Annual Update to the

# Pension Reform Commission

August 7, 2009

FPPA

Fire & Police Pension Association of Colorado

**FPPA** *Fire and Police Pension Association of Colorado*

# Agenda

*Pages*



Appendix A: Gabriel Roeder Smith & Company Presentation

Appendix B: Actuarial & Funding

Q&A Session

# FPPA Administration

## *FPPA's Board of Directors*

Left Column

**Kirk J. Miller,** Board Chair
Active, Denver Police Department
Member since 2005
Current term expires 9.1.12

**Mark Sunderhuse,** Board Vice Chair
Managing Partner - Red Rocks Capital, LLC
Member since 2002
Current term expires 9.1.10

Center Column

**Todd Bower**
Captain, Denver Fire Department
Member since 2001
Current term expires 9.1.09

**Monica Cortez-Sangster**
Director of Human Resources, Colorado Department of Personnel & Administration
Member since 2003
Current term expires 9.1.10

**Susan R. Eaton**
HR Director, City of Englewood
Member since 2009
Current term expires 9.1.10

**Leo J. Johnson**
Trustee, West Metro Fire Rescue District
Member since 2000
Current term expires 9.1.11

Right Column

**Tim Nash**
Finance Director - Greeley
Member since 2008
Current term expires 9.1.11

**Stanley T. Sponsel**
Retired, Assistant Fire Chief, Denver Fire Department
Member since 2005
Current term expires 9.1.09

**Clifford W. Stanton**
CIO, Prima Capital Holding
Member since 2009
Current term expires 9.1.12

## Executive Summary

*Membership*

- Over 95% of old hire plan membership is in retired status.
- 2.1% increase in membership of new hire plans affiliated with, or administered by, FPPA.
- 8.5% increase in total number of retirees.

*Investment Returns*

- The Fire & Police Members' Benefit Investment Fund had a gross return of -28.9% in 2008.
- The Fire & Police Members' Benefit Investment Fund had a gross return of +4.1% YTD through June 30, 2009.

*Funded Status*

- Statewide Defined Benefit Plan funded ratio decreased from 119.4% as of January 1, 2008 to 101.0% as of January 1, 2009.
- Statewide Death & Disability Plan funded ratio decreased from 134.2% as of January 1, 2008 to 106.4% as of January 1, 2009.
- State assisted old hire plan unfunded liability increased by $95.2 million from January 1, 2008 to January 1, 2009.

# Overview of Fire & Police Pension Plans and their Funding

Up until 1978, all fire and police pension plans in Colorado were local in nature. Each municipality or fire protection district with paid police officers and/or firefighters administered its own local pension plan for these members. The benefit structure for these plans was set forth in state statute, but the administration and funding was left largely to local governments.

Although the Colorado General Assembly provided some assistance to these local plans, and, in some cases, prescribed or permitted member and employer contributions, there was no statutory requirement that these local plans be funded on an actuarially sound basis. It became apparent in the mid-1970's that many of these local plans were significantly underfunded. A 1977 study by the Colorado General Assembly found that in total, these local plans had in excess of $500 million in unfunded liabilities. As a result of this study, the General Assembly enacted a series of reform bills in 1978 and 1979.

First, the reform legislation limited membership in the existing local plans to those police officers and firefighters hired prior to April 8, 1978. (Thus, these plans have become labeled **"old hire" pension plans.**) The state also established a program for partial state funding of these plans if the employers agreed to significantly increase employer contributions and establish minimum member contributions in order to fund their plans on an actuarially sound basis. The state continues to contribute funding to some of these "old hire plans" pursuant to Part 3 of Title 31, Article 30.5. State assistance is distributed by FPPA to the local plans.

With respect to police officers and firefighters hired on or after April 8, 1978, the reform legislation established a **Statewide Defined Benefit Plan ("new hire" pension plan)** to be administered by the newly created Fire and Police Pension Association. The Statewide Defined Benefit Plan is funded exclusively through member and employer contributions. Since inception, it has been funded on an actuarially sound basis, with no unfunded liabilities and no state assistance.

In addition to this basic split between old hire plans and the Statewide Defined Benefit Plan, the legislature permitted certain local options for a limited time. Thus employers were granted the authority to create **"exempt" plans**. Employers also had authority to withdraw from the Statewide Defined Benefit Plan to establish local pension plans for their new hires (**"withdrawn" plans**). All the plans that withdrew from the Statewide Defined Benefit Plan established money purchase plans. Exempt plans and withdrawn plans receive no state assistance.

Later, the legislature authorized FPPA to create a **Statewide Money Purchase Plan.** Under certain conditions, an employer may withdraw its members from the Statewide Defined Benefit Plan in order to cover them under the Statewide Money Purchase Plan. In addition, an employer having a withdrawn local money purchase plan may also elect to dissolve that plan and cover its members under the Statewide Money Purchase Plan. The Statewide Money Purchase Plan receives no state assistance.

Since 2004, police and fire departments have been able to elect coverage under the **Statewide Hybrid Plan.** The Statewide Hybrid Plan has a defined benefit component and a money purchase (defined contribution) component. The Statewide Hybrid Plan is also funded exclusively through member and employer contributions. Since inception, it has also been funded on an actuarially sound basis, with no unfunded liabilities and no state assistance.

# Overview of Fire & Police Pension Plans and their Funding

*continued*

FPPA also administers the **Colorado Springs New Hire Pension Plans - Fire Component and Police Component**, which cover police officers and firefighters who were hired on or after April 8, 1978, and before October 1, 2006. These plans are funded by member and employer contributions and receive no state assistance. Full time Colorado Springs police officers and firefighters hired on or after October 1, 2006, participate in the Statewide Defined Benefit Plan.

Finally, there are some local governments which cover their police officers under Social Security, but affiliate with FPPA to provided a supplemental benefit under the **Social Security Supplemental Retirement Plan**. This plan is a component of the Statewide Defined Benefit Plan, and is designed to give half the benefit of the Statewide Defined Benefit Plan for half the cost. This plan receives no state assistance.

Nearly all employers now cover their paid police officers and firefighters under the **Statewide Death and Disability Plan**, with the exception of a few social security employers and a few exempt employers. Up until 1996, the Statewide Death and Disability Plan had been funded entirely through an annual state contribution. In 1996, however, the General Assembly provided a final state contribution sufficient to fund the benefits of members hired prior to January 1, 1997 in perpetuity. This legislation further required that benefits for members hired after January 1, 1997 be funded entirely through employer and/or member contributions. Thus, the state no longer provides assistance to the Statewide Death and Disability Plan.

FPPA, pursuant to state statute, has also created a Model 457 **Deferred Compensation Plan**. Nearly any employer throughout the state may adopt this plan for its police officer/firefighter members. The plan is funded entirely through voluntary contributions from those members who wish to participate.

The above-described pension plans are for paid firefighters and police officers. There is also a system for **volunteer firefighter pension plans**. Cities and districts with volunteer firefighters may establish volunteer pension plans pursuant to the provisions of state statutes. Volunteer plans receive funding from property tax revenues, moneys paid or given to the funds, and state matching funds. State matching funds come from insurance premium tax proceeds, and are paid according to Section 31-30-1112, C.R.S., as amended. The state matching funds are distributed to eligible local plans by FPPA.

FPPA directly administers the Statewide Defined Benefit Plan, Colorado Springs New Hire Pension Plans, Statewide Hybrid Plans, Statewide Death and Disability Plan, Statewide Money Purchase Plan and Model 457 Deferred Compensation Plan. In addition, old hire pension plans, withdrawn money purchase plans and volunteer plans may affiliate with FPPA for investment purposes. These affiliations are at the option of the local employer. Upon affiliation, contributions are made to FPPA, which invests the assets and pays benefits to eligible members, pursuant to the direction of the local pension board. As of June 30, 2009, there were 198 employer plans participating in the Defined Benefit System - Statewide Defined Benefit Plan,18 employer plans participating in the Defined Benefit System - Statewide Hybrid Plan, 2 employer plans participating in the Defined Benefit System - Exempt Plans, 35 employer plans with employees participating in the Statewide Money Purchase Plan, 378 employer plans covered by the Statewide Death & Disability Plan, 54 affiliated Local "Old Hire" plans, and 176 affiliated Local Volunteer Fire pension plans.

# Overview of Fire & Police Pension Plans and their Funding

*continued*

In conclusion, state funding continues for only two types of fire and police pension plans: local "old hire" plans that are not yet actuarially sound, and local volunteer plans that are eligible for state matching funds. A more detailed discussion of the state funding for these types of plans follows.

### *State Assistance for Old Hire Fire and Police Pensions Plans*

The General Assembly continues to provide assistance to local old hire pension plans that are not yet funded on an actuarially sound basis. In 1995, the General Assembly committed to provide state assistance to these plans until their unfunded liabilities are eliminated, but no later than December 31, 2009. Subsequently, SB03-263 suspended the state scheduled payments due in September 2003, 2004 and 2005, with state payments resuming in April of 2006 and extended these payments until 2012 from 2009. The state also committed to transferring to the old hire plans any amount of unfunded liability accrued as a result of the suspension of state contributions. Local governments receiving state funding were required to continue to make the local contributions required while the state contributions were suspended. This deadline has been reviewed from time to time, most recently by Senate Bill 09-227, which eliminated the state contribution to the old hire plans for fiscal years 2009, 2010 and 2011, and extended the state contributions through fiscal year 2015.

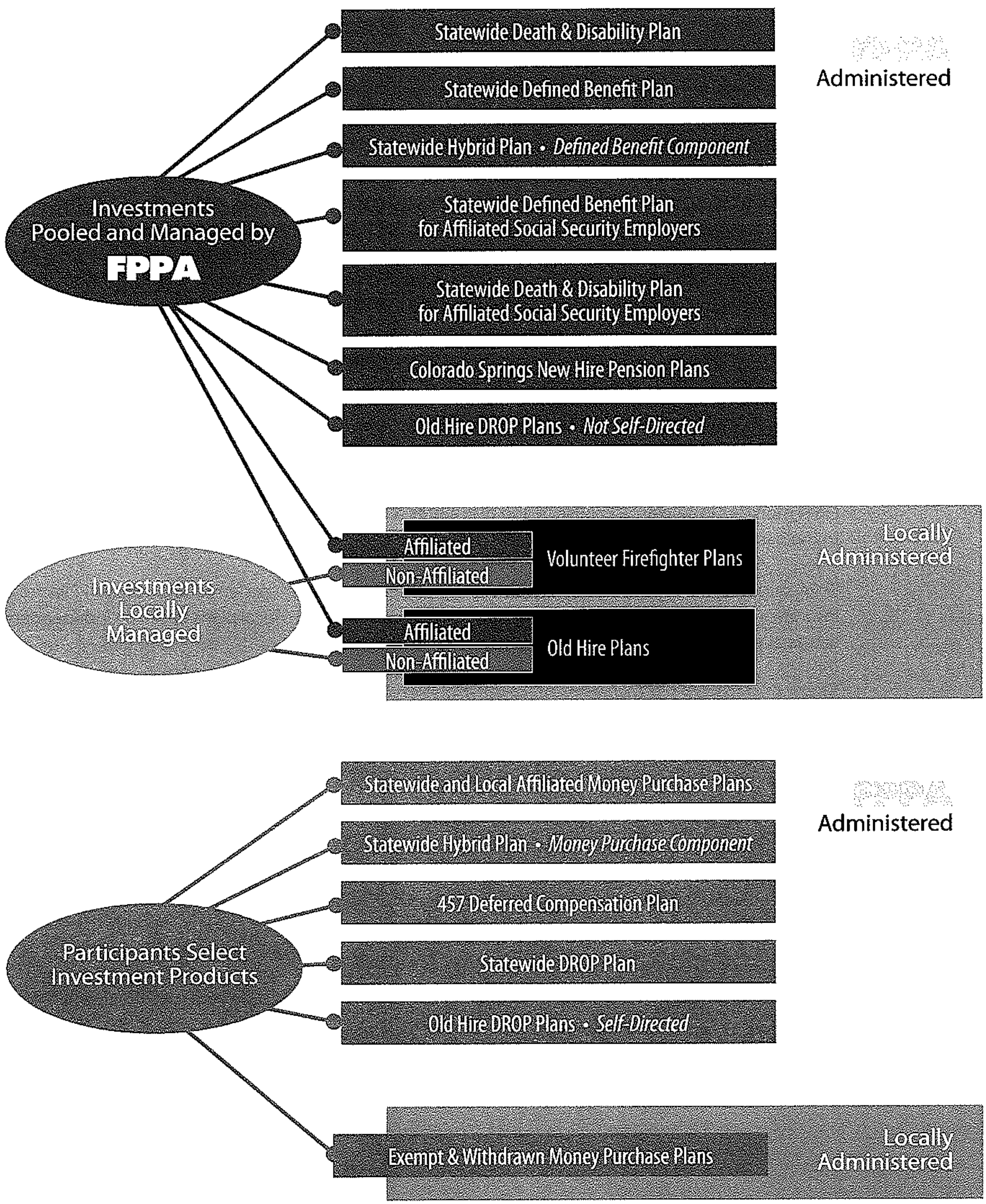
Also, state assistance is contingent on the assisted plans maintaining required levels of local contributions. Finally, employers desiring to receive state assistance must file actuarial studies with FPPA every other year. FPPA monitors local plan compliance and distributes state funds to qualifying employers in proportion to the percentage of aggregated accrued liabilities each employer represents.

FPPA serves as a flow-through entity for state funds. Moneys are transferred annually to FPPA from insurance premium tax proceeds. FPPA then distributes the funds to local plans based on independent actuarial review and statutory requirements.

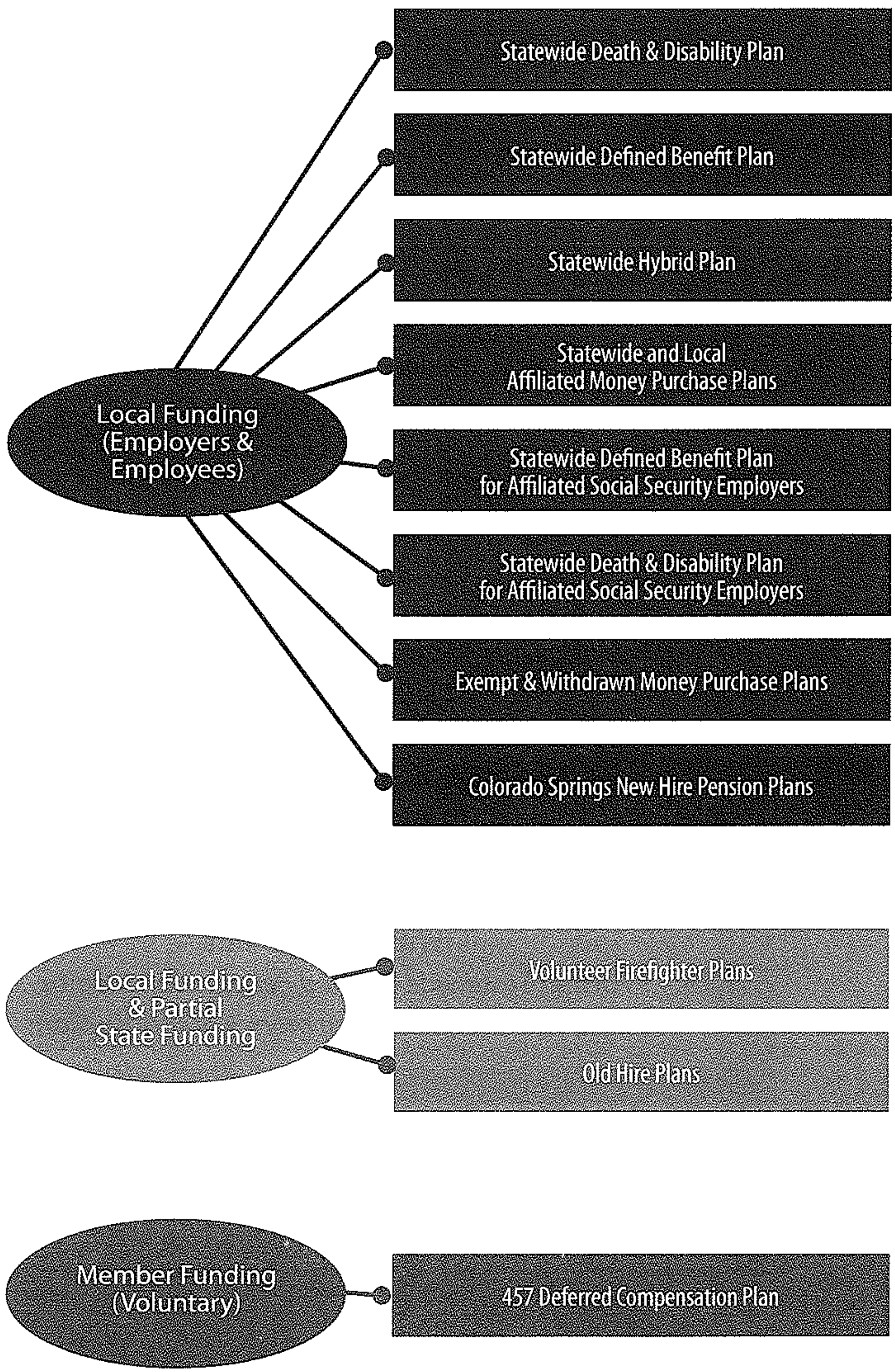
### *State Assistance for Volunteer Firefighter Pension Plans*

The General Assembly has declared its intent to continually fund volunteer firefighter pension plans. Moneys are provided as state matching funds from insurance premium tax proceeds. Again, FPPA serves as a flow-through entity, receiving funds as determined by the Department of Local Affairs for volunteer plans.

# Pension Plans



## Funding Method



## Plan Coverage *as of December 31, 2008*

# Covered by The Statewide Death & Disability Plan
*1 Plan - 378 Employers*

**Affiliated Local Plan (Old Hire) Members**
*54 Plans*

**Statewide Defined Benefit Plan (New Hire) Members**
*1 Plan - 198 Employers*

**Statewide Hybrid Plan Members**
*18 Employers*

**Statewide Money Purchase Plan Members**
*1 Plan - 35 Employers*

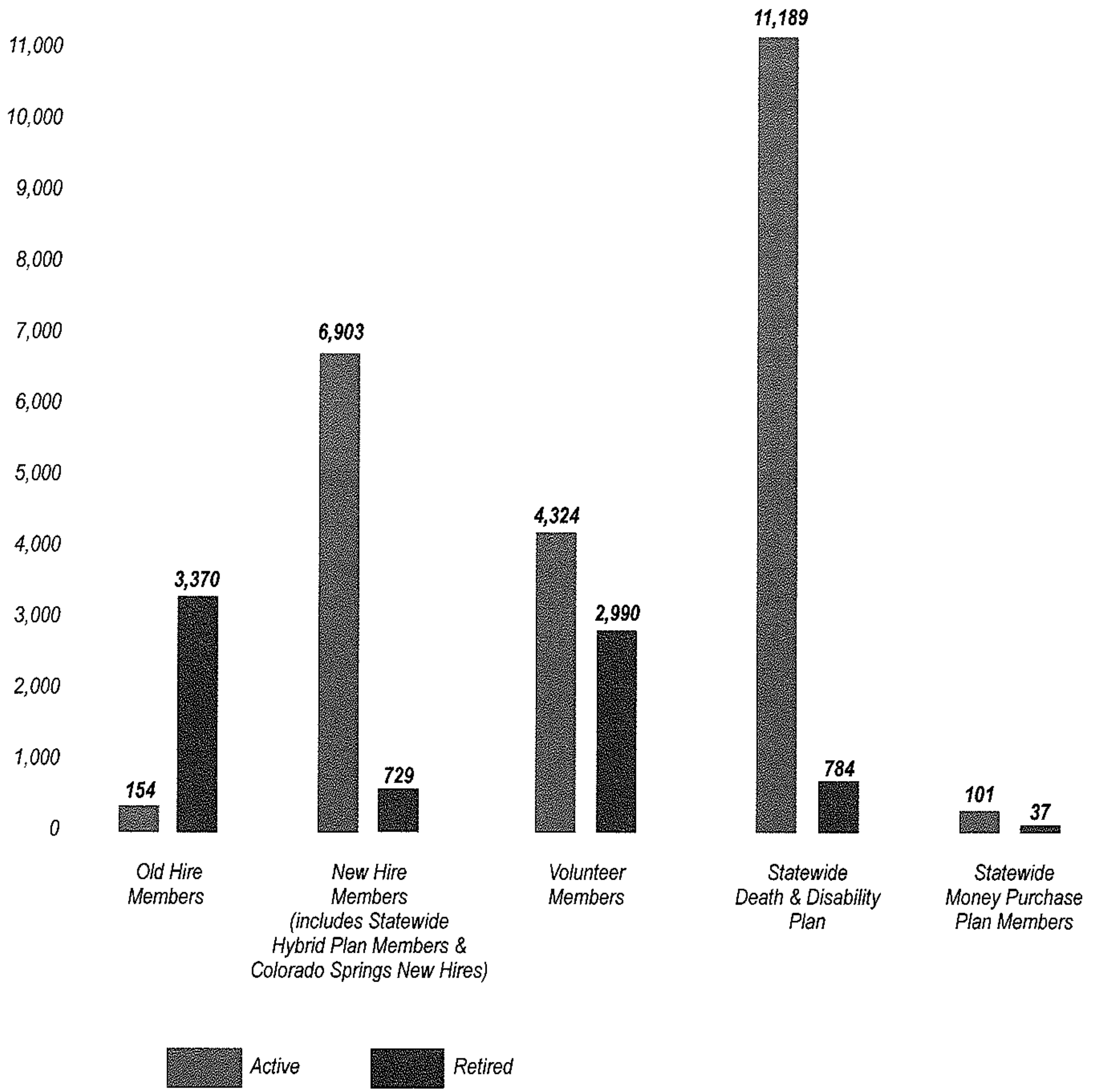
**Colorado Springs Defined Benefit Plan (New Hire) Members**
*2 Plans - 1 Employer*

**Withdrawn Plans**
*Former Statewide Defined Benefit Plan Members who withdrew into local money purchase plans.*

# Affiliated Local Volunteer Fire Pension Plans
*176 Plans*

**FPPA** *Fire and Police Pension Association of Colorado*

## Members By Plan & Status *as of December 31, 2008*



# Results of January 1, 2009 Actuarial Study

*Statewide Hybrid Plan – Defined Benefit Component Contribution Rate*

- Cost of Living Adjustment (COLA)
  *3%, effective 10/1/09 – 9/30/10*
- Defined Benefit Component contribution rate
  *Increased to 11.4%, effective 7/1/09 – 6/30/10. (Increased from 11%).*

  *This means that a contribution of 4.6% (or more, if contribution exceeds 16%) will be directed into the Money Purchase Component. (This only applies to those members who selected the Hybrid Plan – Defined Benefit and Money Purchase Components.)*

*Statewide Defined Benefit (SWDB) Plan (SRA) Contribution Rate*

- Cost of Living Adjustment (COLA)
  *1.35%, effective 10/1/09 – 9/30/10*
- Separate Retirement Account (SRA)
  There are now two components for the SRA Account:
  - The first component applies to every member in the SWDB Plan - for the general benefit cost calculated annually by the actuary.
    *0% contribution rate – 7/1/09 – 6/30/10*
  - The second component is for the money purchase plan members who re-entered the FPPA System, referred to as the "Re-entry group". This group contributes 20% to the SWDB Plan.
    *3.82% contribution rate - 7/1/09 – 6/30/10, in addition to the 0% above, for a total of 3.82%.*

    *Although the contribution rate remains at 20%, 3.82% of the contribution is allocated to the SRA.*

*Statewide Death & Disability Plan*

- Cost of Living Adjustment (COLA)
  - Occupational disability retirees and Survivors
    *0.4%, effective 10/1/09 – 9/30/10*
  - Totally disabled members
    *by state statute, receive a 3% COLA each year.*

# Plan Design Advantages of the FPPA Plans

Like most pension systems which rely on returns from the investment of plan assets to fund benefits, FPPA was adversely affected by the significant decline in equity markets in 2008. The FPPA system, however, has certain safeguards in place which have helped it to weather this storm and should ensure the security of members' retirement benefits in the future. These safeguards are discussed below.

Initially, it is important to distinguish between "old hire," local fire and police pension plans and the Statewide Defined Benefit Plan. The local old hire plans pre-date the creation of FPPA in 1980. In fact, the Colorado Legislature established FPPA in large part because of problems in the funding of these local old hire plans. Specifically, by the late 1970s, old hire plans had in excess of $500 million in unfunded liabilities. Moreover this amount was expected to grow exponentially over the coming years. Reform legislation was enacted in 1978 which closed participation in these old hire plans, required substantially increased contributions from local employers to the plans, required increased member contributions to the plan, reduced the death and disability benefits for members and provided annual state assistance to old hire plans having unfunded liabilities. The reform legislation also established the Statewide Defined Benefit Plan for firefighters and police officers hired after April 1978.

FPPA was given the responsibility for managing the funds of old hire plans receiving state assistance. Initially in 1980, 112 plans received state money to assist with unfunded liabilities. As of 2009, the number of plans now eligible for state assistance is 6. Unfunded liabilities in these remaining plans are estimated at $258 million as of January 1, 2009. The vast majority of participants in old hire plans have now retired or are scheduled to do so within the next few years.

FPPA is also responsible for administering the Statewide Defined Benefit Plan which is now the largest fire and police pension plan in Colorado in terms of the number of active participants. Its design and administration include a number of features intended as a buffer against adverse actuarial experience. Among these are the following:

### *Cost of Living Increases*
The Statewide Defined Benefit Plan's base benefit does not include a guaranteed COLA. Rather, the FPPA Board of Directors may grant an annual COLA on an ad hoc basis if sufficient funds exist. The COLA may not exceed the greater of CPI or 3% per year.

### *Retirement Age*
The Statewide Defined Benefit Plan permits an unreduced, normal pension starting at age 55 with 25 years of service. Early retirements for members who are age 50 or have 30 years of service are permitted, but benefits are reduced on an actuarial basis, at the rate of 0.5% per month for each month that the benefit is drawn before age 55. Moreover, the statutes governing the Plan give the Board of Directors the discretion to raise the retirement age up to age 60, if actuarially necessary.

### *Stabilization Reserve Account*
When employer and member contributions are in excess of what the FPPA Statewide Defined Benefit Plan needs for the coming year, the excess is redirected into a Stabilization Reserve Account, which is split into Separate Retirement Accounts for each member. These are cash accounts that are available to the members only upon retirement and remain as part of the Statewide Defined Benefit Plan assets

# Plan Design Advantages of the FPPA Plans

*continued*

until then. The accounts are credited each year with the investment fund earnings (or losses) made by FPPA through investment of assets in the Members' Benefit Fund. If in any year contributions in excess of the current 16% contribution rate (8% member and 8% employer) are needed to fund base benefits, the excess contributions must be taken out of the SRA accounts of active members before contribution rates may be increased. This has never happened yet, but is an important safeguard of the plan.

### *Benefit Changes*

FPPA's Statewide Defined Benefit Plan specifically states that, in case of actuarial necessity, the benefit improvements that have been made over the years may be eliminated one-by-one. This would include taking funds from the Stabilization Reserve Account, reducing the benefit formulas and raising the retirement age from 55 to 60. Because of the flexibility of the COLA benefit and the "cushion" of the SRA accounts, however, the Board is optimistic that current benefit provisions will not have to be reduced.

### *Purchase of Service Credit*

FPPA has always charged full actuarial cost for the purchase of service credit.

### *Employer and Employee Contribution Rates*

Both employee and employer contribution rates for the Statewide Defined Benefit Plan are set at 8% of pay. These rates have not changed since inception of the Plan in 1980. Further, the statute governing the Plan requires that employee and employer contribution rates remain equal.

### *Fund Governance and Conflicts of Interest*

FPPA's Board of Directors is comprised of nine (9) members, all appointed by the Governor and confirmed by the Senate. There are three member representatives, three employer representatives and three private citizens, each with a different area of expertise. FPPA staff members are not participants in the Statewide Defined Benefit Plan.

### *Funded Status of the Plan*

In part because of the foregoing plan features, the Statewide Defined Benefit Plan has been fully funded since inception. As of January 1, 2009, the Plan has a funded ratio of 101.0%.

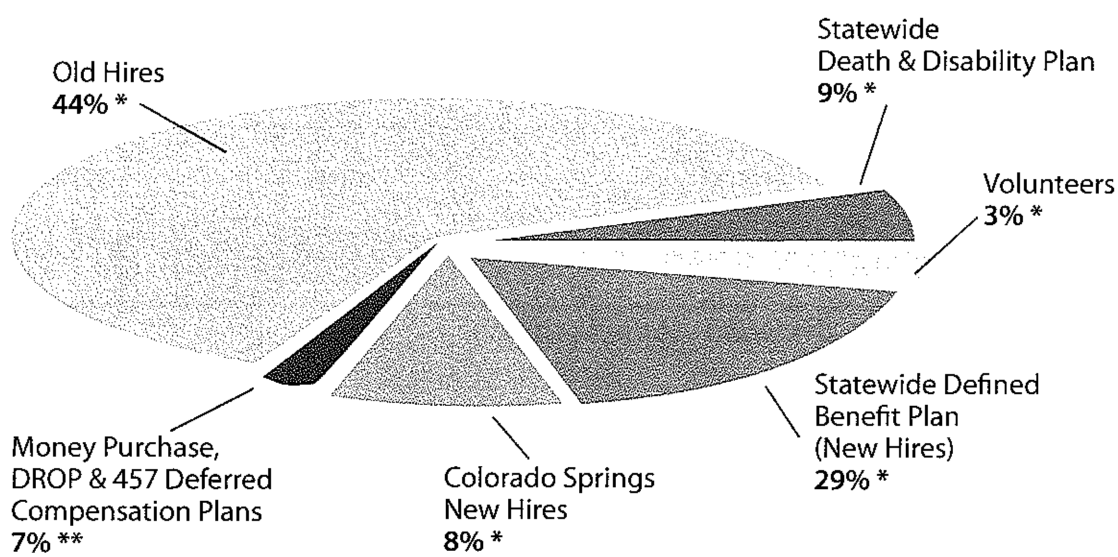
Obviously, there is always a degree of uncertainty in defined benefit plans regarding the ability to meet actuarial assumptions, particularly the rate of return assumption. We believe, however, that given the design of the Statewide Defined Benefit Plan, reasonable assumptions, including an 8% return assumption, and a well-diversified investment program designed around future liabilities, the FPPA program is positioned well to ensure the payment of promised retirement benefits to members.

## Investment Program

*Net Assets Available for Benefits as of June 30, 2009*

| | |
|---|---|
| Fire & Police Members' Benefit Investment Fund* | $ 2,489,774,975 |
| Fire & Police Members' Self-Directed Investment Fund** | 193,205,497 |
| **TOTAL** | **$ 2,682,980,472** |

*Assets by Plan Type as of June 30, 2009*

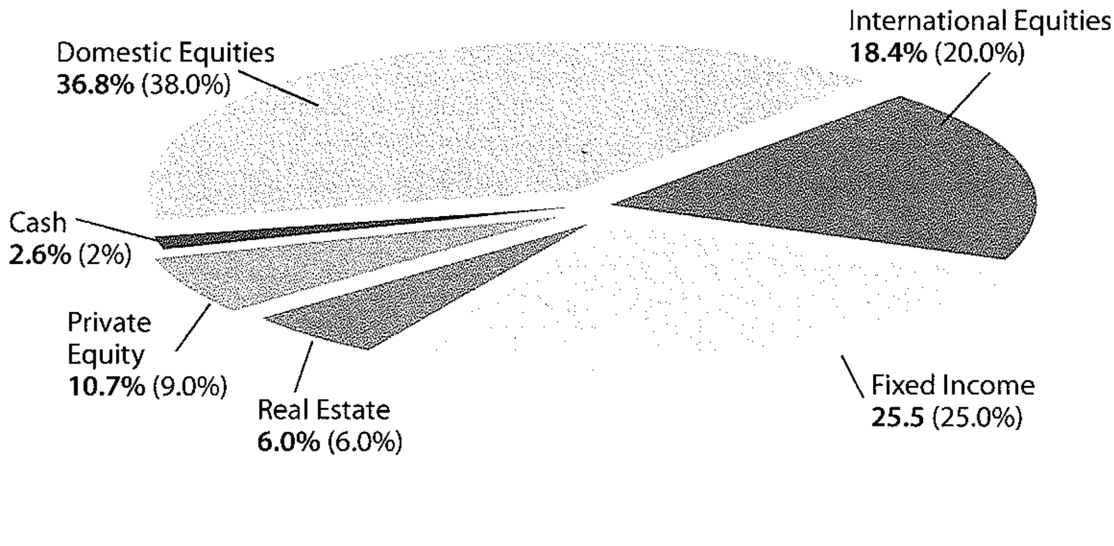


# Fire & Police Members' Benefit Investment Fund

*Asset Allocation as of June 30, 2009.*

| Asset Class | Current % Targets | Target Ranges | Current % Actual | % Difference | $ (000's) Actual | $ (000's) Difference |
|---|---|---|---|---|---|---|
| Equities | 58.0% | 53% - 63% | 55.3% | -2.7% | $1,375,890 | ($68,179) |
| Domestic | 38.0% | 33.0% - 43.0% | 36.8% | -1.2% | $916,936 | ($29,179) |
| International | 20.0% | 16.0% - 24.0% | 18.4% | -1.6% | $458,955 | ($39,000) |
| Fixed Income | 25.0% | | 25.5% | 0.5% | $634,242 | $11,798 |
| Domestic | 25.0% | 22.0% - 30.0% | 25.5% | 0.5% | $634,242 | $11,798 |
| Alternative Investments | 15.0% | | 16.7% | 1.7% | $414,667 | $41,201 |
| Real Estate | 6.0% | 4.5% - 7.5% | 6.0% | 0.0% | $149,092 | ($294) |
| Private Equity | 9.0% | 6.5% - 11.5% | 10.7% | 1.7% | $265,575 | $41,495 |
| Cash | 2% | | 2.6% | 0.6% | $64,225 | $14,430 |
| **TOTAL FUND** | **100%** | | **100%** | | **$2,489,775** | |

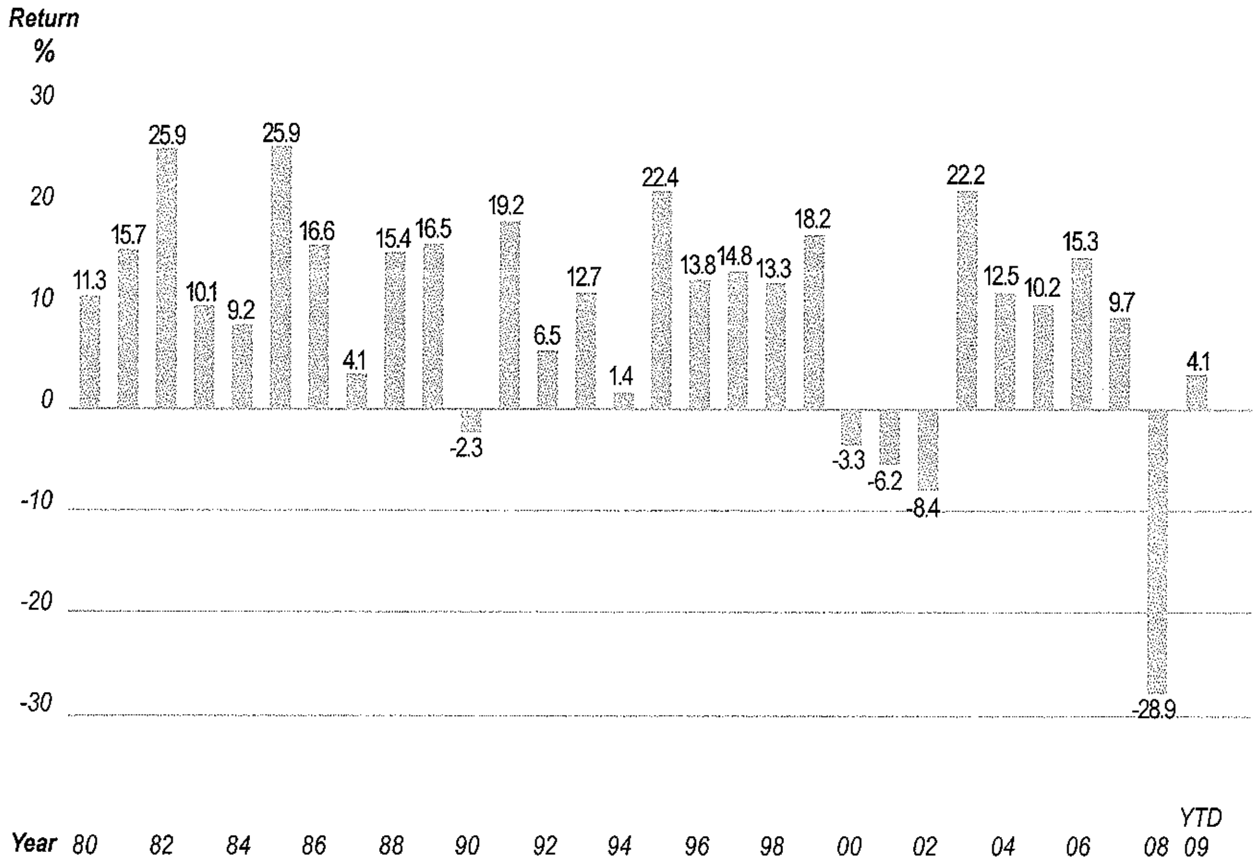
*Asset Allocation - Actual (Target)*




- Asset Allocation is the biggest driver of performance
- FPPA does not manage assets internally. Each asset class is comprised of a diverse allocation to several outside investment managers.
- Completion of an Asset Liability Study in Q3 2009 will result in changes to the strategic asset allocation.

# Fire & Police Members' Benefit Investment Fund

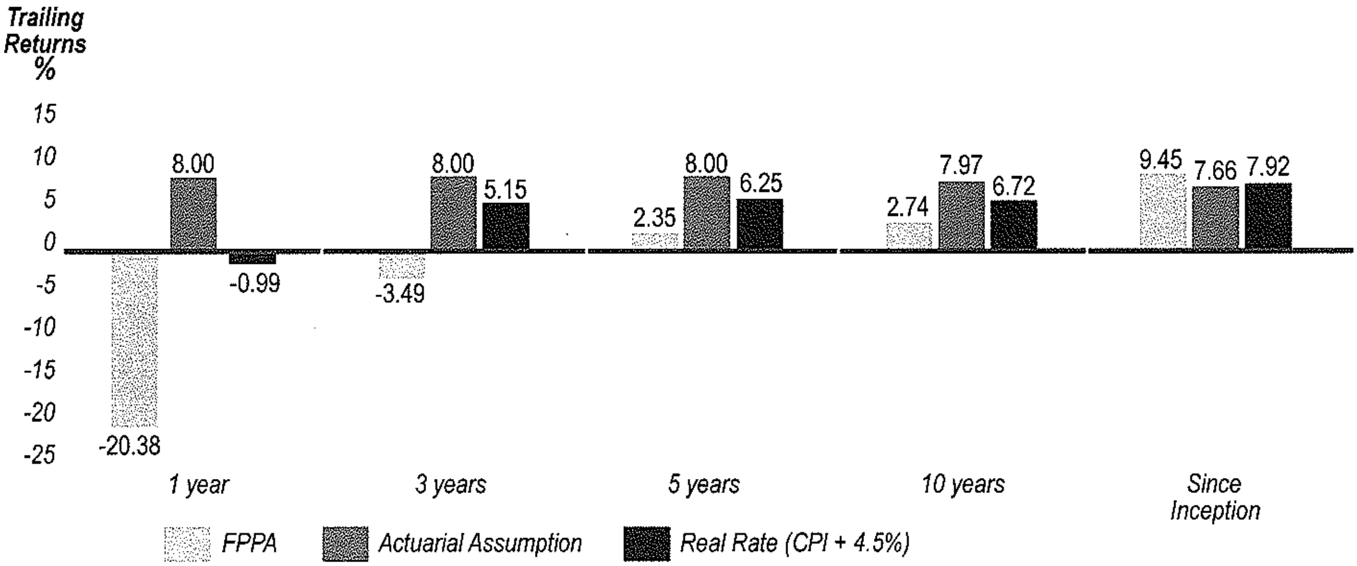
*Absolute Performance Annual Returns Since Inception as of June 30, 2009*




- Similar in magnitude to other institutional investors, FPPA experienced significant negative performance in 2008.
- In previous years, FPPA has experienced negative performance (or performance below our target actuarial rate).
- The investment portfolio has maintained its structure to achieve long-term performance results.

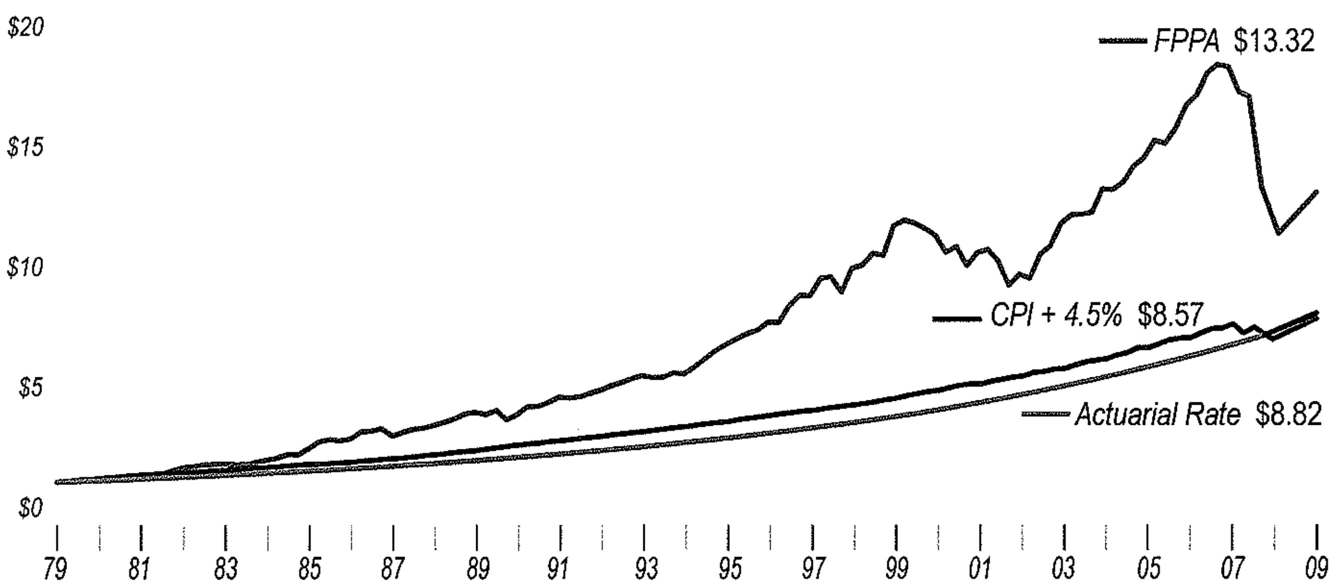
## Fire & Police Members' Benefit Investment Fund

*Fund Return vs. Inflation & Actuarial Assumption*
*Annualized Returns as of June 30, 2009*




- 10-year performance now includes two significant down market periods (2000-2002 and 2008).
- Since inception, investment performance still exceeds an inflation hurdle and actuarial assumption.

*Growth of $1 Since Inception as of June 30, 2009*



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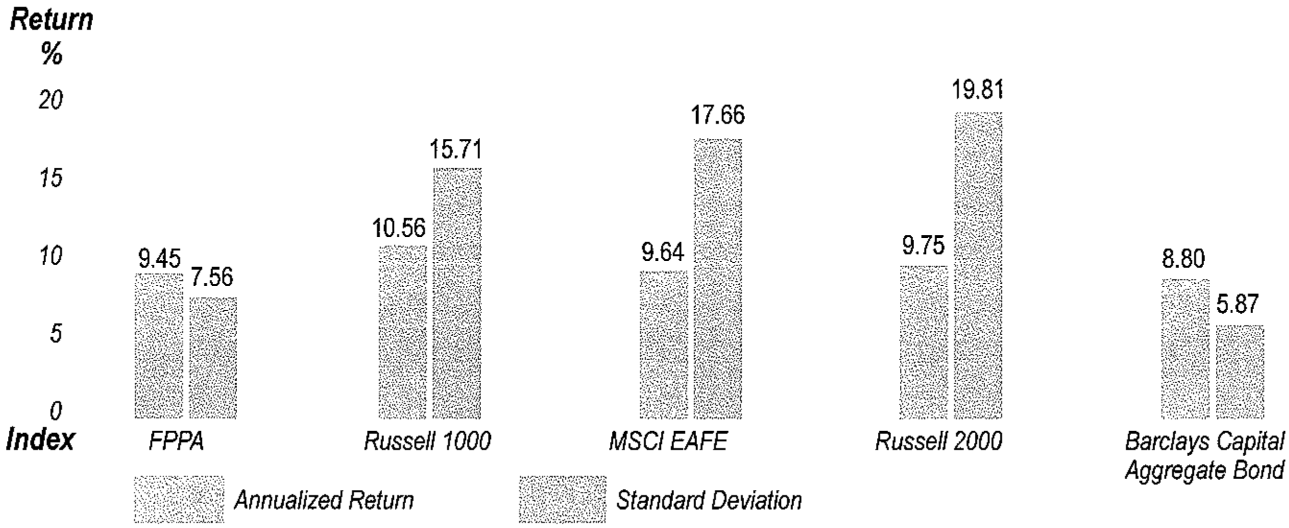
# Fire & Police Members' Benefit Investment Fund

## *Fund Performance Relative to Market Indices*
## *Risk/Return Since FPPA Inception (1980) as of June 2009*




- Standard deviation is a measure of risk.
- Goal is to achieve higher returns for an acceptable level of risk.

## *Performance Relative to Benchmarks as of June 30, 2009*

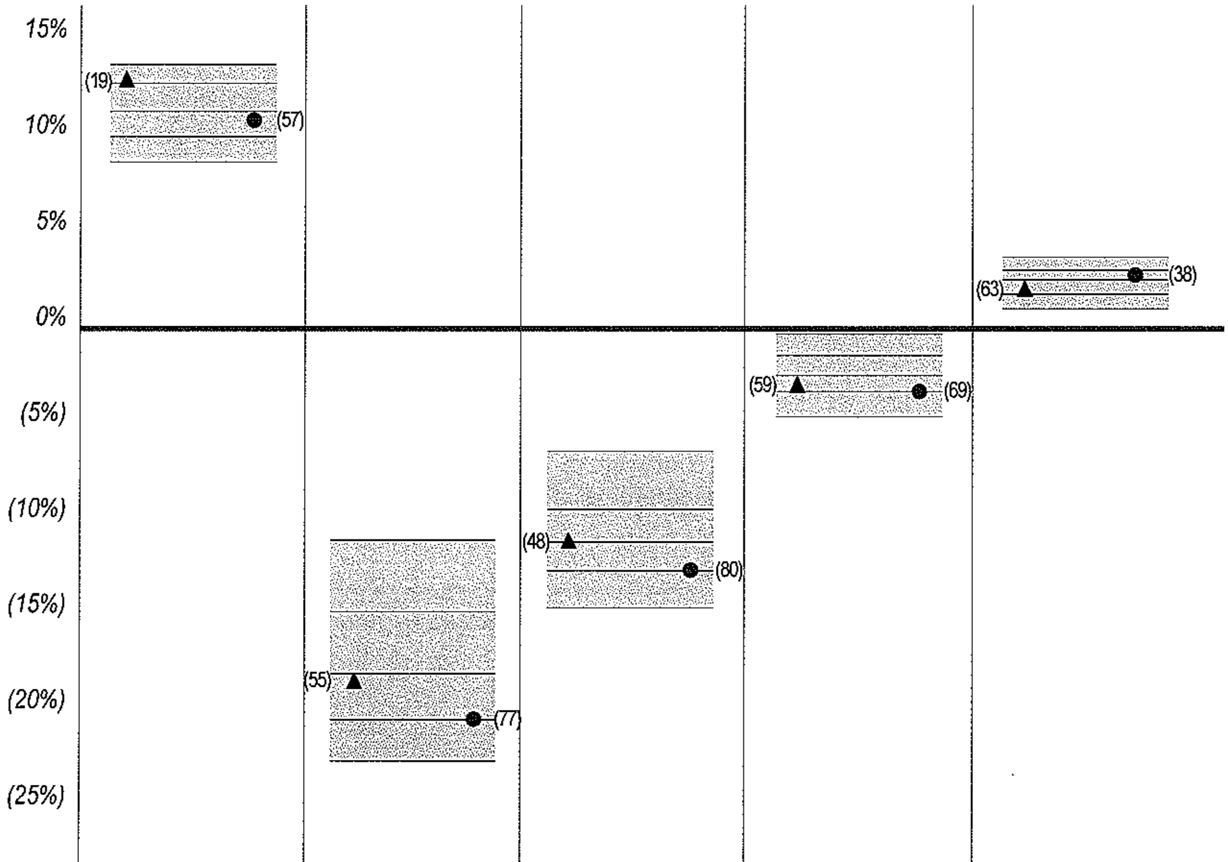
| | | Annualized | |
|---|---|---|---|
| | 1 Year | 3 Year | 5 Year |
| **FPPA Total Fund** | **-20.38 %** | **-3.49 %** | **2.35 %** |
| **Total Fund Benchmark** | **-18.11 %** | **-2.22 %** | **3.10 %** |
| Domestic Equities | -28.56 % | -10.96 % | -3.80 % |
| Russell 3000 Index | -26.56 % | -8.35 % | -1.84 % |
| International Equities | -31.37 % | -5.81 % | 4.97 % |
| MSCI All Country World ex U.S. Index | -30.54 % | -5.35 % | 4.95 % |
| Total Fixed Income (excl. cash) | 4.63 % | 5.98 % | 5.32 % |
| Total Fixed Income Benchmark | 4.93 % | 5.92 % | 4.95 % |
| Real Estate | -29.88 % | -2.55 % | 6.71 % |
| NCREIF Property Index 1 Q in Arrears | -23.80 % | -0.50 % | 6.11 % |
| Alternative Investments | -22.21 % | 4.92 % | 13.45 % |
| Cambridge Private Equity Benchmark | -23.30 % | 2.68 % | 11.19 % |

- Similar to other institutional investors, FPPA's absolute total fund performance is significantly influenced by the allocation and performance of its public equity exposure.
- A healthy exposure to fixed income muted the decline in total fund performance during 2008.
- Allocations to alternative investments and real estate have been a driver of positive long-term performance.

# Fire & Police Members' Benefit Investment Fund

*Performance vs CAI Public Fund Sponsor Database period ended June 30, 2009*

The Public Fund Sponsor Database consists of public employee pension total funds including both Callan Associates client and surveyed non-client funds.




| | Last Quarter | Last Year | Last 2 Years | Last 3 Years | Last 5 Years |
|---|---|---|---|---|---|
| 10th Percentile | 13.58 | (10.92) | (6.79) | (0.01) | 3.59 |
| 25th Percentile | 12.41 | (15.24) | (9.97) | (1.85) | 2.63 |
| Median | 11.23 | (18.09) | (11.73) | (2.77) | 2.25 |
| 75th Percentile | 9.80 | (20.32) | (13.15) | (3.60) | 1.43 |
| 90th Percentile | 8.36 | (22.64) | (14.64) | (4.93) | 0.75 |
| **Total Fund ●** | **10.80** | **(20.39)** | **(13.36)** | **(3.49)** | **2.35** |
| Composite Benchmark ▲ | 12.81 | (18.70) | (11.52) | (3.05) | 1.96 |

- FPPA performance relative to peer pension funds (Percentile Rankings: lower numbers are better).
- FPPA's slightly higher allocations to public equity, alternative investments and real estate relative to peers were likely factors in poorer relative rankings to peers last year.

# Investment Philosophy

*FPPA Issues*

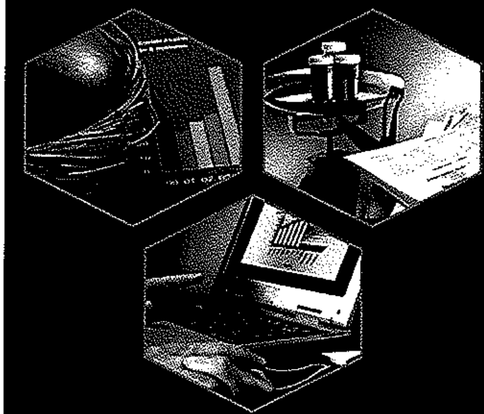
- Continued compliance with Sudan Divestment Legislation
- Estimated Cost (expense ratio) of FPPA measured as a percentage of assets (December 31, 2008)
  - Investment Expenses (.75%) – includes external investment management fees, consultant fees and custodial costs.
    - FPPA participates in two major annual surveys to measure costs relative to peers. After adjusting for such factors as (plan size, level of active vs. passive management, level of internal vs. external management, exposure to alternative investments), FPPA is in-line with its peers on an investment cost basis.
  - Administrative Expenses (.19%) – includes staff compensation, actuary, legal and other administrative expenses.
    - FPPA is in-line with its peers on an administrative cost basis.

*Future Efforts*

- Asset Liability Study
- Enhanced Risk-Based Portfolio Management
- Investment Outlook - ability to return to long-term investing

*We are long term, strategic investors.*

- We plan our investment strategies around long term trends.
- We believe in diversification to reduce risk.
- We are not market timers.



Pension Reform Commission

August 7, 2009

Joseph Newton, FSA

GRS Gabriel Roeder Smith & Company
Consultants & Actuaries
www.gabrielroeder.com



# Agenda

- Pension Funding Overview
- General Definitions
- Funding Status of Individual Plans

# Overview

- Defined Benefit (DB) plans provide a fixed benefit to employees when they retire
  - Contribution varies based on plan experience
- Defined Contribution (DC) plans provide a fixed contribution
  - Benefit varies based on plan experience
  - Returns and life span determine what the benefits are

3

GRS

# DB Plans Are Better For Employers Who:

- Want to maximize retirement benefits relative to long term costs
- Want to provide benefits which:
  - Facilitate retirement
  - Reward long service
- Want to provide guaranteed retirement benefits
- Have the structure to manage a pension fund

4

GRS

## DC Plans Are Better For Employers Who:

- Want stable costs
- Want no risk of cost increases
- Want no balance sheet liabilities
- Have higher turnover of employees

5 GRS

## Purpose of an Actuarial Valuation

- Valuations are only needed for Defined Benefit Plans
- The primary purpose is the funding of the pension plan and equity across all generations of stakeholders
  - Actuarial funding method determines annual contributions which are aimed to create a stable, sustainable benefit program
- Regular valuations can track progress over time and create a way to make adjustments as needed

6 GRS

## Basic Retirement Funding Equation

# C + I = B

Where

- C is Contribution Income
- I is Investment Return
- B is Benefits Paid

**"Money In = Money Out"**

7

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## Basic Retirement Funding Equation

# C + I = B

B depends on

- Plan Provisions
- Experience

C depends on

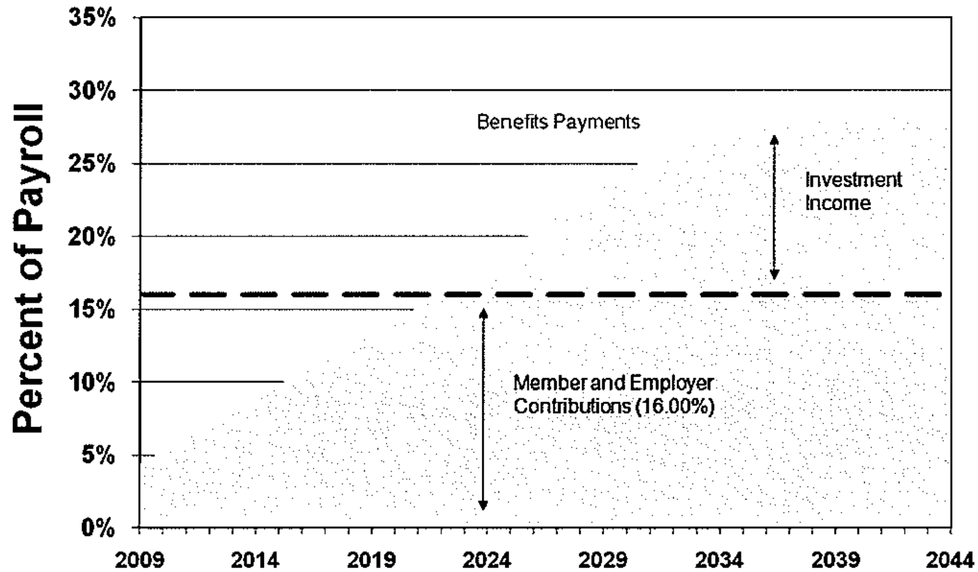
- Short Term: Actuarial Assumptions
  Actuarial Cost Method
- Long Term: I, B

"Money In = Money Out"

8

GRS

## The Long Term Solution to the Equation
## Statewide Defined Benefit Plan (SWDB)




9 Assumes 4.25% payroll growth

GRS

# Defined Benefit Plan
## Risk Characteristics

- Investment Risk (Poor performance)
- Mortality Risk (Long lives)
- Inflation Risk (Pay increases, CPI COLA)

---

- In a pure DB Plan:
  - Employer bears the risks
  - Benefits are predictable (defined)
- In the SWDB:
  - Risks shared between membership and employers
  - Baseline benefits are predictable
  - Ultimate benefits are variable

10

GRS

# Economic Assumptions

- Specific Assumptions
  - Price inflation (CPI)
  - Overall Wage Inflation
  - Salary increases (for individuals)
  - Investment return

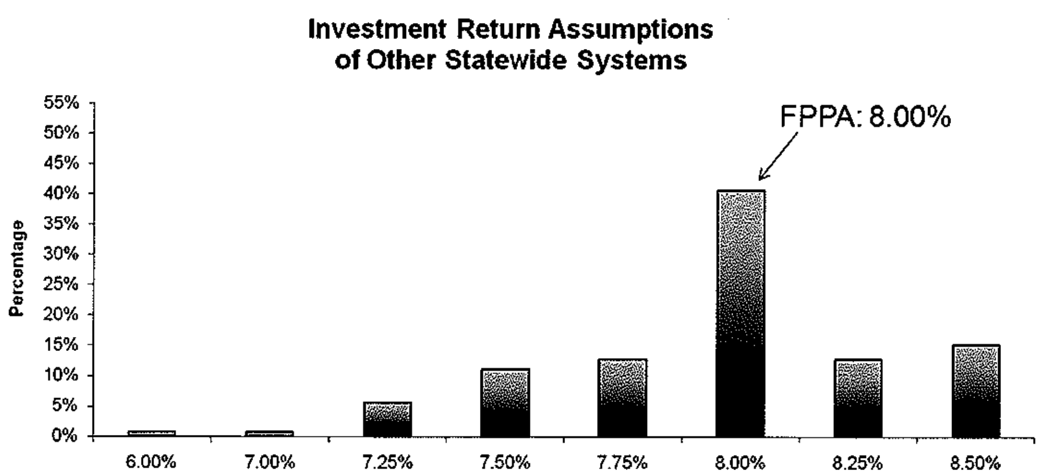
- The assumptions should be consistent individually and as a whole
  - Inflation < Wage Inflation < Salary Increases < Investment Return

| Inflation | Wage Inflation | Salary Increases | Investment Return |
|---|---|---|---|
| 3.50% | 4.25% | 5.50% | 8.00% |



GRS

# Comparison to Other Systems

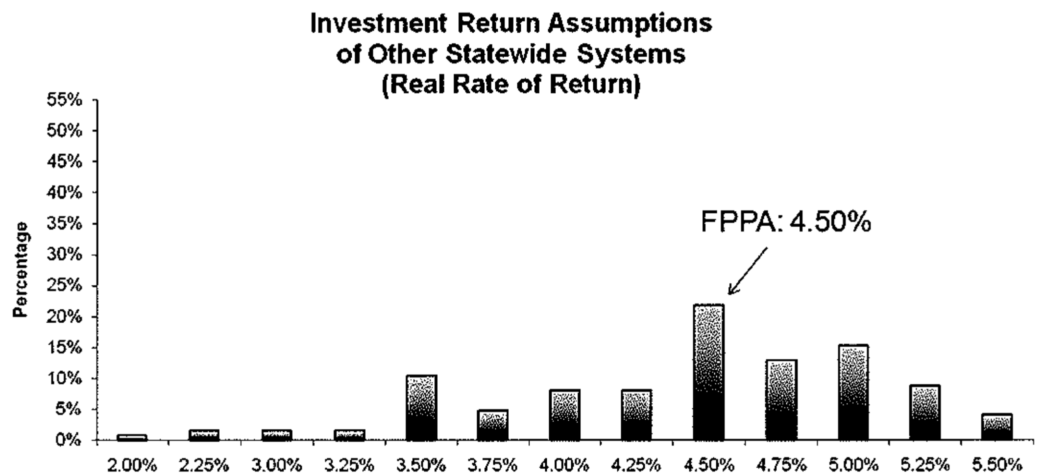



Source: Public Funds Survey Summary of Findings (FY 2008)
Median: 8.00%



GRS

# Comparison to Other Systems




Source: Public Funds Survey Summary of Findings (FY 2008)
Median: 4.50%



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# Asset Smoothing

- Most public retirement systems use a smoothed value of assets for determining funding and reporting information pursuant to the Actuarial Standards of Practice
  - Defined as the Actuarial Value of Assets
  - Dampens volatility due to investment performance
- The most common is 5 year smoothing
- Most plans are between 4 and 7 years
- FPPA's current method is 3 year smoothing with a 20% corridor
  - Smoothed asset value can not be more or less than 20% of the market value



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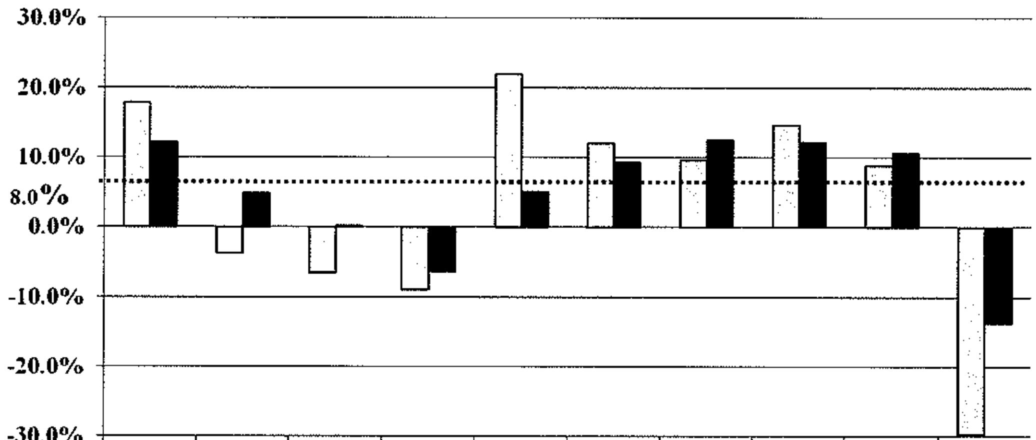
# Estimated Yields Based on Actuarial and Market Value of Assets




| | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|
| □Market | 17.9% | -3.8% | -6.6% | -9.0% | 21.9% | 12.1% | 9.6% | 14.6% | 8.8% | -29.7% |
| ■Actuarial | 12.2% | 4.9% | 0.2% | -6.3% | 5.1% | 9.3% | 12.5% | 12.2% | 10.6% | -13.7% |

SWDB plan only

2.4% average compound return (on market value) over last 10 years.

4.3% average compound return (on actuarial value) over last 10 years.

9.47% average compound return since inception



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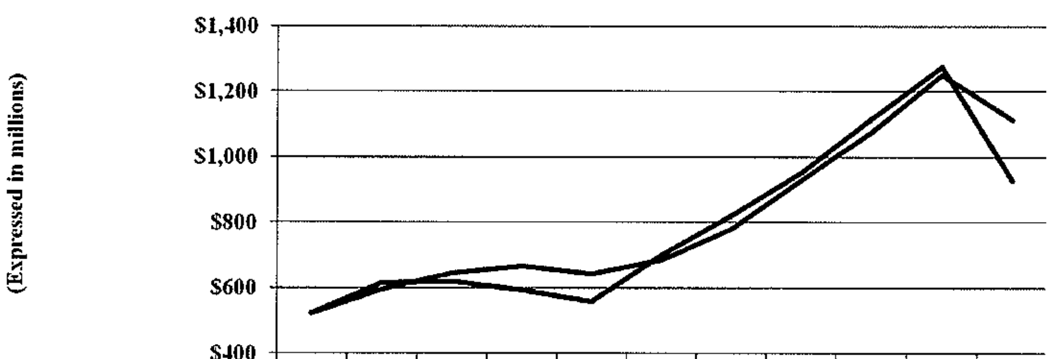
# Historical Asset Values Total of SWDB & SWDD




| | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Actuarial Value | 523 | 597 | 646 | 668 | 642 | 685 | 781 | 930 | 1075 | 1251 | 1113 |
| Market Value | 523 | 615 | 619 | 594 | 557 | 701 | 821 | 950 | 1117 | 1276 | 928 |



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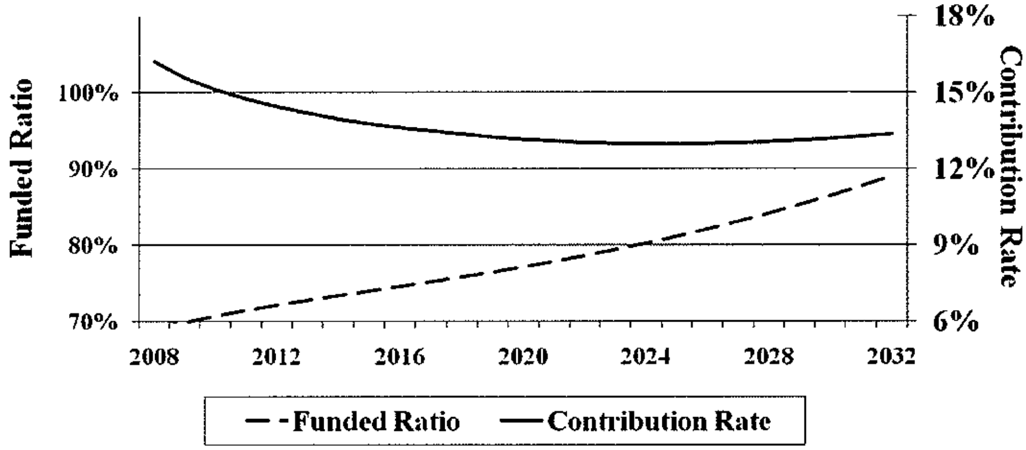
# Optimal Scenario
(Sample Other Client)

## Projection with Assumptions Exactly Matched




- Expected Funded Ratio at each valuation date based on expected return during each year
- Contribution rate expected to be equal to the actuarial determined rate
- Assumes all other assumptions are exactly met

17

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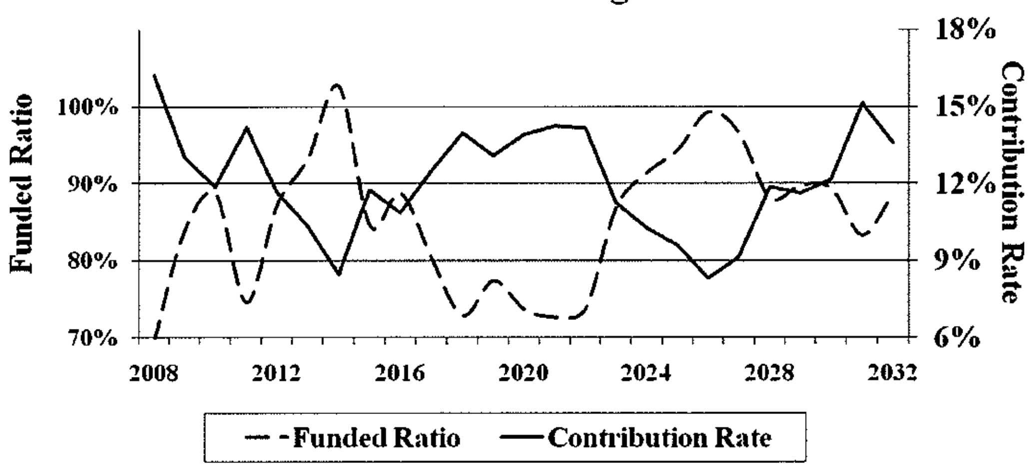
# Stochastic Scenario – expected return met over 25 years, no smoothing
(Sample other Client)

## Projection with Assumptions Exactly Matched No smoothing




- Expected Funded Ratio at each valuation date based on simulated return during each year
- Contribution rate expected to be equal to the actuarial determined rate
- Assumes all other assumptions are exactly met

18

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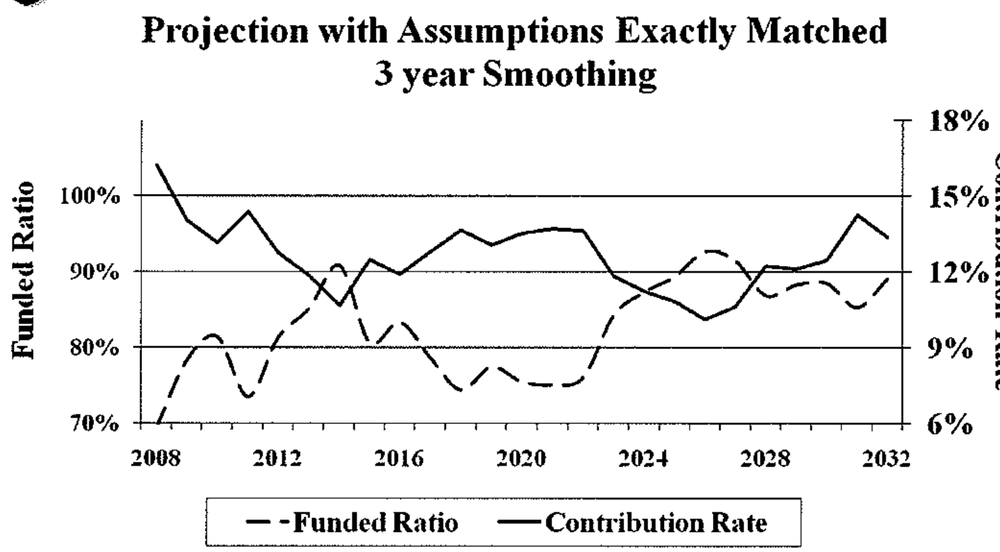
## Stochastic Scenario – expected return met over 25 years, 3 year smoothing
(Sample other client)




- Expected Funded Ratio at each valuation date based on simulated return during each year
- Contribution rate expected to be equal to the actuarial determined rate
- Assumes all other assumptions are exactly met



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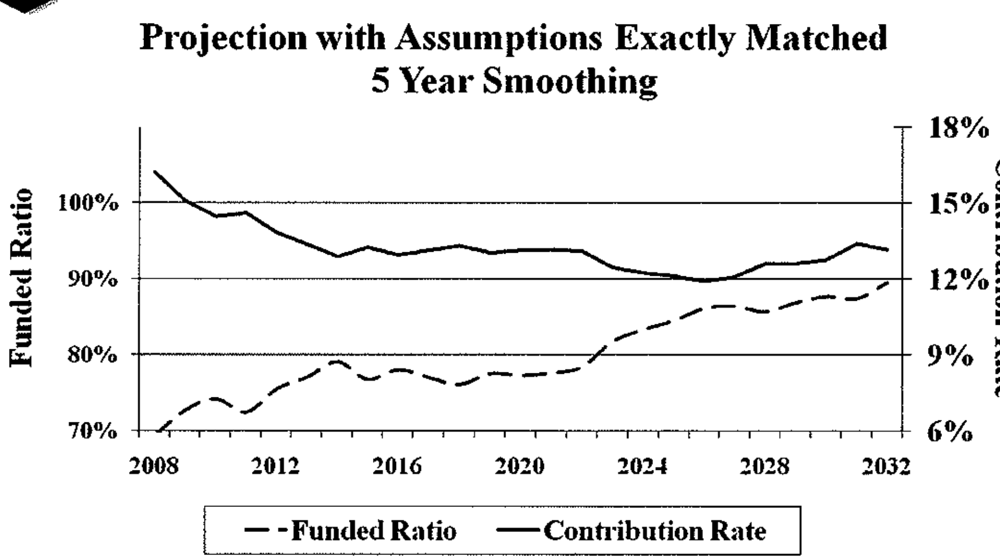
## Stochastic Scenario – expected return met over 25 years, 5 year smoothing
(Sample other client)




- Expected Funded Ratio at each valuation date based on simulated return during each year
- Contribution rate expected to be equal to the actuarial determined rate
- Assumes all other assumptions are exactly met



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## Summary

- Smoothing is a method used to force the decision making process to focus on the long term
  - Consistency in reporting
  - Consistency in funding
  - Consistency in benefit provisions



## Actuarial Definitions

- Annual Required Contribution (ARC)
- Normal Cost
- Actuarial Accrued Liability (AAL)
- Unfunded Actuarial Accrued Liability (UAAL)
- Funded Ratio

## Example

- A City hires an employee and agrees to pay the employee $1,000 the day he retires in 20 years
- No investments are available
  - (earnings = $0)
- The City would like to save up for this payment throughout the 20 years instead of having to come up with $1,000 at the end of the agreement



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## Normal Cost

- Therefore, the City would save $50 per year to accumulate the $1,000
  - $1,000 / 20 years => $50 per year
  - The $50 can be defined as the Normal Cost
- The Normal Cost can be defined as:
  - The cost of accruing a next year's benefit
  - The cost of providing benefits to a new employee



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## Actuarial Accrued Liability

- Therefore, 10 years into the arrangement the City should have saved $500
  - $50 each year for 10 years
  - The $500 can be defined as the Actuarial Accrued Liability (AAL)
- The Actuarial Accrued Liability represents the *target value of assets* at a specific point in time based on the funding objectives
  - AAL at time 5 = $250
  - AAL at time 20 = $1,000



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## Unfunded Actuarial Accrued Liability

- What if the City had only saved $400 by year 10?
  - AAL (target assets): $500
  - Actual asset level: <u>400</u>
  - UAAL $100
  - The $100 can be defined as the Unfunded Actuarial Accrued Liability (AAL)
- The Funded Ratio is the actual asset value as a percentage of the target asset value
  - $400 / $500 = 80%



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## Amortization Payment

- Additional contributions will be made so that the UAAL will be amortized over a desired period of time
  - ▶ In this example, lets assume 10 years
  - ▶ Amortization payment = $100 / 10 = $10
- Therefore, the total contribution requirement will be the normal cost plus the amortization of any UAAL
  - ▶ $50 + $10 = $60

27

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## Annual Required Contribution (ARC)

- The contribution is set to be the sum of:
  - ▶ The normal cost for the year and
  - ▶ The amortization of the UAAL
- Another way to look at it:
  - ▶ The contribution for the current year

    plus
  - ▶ The contribution to make up any shortfall that may have occurred due to past experience or plan changes

28

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## Why is there a UAAL?

- If contributions have been made equal to the actuarially determined contribution for the life of the fund, why does the UAAL exist?
  - New base at inception
  - Benefit increases granted that change the accrual for past service
  - Experience differing from expectations (assumptions)

29

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## Individual Plans

- SWDB
- SWD&D
- Old Hire Plans

30

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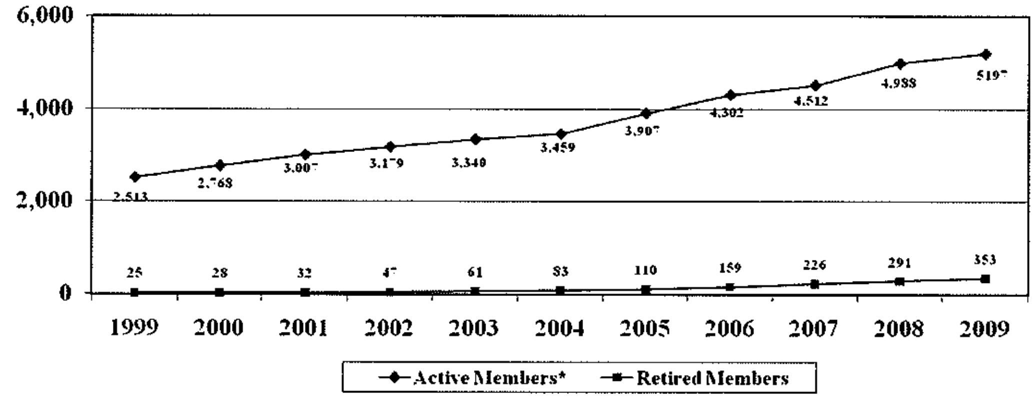
# Active Members and Retired Members (SWDB)




7.5% average increase in active members since 1999.
30.3% average increase in retired members since 1999; 21.3% this year.
There are currently 14.7 actives per retiree, down from 100.5 in 1999



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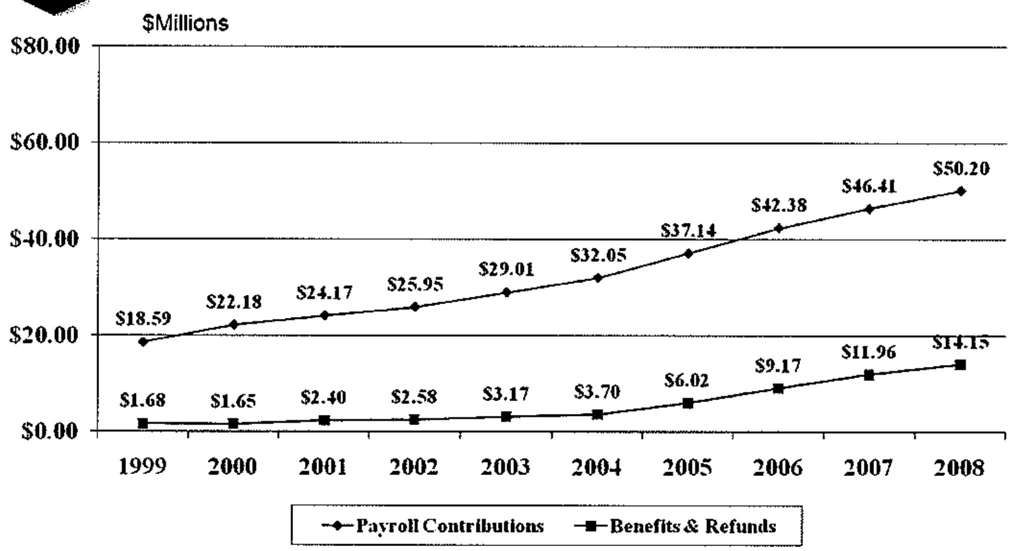
# Payroll Contributions vs. Benefits and Refunds (SWDB)




10.4% average increase in contribution since 1999.
26.7% average increase in Benefits and Refunds since 1999; 18.3% this year.



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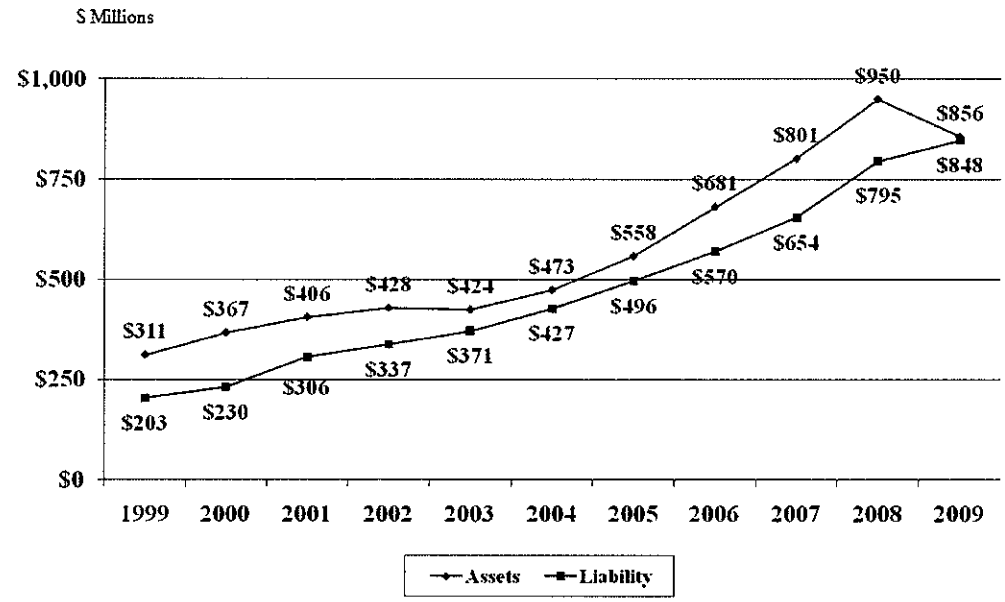
# Actuarial Value of Assets vs. Actuarial Accrued Liability (SWDB)



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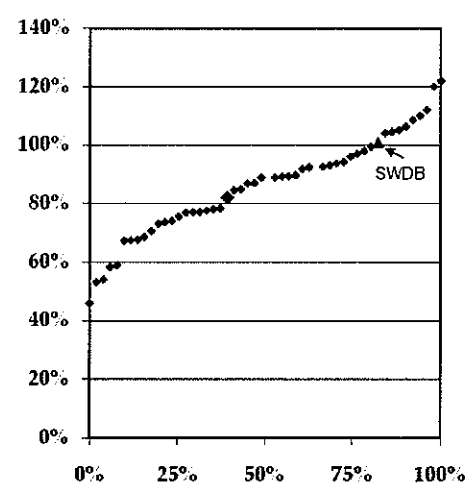
# Funded Ratio (SWDB)

- The Funded Ratio of the FPPA SWDB ranks in the 82th percentile of a comparison with other public safety retirement systems
  - SWDB - 101%
  - 75th percentile – 95.3%
  - 50th percentile – 89.0%
  - 25th percentile – 75.0%




Data from the Public Fund Survey FY2008
Only 8 of 47 had published 12/31/2008 results, others were 6/30/2008
Funded Ratio for SWDB plan was 115.0% as of 12/31/2007



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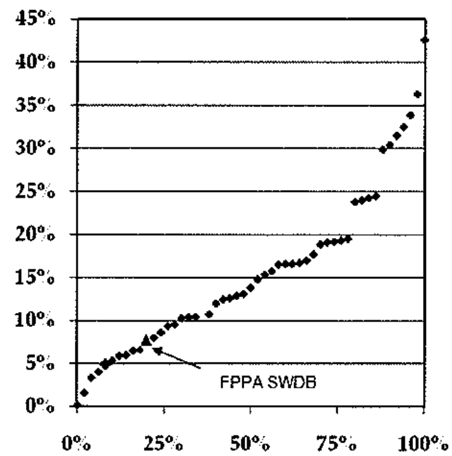
# Employer Contribution Rate (SWDB)

- The Employer Contribution Rate for the FPPA SWDB ranks in the 22th percentile of a comparison with other public safety retirement systems
  - FPPA – 8.00%
  - 75th percentile – 19.27%
  - 50th percentile – 13.84 %
  - 25th percentile – 8.98%




Data from the Public Fund Survey FY2008
Includes some Systems who also have Social Security



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# Illustration of Contribution Rate (SWDB)

| | 2009 | 2008 |
|---|---|---|
| 1. Normal Cost for Current Law Benefits | 12.64% | 12.63% |
| 2. Amortization of Unfunded AAL/(Surplus) | -0.13% | -2.65% |
| 3. Cost of Benefits (ARC) | 12.51% | 9.98% |
| 4. Total Contribution Rate | 16.00% | 16.00% |
| 5. Contribution Available for Ad hoc COLAs | 3.49% | 6.02% |

16.00% would be the ARC based on an illustrative 1.35% permanent COLA



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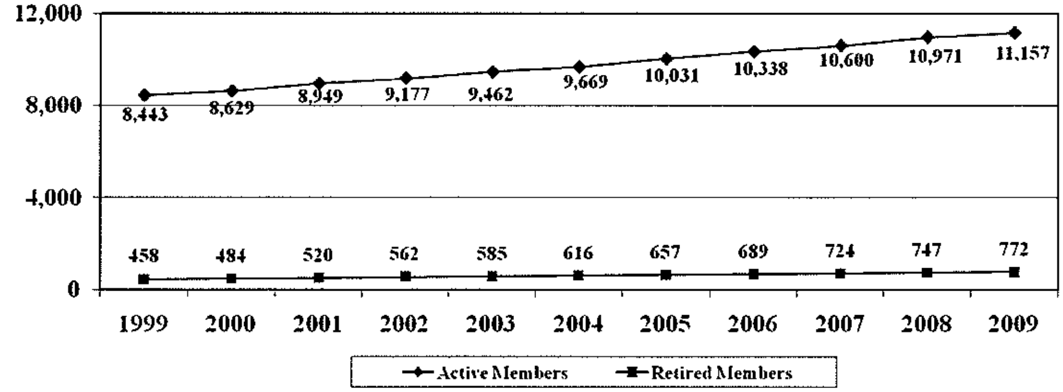
## Active Members and Retired Members (SWDD)




2.8% average increase in active members since 1999.
5.4% average increase in retired members since 1999; 3.3% this year.
There are currently 14.5 actives per retiree, down from 18.4 in 1999



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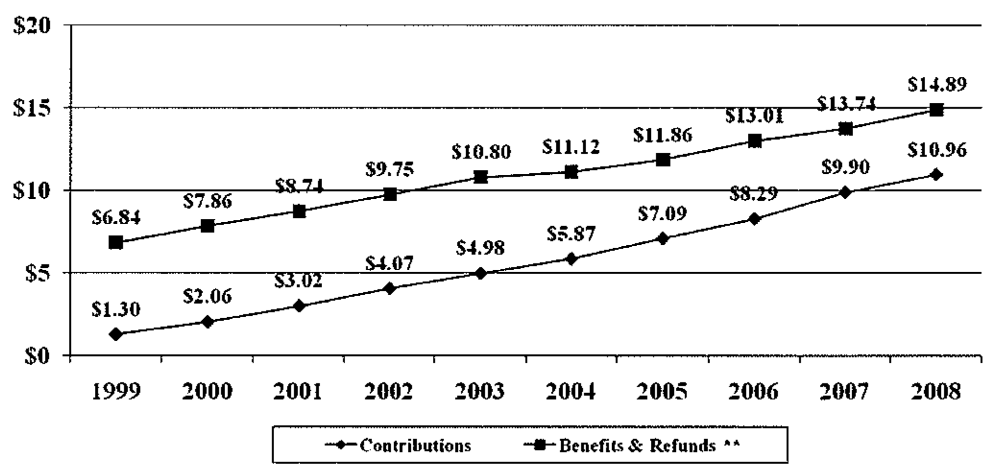
## Payroll Contributions vs. Benefits and Refunds (SWDD)

$Millions




* Only members hired after 1/1/1997 make contributions



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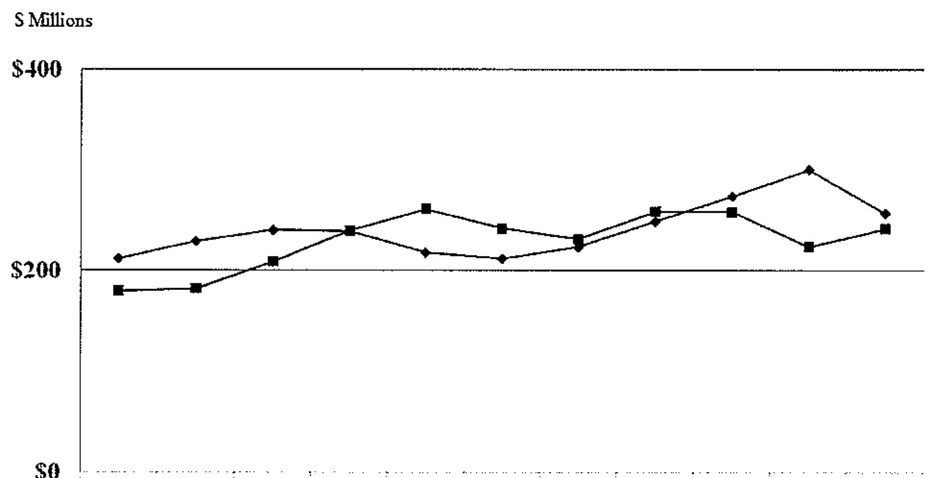
# Value of Assets vs. Actuarial Accrued Liability (SWDD)




| | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Assets | $212 | $230 | $241 | $239 | $218 | $212 | $223 | $249 | $274 | $301 | $257 |
| Liability | $180 | $182 | $209 | $240 | $261 | $242 | $231 | $259 | $258 | $224 | $242 |

39

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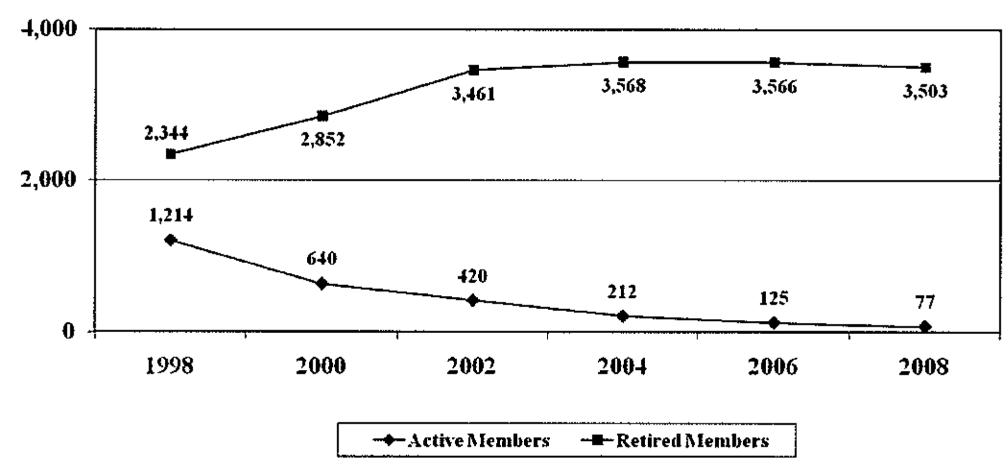
# Active Members and Retired Members (Old Hire Plans in Aggregate)




40

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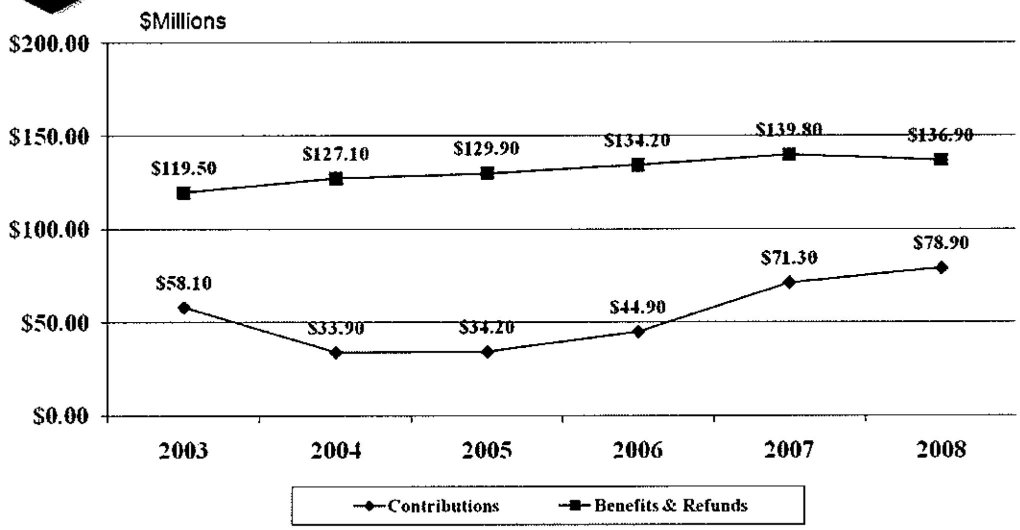
# Contributions vs. Benefits and Refunds (Old Hire Plans in Aggregate)




41

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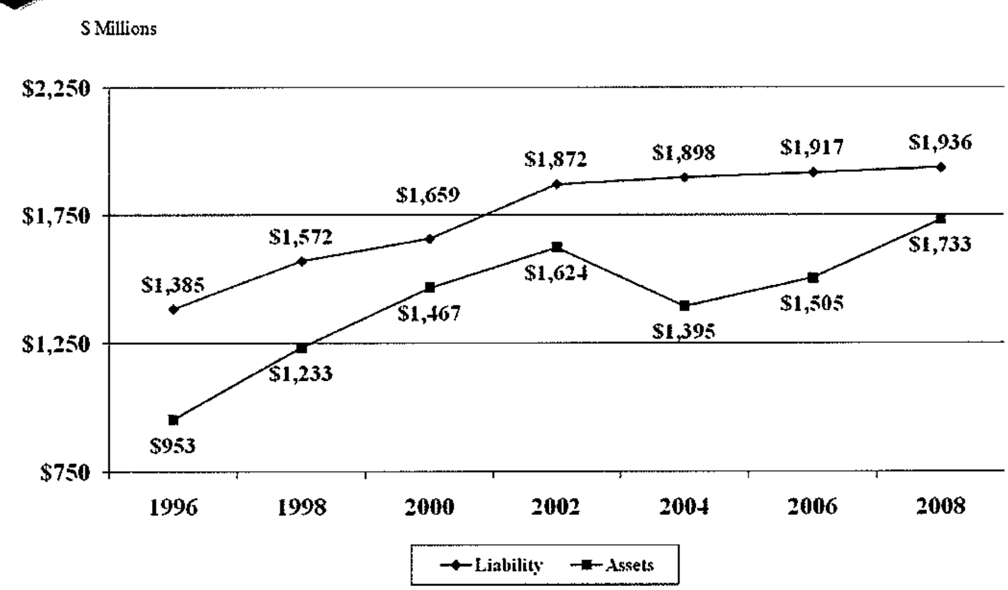
# Actuarial Value of Assets vs. Actuarial Accrued Liability (Old Hire Plans in Aggregate)




42

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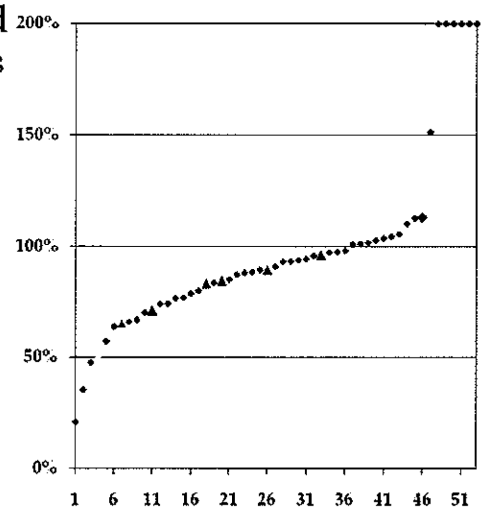
## Funded Ratio (Old Hire Plans in Aggregate)

- The chart displays the funded ratio of each Old Hire Plan as of January 1, 2008
- The blue triangles represent Plans still eligible for State Funds
  - 75th percentile – 102.7%
  - 50th percentile – 90.8%
  - 25th percentile – 76.6%




43

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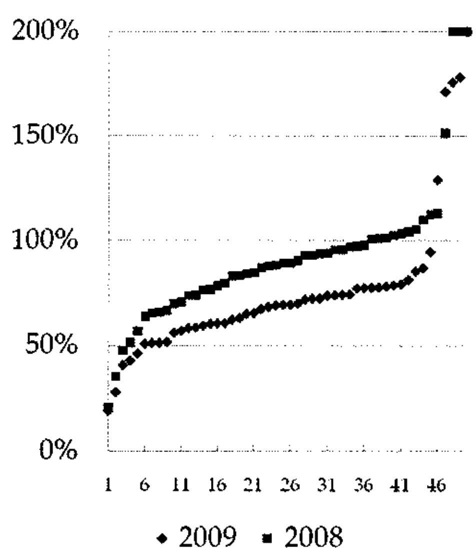
## Funded Ratio (Old Hire Plans in Aggregate)

- The chart displays the projected funded ratio of each Old Hire Plan as of January 1, 2009
  - 75th percentile – 78.4%
  - 50th percentile – 69.6%
  - 25th percentile – 58.7%




44

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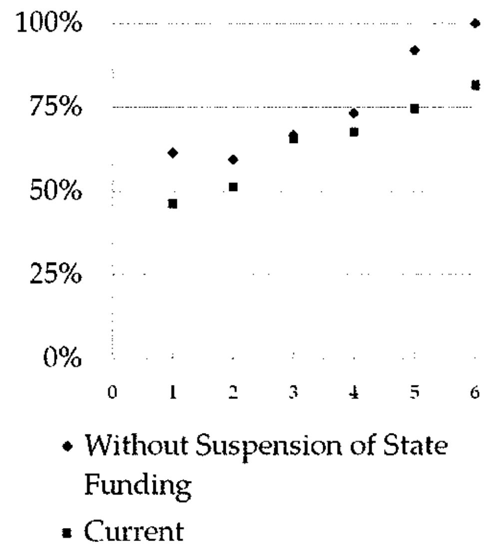
# Funded Ratio (Old Hire Plans in Aggregate)

- The chart displays the projected funded ratio of each Old Hire Plan as of January 1, 2009
- The blue markers represent the funded ratio for Plans still eligible for State Funds
- The red markers represent where the Plans eligible for State Funds would be if the State had not delayed contributions 2003-2005
- State has agreed to delay again



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**FPPA** *Fire and Police Pension Association of Colorado*

# Schedule of Funding Progress *(Unaudited) as of January 1, 2009*

| Year | Valuation Date | Actuarial Value of Assets | Actuarial Accrued Liability | Unfunded (Surplus) Actuarial Accrued Liability | Actuarial Funded Ratio |
|---|---|---|---|---|---|
| **Defined Benefit System - Statewide Defined Benefit Plan** | | | | | |
| 2009 | 1/1/2009 | $856,090,014 | $847,821,122 | $(8,268,898) | 101.0% |
| 2008 | 1/1/2008 | 950,114,346 | 795,499,983 | (154,614,363) | 119.4% |
| 2007 | 1/1/2007 | 801,426,848 | 654,097,657 | (147,329,191) | 122.5% |
| 2006 | 1/1/2006 | 681,193,087 | 569,819,934 | (111,373,153) | 119.5% |
| 2005 | 1/1/2005 | 557,949,693 | 495,915,617 | (62,034,076) | 112.5% |
| 2004 | 1/1/2004 | 473,006,658 | 426,673,675 | (46,332,983) | 110.9% |
| 2003 | 1/1/2003 | 424,088,589 | 371,056,405 | (53,032,184) | 114.3% |
| 2002 | 1/1/2002 | 428,388,591 | 337,391,594 | (90,996,997) | 127.0% |
| 2001 | 1/1/2001 | 405,598,652 | 305,500,209 | (100,098,443) | 132.8% |
| 2000 | 1/1/2000 | 367,003,914 | 230,422,395 | (136,581,519) | 159.3% |
| **Defined Benefit System - Statewide Hybrid Plan** *(The first actuarial valuation completed on the Defined Benefit System- Statewide Hybrid Plan was in 2005.)* | | | | | |
| 2009 | 1/1/2009 | $13,642,709 | $10,648,712 | $(2,993,997) | 128.1% |
| 2008 | 1/1/2008 | 14,075,984 | 9,774,906 | (4,301,078) | 144.0% |
| 2007 | 1/1/2007 | 9,624,239 | 6,299,422 | (3,324,817) | 152.8% |
| 2006 | 1/1/2006 | 7,998,356 | 5,366,912 | (2,631,444) | 149.0% |
| 2005 | 1/1/2005 | $5,040,067 | $4,035,894 | $(1,004,173) | 124.9% |
| **Colorado Springs New Hire Pension Plan - Police Component** *(The first actuarial valuation completed on the Defined Benefit System- Exempt Plan was in 2007 as the program began 10/1/2006.* | | | | | |
| 2009 | 1/1/2009 | $156,099,012 | $198,695,916 | $42,596,904 | 78.6% |
| 2008 | 1/1/2008 | 178,548,095 | 188,263,204 | 9,715,109 | 94.8% |
| 2007 | 1/1/2007 | 159,508,243 | 161,530,980 | 2,022,737 | 98.7% |
| 2006 | 1/1/2006 | N/A | N/A | N/A | N/A |
| **Colorado Springs New Hire Pension Plan - Fire Component** *(The first actuarial valuation completed on the Defined Benefit System- Exempt Plan was in 2007 as the program began 10/1/2006.)* | | | | | |
| 2009 | 1/1/2009 | $92,515,096 | $113,068,434 | $20,553,338 | 81.8% |
| 2008 | 1/1/2008 | 104,946,386 | 107,389,383 | 2,442,997 | 97.7% |
| 2007 | 1/1/2007 | 98,290,761 | 99,137,903 | 847,142 | 99.1% |
| 2006 | 1/1/2006 | N/A | N/A | N/A | N/A |
| **Affiliated Local Plans** **State Contributions were suspended for 2 years and recommenced 4/30/2006.* | | | | | |
| 2008 | 1/1/2008 | $1,859,987,228 | $2,064,576,138 | $204,588,910 | 90.1% |
| 2006 | 1/1/2006 | 1,818,993,571 | 2,246,572,810 | 427,579,239 | 81.0%* |
| 2004 | 1/1/2004 | 1,642,270,820 | 2,160,729,353 | 518,458,533 | 76.0%* |
| 2002 | 1/1/2002 | 1,902,729,069 | 2,086,914,286 | 184,185,217 | 91.2% |
| 2000 | 1/1/2000 | 1,824,520,033 | 1,958,959,749 | 134,439,716 | 93.1% |
| 1998 | 1/1/1998 | 1,466,608,186 | 1,813,999,862 | 347,391,676 | 80.9% |
| 1996 | 1/1/1996 | $1,121,444,504 | $1,593,927,538 | $472,483,034 | 70.4% |

**FPPA** *Fire and Police Pension Association of Colorado*

# Schedule of Funding Progress *(Unaudited) as of January 1, 2009*

*continued*

| *Year* | *Valuation Date* | *Actuarial Value of Assets* | *Actuarial Accrued Liability* | *Unfunded (Surplus) Actuarial Accrued Liability* | *Actuarial Funded Ratio* |
|---|---|---|---|---|---|
| **Statewide Death & Disability Plan** | | | | | |
| *(This plan is valued under the Aggregate Funding Method, where the Actuarial Accrued Liability is set equal to the assets, resulting in no Unfunded Actuarial Accrued Liability and a Funded Ratio of 100%. The Actuarial Accrued Liability reported here is the Present Value of Projected Benefits, less the Present Value of Projected Member Contributions.)* | | | | | |
| 2009 | 1/1/2009 | $257,279,496 | $241,813,411 | $(15,466,086) | 106.4% |
| 2008 | 1/1/2008 | 300,642,721 | 223,999,678 | (76,643,043) | 134.2% |
| 2007 | 1/1/2007 | 274,091,581 | 258,243,478 | (15,848,103) | 106.1% |
| 2006 | 1/1/2006 | 249,299,173 | 258,726,894 | 9,427,721 | 96.4% |
| 2005 | 1/1/2005 | 223,389,097 | 231,252,507 | 7,863,410 | 96.6% |
| 2004 | 1/1/2004 | 212,273,124 | 241,966,436 | 29,693,312 | 87.7% |
| 2003 | 1/1/2003 | 218,151,921 | 261,133,007 | 42,981,086 | 83.5% |
| 2002 | 1/1/2002 | 239,456,347 | 239,793,687 | 337,340 | 99.9% |
| 2001 | 1/1/2001 | 240,575,733 | 209,233,639 | (31,342,094) | 115.0% |
| 2000 | 1/1/2000 | 229,537,083 | 182,268,906 | (47,268,177) | 125.9% |
| 1999 | 1/1/1999 | 212,356,890 | 179,953,848 | (32,403,042) | 118.0% |

## Summary of Unfunded Liabilities for State Assisted Plans

*As of January 1, 2009*

| Department | Actuarial Value of Assets | Actuarial Accrued Liability (AAL) | Initial Unfunded AAL | Additional Unfunded AAL due to Suspension of State Contribution* | Adjusted Unfunded AAL* |
|---|---|---|---|---|---|
| Denver Police | $515,060,992 | $731,116,052 | $216,055,060 | $40,867,281 | $175,187,779 |
| Grand Junction Police | 3,088,614 | 6,388,996 | 3,300,382 | 936,349 | 2,364,033 |
| Greeley Fire (Union Colony) | 9,857,861 | 12,524,687 | 2,666,826 | 2,134,273 | 532,553 |
| Lakewood Fire | 14,402,430 | 20,964,487 | 6,562,057 | 2,203,204 | 4,358,853 |
| North Washington Fire | 3,507,547 | 6,559,797 | 3,052,250 | 508,638 | 2,543,612 |
| Pueblo Fire | 35,366,935 | 60,774,110 | 25,407,175 | 3,136,078 | 22,271,097 |
| Total | $581,284,379 | $838,328,129 | $257,043,750 | $49,785,823 | $207,257,927 |

* State contributions due September 30, 2003 through September 30, 2005 were suspended; they recommenced April 30, 2006.

State contributions were suspended again for the years 2009 - 2011 with the expectation to recommence as of April 30, 2012.

## Summary Of Unfunded Liabilities For State Assisted Plans

*as of January 1, 2009*

| Department | 1994* Required Employer Contribution | 2009 State Contribution ** | Unfunded Liability* As Of 1/1/2007 | 1/1/2008 | 1/1/2009 | Projected Year for Final Payment from State (8% Rate of Return in 2009 & Thereafter) | Employer (8% Rate of Return in 2009 & Thereafter) |
|---|---|---|---|---|---|---|---|
| Aurora Police | $1,248,291 | n/a | n/a | n/a | n/a | n/a | n/a |
| Colorado Springs Fire | 470,614 | n/a | n/a | n/a | n/a | n/a | n/a |
| Colorado Springs Police | 722,581 | n/a | n/a | n/a | n/a | n/a | n/a |
| Denver Fire | 11,631,977 | n/a | $65,406,665 | $20,027,737 | n/a | n/a | n/a |
| Denver Police | 16,261,604 | $0 | 149,794,216 | 113,062,712 | $216,055,060 | 2015 | Beyond 2015 |
| Grand Junction Fire | 298,132 | n/a | n/a | n/a | n/a | n/a | n/a |
| Grand Junction Police | 426,798 | 0 | 3,568,380 | 3,171,225 | 3,300,382 | 2015 | Beyond 2015 |
| Greeley Fire (Union Colony) | 288,931 | 0 | 3,430,082 | 1,341,869 | 3,666,826 | 2015 | 2008 |
| La Salle Police | 7,326 | 0 | n/a | n/a | n/a | n/a | n/a |
| Lakewood Fire | 562,858 | 0 | 5,242,463 | 3,573,809 | 6,562,057 | 2015 | Beyond 2015 |
| North Washington Fire | 45,912 | 0 | 2,211,602 | 2,268,804 | 3,052,250 | 2015 | Beyond 2015 |
| Pueblo Fire | 1,028,768 | 0 | 17,776,284 | 17,412,601 | 25,407,175 | 2015 | Beyond 2015 |
| Rocky Ford Fire | 10,522 | n/a | n/a | n/a | n/a | n/a | n/a |
| Total | $33,004,314 | $0 | $247,429,692 | $160,858,757 | $257,043,750 | | |

| | |
|---|---|
| **Last Payment** | **$83.8 million** |
| **In The Year** | **2015** |

* Employer level dollar funding amount applicable only until unfunded liabilities are eliminated and state funding ceases.

** State contributions were suspended for 3 years beginning 4/30/09 and will recommence as of 4/30/2012.

# Current Statutory Provisions for State Contributions for "Old Hire" Plans

| Payment Date | Funding Currently in Statute * | |
|---|---|---|
| April 30, 2008 | $34,777,172** | |
| April 30, 2009 | 0 | |
| April 30, 2010 | 0 | |
| April 30, 2011 | 0 | |
| April 30, 2012 | 25,321,079 | |
| April 30, 2013 | 25,321,079 | |
| April 30, 2014 | 25,321,079 | |
| April 30, 2015 | 83,853,854 | |
| | **$159,817,091** | **Total Estimated Payments ***** |
| | **$108,787,691** | **April 30, 2009 Present Value ****** |

* Assumes that lost interest is made up in the final payment.

** Record is informational only and is not included in the totals.

*** Actual experience, including investment returns over this period, will determine final payment amounts and termination date.

**** Differences represent value due to certain employers going to zero unfunded liability earlier under accelerated schedule; this results in earlier termination of employer contributions for those plans.

**FPPA**

Fire and Police Pension Association of Colorado

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