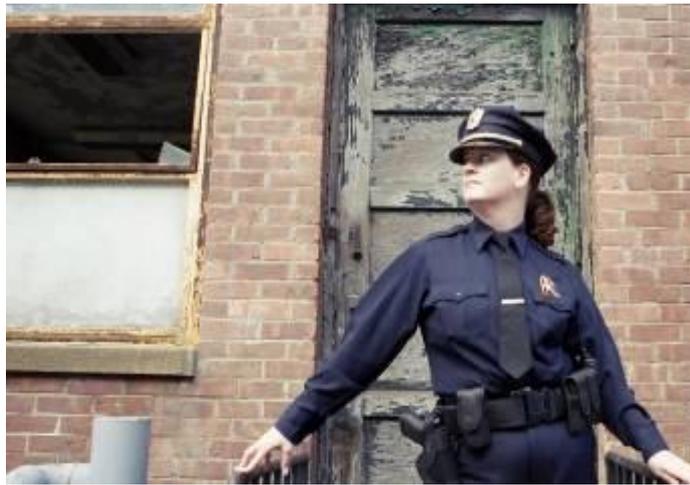


Measuring Retirement System Effectiveness

Pennsylvania Association of Public Employee Retirement Systems
PAPERS 11th Annual Forum

Julian M. Regan
Vice President & Senior Consultant
The Marco Consulting Group
May 22, 2015

Measuring Public Retirement System Effectiveness



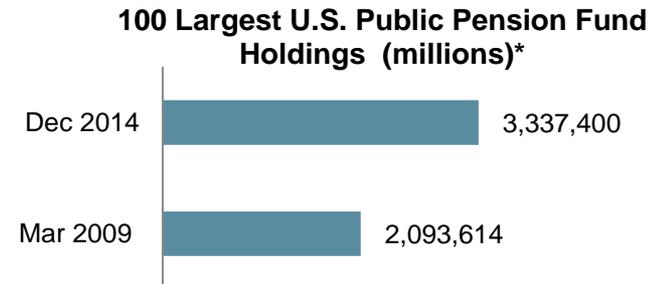
- Governance, Measures & Metrics
- Functions & Roles
- Key Performance Measures
- Setting Expectations
- Monitoring Performance & Risk
- Defining Success
- Examples
- Conclusions



Governance, Measures & Metrics

Retirement systems face measurable challenges and opportunities...

- **Pressure on Funding Levels**
 - Impact of 2008 Market Meltdown
- **Economic Recession: 2007-2009**
 - Impact on Cash Flow
- **Risk and Liquidity Challenges**
 - Impact of Financial System Crisis
- **Reputational Risk**
 - Relationship to External Environment

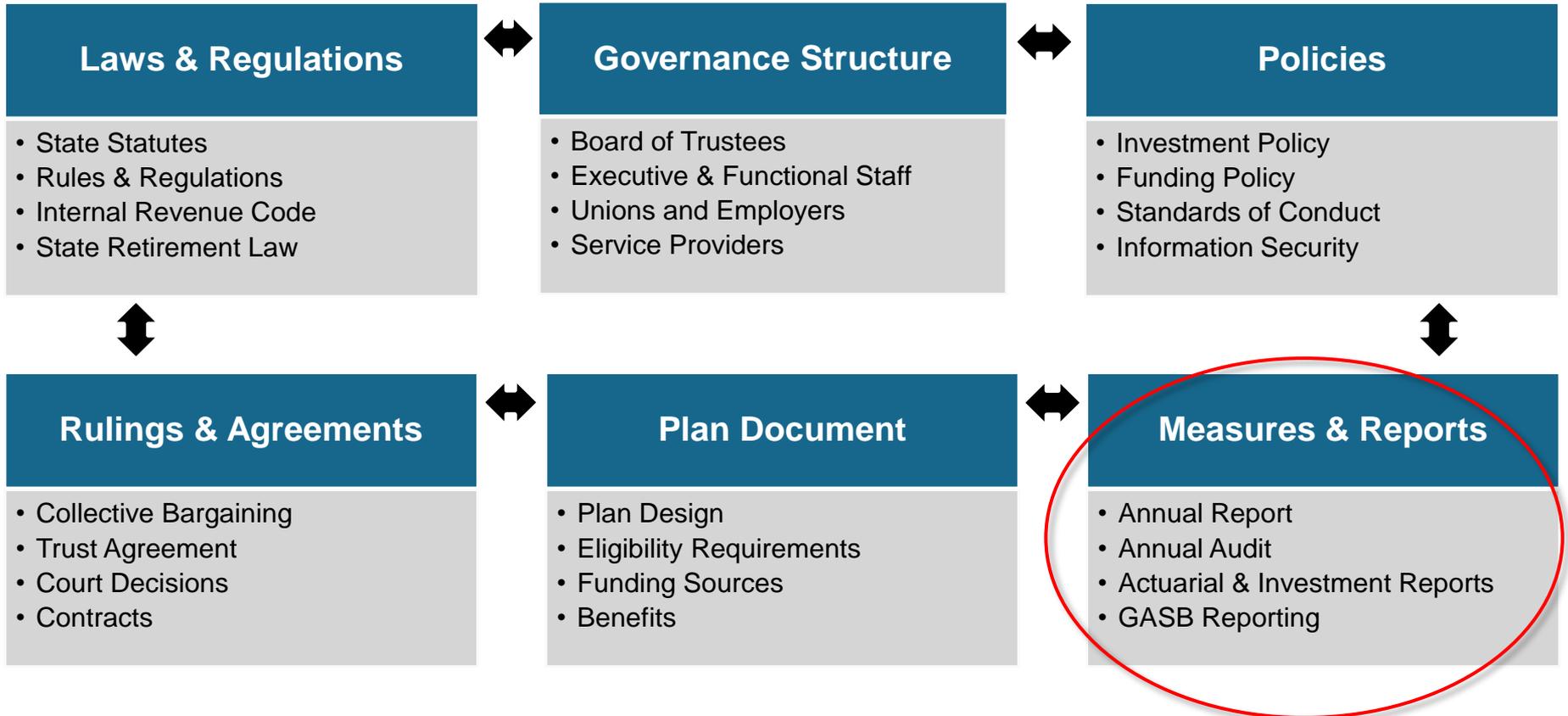


“Confidence continues to rise among public pension plan administrators about the sustainability of their funds and readiness to address future retirement issues.” - [NCPERS](#), November 24, 2014

Source: U.S. Census Bureau, March 26, 2015



Measurement is a key to system governance...

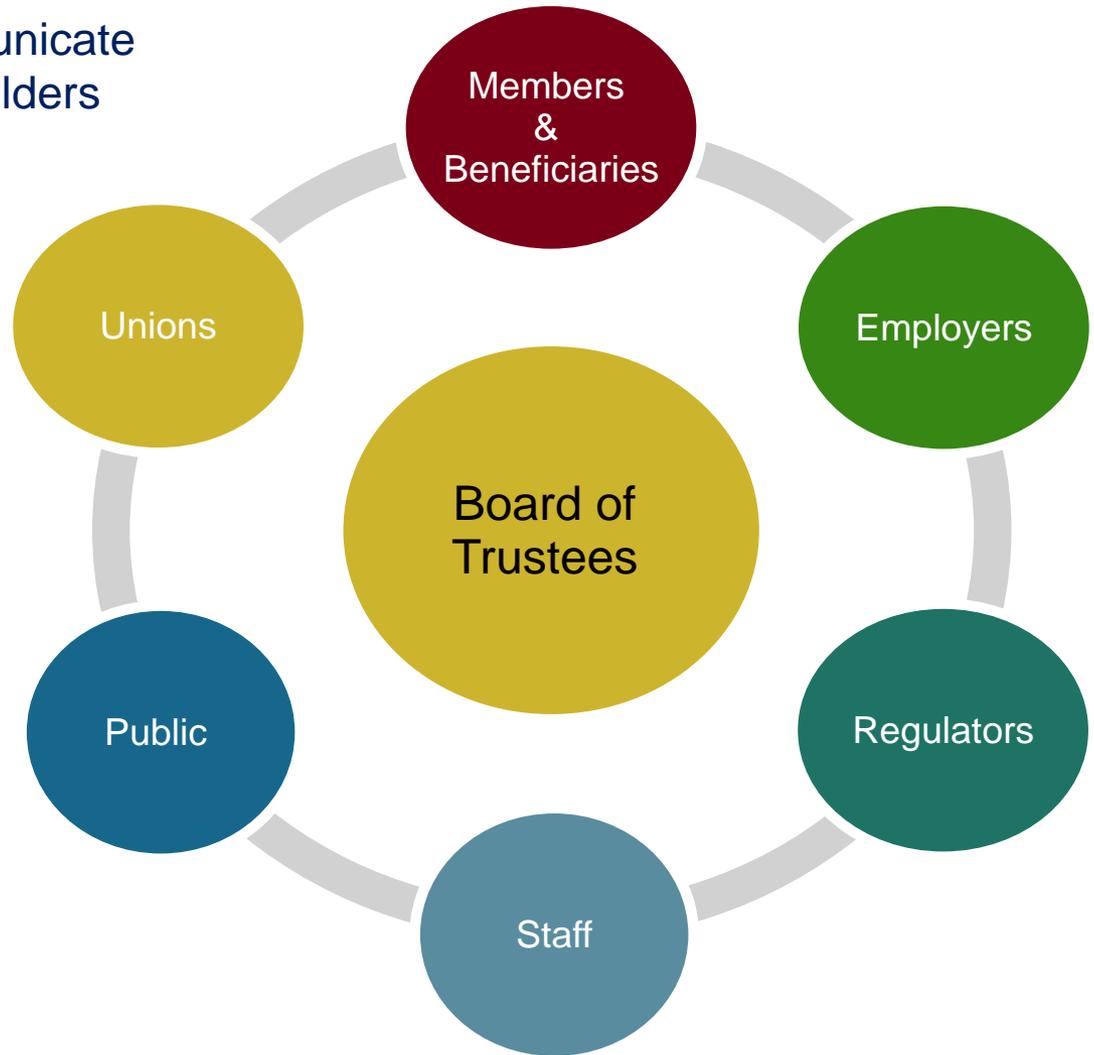


•Examples for illustrative purposes. Not all inclusive. Not all documents cited are required of public pension systems.



Boards communicate measurable retirement system results to stakeholders...

- Effective organizations communicate measurable results to stakeholders
- Stakeholders
 - Members
 - Member Beneficiaries
- Secondary Stakeholders
 - All other Groups



Functions and Roles

Boards oversee performance and risk across administrative, investment, operational and compliance functions...

Governance Framework

- Laws & Regulations
- Board Policies
- Contracts; Position Descriptions
- Rulings & Agreements
- Plan Document
- Required Reporting

Authority delegated through course of conduct, job descriptions and contracts

Board & Committees

- Provide Guidance & Strategic Oversight
- Review and Approve Policy
- **Oversee Performance, Risk and Controls**

Administration

- Develop and Recommend Policy
- Monitor Performance & Risk
- Supervise Service Providers

Fund Staff / Counsel

Administration

Benefits

Finance /
Compliance

Counsel*

Advisors / Service Providers

Investment*
Consultant

Investment
Managers

Custodian

Actuary*

Auditor

Note: Sample retirement system governance structure.



Functional groups are responsible for reporting on measures within their span of operations...

Actuary

- Funded Ratio (%)
- Actuarial Value (\$)
- Projected Liabilities (\$)

Auditor

- Net Assets (\$)
- Accrued Liabilities (\$)
- Audit Exceptions (#)

Administration/ Benefits

- Benefits Paid (\$)
- Benefits Processing (%)
- Service Quality (%)

Investment Consultant

- Investment Returns (%)
- Market Values (\$, %)
- Risk Exposures (\$, %)

Custodian

- Fund Valuation (\$)
- Accruals (\$)
- Transactions (#)

Finance

- Contributions (\$)
- Benefits & Expenses (\$)
- Cash Flow (\$)

Counsel/ Compliance

- Regulatory Compliance
- Risk Assessment
- Contract Administration

Investment Managers

- Investment Returns (%)
- Risk Controls
- Market Values (\$)

Note: Illustrative. Not inclusive of all functional measures and reports.



Key Performance Measures

Boards assess results using multiple measures over multiple time periods...

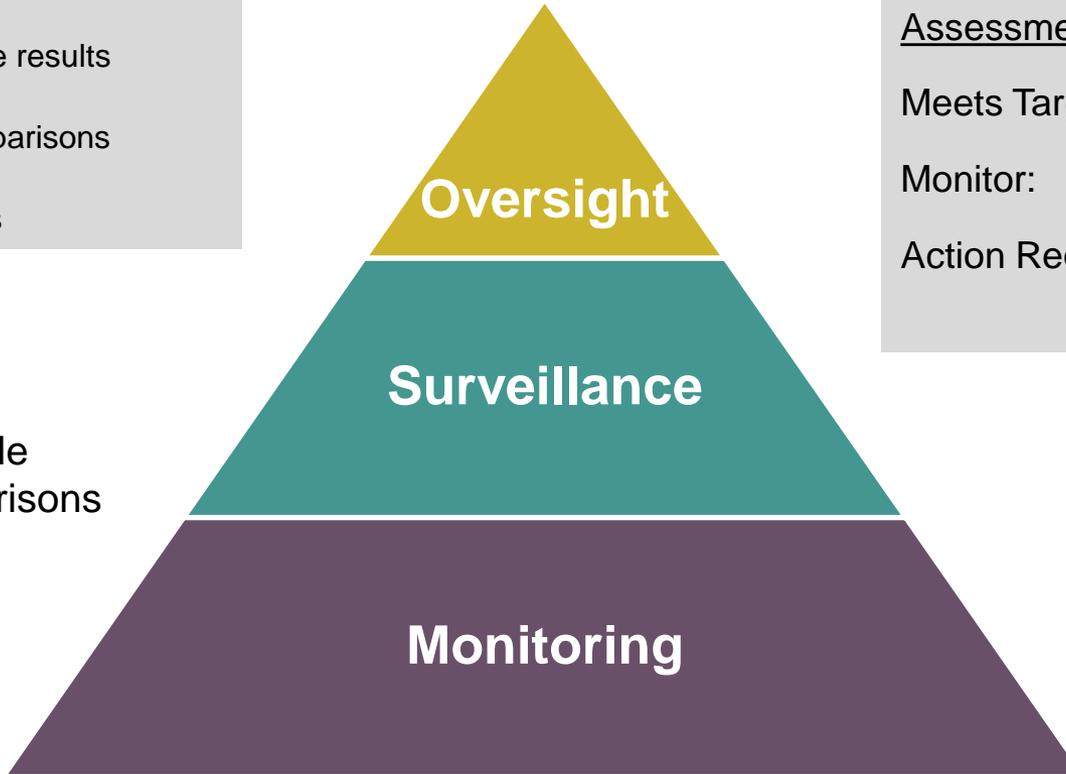


Measures:

- Absolute and relative results
- Peer comparisons
- Year-over-year comparisons
- Risk metrics
- Multiple time periods



Trustees use multiple measures & comparisons to assess results



Assessment / Status Indicators

Meets Target:



Monitor:



Action Required:



Key performance & risk measures enable assessment across administrative, investment and compliance functions...

Funded Ratio (%)

**Net Annualized
Investment Returns (%)**

**Benefit Payment
Processing (%)**



**Member Service
Satisfaction (%)**

**Actuarial Accrued
Liability (\$)**

**Net Assets Available for
Benefits (\$)**

Source: [NCPERS Best Governance Practices](#), April 2012



Key performance indicators include actuarial, processing, investment and financial measures...

Funded Ratio (%)

Unfunded Actuarial
Accrued Liability (%)

Benefit Processing
Accuracy (%)

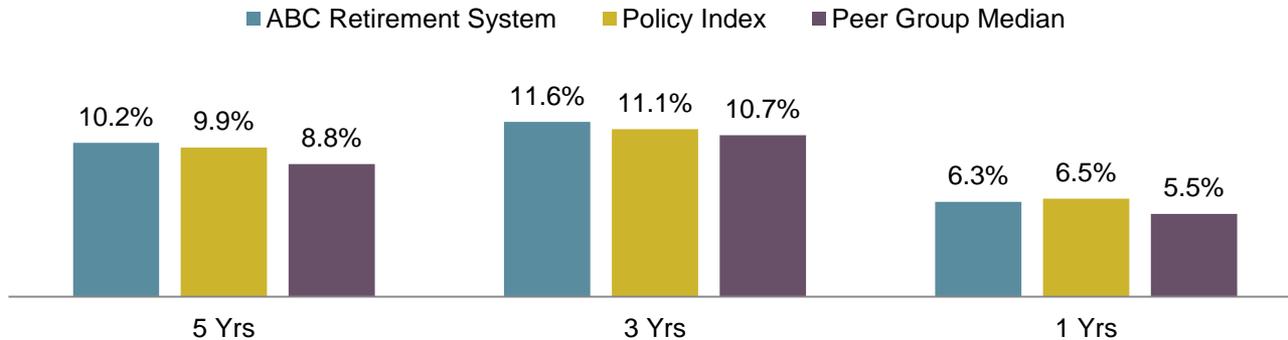
Member Service
Satisfaction (%)

Net Annualized
Investment Returns (%)

Net Assets Available
for Benefits (\$)



Total Fund Rates of Return*
Periods Ending December 31, 2014



Notes: Rates of return are samples for illustrative purposes. Sources include [NCPERS Best Governance Practices](#). Cost-effectiveness is implicit in all key measures.



Key Performance and Risk Measures Defined

Measure

Description

Funded Ratio

- Ratio of Fund Assets to Fund Liabilities according to Actuarial and Market Value measures.

Annualized Investment Returns

- Net-of-fee Annualized Investment Returns over multiple periods relative to Assumed Return and Benchmarks.

Benefit Payment Processing

- Percentage of payments paid Accurately and Timely relative to pay date and/or other stated objectives.

*Note: NCPERS Key Performance Measures. Not all inclusive.



Key Performance and Risk Measures Defined

Measure

Description

Member Satisfaction

- Member satisfaction with Retirement System services as measured by surveys and correspondence.

Actuarial Accrued Liability

- Future value of benefits owed to members as measured by actuarial accrued liability.

Net Assets Available for Benefits

- Net assets available to pay benefits and changes thereto as reported in annual audit.

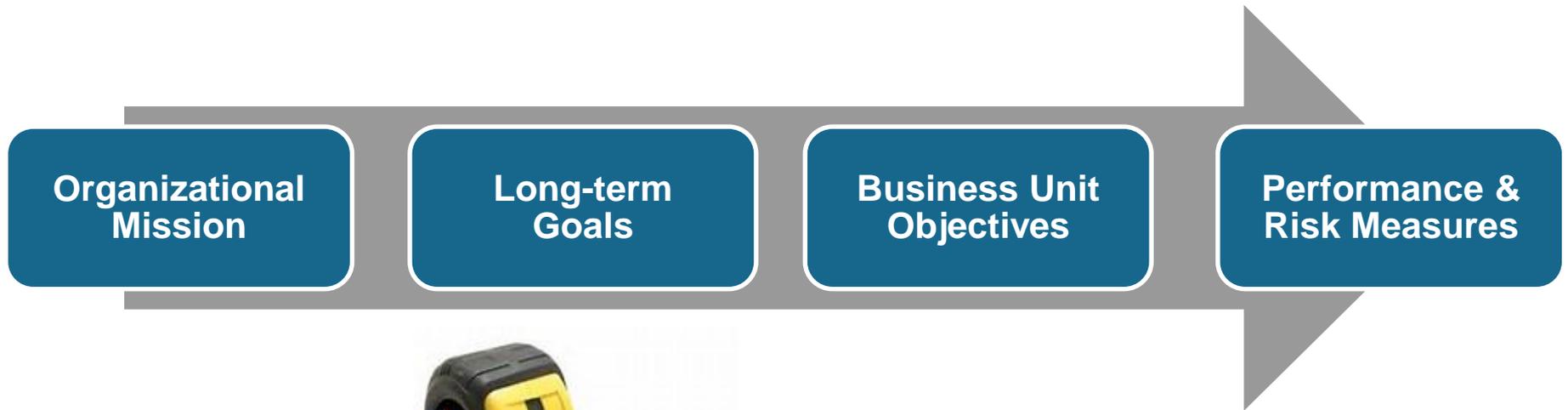
Note: NCPERS Key Performance Measures. Not all inclusive.



Setting Expectations

Strategic planning, goals and measures...

- Effective organizations set measurable performance goals and risk tolerances through the business planning and/or policy development process.



“Someone’s sitting in the shade today because someone planted a tree a long time ago.” -Warren Buffet



Business plans are a means for documenting goals, objectives and measures...

TABLE OF CONTENTS

Introduction to the Strategic Plan 1

Operations Goals and Objectives 3

OPERATIONS GOALS & OBJECTIVES

Goal 1: Ensure that members receive services and benefit payments accurately, timely, and efficiently. 6

Goal 2: Provide a variety of methods for members and employers to easily access accurate and timely information and educational programs. 9

Goal 3: Accurately, timely and efficiently collect, maintain and account for contributions and information in order to sufficiently meet actuarial requirements. 11

Goal 4: Accurately, timely and efficiently maintain financial statements and reports to ensure compliance with industry standards. 12

Goal 5: Implement and maintain modern business processes and technologies that support accurate, timely and efficient service in a secure environment. 13

INVESTMENT GOALS & OBJECTIVES

Goal 6: Develop and maintain a DB asset allocation that prudently 16

Investment Goals and Objectives

Goal 7: Achieve a DB fund rate of return equal to the actuarial assumed rate of return. 18

Goal 8: Achieve a DB fund rate of return greater than the asset allocation benchmark. 18

Goal 9: Provide a variety of ASA and DC fund options and achieve rates of returns equal or greater than the fund options' benchmark. 18

Goal 10: Ensure sufficient monies are available to meet cash flow requirements. 19

ADMINISTRATION GOALS & OBJECTIVES

Goal 11: Maintain stakeholder trust through effective 20

Administration Goals and Objectives

management, program management and quality management policies and programs needed to achieve goals. 22

Goal 13: Recruit, retain, train, and develop a work force needed to achieve goals. 24

Goal 14: Ensure that services are in place to support an effective operating cost structure needed to achieve goals. 26

Goal 15: Advocate for and implement legislative and regulatory policies needed to achieve goals. 27

Source: The Strategic Plan of the Indiana Public Retirement System (INPRS) for the period of July 1, 2011 – July 30, 2014.



Business unit objectives...

- A retirement system may set annual objectives across operational, investment, member service and compliance functions as a subset of a broader set of goals.

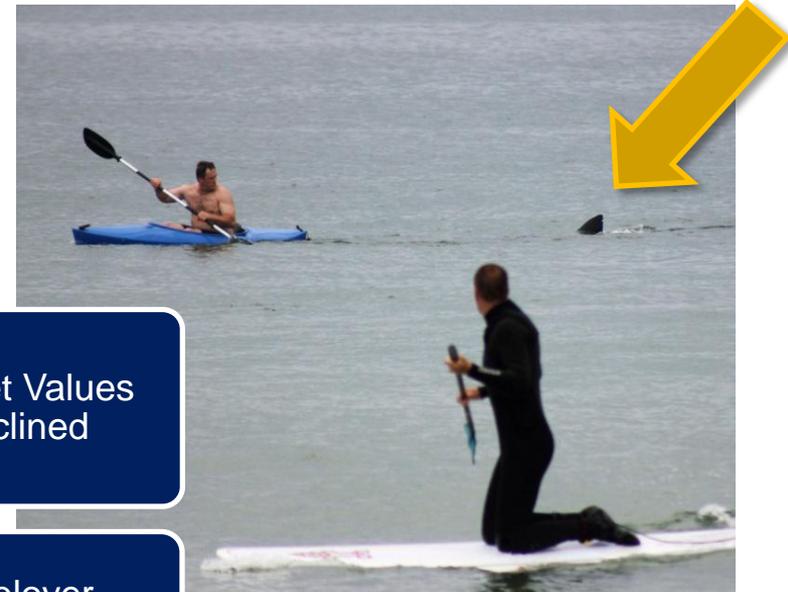
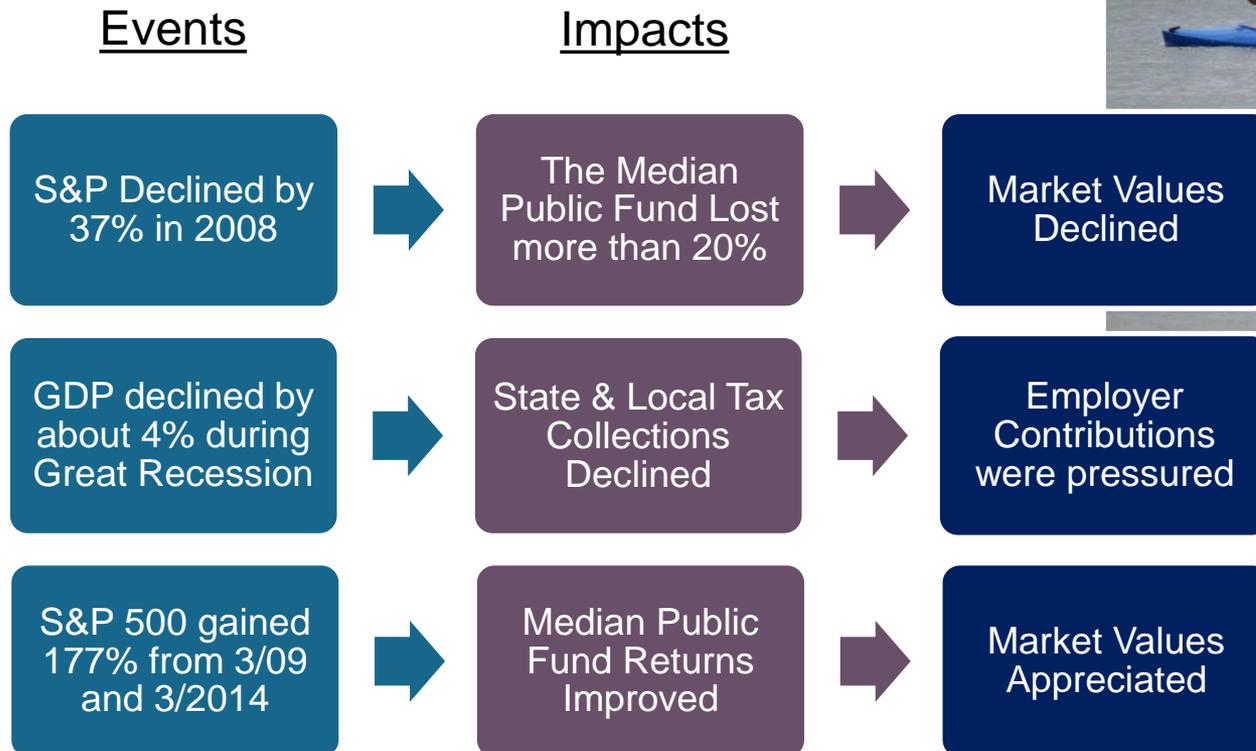
Administrative Objectives	Measure
Process 100% of Pension and other Benefit Payments on Pay Date	Processing Timeliness (%)
Investment Objectives	
Net of Fee 3-Year Annual Rate of Return Meets Benchmark	Net Annualized Returns (%)
Member Service Objectives	
Call Center Answers 80% of Calls in 30 Seconds Or Less	Avg. Wait Time (seconds)
Audit & Compliance Objectives	
Annual Audit completed with no Material Control Exceptions	Unqualified Opinion

Notes: Sample retirement system business unit objectives.



Effective monitoring includes assessment of external events that may impact results...

- Trustees factor measurable external events into their assessment of results.



Effective monitoring and decision making requires assessment of the external environment...

Global Outlook for Growth of Domestic Product

	2014 Actual	2015–2019 Projected	2020-2025 Trend
U.S.	2.2%	2.4%	1.9%
Europe	0.9%	2.1%	1.5%
All Mature Economies*	1.8%	2.3%	1.8%
Emerging & Developing	6.2%	4.5%	3.7%



Source: The Conference Board, November 2014. *Mature economies include U.S., Europe, Japan and other mature economies. Growth rates are annualized.

U.S. Inflation

Inflation Measure	50 Year Average	November 2014
Core CPI	4.1%	1.7%

Source: J.P. Morgan Asset Management.

"America will do well to grow by 3% (in 2014), Japan by 2% and the euro zone by 1.2%. Most emerging economies will do better than that, but the gap is closing"
 –The Economist Intelligence Unit, The World in 2014



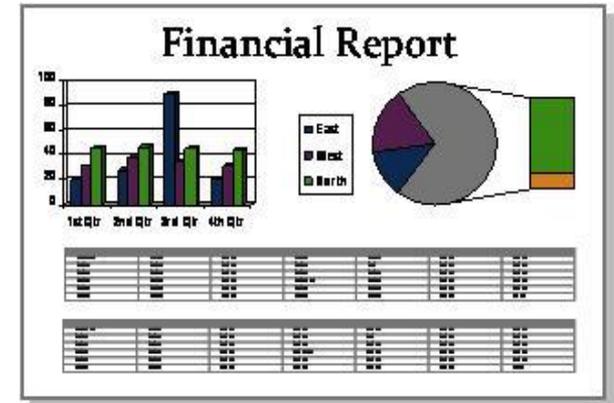
Monitoring Performance and Risk

"In God we trust, all others bring data."
–W. Edwards Deming

Monitoring: Reports to the board “bring the data”...

Effective reporting enables board monitoring

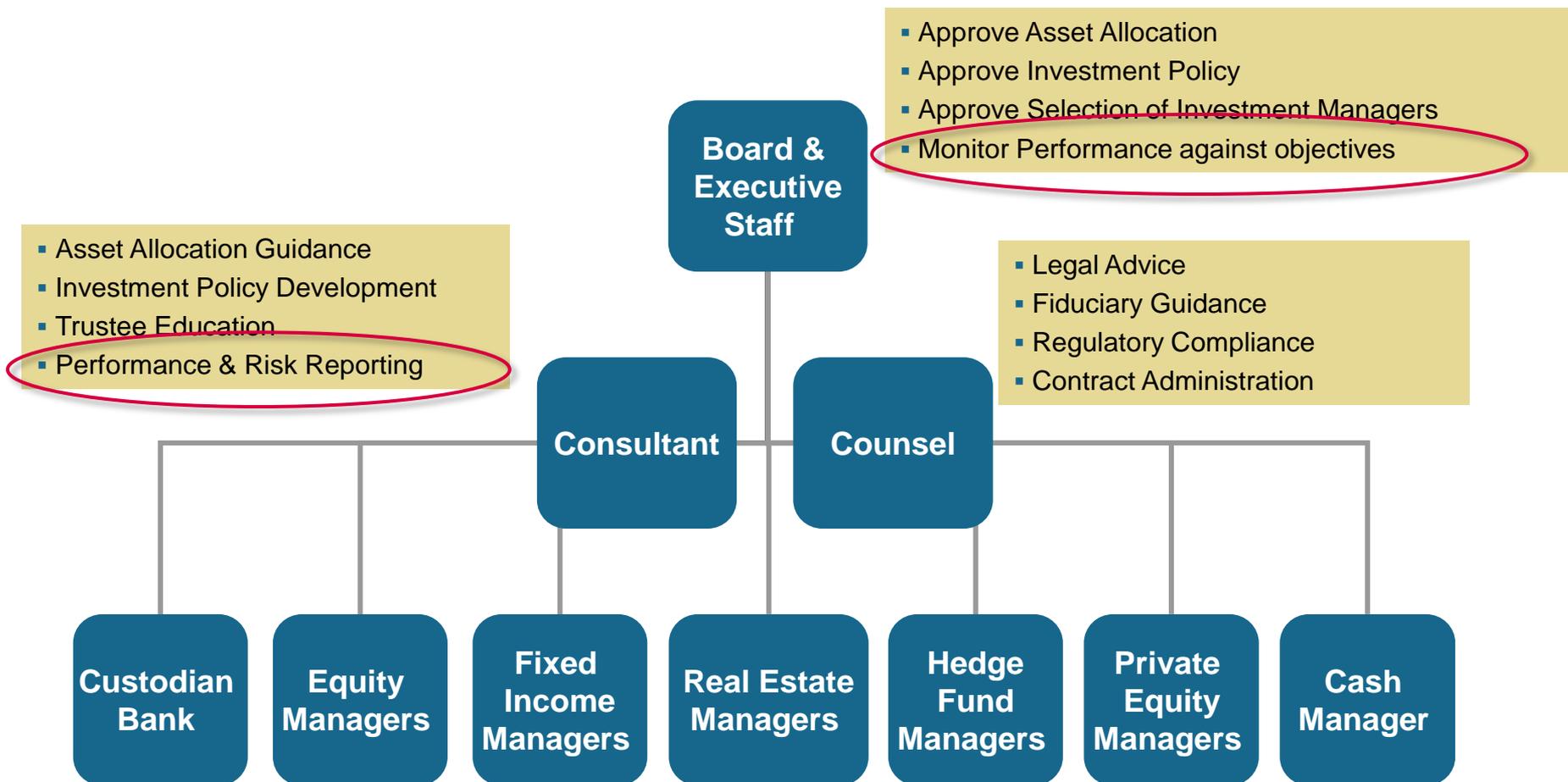
- Actuarial Report
- Administrator/Executive Director’s Report
- Annual Report
- Counsel’s Reports (may be verbal)
- Audited Financial Statements
- Comprehensive Annual Financial Report (CAFR)
- Investment Consultant’s Report
- Custodian’s Report
- Investment Managers’ Reports
- Member Correspondence



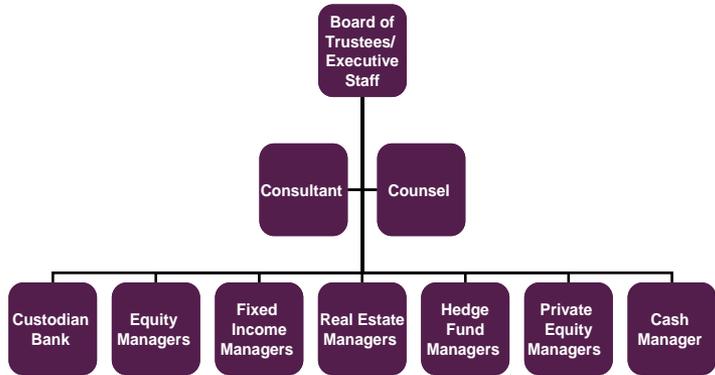
Note: Not all inclusive.



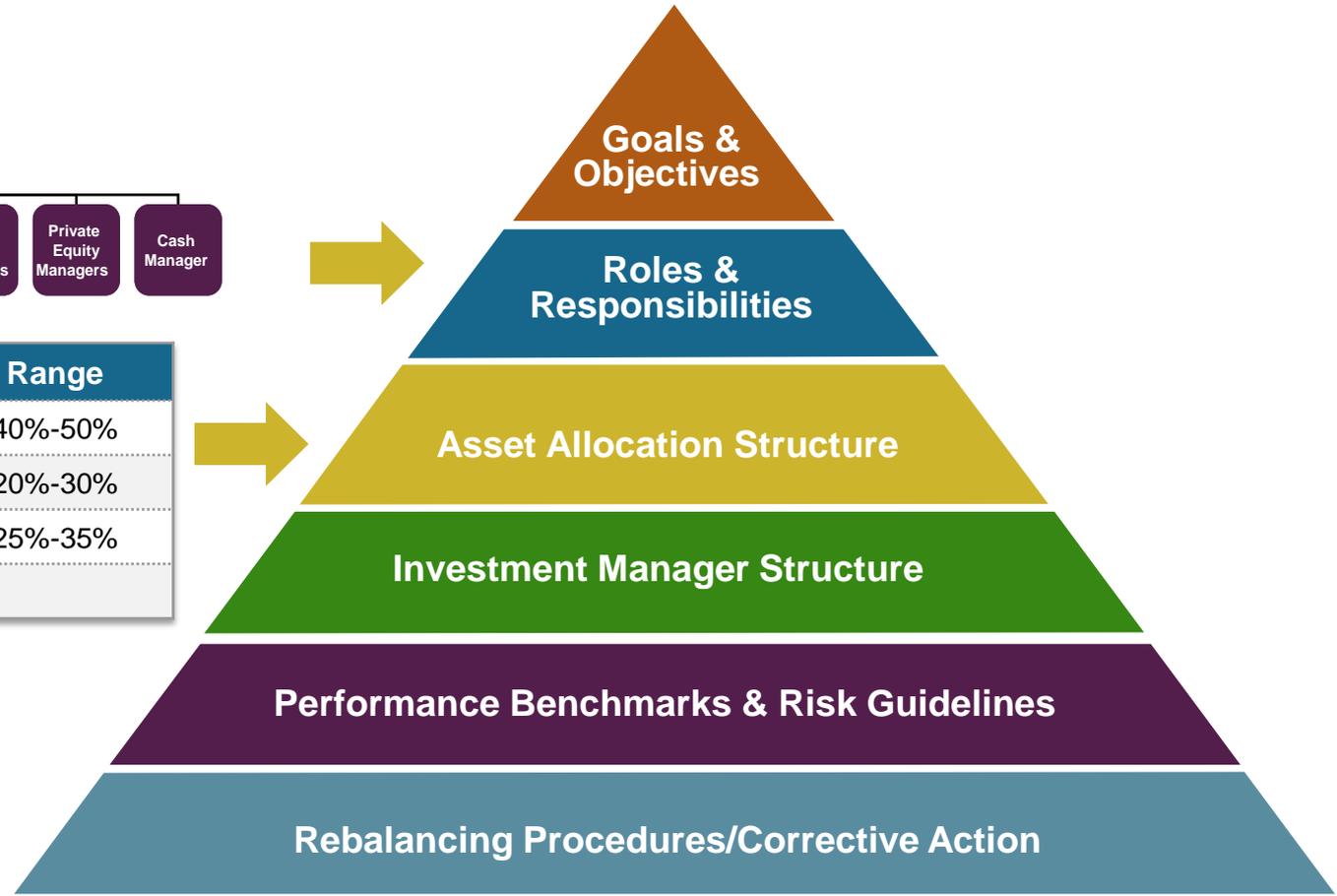
Board oversight is enabled by reporting from advisors and service providers...



Retirement systems document goals, risk tolerances and reporting requirements in the investment policy...



Asset Class	Target	Range
Equities	45.0%	40%-50%
Fixed Income	25.0%	20%-30%
Alternatives	30.0%	25%-35%
Total	100.0%	



Monitoring performance and risk...

- Effective investment monitoring requires assessment of absolute and relative net of fee investment returns adjusted for risk.

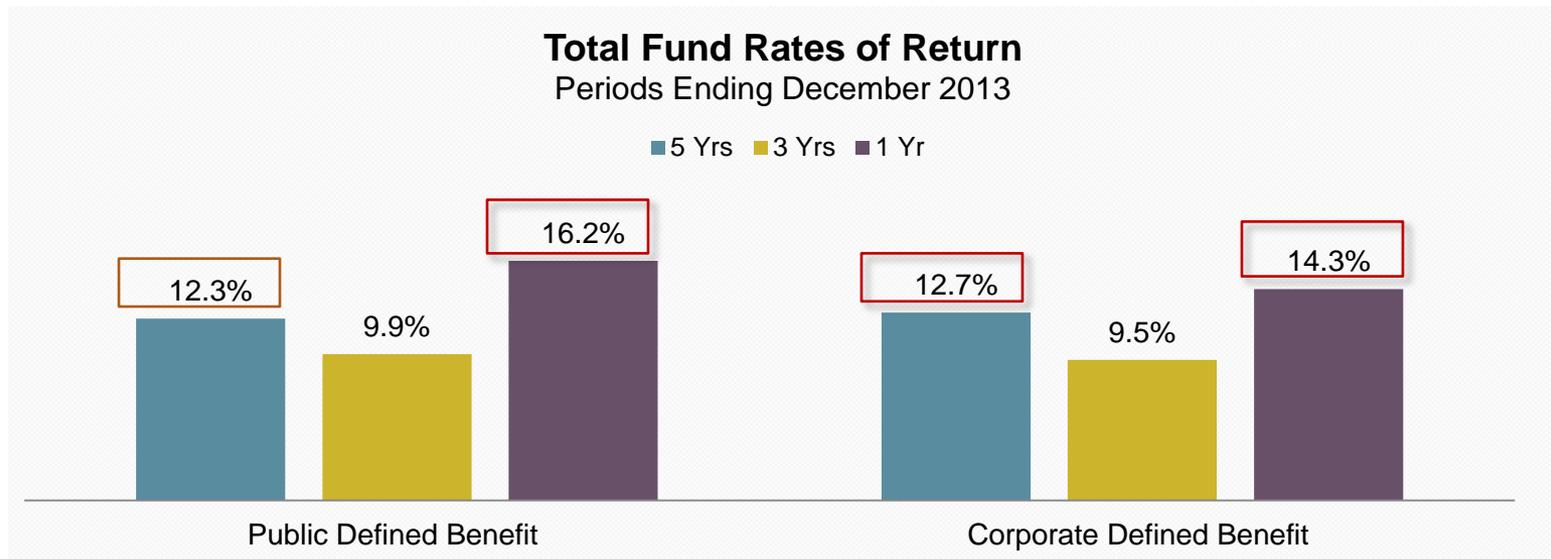
SAMPLE BENEFIT FUND MANAGER ALLOCATION AND PERCENTAGES FOR 12/31/12

	(\$000) Market Value	Policy		(Ending 12/31/12)		
		Actual	Target	5 Yrs	3 Yrs	1 Yr
Total Plan						
SAMPLE BENEFIT FUND	\$5,294,144	100.0%	100.0%	5.0%	9.8%	11.2%
<i>Median</i>				2.6%	8.8%	12.5%
<i>Index*</i>				3.8%	8.4%	8.6%
Equity Managers						
Equity All Cap						
Manager 1 (EACC)	\$149,732	2.8%				
<i>Russell 3000</i>						
Equity Large Cap						
Manager 2 (ELCG)	\$194,210	3.7%		3.4%	11.5%	15.2%
<i>Median</i>				2.5%	10.5%	15.6%
<i>S&P 500 Growth</i>				3.4%	11.3%	14.6%
Manager 3 (ELCV)	\$177,271	3.3%		1.5%	9.5%	17.5%
<i>Median</i>				1.4%	10.1%	16.3%
<i>Russell 1000 Value</i>				0.6%	10.9%	17.5%
	\$371,481	7.0%	12.9%	0.7%	10.3%	16.4%
<i>S&P 500</i>				1.7%	10.9%	16.0%



Performance Measurement: Peer Comparisons

- Peer comparisons are useful assessment tools. However, results should be adjusted for differing plan characteristics and risk exposures.



Source: Wilshire Median Returns.

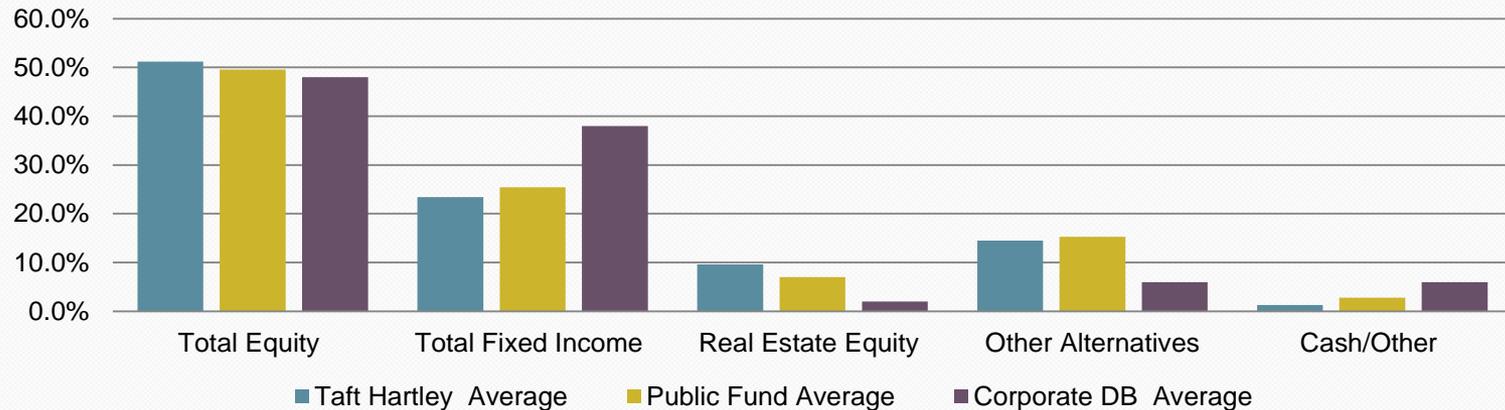


Asset Allocation: Peer averages and medians reflect differing plan characteristics, objectives and risk tolerances...

	Total Equity	Total Fixed Income	Real Estate Equity	Alternative Investments	Cash / Other
Public Fund Defined Benefit Average	49.6%	25.4%	7.0%	15.3%	2.8%
Corporate Defined Benefit Average	48.0%	38.0%	2.0%	6.0%	6.0%
Taft-Hartley Defined Benefit	51.2%	23.4%	9.6%	14.5%	1.3%



Asset Allocation: Peer Comparison



*Sources: (1) Taft-Hartley: Q3 2013: MCG; (2) Public Funds: NASRA Survey FY 2012; (3) Corporate DB: JP Morgan 2012 year end.



Monitoring includes risk assessment. Breaking risk into categories facilitates delegation and measurement ...



Operational Risk—Risk of loss resulting from inadequate or failed internal processes, people and systems or from external events.

Market Risk—Risk related to adverse movement in market factors, such as asset prices, currency or interest rates.

Credit Risk—Risk of loss due to failure of obligors to honor their payments.

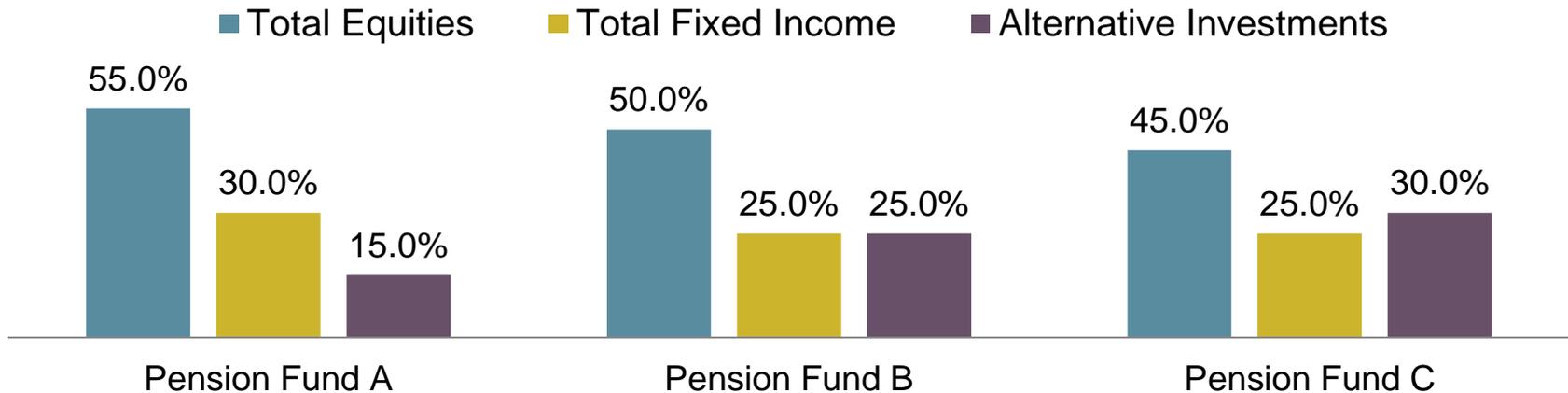
Asset/Liability Risk—Risk that liquidity will not be adequate to meet operational requirements or financial obligations.

“If you can’t measure it, you can’t manage it”
—Various



Asset Allocation Scenarios: Establishing a balance between expected return and risk...

Asset Allocation Structure*



Expected Return (A)	7.29%
Expected Return (G)	6.61%
Standard Deviation	12.09%
Sharpe Ratio	0.45

Expected Return (A)	7.63%
Expected Return (G)	6.99%
Standard Deviation	11.83%
Sharpe Ratio	0.48

Expected Return (A)	7.63%
Expected Return (G)	7.04%
Standard Deviation	11.28%
Sharpe Ratio	.51

Note: Hypothetical asset allocation data. For illustrative purposes only. Expected Return (A) is arithmetic expected return. Expected Return (G) is geometric expected return. Expected returns do not include factor in the net of fee impact of active investment management or liquidity characteristics.



Examples of risk measures...

- A board's assessment of results is not complete until it considers risks taken.

Sample Risk Measures



Market Risk	Credit Risk	Operational Risk	Asset/Liability Risk
▪ Standard Deviation	▪ Credit Rating	▪ Failed Transactions	▪ Unfunded Liability
▪ Beta	▪ Default Rate	▪ Audit Exceptions	▪ Funded Percentage
▪ Tracking Error	▪ Debt Coverage	▪ Overdrafts	▪ Projected Liability
▪ Sharpe Ratio	▪ Capital Adequacy	▪ Compliance Failures	▪ Margin



Cost effectiveness is a key performance measure...

- Cost-effectiveness measures include:
 - Total costs and year-over-year changes thereto
 - Unit costs, including costs per plan participant
 - Asset-weighted expenses (% of plan assets)
 - By category or in the aggregate.

- Factors that may impact costs include:
 - Large systems with greater buying power may incur lower unit costs
 - Allocations to alternative investments may increase fees
 - Utilization of passive investment strategies will drive down expenses
 - Plans that seek to provide higher quality services may incur higher operational costs.



Defining Success

Defining Success: Performance Dashboard

Funded Ratio

CY 2014 Result:



- Completed actuarial report
- Funded ratio improved by 1.1%

Net Annualized Investment Returns

CY 2014 Result:



- Net Annualized 1 and 3 Year Returns exceeded benchmark

Benefit Payment Processing

CY 2014 Result:



- Processed 100% of payments to members on pay date

Member Satisfaction

CY 2014 Result:



- 87% of members ranked service “good” or “excellent”

Unfunded Liability

CY 2014 Result:



- Unfunded liability declined by \$14 million or 0.6%

Net Assets Available for Benefits

CY 2014 Result:



- Net assets increased by \$28 million

Source: [NCPERS Best Governance Practices](#), April 2012. Cost-effectiveness is implicit in all key measures.



Defining Success: Balanced Scorecard

Administration	Annual Result	Trend
Completed Annual Actuarial Report by December 31	✓	Neutral
Processed 100% of Pension and other Benefit Payments on Pay Date	✓	Positive
Investments		
Net of Fee 3-Year Annual Rate of Return Meets or Exceeds Benchmark	✓	Neutral
Completed Investment Policy Statement Review	✓	Neutral
Member Services		
Call Center Answered 80% of Calls in 30 Seconds Or Less	✓	Neutral
85% of More of Surveyed Members Rated Service "Good" or "Excellent"	✓	Positive
Audit & Compliance		
Annual Audit found no Material Exceptions (Unqualified Opinion)	✓	Neutral
Obtained IRS Letter for Amended and Updated Plan Document	✓	Positive



Key Performance & Risk Measures: Examples

Report Example: Financial and actuarial measures...

Actuarial Measures

Funded Ratio

- INPRS membership was 447,651 as of June 30 , 2012. There were 230,703 active members, 126,813 benefit recipients, 27,887 terminated vested members, and 62,248 terminated non-vested members.
- As of June 30, 2012, the date of the most recent actuarial valuation, the aggregate INPRS (excluding the TRF Pre-1996 Account Pay-As-You-Go plan) funded ratio was 81.2 percent. This represents a decrease of 3.7 percentage points from the 84.9 percent funded ratio as of June 30, 2011. The decrease was primarily due to the reduction in the interest rate/investment return assumption from 7.0 percent to 6.75 percent.

Source: Indiana Public Retirement System 2012 Comprehensive Annual Financial Report



Strategic Plan example: Investment performance measures...

7.2 Performance Evaluation Factors*

The key factors to be used in the analysis of the investment performance of the Retirement Funds include:

**Net Annualized
Investment Returns**

1. Net of fees, 10-year rolling annual rate of return equal to the target rate of return for the Retirement Funds.
2. Net of fees, 1-year and 3-year rolling investment rate of return of the Retirement Funds, no less than a weighted average of benchmark indices which best describe the Retirement Funds' asset allocation.
3. Net of fees, 3-year and 5-year Sharpe Ratio of the Retirement Funds, no less than a weighted average of benchmark indices' Sharpe Ratio which best describe the Retirement Funds' asset allocation.

Source: Indiana Public Employee Retirement System



Investment compliance measures...

Risk Measures

Account Compliance Summary

Alerts:	0
Warnings:	0
Passes:	6

ABC1 DOMESTIC EQUITY - CLIENT DEMO

Production Date: 08/24/2012

Securities + Cash	152,958,711.45	Base Currency	USD	Net Assets	153,140,538
Rule Name		Limit Type	Limit Value	Result	Result Status
<u>Asset Measures</u>					
1	AssetMeasure: AssetMeasure_Funds_Preferred_Denominator			152,958,711.45 Value	Pass
<u>Asset Type</u>					
2	LMCS not permitted	Maximum	0	0 Num Bkts	Pass
3	No more than 5% held in Convertibles and Preferreds	Maximum	5.00%	0.00 %	Pass
4	No more than 5% of the Fund held in securities with a market cap less than \$1bln	Maximum	5.00%	1.29 %	Pass
5	Short Sales are not permitted	Maximum	0.00%	0.00 %	Pass
<u>Credit Quality</u>					
6	All Convertible and Preferred Securities should be rated above BBB/Baa	Maximum	0.00%	0.00 %	Pass

Source: State Street



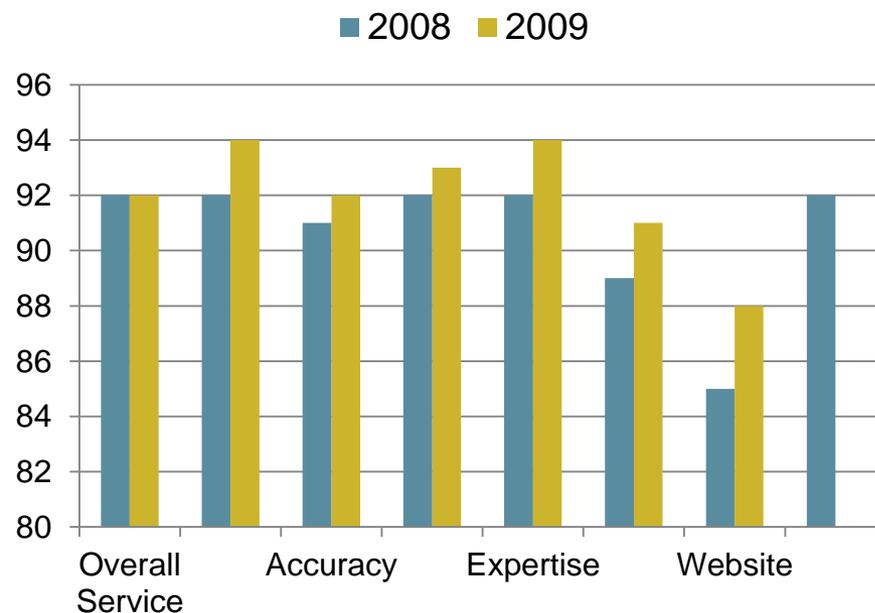
Measuring customer service...

2009 Customer Service Survey Results

Ratings for the eight survey questions How do you rate...	Excellent (1)	Good (2)	Fair (3)	Poor (4)	Don't Know (5)
The overall quality of service?	63%	27%	3%	3%	4%
The timeliness of services PERS provides?	61%	28%	3%	3%	5%
PERS' ability to provide services correctly the first time?	61%	26%	3%	4%	6%
PERS' helpfulness?	63%	25%	3%	3%	6%
The knowledge and expertise of PERS employees?	57%	28%	3%	2%	10%
The availability of information at PERS?	57%	29%	5%	3%	6%
The PERS website?	21%	19%	5%	1%	54%
Our service in the past year compared to previous years?	49%	24%	3%	3%	22%

Member Satisfaction

Percent of respondents rating "Excellent" or "good" (the state's Key Performance Measures do not include the "Don't Know" response; the numbers in the graph have been rebaselined to exclude those responses)



Source: Oregon Public Employees Retirement System—Perspectives Vol. 34., No 3, December 2009



Measuring the Board: Board self-evaluation...

Criteria	5 Always	4 Almost Always	3 Some Times	2 Almost Never	1 Never
1. The Board knows and understands the plan's mission and reflects this understanding when addressing key issues throughout the year.					
2. The Board engages in long-range strategic thinking and planning.					
3. The Board has achieved what it set out to accomplish the past year.					
4. The Board stays abreast of issues and trends affecting the plan, using this information to assess and guide the organization.					
5. The Board conducts a comprehensive evaluation of the administrator/executive director annually.					
6. The Board ensures that new Board members receive a prompt, thorough orientation.					

*Notes

•Partial self-evaluation. Questions 1 – 8 of 1 – 26

•Source: Missouri Department of Transportation and Highway Patrol Employees' Retirement System (MPERS).



Takeaways

Reporting and Measurement Checklist

Set Achievable Goals, Risk Tolerances and Risk Measures	X
Incorporate Goals and Measures into Business Plans, Policies and Contracts	X
Communicate Goals, Measures and Accountabilities to Stakeholders	X
Delegate Responsibility for Day-to-Day Measurement to Appropriate Groups	X
Factor External and Uncontrollable Events into Assessments	X
Communicate Results to Stakeholders	X
Periodically Benchmark Performance relative to Peers and Best Practices	X
Include Risk Measures and Control Exceptions in Monitoring Process	X
Use Results as basis for Continuous Improvement and Corrective Action	X



Key Takeaways

- Set ambitious, but achievable goals and risk tolerances.
- Delegate monitoring and reporting on specific measures through policies, contracts and job descriptions.
- Develop specific measures across administrative, investment, benefits and compliance functions.
- Include measurable goals and objectives in business plans, policies and contracts.
- Factor the impact of external events and uncontrollable variables into assessment of results.
- Recognize exceptional results and consider corrective action where outcomes do not meet targets.



Key Takeaways

- Include key risk measures and monitoring of control exceptions in monitoring of system effectiveness
- Require executive summary reports that inform the board of “why” and “how” results were achieved
- Communicate performance expectations down and across the organizational structure
- Conduct assessments, peer reviews and benchmarking exercises using key measures
- Use measurable results as basis for continuous improvement.

