South Dakota Retirement System

MANAGING SDRS:
ACTUARIAL SOUNDNESS

BOARD OF TRUSTEES
POSITION PAPER
OCTOBER 2016

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INTRODUCTION

In order to meet its key objective of managing SDRS within fixed contributions and not subject its participating employers to the risk of higher future contributions, the SDRS Board of Trustees relies on current and accurate information on the projected long-term costs of SDRS benefits to judge the soundness and sustainability of SDRS. This information is provided by an annual analysis, referred to as the Actuarial Valuation.

This paper discusses the disciplined approach SDRS follows in the Actuarial Valuation process and the SDRS commitment to actuarial soundness. Throughout this document terms, such as Actuarial Valuation, Experience Analysis, and certain other terms defined in South Dakota Codified Law related to SDRS or in the attached SDRS Funding Policy, will be capitalized for emphasis.

ACTUARIAL SOUNDNESS

The ultimate goal of any retirement plan is actuarial soundness. Actuarial soundness means that the plan will accumulate assets from employer and member contributions, and investment earnings on those contributions, which will be sufficient to pay the plan benefits. However, actuarial soundness must consider that many variables will ultimately determine the cost of the benefits, the plan has a very long time horizon, and benefits will be paid for decades into the future for current and future members.

The SDRS Funding Policy defines actuarial soundness for SDRS as:

- The fixed, statutory contributions are sufficient to fund the cost of future benefits
- The SDRS assets are equal to or greater than the value of accumulated benefits (referred to as Funded Ratios)

In addition, the Board has established specific objectives to judge the actuarial soundness of SDRS. They include:

- Statutory contributions that equal or exceed the cost of SDRS benefits
- Funded Ratios of 100 percent or more
- No Unfunded Liabilities
- A Cushion maintained as a source of funds to offset unfavorable experience

Note that the Cushion is the excess of the fair value of assets over the actuarial value of assets (the expected value).

These objectives will not be met at all times or under all economic conditions, but the Board's goal is to achieve these objectives most of the time. The SDRS objectives represent a higher standard than is typically established for similar plans.

The SDRS Funding Policy is shown in Appendix A.

ACTUARIAL VALUATION

The process used to judge the actuarial soundness of SDRS is called an Actuarial Valuation. An Actuarial Valuation of SDRS is completed annually and is a complicated mathematical model that projects all benefits that will be provided by SDRS in the future for all current members. It is a snapshot of the funded position of SDRS at that time and provides the following information:

- The adequacy of the fixed, statutory contributions to fund the benefits
- A comparison of the System's current assets compared to the value of accumulated benefits (Funded Ratios)
- How the current year's experience compared to what was expected
- Trends in assets, the cost and value of SDRS benefits, and Funded Ratios

These projections require a number of actuarial assumptions about future unknown events.

ACTUARIAL ASSUMPTIONS

The Actuarial Valuation provides a projection of the benefits that will be paid from SDRS. This projection requires a determination of the likelihood that members will qualify for a retirement, death, disability, or termination benefit, the amount of the benefit, and how long it will be paid. It also requires a projection of the future employer and member contributions and the investment return on those contributions as well as current assets.

These projections are based on actuarial assumptions, the most significant of which include:

- The rate of investment return earned on SDRS assets
- Inflation
- Member pay increases
- Life expectancy for retirees and survivors
- Rates of:
    - Retirement
    - Disability
    - Death
    - Termination of employment

The first three assumptions are referred to as economic assumptions while the last two are referred to as demographic assumptions.

The results of the Actuarial Valuation are directly dependent upon the actuarial assumptions selected and may vary significantly based on alternate assumptions.

EXPERIENCE ANALYSIS

The actuarial assumptions are set to reflect the very long-term time horizon of SDRS and are adopted by the Board of Trustees based on the recommendations of the Approved Actuary and the results of an Experience Analysis.

An Experience Analysis is conducted periodically (every 5-7 years) and provides an in-depth multi-year review of the actual SDRS experience compared to each assumption. This information, along with prior Experience Analyses, quantifies the "fit" of each assumption with the actual experience and provides a basis for recommended changes by the Approved Actuary.

Recommendations by the Approved Actuary also consider expectations of future experience, particularly with regard to the economic assumptions, are based on professional judgment, and must follow rigorous professional standards of practice.

The future investment return assumption is the most powerful assumption. The long-term outlook of the South Dakota Investment Council, as well as other independent investment professionals, is a significant factor in the evaluation of most likely future investment returns.

The objective is to adopt actuarial assumptions that individually and collectively provide the best estimate of future experience so the projections of current and future costs of SDRS benefits are as accurate as possible.

OTHER ACTUARIAL STUDIES

Additional actuarial studies are made to confirm the accuracy of the calculations and provide additional independent advice. They include:

- An annual review of the reasonableness of the Actuarial Valuation results by an independent organization, including compliance with Actuarial Standards of Practice
- An in-depth parallel Actuarial Valuation by an independent organization every five years to replicate the results
- An annual review by the SDRS independent auditor
- Projections based on potential variability in the assumptions, plan terms, and membership

Before any benefit improvement recommendations are considered, an actuarial analysis of the effect of the changes is made. In addition, any benefit improvement must meet the Board policy for affordability as shown in the Funding Policy.

THE SDRS HISTORY OF ACTUARIAL SOUNDNESS

The SDRS funded status is shown in Appendix B at each Actuarial Valuation date since 1973. In the early years after consolidation, SDRS was not well funded but by 1986 SDRS first achieved the goal of fully funding all accrued benefits based on the fair value of assets. Since that time, SDRS has achieved that goal 80 percent of the time.

The fixed, statutory contributions to SDRS have been sufficient to fund the cost of SDRS benefits at each Actuarial Valuation date, except in 2009 after the great recession. Corrective actions initiated by SDRS and the market recovery resulted in achieving that goal in 2010 and every year since.

In 2013, SDRS first achieved its goal of having no Unfunded Liabilities and has achieved that goal every year since.

The average public retirement plan has substantial Unfunded Liabilities that are being funded over extended periods of up to 30 years or more, and has a Funded Ratio of approximately 70 percent.

CONCLUSIONS

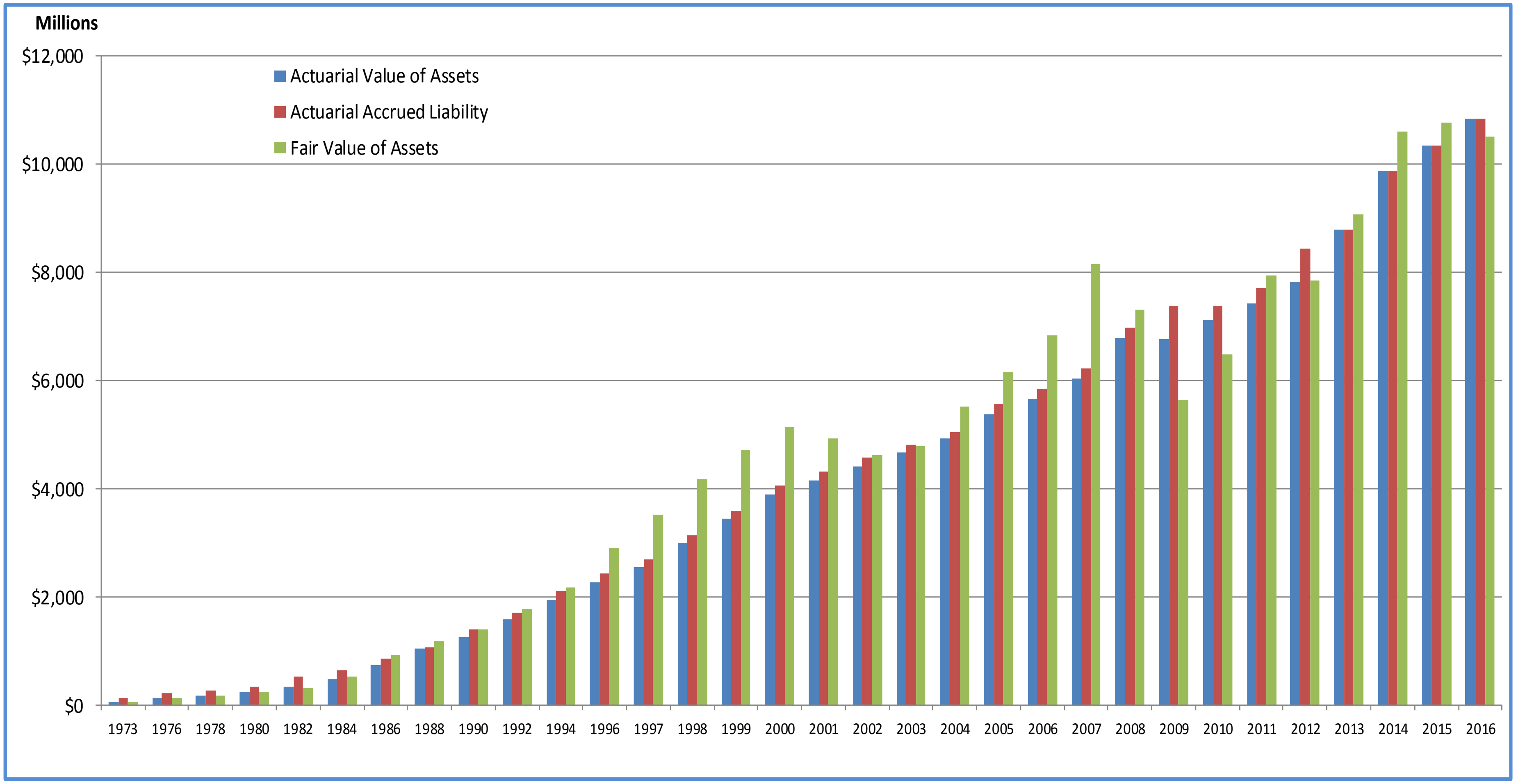
The Actuarial Valuation process is a key component for managing SDRS and provides the basis to objectively assess the actuarial soundness of SDRS and the success in meeting the objectives of the Board's Funding Policy.

APPENDIX A – SDRS BOARD OF TRUSTEES' FUNDING POLICY

Elements			
Funding Objectives (Discussed at the Quadrennial Funding Study presentations in 1999 and 2002, and formally adopted April 2006 and revised September 2013)	**Establishment of Cushion and Reserve** (The Reserve for Funding of Long-Term Benefit Goals, adopted in 1995 and later revised in 1998, 2001 and 2013)	**Policy Regarding Consideration of Benefit Improvements** (Adopted in 2004 and revised in 2013)	**Statutory Conditions That Would Require Corrective Action** (SDCL 3-12-122, refined during 2004 and 2013 Legislative Sessions)

• Funded Ratios (Assets ÷ Actuarial Accrued Liabilities)
  ○ Based on Fair (Market) Value of Assets – 100% or greater
  ○ Based on Actuarial Value of Assets – 100%
 	
• Ratio of Fair Value of Assets to Actuarial Value of Assets
  ○ Exceeds 100%, which results in a Cushion
 	
• Maintain a fully funded system
  ○ No Unfunded Liabilities under Entry Age Normal Cost method
  ○ If future Unfunded Liabilities created because of unfavorable experience, fully fund over a period not to exceed 20 years (amortization over a shorter period at Board discretion)
 	
• Statutory fixed contributions meet or exceed the actuarially required contribution each year
  ○ Normal Cost plus expenses when System is fully funded
  ○ Includes payment of Unfunded Liabilities over a period not to exceed 20 years if System not fully funded (amortization over a shorter period at Board discretion)
	• Cushion
	  ○ Excess of Fair Value of Assets over Actuarial Value
	  ○ Captures all net favorable experience
	
	• Actuarial Value of Assets
	  ○ asset value if all assumptions met
	  ○ minimizes volatility in actuarial measures
	  ○ limited to 80-120% of Fair Value of Assets
	  ○ set to Fair Value if no Cushion for five consecutive years
	
	• Reserve
	  ○ Delays recognition of asset gains (and liability experience gains/losses) over five years, but recognizes asset losses immediately
	
	• Both Cushion and Reserve provide resources to:
	  ○ Protect SDRS during times of unfavorable experience, and
	  ○ Pre-fund benefit improvements
		• After consideration of the expense of the benefit improvement the Fair Value Funded Ratio must be at least 120%
		
		• In addition, the following guidelines must be satisfied:
		  ○ Reserve is sufficient to fully fund the present value of the benefit improvement
		  ○ After consideration of the recommended benefit improvement all funding objectives must still be met
		
		• Proposed benefit improvement must be consistent with both the Board's long-term benefit goals and public policy with regard to retirement practices
			• Funded status report to Governor and Retirement Laws Committee (RLC) if any of the following exists:
			  ○ Contributions not sufficient to fund current benefit structure
			  ○ Funded Ratio (based on Fair or Actuarial Value) less than 80%
			  ○ Fair Value of Assets less than 90% of the Actuarial Value of Assets
			
			The report shall include an analysis of the conditions and recommendations for the circumstances and timing for any future benefit changes, contribution changes or any other corrective action, or any combinations of actions
			
			• If any of the above conditions exist for three consecutive actuarial valuations, the Board shall recommend such changes to the Governor and RLC, effective as soon as possible to improve the statutory conditions

APPENDIX B – SDRS HISTORY OF FUNDED STATUS



Fair Value Funded Ratio (%)	40%	57%	68%	76%	63%	81%	106%	111%	101%	104%	103%	120%	130%	133%	132%	126%	114%	101%	99%	109%	111%	117%	131%	105%	76%	88%	103%	93%	103%	107%	104%	97%
Actuarial Value Funded Ratio (%)	40%	57%	68%	76%	67%	75%	85%	97%	91%	94%	92%	94%	95%	96%	97%	95%	96%	97%	97%	98%	97%	97%	97%	97%	92%	96%	96%	93%	100%	100%	100%	100%
Funding Period (years)	41	19	19	9	28	18	37	6	46	16	38	30	23	22	21	20	20	20	20	20	20	20	20	20	N/A[1]	30	30	29	N/A[2]	N/A[2]	N/A[2]	N/A[2]
% of Actuarially Required Contributions Made	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	91%[1]	100%	100%	100%	100%	100%	100%	100%

[1] Fixed, statutory Member and Employer contributions were not sufficient to fund the Frozen Unfunded Actuarial Accrued Liability as of June 30, 2009.

[2] SDRS was fully funded with no Frozen Unfunded Actuarial Accrued Liability (based on the Actuarial Value of Assets) as of June 30, 2013 through June 30, 2016.