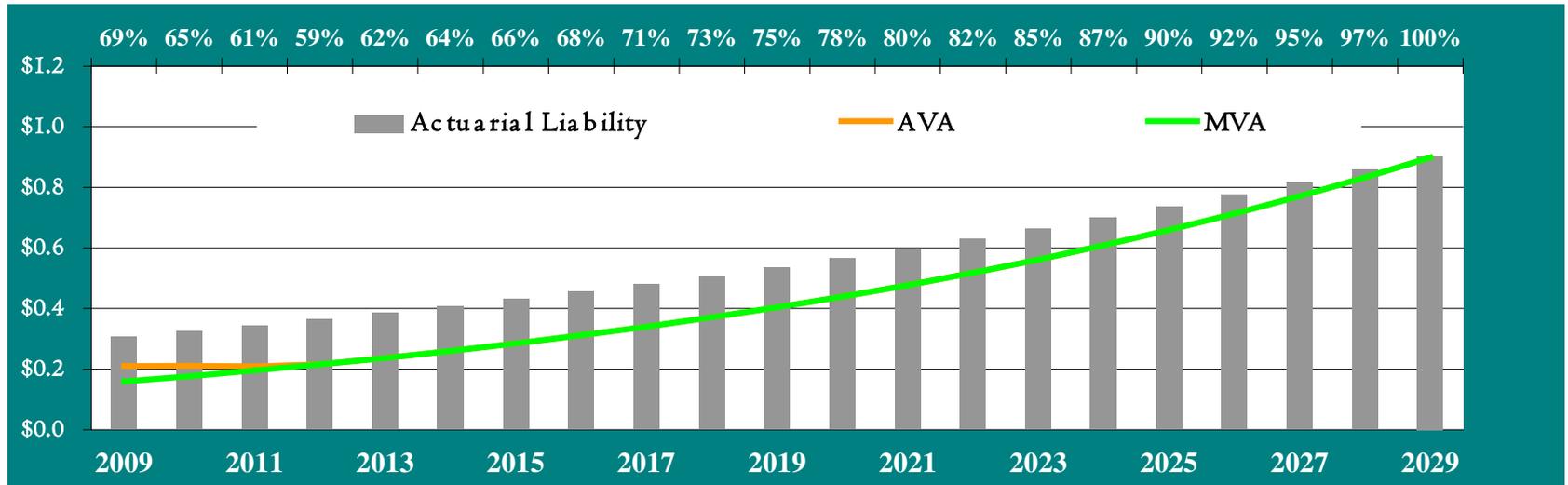


MPORS Projections - Assets and Liabilities Assuming Statutory Contributions Asset Returns at 8%



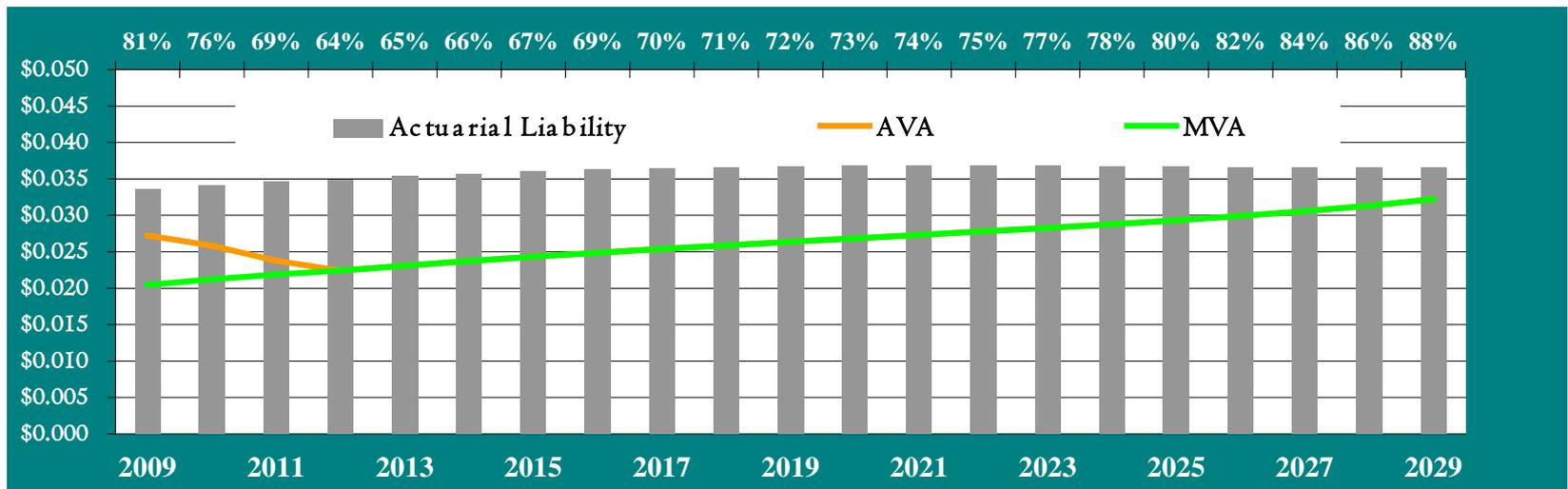


FURS Projections - Assets and Liabilities Assuming Statutory Contributions Asset Returns at 8%





VFCA Projections - Assets and Liabilities Assuming Contributions Same as FY2009 Asset Returns at 8%



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Board of Investments

MEMORANDUM

Montana Board of Investments

Department of Commerce
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To: Board of Investments
Public Employees' Retirement Board
Teachers' Retirement Board

From: Carroll South, Executive Director 

Date: May 13, 2010

Subject: Pension Funds Investment Process

The Investment Law

Board of Investment (Board) Authority - The Board of Investments (Board) has the primary authority to invest state funds as cited in 17-6-201(4), MCA:

"The board has the primary authority to invest state funds. Another agency may not invest state funds unless otherwise provided by law. The board shall direct the investment of state funds in accordance with the laws and constitution of this state. The board has the power to veto investments made under its general supervision."

The law requires the Board to use the "prudent expert principle" as its guide when it invests public funds.

"17-6-201.MCA (1) The unified investment program directed by Article VIII, section 13, of the Montana constitution to be provided for public funds must be administered by the board of investments in accordance with the prudent expert principle, which requires an investment manager to:
(a) discharge the duties with the care, skill, prudence, and diligence, under the circumstances then prevailing, that a prudent person acting in a like capacity with the same resources and familiar with like matters exercises in the conduct of an enterprise of a like character with like aims;
(b) diversify the holdings of each fund within the unified investment program to minimize the risk of loss and to maximize the rate of return unless, under the circumstances, it is clearly prudent not to do so;
And
(c) discharge the duties solely in the interest of and for the benefit of the funds forming the unified investment program."

The Board is a "quasi-judicial board", comprised of nine members appointed by the Governor and confirmed by the State Senate. Five members serve terms concurrent with the Governors term, while the remaining four members are appointed midway through the Governor's term. The Governor also appoints the Chairperson. Legislative leadership appoints a Senator and Representative as non-voting members. The Board meets quarterly or more frequently at the call of the Chairperson.

The Investment Infrastructure

Investment Pools - To simplify the investment infrastructure for the nine pension funds, the Board operates six investment pools in which all nine pension funds participate. The pools not only simplify the infrastructure but provide more diversification for the smaller pension funds than they would have investing in individual securities. Each pension fund owns a prorata share of the pools, based on the number of shares each owns. Dividend and interest income is distributed monthly to pool participants based on pro rata ownership.

The Board approves an Investment Policy for each pool that includes the “benchmark” against which pool investment performance will be measured as reflected below.

Pension Investment Pools & Benchmarks		
<u>Investment Pool</u>	<u>Benchmark</u>	<u>Benchmark Definition</u>
Domestic Equity Pool	S&P 1500 Index	Represents 85% of the US Stock Market
International Equity Pool	MSCI ex US Index	All Publicly-Traded Stocks Excluding US Stocks
Bond Pool	Barclays Aggregate Index	A Large Diverse Basket of Domestic Bonds
Real Estate Pool	NCREIF Property Index	Large diverse basket of IG-rated U.S. Bonds
Private Equity Pool	S&P 1500 Index + 4%	Adds 4% To Public Stocks For Additional Risk
Short Term Investment Pool	LIBOR Index	Interest Charged by London Banks to Other Banks

The Custodial Bank – The Board’s custodial bank, State Street Bank and Trust, plays a critical role in the investment infrastructure. The bank not only provides custody of the Board’s investments, but also provides the Board’s securities and pool participant (mutual fund) accounting systems. The bank assumes all back-up and disaster recovery responsibilities for these systems, relieving the Board of this task. The bank is authorized to lend Board securities and is responsible for assuring that the Board participates in all class action litigation in which it is a member. It also provides independent and objective analysis of the Board’s investment performance, including the investment pools, all managers within the pools, and each of the nine pension funds. The Board originally contracted with the bank in December 1993 via the issuance of a Request for Proposals and has renewed the contract twice utilizing the same process.

Pension Fund Return Assumptions – Before discussing the asset allocation process, it is important to emphasize why asset allocation is critical to the pension funds. The investment returns that pension fund contributions are expected to earn has already been determined when the Board receives the contributions to invest. These assumptions are “baked” into the calculations that drive funding ratios, unfunded liabilities, and the required level of contributions. A small reduction in the return assumptions will reduce the funding ratios and increase unfunded liabilities. Once these return assumptions are hard wired into actuarial valuations, if investments returns do not meet the return assumptions the funding ratios will go down and unfunded liabilities will grow. These return assumptions cannot be met without incurring investment risk; a risk demonstrated recently when pension fund assets were battered by the financial markets meltdown. The asset allocation process must balance risk/return in an attempt to generate the

investment returns that are embodied in the funding ratios and unfunded liabilities, while not incurring excessive risk.

Asset Allocation - Because the law imposes no restrictions on the investment of pension funds other than the prudent expert principle, the Board must determine the types of investments to be made and the portion that each investment type will comprise of total assets. This process requires a two-tier allocation structure to ensure that the Board approves the types and levels of investments at the pension fund level as well as within each investment pool. To provide day-to-day flexibility in the management of assets, the allocations are approved in ranges rather than absolute percentages. The asset allocations are currently identical for all nine pension funds and the Board has set a fund-level maximum of 70.0 percent for public/private equity. The table below shows the current Board-approved asset allocations at the fund and investment pool level.

		Pension Fund Investments			
		70% Equities Cap			
Domestic Equity Pool				Real Estate Pool	
<u>Investment Type</u>	<u>Range</u>			<u>Investment Type</u>	<u>Range</u>
Large Cap Core (passive)	10% - 30%			Core	40% - 60%
Large Cap Enhanced	20% - 30%	30% - 50%	4% - 8%	Value	20% - 30%
Large Cap Style-Based (long-only)	20% - 30%			Opportunistic	20% - 30%
Partial Long/Short (130/30)	10% - 20%				
Total Large Cap	82% - 92%				
Mid Cap	5% - 11%				
Small Cap	3% - 8%				
International Equity Pool				Private Equity Pool	
<u>Investment Type</u>	<u>Range</u>			<u>Investment Type</u>	<u>Range</u>
Large Cap Core	50% - 70%	15% - 30%	9% - 15%	Leveraged Buyouts	40% - 75%
Large Cap Growth	10% - 20%			Venture Capital	10% - 50%
Large Cap Value	10% - 20%			Mezzanine Financing	0% - 10.0%
Small Cap Core	5% - 15%			Distressed Securities	0% - 40.0%
				Special Situations	0% - 10.0%
Retirement Funds Bond Pool				Short Term Investment Pool	
<u>Investment Type</u>	<u>Range</u>			Short-term High Quality Securities	
Domestic High Yield	0% - 15%	22% - 32%	1% - 5%	24 Hour Liquidity	
International	0% - 10%				
Total High Yield/International	0% - 20%				
Domestic Core(investment grade)	80% - 100%				

The Investment Process

Board/Staff Asset Allocation Responsibilities - The Board, as the fiduciary for the pension fund assets, has clearly spelled out the role and responsibilities for its staff in the asset allocation process. The Board authorizes the type of assets in which pension funds may be invested and the ranges for those assets at both the fund and investment pool level. The Board delegates to staff the responsibility for maintaining the assets within the approved ranges at both the fund and investment pool level.

Rebalancing - In investment-speak, the process of “keeping assets within approved ranges” is called rebalancing. Given the roller coaster performance of the equity markets during the past 30 months, the most volatile range to manage has been the total equity allocation of 60.0 to 70.0 percent of assets and the various equity components within the allocation. When the equity markets outperform non-equity assets, total equities exposure may exceed 70.0 percent, at which time equities would be sold and non-equity assets purchased. Conversely, when equity markets fall significantly as they did in 2008 and the first quarter of 2009 and equity exposure nears the bottom of the range, non-equity assets would be sold and equities purchased. This somewhat counterintuitive process brings discipline to the investment process and, at least in theory, conforms to the investor’s ideal of buying low and selling high. The adjacent table shows the declining pension fund equity exposure during the sharp downturn in the equity markets, actually falling below the bottom of the range in February 2009.

Total Equities	
09/30/08	65.97%
10/31/08	63.04%
11/30/08	61.60%
12/31/08	62.30%
01/31/09	61.35%
02/28/09	59.44%
03/31/09	60.59%
04/30/09	62.57%
05/31/09	63.82%
06/30/09	63.66%
07/31/09	65.03%
08/31/09	65.89%
09/30/09	65.88%

During fiscal year 2007 and the first four months of fiscal year 2008 when the stock markets were taking off, \$292.5 million in public equities were sold and \$105.4 million in fixed income investments purchased to bring the assets back into balance. As the equity markets were falling, staff sold \$181.6 million in fixed-income investments and pumped \$173.6 million into international and private equity in an attempt to keep the fixed-income/equity ratio in balance.

Other asset rebalancing may occur from time to time but staff has been reluctant to make any major transfers between assets during volatile market conditions. Monthly adjustments are made among investment pools for operational purposes. Staff must ensure that there is adequate cash in the Short Term Investment Pool to pay monthly retiree benefits and that there is sufficient cash in the private equity and real estate pools to cover ongoing capital calls. Providing adequate cash for these purposes may require the sale of public stocks/bonds. A small amount of asset rebalancing may be included in these monthly adjustments.

Active or Passive Investment Management – Once the Board sets asset allocation ranges, it must determine whether assets are actively managed, passively managed, or a combination of both strategies. All assets directly managed by Board staff, which include the entire Short Term Investment Pool and approximately 77.0 percent of the Bond Pool, are actively-managed. All private equity and private real estate investments are actively-managed because there are no

“investable” indexes available for passive investing in these assets. However, there are passive investable indexes for a broad array of publicly-traded fixed income and equity securities.

Passive Investments - Passive index investments have the advantage of very low fees and little if any tracking error relative to the respective indexes. The managers of these funds seek to replicate the index in which they are invested and the fund is usually a commingled fund in which the investor buys and sells shares. The disadvantage to passive investments is that they cannot “beat” the index and assets in these funds are at the mercy of the index performance.

Active Investments - Active investing has the disadvantage of much higher fees. If an active manager cannot outperform the respective index “net of fees” over time, passive investments with lower fees are a better choice. In theory, the advantage to active investing is that the managers will deploy much greater resources than passive managers and should be able to outperform the index, either through fundamental stock/bond analysis or some type of quantitative computer-driven process.

Investment Manager Selection – The Board has delegated to staff the task of selecting and monitoring all investment managers, and to terminate public security managers. There are different processes utilized to select public security and private equity/real estate managers and technically, private managers cannot be terminated.

Passive Investment Managers - Most passive investment managers are very large institutions, whose performance, past and present will be very similar and the distinguishing characteristics may be management fees. Choosing one manager over another will likely not make much difference in the long term, except for fee differences. Selection of these managers is similar to purchasing a product off the shelf and a Request for Proposals (RFP) is not utilized in the selection process. The Board currently utilizes Blackrock and State Street Bank for its passive public equity investments.

Active Public Security Managers - Active public security managers are selected based not only on the fees they charge but by an analysis of whether they will outperform the index net of fees in the future. Since it is impossible to predict the manager’s future performance, the selection process involves looking at past performance, the expertise/experience of its staff, its investment style, its investment process, its risk controls, and its systems. A RFP is issued for all active public security managers to ensure that all respondents provide the same information that can be easily compared and analyzed. The Board’s consultant assists throughout the entirety of this process, including the drafting of the RFP and the accompanying questionnaire, and interviewing the finalists.

Selecting the best active public security managers is not a science, and whatever selection process is utilized there will likely be outperformers and underperformers selected. Because it takes several years to identify and terminate the underperformers, the selection of the wrong manager will adversely impact the overall portfolio performance. Terminating a manager is not an exact science either. It is possible that a terminated manager may outperform after it is terminated and could have made up for its past underperformance if not terminated.

The Board began diversifying the two public equity pools in early 2006 and the bond pool in 2008 by issuing RFP's for specific types of managers. The table below shows the RFP issue dates, the number of responses, the number of public security managers hired, the number of managers terminated, and the number of managers on the watch list as of April 30, 2010.

RFP		Managers	Managers	
Issue Date	Investment Strategy	Responding	Hired	Hire Date
03/03/06	US Equity Enhanced Index	46	4	June 2006
03/27/06	Non-US Equity	68	9	September - October 2006
09/25/06	US Equity Small & Mid-Cap	209	5	Feb. - Mar., 2007
02/23/07	US Equity Large-Cap	153	5	August, 2007
02/23/07	US Equity Large-Cap (130/30)	13	3	March, 2008
02/08/08	Fixed-income Core	46	0	NA
02/08/08	Fixed-income Core Plus	25	2	October 2008
02/08/08	Fixed-income High Yield	32	2	May 2009
Total		592	30	
			Managers	
	Investment Strategy		Terminated	Termination Date
	US Equity Enhanced Index		1	September 2009
	Non-US Equity		2	August 2009 - April 2010
Total			3	
			Managers	
			On Watch	Inclusion Date
	US Equity Enhanced Index		1	March 2008
	US Equity Large-Cap (130/30)		1	February 2010
	US Equity Small & Mid-Cap		1	August 2008
	US Equity Small & Mid-Cap		1	February 2010
	Non-US Equity		2	February 2009
	Non-US Equity		1	May 2009
Total			7	

Of the 30 managers hired through the RFP process, three have been terminated and seven are on the watch list. An optimal balance for the public equity pools will likely be a core of passive investments combined with a team of outperforming active managers. The passive components will provide stability, while the outperforming active managers will add value and be able to better respond to changing market conditions. Further details on the selection of active public security managers are shown in Appendix A on Page 9.

Private Equity & Real Estate Managers – The selection process for private equity and private real estate managers differs from the process for public security managers in that it does not include the issuance of a RFP. The management structure for these investments is in the

form of a General Partnership, in which the Board becomes a limited partner along with many other institutional investors. These are closed-type investments in which the Board participates and can only be entered when the fund managers are raising capital. When the Board subscribes to these partnerships, it makes a firm commitment that is drawn down over time via capital calls. The initial decision to commit is the most important part of the process. Since these commitments are long-term and involve a multi-year period of underlying investing activity the assessment of managers' abilities and the effectiveness of their strategy are critical to overall positive results. The Board first invested in private equity in 1987 and has had considerable experience in the selection process.

Selecting the "right" manager for these investments is perhaps more critical than selecting the right public security managers because of the long-term commitment to the manager. While most contracts with public security managers can be terminated in five days, commitments to these private partnerships may last from 10 to 12 years. The only way limited partners can exit the investment is to sell their interests on the secondary market. However, allocations to private managers are much smaller than are allocations to public security managers so the total portfolio impact of individual underperforming private managers may be less than for a public security manager.

Except for the absence of a RFP, the selection process for private managers is similar to the process for public security managers. When a private equity or real estate manager is in a capital-raising status and is identified as a potential fit, they are vetted by staff. The vetting process begins with a fundamental understanding of the manager's strategy (e.g., buyout, venture, distressed, etc.) and its prospects for success in the current and expected economic environment. The vetting process for private real estate managers is similar, except the strategies analyzed will involve geographical location, the type of real estate, and the amount of leverage used to purchase the real estate. The manager's ability to execute and provide above average returns using the strategy is assessed. Because the best indicator of future success is generally past success by the manager, staff conducts a detailed examination of the manager's past funds and the underlying investments made in those funds.

Any change in the key personnel responsible for past performance is considered and the legal documents for the fund are reviewed by staff and outside legal counsel. Before any commitment is made, staff will meet the manager face-to-face, and if they are still interested, write a detailed report justifying a commitment. Ultimately the Chief Investment Officer makes the final decision to commit and the Chief Investment Officer, the Executive Director, and the Board's legal counsel sign all the legal documents.

Further details on the selection of private equity and real estate managers are shown in Appendix B on Page 11.

Summary

The Board is authorized by state law to invest all state funds and it carries out this mission using the "prudent expert principle" as its guide. While the state constitution places restrictions on

certain types of state funds, there are no restrictions on the investment of pension funds and the Board is free to invest in any asset type as long as it considers the investment to be prudent. The objective of the asset allocation process is to achieve a long-term return sufficient to meet the actuarial return assumption of the pension plans while diversifying risks. Once the asset types are chosen, the Board must determine the mechanism with which the investments are made.

There are “passive” and “active” options available for publicly-traded investments but only active options exist for private investments. Selecting passive investment managers is similar to purchasing a finished product off the shelf, but selecting active investment managers require a serious due diligence effort by Board staff. Despite the best due diligence efforts, there are no assurances the process will always result in the selection of managers who will outperform in the future.

The selection of underperforming active managers, both private and public, will adversely impact pension fund assets. However, the process for terminating an active manager must be well thought out because there may be ramifications. There are always transition costs involved, and, there is always the outside chance that a fired manager will begin to outperform after termination. The “watch list” is intended to prevent hasty manager termination by increasing staff scrutiny of the manager for a period of time. If manager performance or other issues that place it on the watch list improve, they can be removed from the list and not terminated.

APPENDIX A

Public Security Manager History/Selection Criteria

History – The Board has invested pension assets in domestic public equities since 1976. Board staff managed the bulk of domestic equities internally until 2004 when the Board began limited diversification efforts. The staff-managed portfolio was focused exclusively on large cap stocks. The Board began investing in international public equities in 1997 when it hired two external managers to invest in Europe and Asia. In early 2006, the Board approved a broad diversification effort by manager and strategy across both domestic and international equities. The diversification effort was enhanced when the Board retained R.V. Kuhns as a general consultant in December 2005. The consultant assisted staff through the Request for Proposal (RFP) process and notified the investment management industry of the opportunities to formally submit a proposal

A team approach by staff and the consultant are utilized in evaluating RFP responses and selecting the managers. Final contract negotiations are then conducted by staff with individual managers. Once management contracts are in place, a decision is made on the transition management process which generally involves a professional transition manager. These firms specialize in the execution of the necessary trades involved in moving funds from one manager to another in the least cost manner.

Public Security Manager RFP Criteria - The RFPs require the respondents to meet certain minimum requirements regarding assets under management in the specific strategy, length of track record, and registration with the Securities and Exchange Commission, as well as requiring them to act in a fiduciary capacity if hired. A questionnaire to clarify the type of strategy being submitted and the associated fees accompanies the RFP. The actual detail on the organization, including information on the investment professionals involved in managing the assets, and the strategy-specific performance history is obtained indirectly by requiring the respondent to input information into a manager database maintained by eVestment Alliance. The use of the database allows for a very efficient process of collecting and organizing pertinent information.

The RFP responses are scored by a selection committee, made up of Board staff and consultant staff against the criteria set out in the RFP. The scoring process involves multiple stages, beginning with an initial review of the responses to determine semi finalists, followed by telephone interviews with the semi finalists, and eventually in-person interviews with the finalists. Contract negotiations then commence with the finalists. Depending on whether the assets were to be managed within a separate account or commingled fund these negotiations cover a variety of issues. The Board has adopted a standard investment management contract format that is used for separate accounts where terms are negotiable. Specific investment guidelines and benchmarks are established for each strategy. In the case of a commingled fund, typically there is no room for negotiation since there is one fund by definition and its objectives and fees are pre-established.

A similar process is utilized in the search for fixed income managers. In an effort to diversify the Bond Pool, a RFP was issued in February, 2008, covering multiple investment strategies,

including Core, Core Plus, and High Yield. Ultimately, a decision was made to rely on internal staff management for a Core strategy and external managers were not hired for this strategy. Although managers were selected in June, 2008, the contract process was not completed until September 2008 for the Core Plus managers and October, 2008 and February, 2009 for the High Yield managers. During this time period the capital markets were in crisis and funding decisions were delayed given the illiquidity in existing fixed income holdings and the need to preserve maximum liquidity until markets stabilized.

The selection process for public security managers is designed to solicit a broad universe of potential managers and to evaluate them on established criteria in an objective manner. The consultant has played a valuable role in the process by collecting needed information on each manager and assisting in the evaluation and scoring of the respondents. Once a manager is hired, staff responsibility shifts to a monitoring role, a task that has become increasingly important after the public equity assets were fully outsourced in late 2007. The monitoring activity entails regular contact with the manager, measuring portfolio characteristics and performance attribution, and assessing the role of a particular strategy in the broader investment pool.

The state Procurement Division is involved throughout the entire selection process and must sign off on the scoring and selection process and also signs the contracts. The criteria and scoring embodied in the public securities RFP's are shown below.

<u>Scoring Component</u>	<u>Score</u>
Organization/Assets under Management	15
Investment Staff	20
Investment Philosophy and Process	40
Performance/Tracking	<u>25</u>
Total Points	<u>100</u>
Once finalists were selected based on the criteria outlined above, interviews were scheduled and the following criteria were used in scoring and selecting the final managers:	
Ability to articulate the offeror's capabilities	30
Ability to address evaluator/evaluation committee	40
Fees	<u>30</u>
Total Points	<u>100</u>

APPENDIX B

Private Equity and Real Estate Managers History/Selection Criteria

History

Private Equity - The Board has been investing in private equity funds since the late 1980's. While the early investments were via a limited number of direct funds, as the strategy developed in the early 1990's, an increasing number of investments involved indirect investment in underlying funds via a fund-of-funds structure. In this type of structure the investor is relying on the fund-of-funds manager to select various direct funds that are held within the master fund. In theory, the value added by these managers is their access to certain funds that may otherwise be difficult to access on a direct basis, and their purported ability to select the best managers within a certain sub-group of private equity strategies. Beginning in 2000, an increased number of direct fund investments were made and the Board's exposure by manager became more diversified. Access to some of the industry's premier managers was available and additional commitments were made to subsequent fund offerings by these same firms.

The Board approved a private equity allocation range of 4%-7% in early 2006 and efforts were made to increase the actual allocation at a time when the overall pension assets were growing significantly due to strong returns in the public equity markets. In August 2006, the allocation range was increased to 5%-10% as part of a general revision of allocations resulting from an asset-liability study in May 2006. At that time, private equity comprised 5.7% of total pension assets. Due to frequent capital calls and new commitments, the allocation reached 7.9% in September 2007 when total pension assets peaked in excess of \$8.0 billion. During 2008, the allocation to private equity increased, in part because of new money being called to fund investments, but more importantly because of a shrinking denominator when total pension assets fell due to the financial markets meltdown. As a result, the private equity allocation exceeded the 10% top of the range. In November, 2008, staff recommended and the board approved an increase in the allocation target to 12%, with a range of 9%-15%. This new range recognized the reality of the plunge in total pension values and the desire for a higher allocation to the private equity asset class. Private equity is expected to provide higher long term returns versus public equity and offers diversification benefits within the broader realm of equity investments.

Real Estate - The Board approved an allocation to real estate in August, 2006 when the pension investment allocations were revised after the May asset-liability study. Rather than direct real estate investments, commitments are made to real estate managers that invest in and maintain the properties. The investments are classified in three broad groupings based on their level of perceived risk – core, value-added, and opportunity funds. The real estate management industry has coined these labels to connote positive aspects of the various fund groups, with “core” funds representing the least risk and “opportunity” funds the most risk. The types of investment vehicles used to gain exposure to the underlying real estate assets also differ by category. Core property investments are made via open end funds that operate similar to mutual funds. Value-added and opportunity type investments are made through closed end funds, similar to private equity funds.

The current Board-approved range for real estate is 4%-8%. As with private equity, real estate grew proportionately as total assets shrank during the financial markets meltdown. At the end of

2008 the real estate weight had increased to 5.9% due to both the lagged effect of real estate valuations and the shrinking denominator effect. The weighting has declined since and stood at 4.6% on March 31, 2010.

Managing Private Equity & Real Estate – Estimating and controlling allocations to private equity and private real estate are difficult given the illiquidity of the assets and the unpredictable cash flows associated with these investments. After a commitment is made, capital is called depending on the timing of the actual investments made by the manager and capital calls may occur over several years. Concurrent with new investments, maturing funds are distributing capital realized from the exit of underlying investments. Capital distributions reduce exposure to the asset class at the same time a higher allocation may be desired given the long term merits of investing in private equity and real estate. Capital distributions generally increase in maturing portfolios such as the Boards, but are subject to the ability of the manager to exit underlying investments, which in turn is dependent on capital market conditions. Since late 2008, when the financial crisis began in earnest, the level of underlying investing activity – both acquisitions and divestments – has declined dramatically.

Private Equity & Real Estate Manager Criteria

Staff experience/expertise in vetting managers and selecting funds has grown significantly in recent years. The increase in number of dedicated staff resulting from the 2007 staff reorganization has enabled a much more in-depth analysis of each prospective fund and manager. Not only does staff spend more time reviewing potential new funds for commitment, but an ongoing evaluation is being made of existing fund investments and their prospects. The ability to monitor existing funds and the portfolios as a whole was enhanced when a new service was obtained for the custodial bank. The service provides administrative support, both accounting and performance measurement, for private equity and real estate. The service also provides an index of private equity funds based on the actual performance history of the funds they administer with sub-indices for the major strategies. This data provides a basis for comparing a manager's historical track record against peers, which is important in making a fund selection decision.

Shown on the next two pages are the due diligent check lists used by staff to vet private equity and real estate managers.

Performed D.D. Documents/Reference Checks	
<input type="checkbox"/>	<p><u>Private Placement Memorandum:</u> Fund PPM has been obtained and reviewed. Review of prior PPM's for this fund strategy is encouraged. <i>Comments:</i></p>
<input type="checkbox"/>	<p><u>Due Diligence Questionnaire:</u> A Due Diligence Questionnaire for the Fund has been obtained and reviewed. Review of DDQ's for prior funds in this strategy is encouraged. <i>Comments:</i></p>
<input type="checkbox"/>	<p><u>Limited Partnership Agreement:</u> Fund LPA has been obtained and reviewed. <i>Comments:</i></p>
<input type="checkbox"/>	<p><u>Sample Qtrly./Annual Reports and Financial Statements:</u> Samples of regular periodic reports and financial statements have been obtained and reviewed. <i>Comments:</i></p>
<input type="checkbox"/>	<p><u>Form ADV, Part II:</u> Part II of sponsor's Form ADV has been obtained and reviewed. <i>Comments:</i></p>
<input type="checkbox"/>	<p><u>Other documents reviewed (Advisory Board meeting agenda/minutes, sponsor IC memorandum and supplemental materials, etc.):</u> Please list other significant documents reviewed in the course of Fund diligence. <i>Comments:</i></p>
<input type="checkbox"/>	<p><u>Communications with Sponsor:</u> List the sponsor's professional staff (name and title) that have been interviewed as a part of the diligence process. <i>Comments:</i></p>
<input type="checkbox"/>	<p><u>Sponsor-provided reference checks:</u> Detail reference's organization, title, and relationship with sponsor. <i>Comments:</i></p>
<input type="checkbox"/>	<p><u>Non-sponsor-provided reference checks:</u> Detail reference's organization, title, and relationship with sponsor. <i>Comments:</i></p>

MBOI has Inquired About/Analyzed the Following:

<input type="checkbox"/>	Items which may threaten the sponsor or the performance of the fund, including lawsuits, clawbacks, anticipated change in ownership of the sponsor, anticipated loss or change in status of important staff/investors, recent/anticipated changes in investment process or strategy, financial stress in the sponsor's other operations/products, and products/lines of business which represent a conflict of interest or competition for fund investments. <i>Comments:</i>
<input type="checkbox"/>	A detailed summary of transactions in the sponsor's prior funds, including a complete listing of the cash flows that roll up into fund performance and sponsor projections for unrealized investments. <i>Comments:</i>
<input type="checkbox"/>	Debt maturities, covenant considerations, and near-term financing requirements for current investments. <i>Comments:</i>
<input type="checkbox"/>	Sponsor's practice regarding collecting monitoring, transaction, broken deal, or other fees. <i>Comments:</i>
<input type="checkbox"/>	Sponsor practice regarding cross-collateralization of debt and debt collateralized by Partnership assets, including uncalled capital. <i>Comments:</i>
<input type="checkbox"/>	Executed or requested secondary transactions in sponsor's prior funds. <i>Comments:</i>
<input type="checkbox"/>	Distribution of economics within the sponsor, including ownership and transition planning at the management company level. <i>Comments:</i>
<input type="checkbox"/>	Use of placement agents and donations to/financial dealings with individuals or family/friends/constituents of individuals who may be able to influence the investment decisions of public funds. <i>Comments:</i>
<input type="checkbox"/>	Mechanics of the cash flow waterfall. <i>Comments:</i>
<input type="checkbox"/>	Insurance purchased at the fund or investment level that would shield LP's from indemnification risk. <i>Comments:</i>