

# Employees' Retirement System of Rhode Island

Presentation of Actuarial Audit  
as of June 30, 2012





# Discussion Topics

- Actuarial Audit Process
- Audit Review
- Valuation Replication
- Experience Study Review
- Projections



# Actuarial Audit Process



# Actuarial Audit Process

- Components of our review:
  - Audit of ERS retirement plan valuation as of June 30, 2012
  - Audit of MERS retirement plan valuation as of June 30, 2012
  - Audit of Experience Studies for the period July 1, 2004 to June 30, 2010



# Actuarial Audit Process

- Purpose of audit:
  - Ensure the Board can rely on GRS's results
  - Review actuarial valuation process
  - Ensure communications are complete and accurate
  - Recommend changes that would improve any of these areas



# Actuarial Audit Process

- Actuarial audit steps:
  - Review census data used in valuations
  - Replicate liabilities and contributions by independently programming our valuation system and applying the System's actuarial methods
  - Review reports for completeness and compliance with Actuarial Standards of Practice
  - Review experience studies and consider reasonableness of actuarial assumptions
  - Review and assess appropriateness of methods employed in valuation



# Audit Summary



# Audit Primary Conclusions

- GRS's June 30, 2012 valuation results can be relied upon as our replication of their results were within acceptable tolerance levels
  - Within 0.5% of replicating ERS liabilities (State Employees and Teachers)
  - Larger differences with some individual MERS units
- We find GRS's actuarial methods to be reasonable
- Various technical issues identified by Cheiron, but none materially affect the valuation results
- Some assumptions/items were omitted from valuation report
  - Using stated assumptions, our liabilities would have been materially different
  - Recommend adding to satisfy ASOP requirements
  - Recommend including projections and stress testing be included in the report



# Audit Summary - ERS

- State Employees:
  - Total liabilities were within 0.5%
  - Cheiron FYE 2015 contribution rate of 23.53% compared to 23.33% for GRS
- Teachers:
  - Total liabilities were within 0.5%
  - Cheiron FYE 2015 contribution rate of 22.61% compared to 22.60% for GRS
- Our actives liabilities by decrement vary from GRS which can be due to the following:
  - Different valuation systems
  - Differences in decrement timing



# Audit Summary - MERS

- General Employees: Total liabilities were within 2.4%
- Police & Fire: Total liabilities were within 1.6%
- More variability in contribution rate results for individual units (partly expected due to effect of leverage)

Liabilities	\$ 102,400,000	\$ 100,000,000	2.4%
Assets	<u>80,000,000</u>	<u>80,000,000</u>	0.0%
UAL	\$ 22,400,000	\$ 20,000,000	12.0%

- FYE 2015 contribution rate was more than 10% different (relative) in 27 of the 68 General units
- FYE 2015 contribution rate was more than 10% different (relative) in 8 of the 45 P&F units



# Experience Study Audit Results

- The experience studies performed by GRS and the resulting assumptions adopted by the Board conform to the applicable ASOPs.
- The assumptions suggested by GRS and adopted by the Board are reasonable but we made some suggestions that should be considered in future studies.
  - Recommend that demographic assumptions be refined to be more reflective of benefit provisions under RIRSA
  - We recommend the Board consider lowering the discount rate further given GRS's long-term investment return expectations



# Valuation Replication



# Valuation Replication

**Employees' Retirement System of Rhode Island  
Actuarial Valuation as of June 30, 2012  
Data Reconciliation (ERS State Employees)  
(\$ in thousands)**

	GRS	Cheiron	Difference	Ratio
<b>Actives</b>				
Count	11,166	11,204	38	100.3%
Adjusted Annual Compensation	\$ 643,909	\$ 645,638	\$ 1,729	100.3%
Average Age	49.1	49.1	0.0	100.0%
Average Service	14.2	14.0	(0.2)	98.6%
Inactive Member Count	2,675	2,674	(1)	100.0%
<b>Service Retirees</b>				
Count	9,285	9,307	22	100.2%
Total Annual Benefits	\$ 262,797	\$ 263,089	\$ 292	100.1%
<b>Disabled Retirees</b>				
Count	715	717	2	100.3%
Total Annual Benefits	\$ 14,905	\$ 14,920	\$ 15	100.1%
<b>Beneficiaries</b>				
Count	1,200	1,201	1	100.1%
Total Annual Benefits	\$ 21,074	\$ 21,064	\$ (10)	100.0%

*Adjusted annual compensation based on fiscal year earnings for June 30, 2012 and expected annual pay for new hires as reported by ERSRI but adjusted for 27 pay periods when applicable.*



# Valuation Replication

**Employees' Retirement System of Rhode Island**  
**Actuarial Valuation as of June 30, 2012**  
**Summary of Pension Audit Results (ERS State Employees)**  
**(\$ in millions)**

	GRS	Cheiron	Difference	Ratio
Present Value of Future Benefits				
a. Actives				
- Retirement	\$1,731.1	\$1,744.6	\$13.5	100.8%
- Termination and Refunds	65.8	62.6	(3.2)	95.2%
- Death	41.5	39.5	(2.0)	95.1%
- Disability	<u>77.9</u>	<u>80.0</u>	<u>2.0</u>	102.6%
- Total	\$1,916.4	\$1,926.8	\$10.4	100.5%
b. Inactives	90.7	90.7	0.0	100.0%
c. In Pay Participants	<u>2,775.0</u>	<u>2,788.7</u>	<u>13.7</u>	100.5%
d. Total	\$4,782.1	\$4,806.2	\$24.0	100.5%
Employer Normal Cost Rate (as a % of Pay)	5.02%	4.99%	-0.03%	99.4%
Actuarial Liability	\$4,297.3	\$4,318.6	\$21.4	100.5%
Actuarial Value of Assets	<u>2,421.2</u>	<u>2,421.2</u>	0.0	100.0%
Unfunded Actuarial Liability (UAL)	\$1,876.1	\$1,897.4	\$21.4	101.1%
Projected UAL as of June 30, 2014	\$1,917.6	\$1,941.8	\$24.2	101.3%
Projected FYE 2015 Payroll	\$720.6	\$720.6	\$0.0	100.0%
Amortization Rate (as % of Projected FYE 2015 Pay)	18.31%	18.54%	0.23%	101.3%
FYE 2015 Calculated Contribution Rate (as a % of Pay)	23.33%	23.53%	0.20%	100.8%
Estimated FYE 2015 Employer Contribution	\$168.1	\$169.5	\$1.4	100.8%



# Valuation Replication

**Employees' Retirement System of Rhode Island  
Actuarial Valuation as of June 30, 2012  
Data Reconciliation (ERS Teachers)  
(\$ in thousands)**

	GRS	Cheiron	Difference	Ratio
<b>Actives</b>				
Count	13,212	13,238	26	100.2%
Adjusted Annual Compensation	\$ 961,959	\$ 963,550	\$ 1,591	100.2%
Average Age	45.3	45.3	(0.0)	99.9%
Average Service	13.4	13.1	(0.3)	98.0%
Inactive Member Count	2,808	2,808	0	100.0%
<b>Service Retirees</b>				
Count	9,824	9,840	16	100.2%
Total Annual Benefits	\$ 435,692	\$ 436,082	\$ 390	100.1%
<b>Disabled Retirees</b>				
Count	286	287	1	100.3%
Total Annual Benefits	\$ 8,463	\$ 8,481	\$ 18	100.2%
<b>Beneficiaries</b>				
Count	512	511	(1)	99.8%
Total Annual Benefits	\$ 12,496	\$ 12,406	\$ (90)	99.3%

*Adjusted annual compensation based on fiscal year earnings for June 30, 2011 and June 30, 2012 as reported by ERSRI and expected annual pay for new hires.*



# Valuation Replication

**Employees' Retirement System of Rhode Island  
Actuarial Valuation as of June 30, 2012  
Summary of Pension Audit Results (ERS Teachers)  
(\$ in millions)**

	GRS	Cheiron	Difference	Ratio
Present Value of Future Benefits				
a. Actives				
- Retirement	\$2,391.1	\$2,397.1	\$6.0	100.2%
- Termination and Refunds	76.5	72.4	(4.1)	94.6%
- Death	41.6	36.4	(5.2)	87.5%
- Disability	<u>74.7</u>	<u>66.0</u>	<u>(8.7)</u>	88.4%
- Total	\$2,583.9	\$2,571.9	(\$12.0)	99.5%
b. Inactives	99.2	99.2	0.0	100.0%
c. In Pay Participants	<u>4,535.6</u>	<u>4,561.7</u>	<u>26.0</u>	100.6%
d. Total	\$7,218.7	\$7,232.7	\$14.0	100.2%
Employer Normal Cost Rate (as a % of Pay)	4.77%	4.98%	0.21%	104.3%
Actuarial Liability	\$6,373.1	\$6,342.3	(\$30.7)	99.5%
Actuarial Value of Assets	<u>3,746.3</u>	<u>3,746.3</u>	0.0	100.0%
Unfunded Actuarial Liability (UAL)	\$2,626.8	\$2,596.0	(\$30.7)	98.8%
Projected UAL as of June 30, 2014	\$2,711.9	\$2,680.8	(\$31.1)	98.9%
Projected FYE 2015 Payroll	\$1,046.2	\$1,046.2	\$0.0	100.0%
Amortization Rate (as % of Projected FYE 2015 Pay)	17.83%	17.63%	-0.20%	98.9%
FYE 2015 Calculated Contribution Rate (as a % of Pay)	22.60%	22.61%	0.01%	100.0%
Estimated FYE 2015 Employer Contribution	\$236.4	\$236.5	\$0.1	100.0%



# Valuation Replication

**Municipal Employees' Retirement System of Rhode Island  
Actuarial Valuation as of June 30, 2012  
Data Reconciliation (MERS General Employees)  
(\$ in thousands)**

	GRS	Cheiron	Difference	Ratio
<b>Actives</b>				
Count	6,012	6,035	23	100.4%
Adjusted Annual Compensation	\$ 223,066	\$ 223,827	\$ 761	100.3%
Average Age	51.3	51.3	0.0	100.0%
Average Service	12.1	11.9	(0.2)	98.6%
Inactive Member Count	2,506	2,507	1	100.0%
<b>Service Retirees</b>				
Count	3,611	3,615	4	100.1%
Total Annual Benefits	\$ 54,308	\$ 54,359	\$ 51	100.1%
<b>Disabled Retirees</b>				
Count	255	255	0	100.0%
Total Annual Benefits	\$ 3,505	\$ 3,505	\$ 0.0	100.0%
<b>Beneficiaries</b>				
Count	411	411	0	100.0%
Total Annual Benefits	\$ 3,553	\$ 3,553	\$ 0.0	100.0%

*Adjusted annual compensation based on fiscal year earnings for June 30, 2012 and expected annual pay for new hires as reported by ERSRI but adjusted for 27 pay periods when applicable.*



# Valuation Replication

**Municipal Employees' Retirement System of Rhode Island**  
**Actuarial Valuation as of June 30, 2012**  
**Summary of Pension Audit Results (MERS General Employees)**  
**(\$ in millions)**

	GRS	Cheiron	Difference	Ratio
Present Value of Future Benefits				
a. Actives				
- Retirement	\$529.0	\$536.2	\$7.2	101.4%
- Termination and Refunds	18.5	18.5	0.0	99.7%
- Death	13.7	10.8	(2.9)	79.1%
- Disability	<u>20.8</u>	<u>20.4</u>	<u>(0.5)</u>	97.7%
- Total	\$582.0	\$585.9	\$3.9	100.7%
b. Inactives	37.7	37.7	0.0	100.0%
c. In Pay Participants	<u>567.3</u>	<u>576.0</u>	<u>8.7</u>	101.5%
d. Total	\$1,186.9	\$1,199.5	\$12.6	101.1%
Employer Normal Cost Rate (as a % of Pay)	7.94%	8.20%	0.26%	103.3%
Actuarial Liability	\$1,023.6	\$1,047.7	\$24.1	102.4%
Actuarial Value of Assets	<u>859.5</u>	<u>859.5</u>	<u>0.0</u>	100.0%
Unfunded Actuarial Liability (UAL)	\$164.1	\$188.2	\$24.1	114.7%
Projected UAL as of June 30, 2014	\$171.6	\$200.0	\$28.4	116.6%
Projected FYE 2015 Payroll	\$250.1	\$257.1	\$7.0	102.8%
Amortization Rate (as a % of Pay)	4.69%	5.35%	0.66%	114.1%
FYE2015 Calculated Contribution Rate (as a % of Pay)*	12.63%	13.55%	0.92%	107.3%
Estimated FYE 2015 Employer Contribution	\$31.7	\$34.9	\$3.2	110.1%

\* Similar to GRS report, weighted on adjusted annual compensation



# Valuation Replication

**Municipal Employees' Retirement System of Rhode Island**  
**Actuarial Valuation as of June 30, 2012**  
**Data Reconciliation (MERS Police & Fire)**  
**(\$ in thousands)**

	GRS	Cheiron	Difference	Ratio
<b>Actives</b>				
Count	1,410	1,413	3	100.2%
Adjusted Annual Compensation*	\$ 83,164	\$ 83,281	\$ 117	100.1%
Average Age	39.2	39.2	0.0	100.1%
Average Service	11.3	10.9	(0.4)	96.4%
Inactive Member Count	129	129	0	100.0%
<b>Service Retirees</b>				
Count	471	471	0	100.0%
Total Annual Benefits	\$ 15,262	\$ 15,262	\$ 0.0	100.0%
<b>Disabled Retirees</b>				
Count	121	121	0	100.0%
Total Annual Benefits	\$ 3,982	\$ 3,982	\$ 0.0	100.0%
<b>Beneficiaries</b>				
Count	62	62	0	100.0%
Total Annual Benefits	\$ 826	\$ 826	\$ 0.0	100.0%

*\* Includes GRS adjustment to Cranston Police and Fire to reflect expected longevity and holiday pay. Adjusted annual compensation based on fiscal year earnings for June 30, 2012 and expected annual pay for new hires as reported by ERSRI but adjusted for 27 pay periods when applicable.*



# Valuation Replication

**Municipal Employees' Retirement System of Rhode Island  
Actuarial Valuation as of June 30, 2012  
Summary of Pension Audit Results (MERS Police & Fire)  
(\$ in millions)**

	GRS	Cheiron	Difference	Ratio
Present Value of Future Benefits				
a. Actives				
- Retirement	\$300.9	\$306.8	\$5.8	101.9%
- Termination and Refunds	5.9	6.5	0.6	110.1%
- Death	3.8	3.7	(0.1)	98.2%
- Disability	<u>57.0</u>	<u>57.6</u>	<u>0.6</u>	101.0%
- Total	\$367.7	\$374.6	\$7.0	101.9%
b. Inactives	4.1	4.1	0.0	100.0%
c. In Pay Participants	<u>250.8</u>	<u>253.9</u>	<u>3.1</u>	101.2%
d. Total	\$622.6	\$632.6	\$10.1	101.6%
Employer Normal Cost Rate (as a % of Pay)	9.35%	9.93%	0.58%	106.2%
Actuarial Liability	\$476.9	\$480.4	\$3.5	100.7%
Actuarial Value of Assets	<u>378.7</u>	<u>378.7</u>	<u>0.0</u>	100.0%
Unfunded Actuarial Liability (UAL)	\$98.2	\$101.7	\$3.5	103.5%
Projected UAL as of June 30, 2014	\$107.1	\$112.3	\$5.1	104.8%
Projected FYE 2015 Payroll	\$92.7	\$92.7	\$0.0	100.0%
Amortization Rate (as a % of Pay)	7.91%	8.33%	0.42%	105.3%
FYE2015 Calculated Contribution Rate (as a % of Pay)*	17.26%	18.26%	1.00%	105.8%
Estimated FYE 2015 Employer Contribution	\$16.1	\$16.9	\$0.8	105.0%



# Experience Study Review



# Assumption Review

- Economic:
  - Investment return
  - Inflation
  - General wage growth
  - COLA
- Demographic:
  - Retirement, termination, disability, and mortality
  - Merit salary increases
  - Misc. (e.g., spouse age difference)



# Economic Assumptions

## Investment Return

- Final comments:
  - The current 7.5% assumption is reasonable, but may consider lowering it further
  - GRS Experience Study indicated a 60% chance that the System would not meet the 7.5% annual return over 20-year period
  - Trend of lower discount rates in the public sector
  - Reflect the Board's risk preference



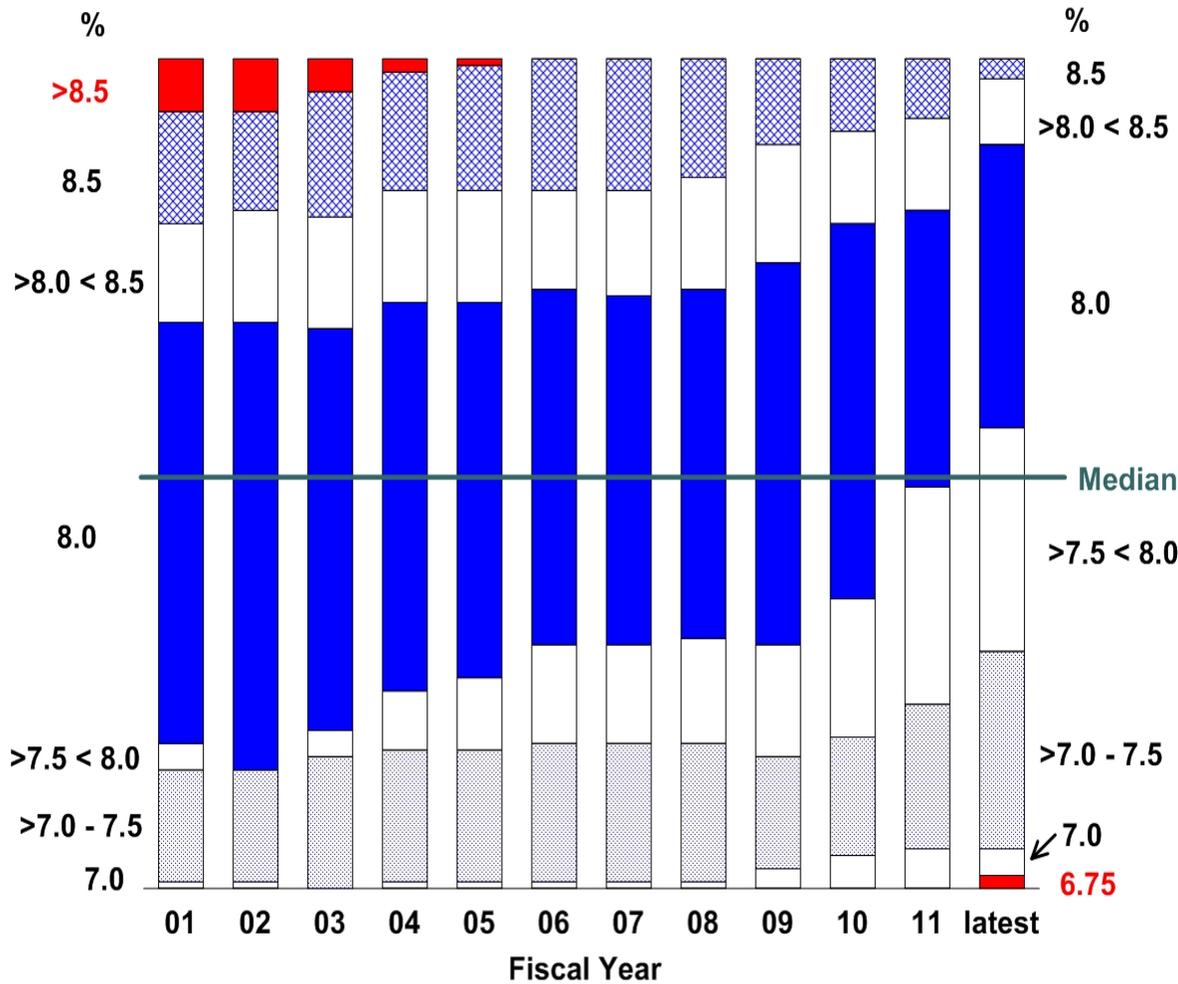
# Economic Assumptions

## Investment Return

- GRS's "building block" approach is reasonable and allowed under ASOP 27
- Current assumption is to deduct 0.40% from the investment return assumption for investment and admin expenses
  - Average expenses of 0.43% during study period; however, 0.35% in last year of study period.



# Investment Return Public Fund Survey



Public Fund Survey  
November 2012

- Since 2009, many plans have reduced their investment return assumption
- The median assumption is now 7.8%
- The number of plans assuming 7.5% or lower has increased significantly



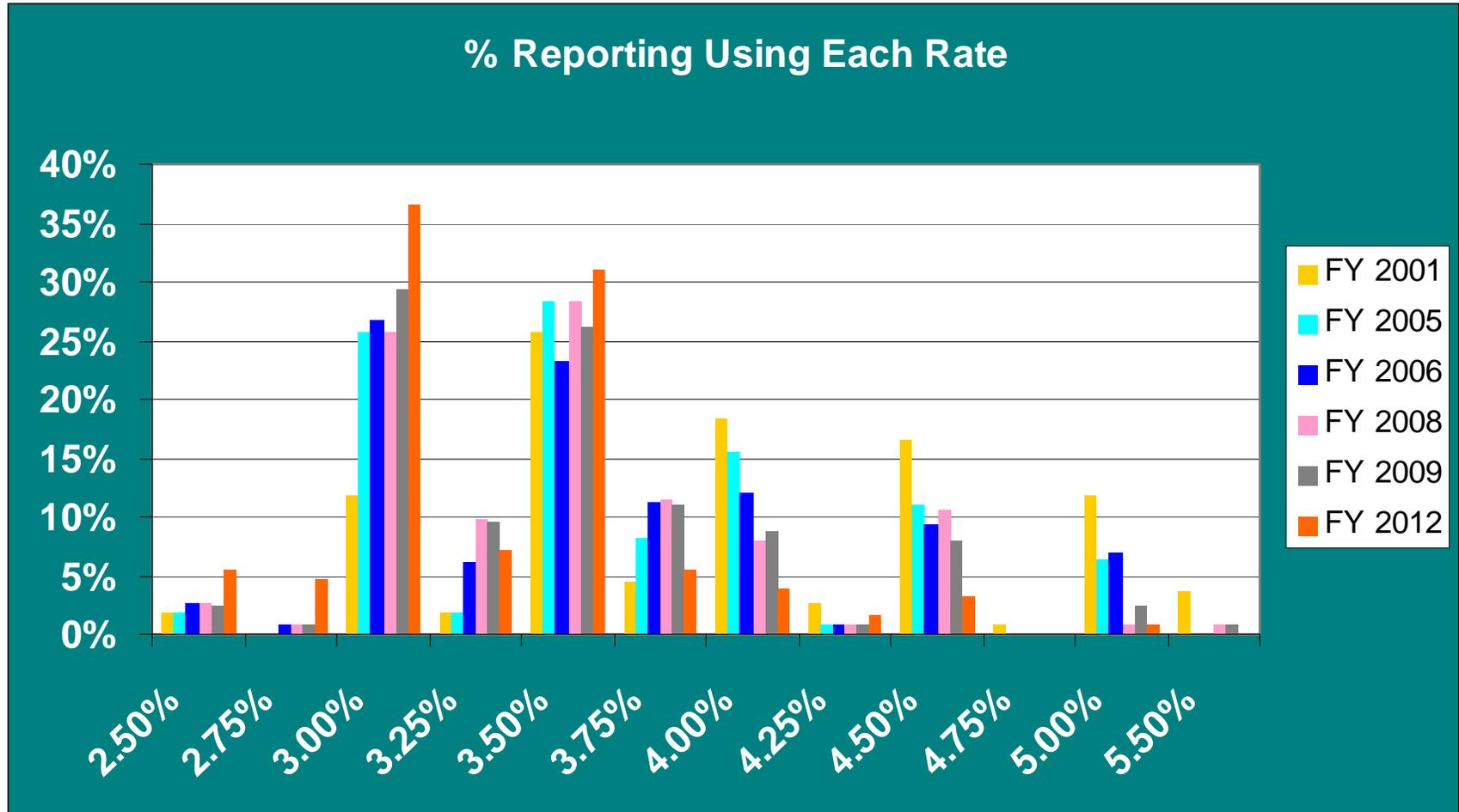
# Economic Assumptions

## Inflation

- Current assumption is 2.75% which is on the low end to peers
- Trend recently toward lower inflation rates



# Inflation Rates at Other PERS



•Source: Public Fund Survey Summary of Findings for FY2001-2012, NASRA  
(data consists mainly of statewide retirement plans)



# Economic Assumptions

## General Wage Growth

- Current assumption is 2.75% for inflation, plus 1.25% (1.50% for MERS Police & Fire) as a real across-the-board increase
- Reasonable based on history, but given continued pressures on government costs, may be justified in lowering it
- Amortization of unfunded for contribution rate based on 3.75%



# Economic Assumptions

## COLA

- ERS:
  - 2% annual COLA assumed in 2018, 2023, 2028, and thereafter
- MERS:
  - 2% annual COLA for all units regardless of whether unit is eligible (> 80% funded)
    - Approach is not unreasonable, but it is inconsistent with ERS, and will result in additional COLAs being paid
    - Reasoning should be properly disclosed in the report and Board should have opportunity to provide input



# Demographic Assumptions

## Mortality

- Comments:
  - Tables are reasonable based on experience study results
  - ASOP No. 35 requires actuary to identify underlying mortality as well as provision for future mortality improvement
    - No improvement built in to mortality for pre-retirement mortality or disabled mortality
  - Currently assume mortality for MERS Police & Fire to be same as State ERS. Consider looking into actual experience.
  - ERS and MERS award separate benefits if death is accidental duty related. Consider reviewing actual experience to determine assumption for percent of deaths assumed to fall into this category.



# Demographic Assumptions

## Withdrawal, Disability, Retirement

- No significant issues on withdrawal or disability assumptions
- Retirement:
  - Subsequent to experience study, GRS modified retirement to reflect transition aspects of RIRSA
  - Additional retirement assumptions not documented in valuation report
  - Consider what retirement rates are appropriate now that RIRSA is in effect



# Method Review

- Actuarial Asset Method
- Actuarial Cost Method
- Amortization Method



# Actuarial Asset Method

- Current method:
  - Adjusts market value by spreading asset gains and losses over five years but with an offsetting of unrecognized gains and losses
- Comments:
  - Five-year smoothing period is common in public plans
  - Appropriate method since results in a smoothed asset value in wake of market volatility



# Actuarial Cost Method

- Current method:
  - Entry Age Normal (EAN)
- Comments:
  - The EAN funding method is reasonable and is by far the most prevalent method used in the public sector
  - Recommend explicitly valuing deferred vested liabilities as opposed to using a load on member account balances



# Amortization Method

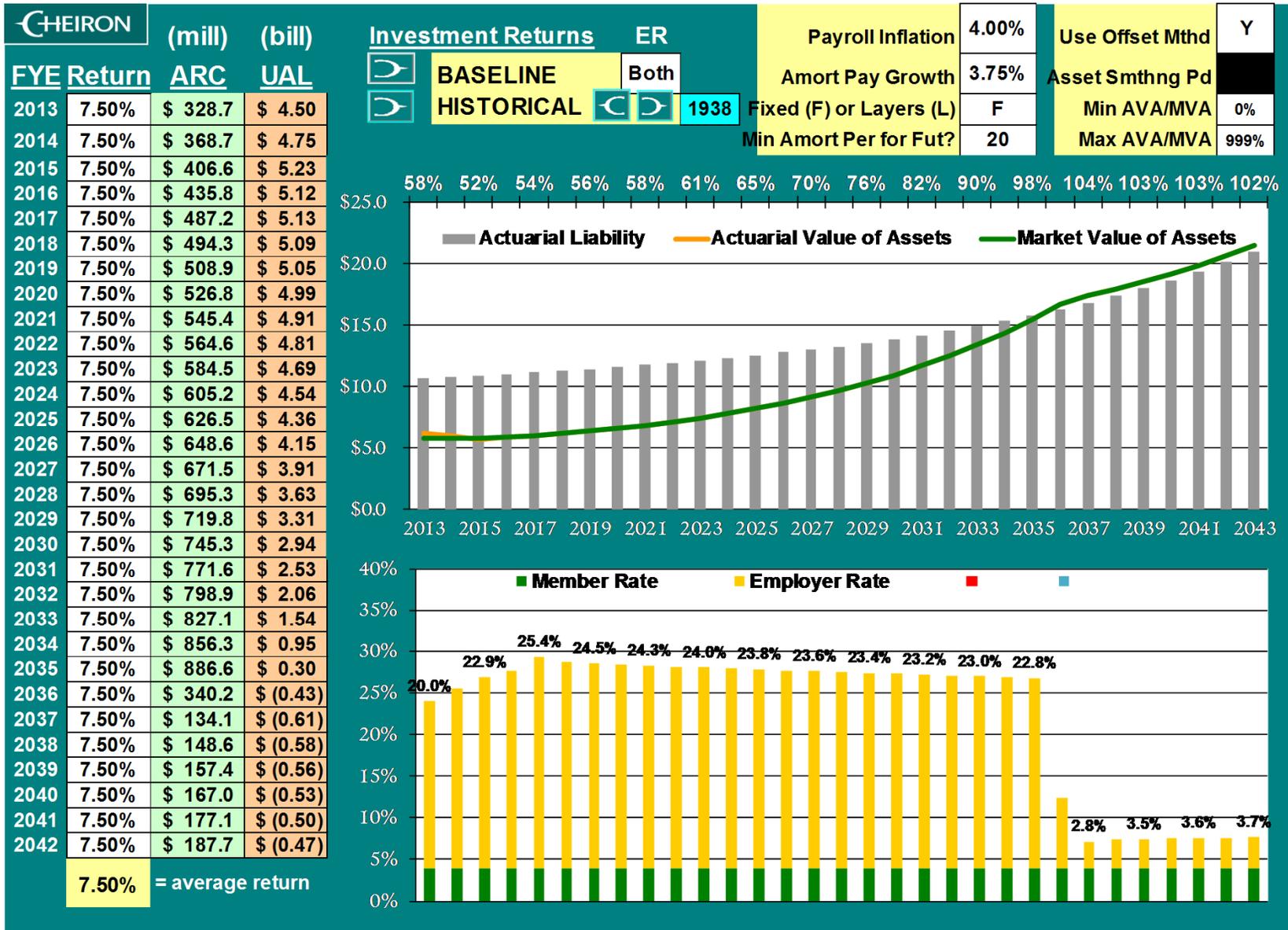
- **Current method:**
  - UAL as of June 30, 2012 amortized over closed 23 years; future gains or losses established on or after June 30, 2015 amortized over 20 years
  - Level percent of pay, with payments growing at 3.75% per year
- **Comments:**
  - More details needed in report regarding what happens in 2015 and after
  - Funding policy does not appear to be passing experience of the past onto future generations



# Projections



# Projections





# Discussion



# Required Disclosures

- The purpose of this presentation is to communicate the results of the audit of the Employees' Retirement System of Rhode Island as of June 30, 2012.
- In preparing this presentation, we relied on information (some oral and some written) supplied by the Employees' Retirement System of Rhode Island and GRS.
- To the best of our knowledge, this presentation and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this presentation. This presentation does not address any contractual or legal issues. We are not attorneys and our firm does not provide any legal services or advice.
- This presentation was prepared exclusively for the Employees' Retirement System of Rhode Island for the purpose described herein. This presentation is not intended to benefit any third party, and Cheiron assumes no duty or liability to any such party.

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