
**FINAL
REPORT
TO ORSC**



**ANALYZING RETIREMENT SYSTEMS'
30-YEAR PLANS
AND ALTERNATIVE
PENSION REFORM SOLUTIONS**

**William B. Fornia, FSA
Linda L. Bournival, FSA
R. Paul Schrader, ASA (Ret)**

July 2012



Contents

Chapter One: Executive Summary	3
Chapter Two: General Analysis	5
2.1 Overview of Study.....	5
2.2 ORSC Public Policy.....	6
2.3 Findings from Councilmember Interviews.....	7
2.4 General Overview of Ohio Pension Systems.....	10
2.5 History and Development of 30-Year Plans.....	11
2.6 Comparison of Ohio Systems with National Systems	16
2.7 Case Studies of US Pension Reforms	18
2.8 Issues Related to Defined Benefit versus Defined Contributions.....	26
2.9 Health Care and Connection with Pension Funding	30
2.10 Funding Policies	32
2.11 Health Care Benefits Available from Limited Resources	36
2.12 Legal Framework for Change	43
2.13 Actuarial Assumptions	46
2.14 Pooling, Coordination of Benefits, and Other Issues.....	56
2.15 Government Accounting Standards Board (GASB) Potential Impact	65
2.16 Disability.....	66
2.17 Methodology for Stress Tests, Including Development of “Worst Case”	67
2.18 Introduction to Review of Each System’s 30-Year Plan	70
Chapter Three: Findings on School Employees Retirement System of Ohio (SERS).....	73
3.1 System Overview.....	73
3.2 Analysis of Current Program	74
3.3 Proposed 30-Year Plan.....	78
3.4 Stress Testing of Proposed 30-Year Plan	83
3.5 Summary of Plan Provisions.....	88
3.6 Other Issues	92
3.7 Overall Findings and Recommendations	94
Chapter Four: Findings on Ohio Public Employees Retirement System (OPERS).....	95
4.1 System Overview.....	95
4.2 Analysis of Current Program	96
4.3 Proposed 30-Year Plan.....	101
4.4 Stress Testing of Proposed 30-Year Plan	107
4.5 Summary of Plan Provisions.....	113
4.6 Other Issues	116
4.7 Overall Findings and Recommendations	119

Chapter Five: Findings on State Teachers Retirement System of Ohio (STRS) 120

5.1 System Overview..... 120

5.2 Analysis of Current Program 122

5.3 Proposed 30-Year Plan..... 127

5.4 Stress Testing of Proposed 30-Year Plan 133

5.5 Summary of Plan Provisions..... 138

5.6 Other Issues 141

5.7 Overall Findings and Recommendations 142

Chapter Six: Findings on Ohio Police & Fire Pension Fund (OP&F)..... 144

6.1 System Overview..... 144

6.2 Analysis of Current Program 145

6.3 Proposed 30-Year Plan..... 150

6.4 Stress Testing of Proposed 30-Year Plan 155

6.5 Summary of Plan Provisions..... 160

6.6 Other Issues 164

6.7 Overall Findings and Recommendations 165

Chapter Seven: Findings on Highway Patrol Retirement System (HPRS)..... 167

7.1 System Overview..... 167

7.2 Analysis of Current Program 168

7.3 Proposed 30-Year Plan..... 173

7.4 Stress Testing of Proposed 30-Year Plan 178

7.5 Summary of Plan Provisions..... 183

7.6 Other Issues 186

7.7 Overall Findings and Recommendations 186

Chapter Eight: Summary of Analysis of 30-Year Plans and Future Considerations..... 188

8.1 Summary of Findings from Chapters Three through Seven..... 188

8.2 What-Ifs, Triggers, and Contingency Plans 189

8.3 Sustainability and Plan Design Issues..... 192

Exhibit A..... 201

Exhibit B..... 203

Exhibit C 205

Chapter One: Executive Summary

The Ohio Retirement Study Council (ORSC) engaged Pension Trustee Advisors and KMS Actuaries (PTA/KMS) to conduct an analysis and review of the 30-year funding plans approved by each of the five Ohio retirement systems. The review included an independent analysis of the changes recommended by the systems and the likelihood of those changes meeting the funding requirements of the systems. In addition, our analysis considered the important issues with regard to actuarial assumptions, funding standards, health care, individual accounts, pooling, coordination of benefits and alternative plan design approaches.

Major Findings and Recommendations

1. The goal of the 30-year plans proposed by the systems is full funding of the retirement plan over 30 years while providing reasonable health care benefits at no increased cost to the Ohio taxpayers. These plans are a major positive step and generally meet that goal. **Approval** of these plans, as contained in the recently passed Senate bills, **will put each of the five retirement systems in a much more solid financial position** than under current law.
2. The current Ohio pension system structure is solid and the 30-year funding requirement is an important feature. **Unlike the vast majority of states** throughout the country, the **Ohio taxpayer has not issued a “blank check”** for increased employer pension costs to compensate **for unfavorable investment returns** and other results.
3. We believe the twin objectives of **30-year retirement benefit funding and long-term health care solvency** are appropriate measures to judge the sustainability of both programs under the submitted plans, but **are only the minimum standard** for measuring appropriate funding requirements. We recommend strengthening the 30-year retirement benefit funding requirement to a 30-year declining period and working towards actuarial funding of health care benefits.
4. **We strongly encourage an immediate and disciplined mechanism to adjust for future unanticipated actuarial experience** (favorable as well as unfavorable). This mechanism at the very least should include limited pension system board discretion to adjust benefits or contributions as included in several of the Senate bills. A more rigorous alternative would be a flexible Cost-of-Living-Adjustment based on funded position.
5. Because the 30-year plans were designed (appropriately) to make the least amount of cuts to pensions consistent with the 30-year objectives, and investment returns since June 30, 2011 have been less than actuarial expectations, **it is likely that further adjustment will be required for SERS, STRS, OP&F and HPRS**. To avoid likely frequent future benefit changes, consideration should be given to providing greater cuts than currently needed to provide a margin for future adverse experience. Alternatively, future favorable experience could be “reserved” for the same purpose.

6. **We conducted “stress tests”** to the systems to consider what could happen over the next five years should investment returns be sub-par, as is projected by many investment advisors. These illustrations describe various possible additional pension cuts, and are based on a 25% probability of actuarial experience at this level, or worse.
7. **Systems should continue to monitor health benefits provided and modify them as necessary** to ensure long-term solvency of the health care fund. This may require significant structural changes as noted.
8. Any **further benefit changes may wish to focus on normal retirement approaching age 67 for non-safety workers and 57 for public safety workers** since extended retirement eligibility reflects the added cost of improving life expectancy and is beneficial to the long-term sustainability of both the retirement and health care programs.
9. We support the **efforts by the systems and the ORSC to deal with inefficiencies and inequities** in the current plan design that may contribute to unanticipated costs and a public perception of unreasonable benefits. Correcting these issues **will not alone solve the funding problems of the systems, but they will help and are worthwhile**. These issues have been identified and discussed in various sections of this report including sections 2.14 and 2.16.
10. **We support the continuation of defined benefit plans** for public employees in Ohio for the reasons noted in this report, including efficiency and costs. However, **we have also identified and discussed alternatives that may be considered in the future**. These may be reasonable future additions or alternatives to the plans developed by the systems. They are discussed at length throughout the report, and summarized in Chapter Eight.

We encourage the reader to consider these and other items while reviewing the entire report.

Chapter Two addresses global issues for Ohio retirement systems in general. We analyzed each system and their 30-year plans and provide the details of our analysis and recommendations in Chapters Three through Seven, followed by a summary of our findings in Chapter Eight.

It has been a privilege to work with the Council and the retirement systems. We thank them for their diligence and their reliable and complete information.

Chapter Two: General Analysis

Chapter Two provides background information with regards to the study, the important issues with regard to public retirement plan management, pension reform issues, comparison of Ohio practices, and the methodology for the assessment of each system's 30-year plan.

2.1 Overview of Study

The Ohio Retirement Study Council (ORSC) advises and informs the state legislature on all matters relating to the benefits, funding, investment, and administration of the five statewide retirement systems in Ohio.

Each pension system is required by law to submit a plan to the ORSC that is based upon becoming 100% funded within 30 years. With the recent investment decline, all five systems are in a position where some changes must be made in order to meet or stay within the 30-year funding requirement and preserve a reasonable funding of retiree health care benefits. Consequently, each has submitted a plan.

Pension Trustee Advisors and KMS Actuaries (PTA/KMS) were engaged by the ORSC to conduct an analysis and report on the following:

- Review the 30-year funding plans approved by each of the five Ohio retirement systems
- Analyze alternative plan design changes and compute the resulting actuarial cost for these plan design changes within parameters established by the systems and the ORSC
- Review retirement eligibility provisions and make recommendations regarding grandfathering these provisions for those nearest retirement while still maintaining a 30-year funding period for each plan
- Review economic assumptions for each system
- Review the funding methodology of the discretionary health care plans provided to retirees, including a review of the most recent GASB 43/45 valuation reports
- Review retiree health care plans' eligibility, benefit levels, subsidy levels and funding
- Identify options for individual member accounts for pension benefits and retiree health care benefits
- Identify areas where purchases can be pooled and services shared among the systems, including a review of the potential cost savings
- Identify alternative funding schedules to fully fund each system
- Make recommendations regarding the coordination of benefits available to retirees, including potential benefit offsets

These criteria were subcomponents of the following seven broad mandates:

- Review of H.B. 69 (-2 Version) Each of the systems has developed a 30-year plan. The major component of our assignment was to analyze and comment upon these plans. These are contained in Chapters Three through Seven of this report. The systems' plans have evolved over the past three years as financial conditions changed and they received more valuable input from their various stakeholders, including the legislature. Some of this input was in response to the discussions emanating from this study. The 30-year plans that we analyzed are the latest versions of the plans and benefit changes are consistent with the recently passed Senate bills
- Review of Economic Assumptions – Section 2.13
- Review of Health Care – Sections 2.9, 2.11, Chapter Eight, and throughout the chapters on the individual systems, Chapters Three through Seven
- Individual Accounts – Sections 2.7, 2.8, and Chapter Eight
- Pooling Purchases and Sharing Services – Section 2.14
- Unfunded Liability – Sections 2.10 and 2.15 and in Chapters Three through Seven
- Coordination of Benefits – Section 2.14

The five statewide retirement systems are:

School Employees Retirement System of Ohio (SERS) – Chapter Three

Ohio Public Employees Retirement System (OPERS) – Chapter Four

State Teachers Retirement System of Ohio (STRS) – Chapter Five

Ohio Police & Fire Pension Fund (OP&F) – Chapter Six

Highway Patrol Retirement System (HPRS) – Chapter Seven

PTA/KMS has met extensively with ORSC Councilmembers, including the five non-voting members representing each system. In addition, we have conducted two or more thorough meetings with each system, and in some cases, their actuaries, to completely understand each 30-year plan and issues considered in the development of such plans. Exhibit A identifies many of these meetings.

2.2 ORSC Public Policy

Proposed retirement system benefit changes to meet the 30-year funding policy would ideally be evaluated by the ORSC within the framework of agreed-upon public policy objectives that include:

- Measurement of acceptable funded status
- Trigger for changes
- Employer funding budget

- Member-employer cost sharing
- Income replacement objectives
- Inflation protection after retirement
- Minimum retirement eligibility requirements
- Benefit uniformity
- Risk assessment and allocation

Because of the linkage of the available funding of retiree health care benefits with the cost of retirement benefits, similar policy objectives would ideally be also developed for retiree health care benefits, including minimum benefits and desirable funding standards. This would enable the ORSC to evaluate the combined long-term impact of the recommended changes on both the retirement and health care benefits.

A well-defined public policy acts as a standard against which any proposal can be fairly analyzed. The absence of such a public policy makes any analysis more subjective and more difficult. Each pension system has developed its 30-year plan based on its own implicit public policy. These policies may differ from system to system and may differ from what ORSC believes is in the best interest of the public. ORSC is the entity most appropriately suited to establish public policy.

Recommendations

The current ORSC policy statements in Exhibit B appear to be dated, incomplete, and on occasion inconsistent with current practices and provisions. We recommend that the ORSC consider updating this policy as a framework to judge the current and future proposals. We recommend that the pension systems be asked for their input in developing this policy as they have likely given these issues considerable thought in the past four years as they have developed their 30-year plans.

2.3 Findings from Councilmember Interviews

Flick Fornia and Paul Schrader interviewed each of the voting councilmembers in January 2012, generally in their offices, and typically for 30-45 minutes. Exhibit B, attached, is the outline used to facilitate discussion. As noted above, ORSC had developed a formal “public policy” several years ago. However, this policy is no longer widely accepted and used. Our interviews did not follow the formal policy, but were very flexible to include all of the issues. There was not a complete consensus among councilmembers, but many findings were noteworthy.

General Philosophies Articulated by the Council

The councilmembers were generally in agreement that the defined benefit (DB) delivery model be preserved, but subject to management of the risk to the taxpayers of increased contributions. Some councilmembers articulated a personal preference for a defined

contribution (DC) model or hybrid model, but realized that the DB model had a long history, was very popular among the workforce, and would likely be preserved. Related issues are discussed in Section 2.8.

There was uniform concern about the sustainability of retiree health care benefits. Because health care benefits are subordinate to pension benefits in all systems, there is risk that as the pension benefits require a larger and larger share of the fixed contributions, health care benefits could become minimal and inadequate.

It was emphasized that change to retirement and health care benefits should be fair to both the workers and the taxpayers. As mentioned above, some councilmembers would have preferred the DC model; yet that could be a particularly painful transition for those in mid-career. Other councilmembers would not be opposed to increases in the employer contributions, but that was generally not considered fair to the Ohio taxpayers, who are currently under particular financial constraints.

Risk

We heard extensively of the concern with the risk of increasing employer contributions. This phenomenon is sweeping the country as public pension funds dig out from the investment losses from 2008 to 2009. Many jurisdictions are considering DC plans as a means to mitigate future risks of this happening again. Councilmembers do not want Ohio to be in the position where DB plan investment losses generate increased costs to taxpayers. If the DB plans can be structured in a manner to eliminate this risk, there would be no immediate need to consider a change to a pure DC approach.

There was general consensus that the current employer rates toward retirement and retiree health care should not be increased. Some desire for a potential decrease in the employer rates was espoused, although it was not a central finding, and is not a central theme of this analysis.

Increased employee contributions were generally viewed by the councilmembers as an acceptable recommendation.

System 30-Year Plans

Each of the systems has developed a 30-year plan. PTA/KMS' primary task is to review these plans, comment on their appropriateness, and make recommendations. In the interviews, we discussed the criteria against which the 30-year plans should be measured.

Most important was sustainability and actuarial solvency. Councilmembers do not want this problem to be passed onto future Ohio legislatures and future taxpayers. The 30-year plans must be robust and flexible enough to deal with an uncertain future.

The 30-year plans must also meet the public expectations for a retirement solution. Public workers and public worker retirement are important issues in Ohio, and these plans must offer viable solutions – viable in terms of costs as well as fair to the public sector workforce. The plans must preserve the commitments made to public employees.

One important specific area for modification was retirement ages. With longer life expectancies, a modest increase in retirement ages seems reasonable. But there was consensus that any delays in retirement eligibility be gradual rather than abrupt. There was a strong desire that there be very few “bright lines” or “cliffs” where one worker would have significantly different benefits than another worker, merely due to a small difference in age or service.

Because of the long term nature of the pension systems and desire to adopt a permanent solution, there was considerable agreement in the need for a mechanism of ongoing review and additional corrective action or repeal of corrective action. For example, there is some desire for specific authorities to the pension system boards to make further benefit or member contribution adjustments as necessary, without needing to enact further legislation. If experience is less favorable than expected, the systems might have a policy to take the following actions:

- Increase the amortization period back up to 30 years
- Reduce funding to health care up to a certain minimum amount
- Increase member contributions up to a certain amount
- Reduce health care benefits up to a certain amount

Likewise, should experience turn out to be more favorable than anticipated, there should be in place a schedule of actions and priorities that can be taken by the boards. For example:

- Improve retirement plan funding ratios
- Improve health care funding
- Improve health care benefits back up to a certain level
- Repeal member contribution increases

Concern was expressed about ancillary practices that are causing unexpected costs or inequities among the members. These issues are not the focal point of this analysis, but are important equity and public perception issues and should be considered:

- Rehiring of retirees
- Increases in final average pay
- Disability determinations and benefits
- Deferred Retirement Option Plan (DROP)
- Definition of Allowable Salary
- Service Credit
- Credited Service Purchase

Significant concern was expressed that the health care benefits are being shortchanged. The pension benefits are targeted to become fully funded after 30 years, but health care benefits might only be projected to be solvent for a much shorter period. This inconsistency is worrisome to the ORSC. Thirty-year plans must adequately address health care in addition to pension.

Potential Additional Interviews

There was not a strong expressed desire for PTA/KMS to interview other stakeholders and interested parties. In general, the legislative and gubernatorial composition of the ORSC combined with the input from the system directors reflects a fair cross section of those most concerned and knowledgeable of Ohio's public pensions. Other parties identified included:

- Think tanks, such as Buckeye Institute and Progress Ohio
- Minority leaders of Ohio House and Senate
- Public Employee Retiree Institute
- Some labor leaders
- Human Resource departments of select Ohio public employers
- Governor's office

2.4 General Overview of Ohio Pension Systems

Ohio's five statewide retirement systems have total assets totaling over \$165 billion as of the 2011 actuarial valuation dates. They provide retirement, disability, and survivor coverage to over 1.5 million members, retirees, and their beneficiaries. Additionally, all five retirement systems have discretionary authority to offer comprehensive hospital, medical, and prescription drug coverage to retirees and their dependents. Participants in the retirement systems are not covered under Social Security with respect to such public employment. These are defined benefit retirement plans, funded through contributions from both the members (employees) and the employers.

Two of the systems (OPERS and STRS) also offer optional defined contribution plans or combined plans with a less significant defined benefit plan and a companion defined contribution plan. Since these optional plans were mandated by the Legislature approximately 10 years ago, participation has been low.

Actuarial calculations are made each year to determine the annual cost to pre-fund the retirement, disability and survivor benefits. The boards of the pension systems then determine how much of the total contribution will be allocated for these benefits, and how much is allocated for health care benefits. Based on the amount allocated for health care, the boards also determine the amount of health care benefits that are currently provided, balancing long-term solvency of the health care program with the desire to provide current health care benefits.

Like most systems in the country, investment returns for the last decade and particularly in late 2008 and early 2009 weakened the funding positions of the pension systems. Some of the systems had very little cushion to absorb the decline and were not particularly well funded prior to the investment losses. All systems are cutting back on the amount allocated to health care benefits, and if reductions are not made in retirement benefits, less and less (or none in some cases) will be available for retiree health care. Ultimately those health care benefits will by necessity be substantially reduced.

OP&F and HPRS cover public safety personnel, as do certain subsets of OPERS. In general, full retirement for these individuals is available at age 48 with 25 years of service. Non-safety personnel in OPERS as well as SERS and STRS members are eligible for full retirement after 30 years of service or at age 55 with 25 years of service for SERS and STRS.

The systems will replace about 66% of final average pay for general employees who retire with 30 years of service. Public safety employees who retire with 25 years of service will receive replacement income of 60-61% of final average pay.

All plans provide 3% cost of living adjustments to the base benefit, surviving spouse benefits, disability benefits and other features. More detail on each program is included in their individual chapters.

2.5 History and Development of 30-Year Plans

Various sections of the Ohio Revised Code specify that each pension system “shall establish a period of not more than thirty years to amortize the ... unfunded actuarial accrued pension liabilities”. Furthermore, in general,

“If in any year the period necessary to amortize the unfunded actuarial accrued pension liability exceeds thirty years, as determined by the annual actuarial valuation required by section ... of the Revised Code, the board, not later than ninety days after receipt of the valuation, shall prepare and submit to the Ohio retirement study council and the standing committees of the house of representatives and the senate with primary responsibility for retirement legislation a report that includes the following information:

- (A) The number of years needed to amortize the unfunded actuarial accrued pension liability as determined by the annual actuarial valuation;
- (B) A plan approved by the board that indicates how the board will reduce the amortization period of unfunded actuarial accrued pension liability to not more than thirty years.”

Several of these “30-year plans” have been developed over recent years. In June 2009, ORSC requested that each system develop a plan in accordance with S.B. 82, which requires that the system’s funding period be within 30 years. Each system determined a comprehensive plan including the actuarial impact of potential changes in contributions and/or benefits. Several proposed changes to the plans were recommended to the ORSC as a result of the collaborative

efforts of the ORSC staff and each retirement system. Increased employer contributions were not considered an acceptable solution.

The histories of the 30-year plans for each system are summarized below.

Ohio School Employees Retirement System (SERS)

- 2008, Senate Bill 148 made changes increasing age and service retirement eligibility, but only for those hired after May 14, 2008
- August 2009, SERS Board recommended to ORSC two additional years of age requirements for normal retirement (67&10 or 57&30) for those retiring after August 1, 2015
- In response to February 2012 Senate requests, SERS “grandfathered” the current retirement requirements for those with 25 years of service as of the transition date, which was delayed from August 1, 2015, to August 1, 2017. This was passed by the Senate as SB 341 in May.

Ohio Public Employees Retirement System (OPERS)

- July 2008, OPERS identified 12 initiatives to comprise 2009 funding plan
- September 2009, OPERS presented their “Alternative Plan Design” to ORSC, which:
 - Changed the following calculations to be actuarially neutral
 - Early retirement factors
 - Intersystem transfer calculations
 - Most service purchase calculations
 - Reduced benefits for those hired after date of legislation, as well as current members, subject to grandfathering (to be determined later)
 - Delayed age and service retirement eligibility by 2 years
 - Reduced multiplier from 2.2% for first 30 years and 2.5% beyond to 2.2% for first 35 years and 2.5% beyond
 - Eliminated minimum benefit calculation
 - Reduced COLA (3% or CPI) for all future retirees
 - Increased final salary averaging (FAS) period from 3 years to 5 years
- November 2009, OPERS Board approved transition plan and specified grandfathering recommendations
- 2009-2012, OPERS disseminated the OPERS Board recommended changes to members and retirees
- In response to February 2012 Senate requests, OPERS modified the “grandfathering” for those in their group B, who are between five and ten years from retirement, proposed a “Contribution Based Benefit Base” to mitigate salary spiking, increased the minimum earnable salary, and expanded Board discretion. This was passed by the Senate as SB 342 in May, but the Board discretion was not included in the bill as passed.

State Teachers Retirement System of Ohio (STRS)

- September 2009, STRS presented a 30-year funding plan to the ORSC, which was estimated to reduce the funding period from infinite to 33.4 years. The recommended plan:
 - Increased member and employer contributions by 0.5% per year, beginning July 1, 2011 for members and July 1, 2016 for employers, to a total of 2.5%
 - Increased final salary averaging (FAS) period from 3 years to 5 years beginning August 1, 2015
 - Increased years of service required for retirement, beginning August 1, 2015
 - Changed the benefit formula to 2.2% per year of service for the first 30 years of service; 2.5% thereafter, beginning August 1, 2015; eliminated the 35-year enhanced benefit
 - Reduced COLA to 2% for current retirees and 1.5% for members retiring after July 1, 2011
- October 2010, STRS revised the 30-year plan as follows:
 - Implemented a transition period to increase eligibility to 35 years of service
 - Delayed COLA of 2% for members retiring after July 1, 2011 beginning 36 months after date of retirement
 - Board seeks authority to set a three-, four-, or five-year FAS
- January 2011, STRS presented a revised 30-year funding plan as follows:
 - Eliminated the provision to increase employer contributions and further amended the increase in member contributions to 3%, phased-in 1% per year beginning July 1, 2012, with Board authority to increase to 4%
 - Increased age and service requirements to include a minimum age of 60 and 35 years of service beginning August 1, 2023
 - Benefit formula of 2.2% per year of service for all service (eliminated the 2.5% calculation for years 31 and above)
 - FAS calculation would be on the five highest years of earnings beginning August 1, 2015
 - Delayed COLA of 2% for members retiring after July 1, 2012, beginning 60 months after the date of retirement
- March 2012, STRS revised actuarial assumptions, which created the need to revise the 30-year funding plan
- April 2012, STRS revised the 30-year funding plan, which estimated to reduce the funding period from infinite to 36 years. This plan passed the Senate in May as SB 342. The plan included the following modifications from earlier plans:
 - Increase member contributions by 4%, phased-in 1% per year beginning July 1, 2013

- Smoothed transition for changes in retirement eligibility – the age 60 and 35 years of service requirement becomes effective August 1, 2026
- Implemented one-year COLA suspension for all current retirees

Ohio Police & Fire Pension Fund (OP&F)

- September 2009, OP&F presented a 30-year funding plan to the ORSC, which was estimated to reduce the funding period from infinite to 39 years. The major components of this plan are:
 - Increase member contribution rate from 10% to 12% in 0.5% increments
 - Increase police employer contribution rate from 19.5% to 24% in 0.5% increments
 - Normal service retirement age of 52 for new hires effective January 1, 2012
 - Delay COLA until age 55 for all members except beneficiaries
- January 2011, OP&F presented a revised 30-year funding plan to the ORSC, which was estimated to reduce the funding period from infinite to 36 years, deferring changes one year from original target dates and reduction to contribution to the health care fund from 4.8% to 4.2%
- February 2011, OP&F presented a revised 30-year funding plan to the ORSC, which was estimated to reduce the funding period from infinite to 30 years. The plan passed the Senate in May as SB 340. The changes made to this plan include:
 - Reduce COLA (3% or CPI) for new hires or active members with less than 15 years of service
 - Phase-in increase to member contribution rate from 10% to 12.25%, 0.75% per year beginning in 2012.

Highway Patrol Retirement System (HPRS)

- September 2009, HPRS presented a 30-year funding plan to the ORSC, which was estimated to reduce the funding period from infinite to 30 years. The plan included:
 - Reduced COLA from 3% to 2%, except for certain over-65 retirees receiving an HPRS benefit less than 185% of the federal poverty level
 - Increase member contribution rate from 10% to 11%
 - Increase final salary averaging (FAS) period from three years to five years
 - Delay COLA from 53 to 60 for retirements on or after the effective date of legislation
- April 2011, HPRS Board adopted revised actuarial assumptions, which created the need to revise the 30-year funding plan

- April 2012, HPRS revised 30-year funding plan, which was estimated to reduce the funding period from infinite to 30 years. The plan passed the Senate in May as SB 345. The revised plan includes:
 - Increase member contribution rate from 10% to 14%, subject to Board discretion
 - Reduce COLA to 0% to 3%, subject to Board discretion
 - Increase final salary averaging (FAS) period from three years to five years
 - Increase COLA eligibility from age 53 to age 60

Below is a brief table of the proposals.

Summary of Proposed 30-Year Plans

Proposed Change	SERS	OPERS	STRS	OP&F	HPRS
Retirement Eligibility -Phase-in	Yes AN -No	Yes AN -Yes	Yes AN -Yes	Yes N -No	No
COLA -Amount -Indexing to CPI -Phase-in	No	Yes R -No -Yes -No	Yes ARN -Yes -No -No	Yes ARN -No -Yes -No	Yes ARN -Yes -No -No
Benefit Formula -Phase-in	No	Yes AN -Yes	Yes AN -Yes	No	No
Final Average Pay -Phase-in	No	Yes AN -Yes	Yes AN -No	Yes AN -Yes	Yes AN -No
Higher EE Contributions -Phase-in	No	No	Yes AN -Yes	Yes AN -Yes	Yes AN -No
DROP -Phase-in	<i>None</i>	<i>None</i>	<i>None</i>	Yes AN -No	Yes AN -No
Purchased Service Cost	Yes AN	Yes AN	Yes AN	No	No
Disability Benefit Changes -Phase-in	No	Yes A -No	Yes A -Yes	No	No

A - Change impacts current active members
R - Change impacts current retired members
N - Change impacts future members

As you can see, with five different systems creating five different 30-year plans based on their unique situations, there is significant variance in the proposals. For example, consider cost of living adjustments (COLAs):

- SERS is proposing no change to their 3% annual increase on the base benefit
- OPERS is proposing no changes for retirees as of transition (date of legislation), but for those retiring after, the COLA will be the lesser of CPI and 3% of base benefit, with a phase-in for those who retire in the five years after the effective date of the legislation.

- STRS is proposing all COLAs be reduced to 2%, limited to a base benefit of \$50,000 and delayed five years after retirement
- OP&F is proposing all COLAs be delayed until age 55 (except for surviving spouses), suspended during DROP, and limited to CPI
- HPRS is proposing all COLAs be delayed until age 60

With the exception of the SERS 2008 plan change for new employees hired after 2008, no plan has been enacted into law. This delay has caused concern among the retirement systems that they have not been able to make the changes necessary to move their systems toward a healthier state. OPERS has calculated that delay is costing the system \$1 million per day.

We understand that in February 2012, Senate leadership met with each of the systems and asked that the systems modify their plans to address the following three components:

- Minimize the disparities of those who barely miss certain transition dates for certain benefit reductions. “Smooth out the cliffs”.
- Strengthen the provisions which combat salary spiking
- Include Board authority to make limited changes to the systems to address future funding shortfalls

As a consequence of this request, systems have made refinements to their 30-year plans. This study evaluates these most updated plans.

Recommendations

We strongly support the concept of Board authority to make limited changes in the plan provisions. At a minimum, Boards should be able to take actions to make modest reductions in benefits when circumstances require them, and then also unwind those changes if situations improve. This is described more thoroughly in Chapter Eight on what-ifs, triggers and contingency plans.

We also strongly encourage the ORSC and Ohio legislature to take action this year. Whether these plans are accepted, modified slightly, or another approach is taken, the systems are correct that delay creates additional cost. Ohio seems ripe for meaningful pension reform; the systems have made difficult decisions as to potential change; and this study provides an independent confirmation of the strength of the plans. Even if additional changes are required or desired based on the alternatives discussed in this report, the changes proposed now are appropriate and significant. We see no valid reason for delay.

2.6 Comparison of Ohio Systems with National Systems

Ohio systems have a unique structure compared with public pension systems elsewhere in the country. This is primarily because of the Ohio interplay between retirement plan benefits and health care benefits.

The vast majority of public retirement systems in the country do not provide any retiree health benefits. Most of those that do only provide a relatively modest retiree health premium subsidy such as the subsidy provided by Public Employee Retirement System of Colorado. Alaska is one other statewide system which provides retiree health benefits through the same governing body as the retirement system, but their defined benefit retiree health plan has been closed to new workers since 2005.

As a result of this dual funding responsibility, contributions toward the systems may exceed the cost of retirement benefits alone, leaving some contribution toward pre-funding retiree health benefits. This is an excess contribution for retirement plans that very few other states have.

Many states have what can be thought of as a “blank check”, where increased contributions are required to fund retirement benefits, either through annual adjustment or periodic legislative change to increase employer contributions. The Boston College affiliated Center for Retirement Research reported in 2008 that only 56% of state and local plans contribute the “Annual Required Contribution” (ARC). The ARC is an amount, calculated by the actuary, which is necessary to be contributed in order to attain full funding in a period of 30 years, under the GASB standards. This is similar to the Ohio 30-year plan concept.

So while most plans see the employer contribution increasing, Ohio no longer sees any such increase. In Ohio, the employer contribution is fixed, and in the case of SERS and OPERS exceeds the retirement ARC. The excess of the fixed contribution over the retirement ARC can be considered to go toward retiree health care benefits.

As a result of this structure, the risk of inadequate funding of retirement benefits is ultimately borne totally or partially by workers and retirees in reduced retirement and health care benefits or increased member (employee) contributions. In most jurisdictions in the United States, this risk is almost entirely borne by the taxpayers. This is a substantial difference in structure between Ohio and most of the country.

Ohio pension benefit provisions are fairly consistent with norms around the country. For example, the benefit multiplier for general employees of 2.2% for the first 30 years is very consistent with other states not in Social Security. The current eligibility requirements for full retirement are also consistent with typical practices.

Two features where Ohio benefit levels exceed national averages are the three year averaging period for final average pay and the three percent COLA. While these are somewhat above the average, they are not at all unusual.

The national median funding level for Fiscal Year 2010 is 76.4%, while Ohio’s plans range from 59% to 76% (at FY 2011).

The average state and local employer contribution to pensions is about 11%. In addition to this, most employers nationally pay 6.2% to Social Security. Ohio’s employer rate is 14% for general workers. The employee contributions nationally average 5%, plus 6.2% for those in Social Security. Nationally the average for those states not in Social Security is 8%. Ohio is 10%.

Most systems nationally have initiated or are considering pension reform. Despite this movement, the defined benefit model continues to be predominant.

The median assumed rate of investment return is still 8.0%, but is declining slowly.

While every system around the country is different, with the exception of the health care structure and its risk sharing characteristics, the Ohio systems are not extraordinary. The following table highlights some of the key differences between the Ohio systems with a typical statewide retirement system.

Key Differences: Ohio and Typical Statewide Retirement Systems

Ohio	Typical Statewide System
Not covered by Social Security	Covered by Social Security
Retiree health care covered through retirement system, partially funded	Health care covered outside of retirement system; little or no pre-funding
Employer contributions of 14% for general employees	Average state and local employer contribution is about 11%, plus most pay 6.2% Social Security
Fixed employer contribution	Employer contribution varies based on experience
If experience is worse than expected, systems develop 30-year plans, which balance reductions in pension and health care	If experience is worse than expected, employer contributions increase
Five statewide systems	One or two statewide systems
Ohio Retirement Study Council charged with oversight	Little centralized oversight

2.7 Case Studies of US Pension Reforms

The National Council of State Legislators regularly reports on pension reform throughout the country. In 2011, 29 state legislatures enacted significant pension reform, and 21 did so in

2010. It is helpful to consider the plan structures in place elsewhere and how each state has addressed the investment market losses. Nine states are examined below: Alaska, Colorado, Illinois, New Jersey, New York, Rhode Island, South Dakota, Utah, and West Virginia.



Alaska is one of the few states (along with Ohio) which provide meaningful retiree health coverage through the retirement system. In 2005, Alaska had a significant unfunded liability, partially because of the inclusion of the health care liabilities.

The legislature then initiated significant pension reform. Those workers hired after June 30, 2006 do not receive DB benefits or pre-Medicare health care. Instead, they are covered in a DC plan and contributions are made on their behalf into a health retirement savings account. The costs for the new combined plan are comparable to the costs of the prior tier DB plan.

Closing the DB plan has not reduced the unfunded liability, and there has continued to be push-back from the workforce and others to return to DB. Legislation has been introduced to add a new DB choice alternative, with a more modest retiree health care provision where benefits would be reduced based on health care cost inflation exceeding certain thresholds.



Colorado has two statewide retirement systems: Colorado Fire and Police Pension Association (FPPA) and Public Employees Retirement Association of Colorado (PERA). Colorado PERA and FPPA both have extensive DC features in their plans; FPPA through the individual DC allocations, and PERA through a DC choice feature.

FPPA was born out of pension reform in 1980, when a new statewide plan was created to address poorly funded local plans, similar to the history of the Ohio Police & Fire Pension Fund. FPPA has fixed contributions of 8% from the employers and 8% from the employees. This level has been sufficient to support a core DB plan, and excess contributions went to individual DC accounts. DC contributions increased during the boom years of the 1980s and 1990s, reaching a peak of 8% (half of the 16% total). At that time the membership voted to improve the DB benefit, reducing their DC allocation. DC contributions continued until a few years ago, when there were no “excess contributions” due to the weakened funding position of the core DB plan.

But FPPA has additional safeguards to prevent an increase in employer contributions:

- First, the COLA on the DB plan is discretionary, and has been zero in several of the past years
- Additionally, the moneys in the DC accounts can be eliminated and called on to shore up the DB plan
- The improvements in the DB plan can be repealed

- Some additional cuts in the early retirement DB benefit can be enacted
- Members (police officers and firefighters) can elect further DB cuts or an increase in their contributions

Only after these safeguards are exhausted can the FPPA Board ask for legislation to increase employer contributions. Consequently, it is unlikely that employer contributions would be increased beyond the 8% level.

Colorado PERA pension reform is more recent, with Senate Bill 1 of 2010 addressing their underfunding problems. PERA itself spearheaded the legislation, using extensive “listening tours” throughout 2009 and 2010 to educate the membership and attain buy-in for the ultimate proposals. Prior to the 2008-2009 market crash, PERA was barely on track to get back to full funding, under a schedule of employer contribution increases. Once the investment losses occurred, PERA was projected to be insolvent within 20 years unless changes were made.

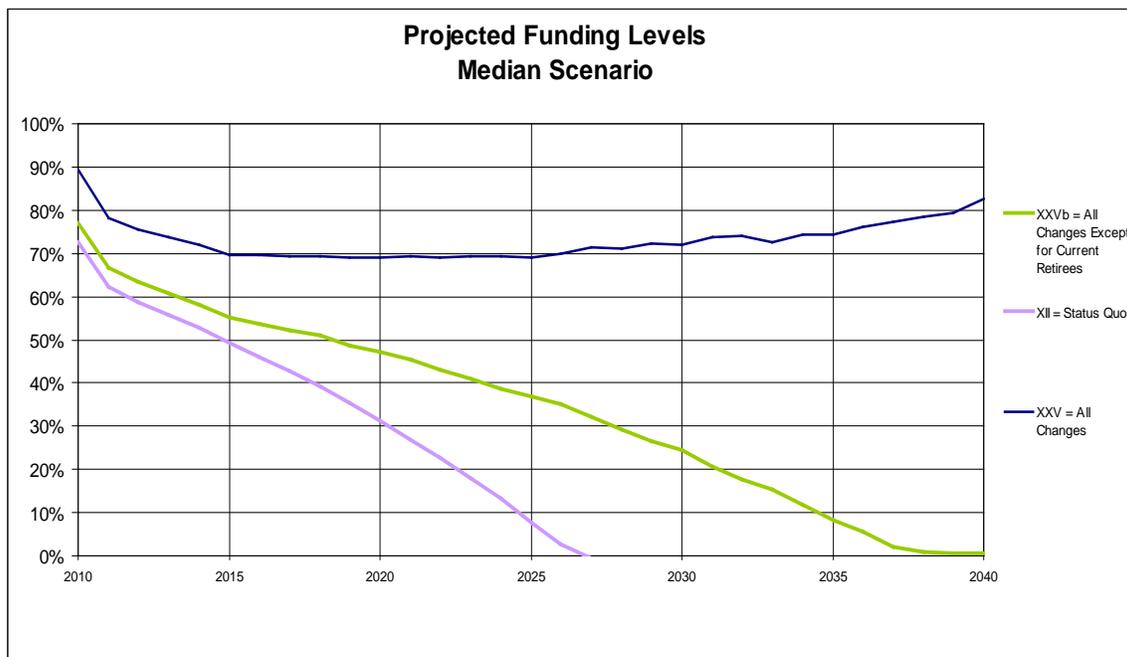
The changes under SB 1 were made under a concept of shared sacrifice between four constituencies:

- Employer contributions would increase
- Retirees would receive reduced COLAs (essentially from 3.5% to 2.0%)
- Future workers would have delayed retirement eligibility, increased contributions, and a much lower COLA
- Current employee contributions would have increased contributions, decreased COLA (like retirees), and delayed retirement eligibility for those not vested

This “shared sacrifice” approach was communicated by one of the PERA divisions (Denver Public Schools) through the following series of graphs, which illustrate the funding consequences under three scenarios:

- What if we do nothing?
- What if we make the entire package of changes?
- What if we make all the changes except one?

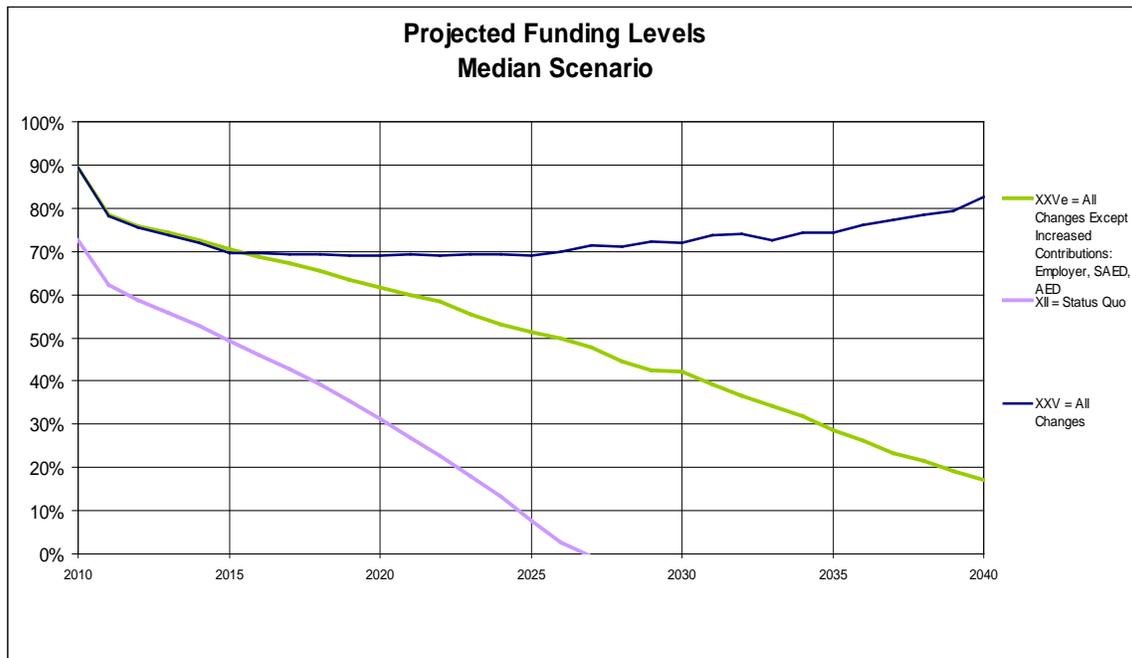
“Shared Sacrifice” – What if we do all reforms but retirees?



In the graph above, for example, the left line shows that with no changes, the plan will run out of money around 2027. The right line shows that if all changes are enacted, the funding position will immediately improve, but will deteriorate for ten years, then move back up toward full funding in the subsequent decades. But the middle line shows that if all changes are made except reducing the COLA for current retirees, the plan will approach insolvency around 2038.

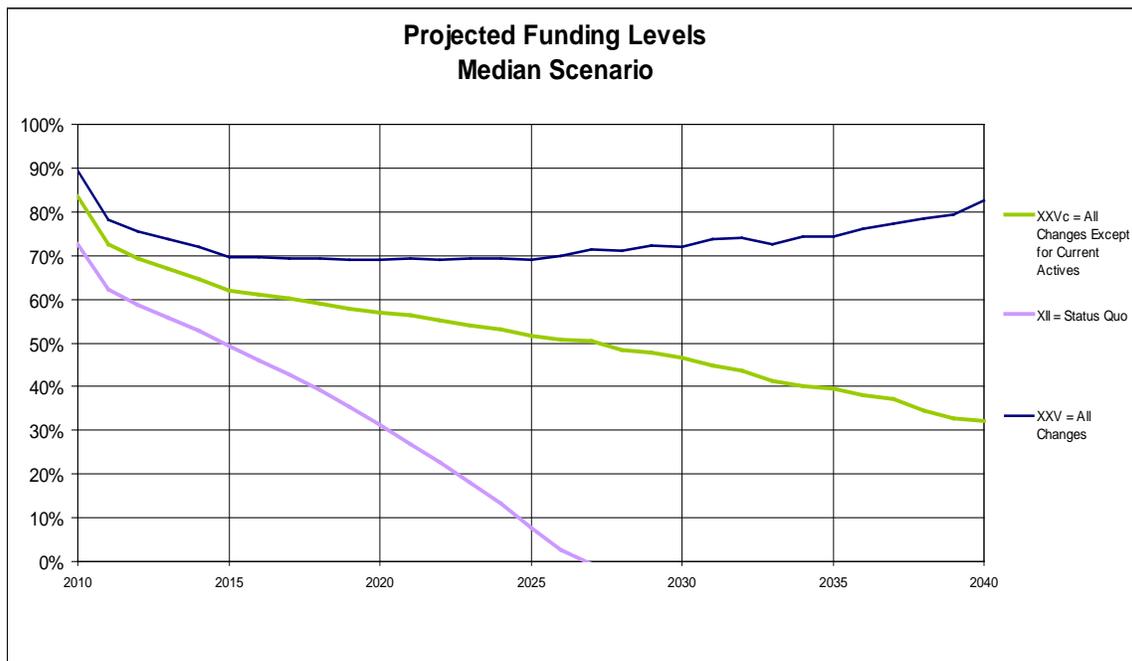
The following graph shows the same left line with no changes (running out of money around 2027) and the right line with all changes enacted. The middle line in this graph shows if all changes except increasing the employer contribution are made, the plan will be on the road to insolvency, although not quite as fast as under current projections.

“Shared Sacrifice” – What if we do all reforms but employer’s contributions?

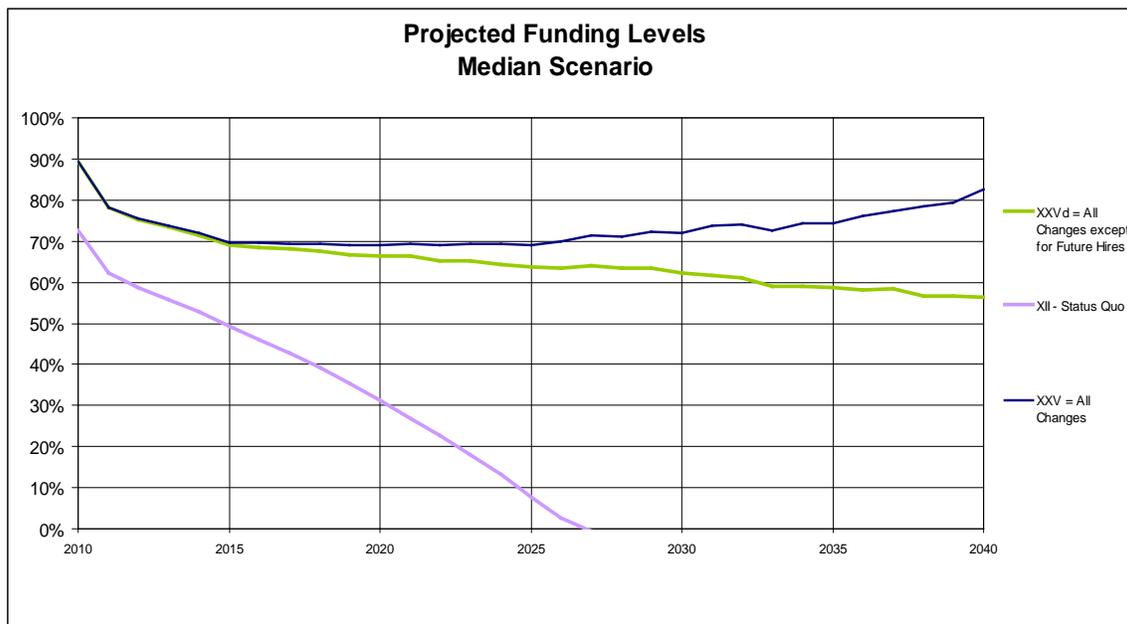


Finally, two more graphs were produced with the same left and right lines, but middle lines which illustrate that without impacting current workers (next graph) and future workers (second graph below), the plans will also deteriorate and never regain 100% funding.

“Shared Sacrifice” – What if we do all reforms but current active workers?



“Shared Sacrifice” – What if we do all reforms but future hires?



Illinois statewide retirement plans are among the most poorly funded in the country. They are frequently cited as a “poster child” for dysfunctional public pension systems. Illinois has chronically underfunded their programs. In addition, the statute only targets that the plans become 90% (rather than 100%) funded, and only by 2044.

Over the years, the State has also issued pension obligation bonds, but these have only been a Band-Aid and not solved funding problems. To a large extent, they have only exacerbated the funding problems by shifting them from the pension fund to the state balance sheet.

Recent reform made major significant benefit reductions for new tiers, but employer contributions are still inadequate.

The Illinois Municipal Retirement Fund (IMRF) is in much better shape. It enforces compulsory employer contributions, at least equal to Normal Cost, unless the plan is over 120% funded. Additionally, employees contribute 4.5%, which is about half the normal cost. IMRF’s strong position enabled it to grant some funding flexibility for employers in 2010.



The other poster child of poorly funded pensions is **New Jersey**. They have also issued Pension Obligation Bonds and taken contribution holidays. The SEC ruling that New Jersey did not adequately disclose the gravity of its pension problems has compounded the problems.

Governor Chris Christie campaigned on fiscal responsibility, including pension reform. This reform was completed in 2011, which included:

- Employee contributions were increased
- The State agreed to make required contributions
- COLAs were eliminated until funding is improved
- A new tier had later retirement ages
- Changes were made in the governance of the plans



Many features have contributed to **New York** State Teachers' Retirement System's (NYSTRS) strong position. It is over 100% funded; employer contributions are only 7.63% of pay; and it has had a 9.8% average investment return for the period from 1985 to 2009.

Employers contribute the Actuarially Required Contribution, based on a conservative actuarial methodology. Benefits include a limited automatic COLA of half of CPI, but only on the first \$18,000 of pension amount.

The plan has rigorous anti-spiking provisions. In 2010, a new tier made modest cuts to the benefit formula and increased employee contributions from 3% to 3.5% of pay.



Rhode Island's recently elected Democratic treasurer Gina Raimondo was quoted by the Wall Street Journal as having driven "perhaps the boldest pension reform of the last decade through the state's Democratic-controlled General Assembly." This was an extensive reform, dramatically impacting not only future employees, but current employees and retirees.

The changes include a modest DC plan coupled with a significantly reduced DB plan through later retirement ages and lower benefit formula multipliers. The benefit accrued as of transition is frozen, similar to what can be done in the private sector. Cost of living adjustments have been suspended until funding improves significantly.

The future benefit accrual rate is 1%, and the normal retirement age is increased to the Social Security retirement age. Employee contributions to the DB plan are decreased, with most of that decrease directed to the new DC component. Employer contributions which were projected to increase rapidly will drop, and then increase more gradually. The unfunded liability of about \$7 billion was reduced by \$3 billion.

The changes result in substantial benefit cuts for those in the middle of their career whose pension changes from a strong DB plan to a much weaker DB plan coupled with DC. Legal action is very likely.



The **South Dakota** Retirement System (SDRS) has historically been among the best funded of the state plans. SDRS is considered a hybrid DB plan with DC features. They have a history of substantive benefit improvements funded by favorable investment results, including improvements for retirees.

SDRS has fixed member and employer contributions. Statutory triggers require Board recommendations for corrective actions, instead of higher employer contributions. The primary benefit changes tie the COLA to funded ratio and CPI. Retirees received a smaller COLA as a result of recent poor investment experience.



The **Utah** pension reform was spearheaded by State Senator Dan Liljenquist, who was a candidate for the US Senate. The reform gives new employees a choice of a DB plan with 1.5% multiplier, based on 10% employer contributions, or a 10% employer-funded DC plan. Additional employee contributions to the 401(k) plan are voluntary.

The unique feature of Utah's plan is that if the 10% of pay employer DB contribution is insufficient, employees must contribute the excess cost. Likewise, if 10% is more than the actuarial DB cost, the excess goes into individual DC accounts. There is some concern that if employee costs become too high a few decades hence, there could be no new membership and prohibitively increasing costs.

There were no changes to the closed plans for current workers; they continue to be funded.



If New Jersey and Illinois were the example of failing public DB plans, **West Virginia** could be considered the example of a failed DC plan. It became primarily a Defined Contribution plan in 1991, but switched back to DB in 2005 for a variety of reasons. The average DC investment returns lagged DB returns in both the up and down markets of that time period. The 4,500 members who had switched from DB to DC in 1991 found it hard to retire after the bad investment market of 2000-2001.

The state concluded that properly funding a DB program would be less expensive than funding an adequate DC program, and offered a return to DB in 2008. 78% of the workers elected to switch back. The plan funding was strengthened, partially by using tobacco securitization bond proceeds.

Like most states, West Virginia has separate authority for retiree health care and retirement benefits. The Public Employees Insurance Agency, which governs health care, recently has been

changed to significantly reduce the growth in retiree health care subsidies and receiving dedicated annual state revenues to a trust fund to eliminate the unfunded liability by 2036.

2.8 Issues Related to Defined Benefit versus Defined Contributions

Discussions involving DB versus DC have been intense since the Federal government clarified the rules in the early 1980s causing an explosion in 401(k) plans. For the first twenty years, DC plans were very popular, in large part because of the bull market. But in the last ten years, DB has been more popular, creating “pension envy” between private workers, who are increasingly DC and public sector workers, who almost always have DB as their core benefit structure.

The major advantage of a DB plan is that it can create a predictable (defined) retirement income for the retired workers at the most efficient long term cost. The major disadvantage of a DB plan (advantage of a DC plan) is that DB can result in unpredictable cost, due to the fact that the risk is typically borne only by the employers.

The DB efficiency advantage is primarily due to three built-in pooling features:

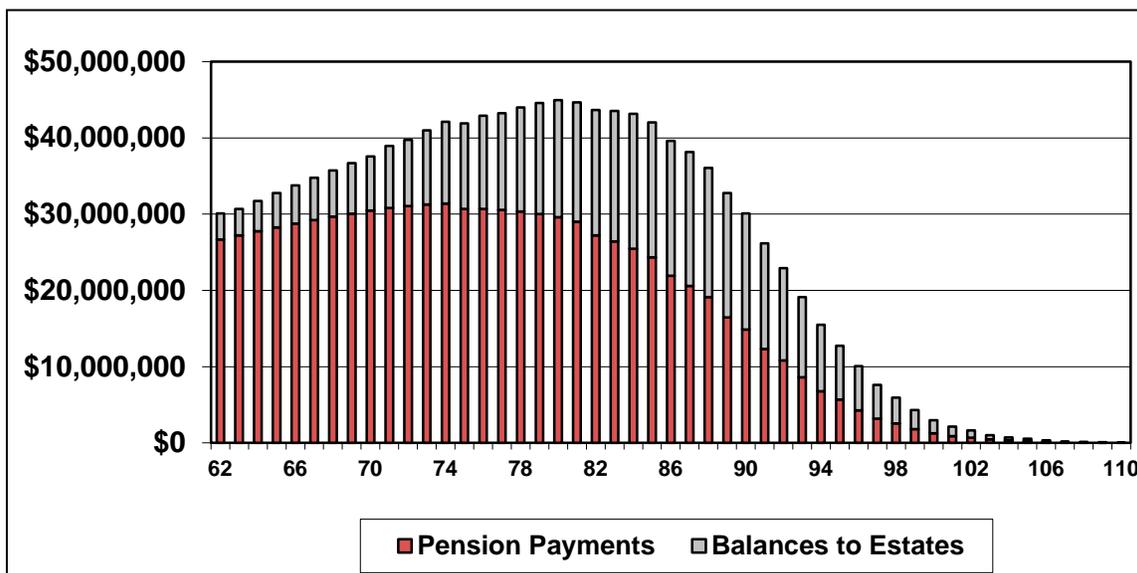
1. Longevity risk pooling
2. Maintenance of portfolio diversification
3. Superior investment returns

Longevity Risk Pooling

Because they cover large numbers of retirees, DB plans can pay out benefits based on the *average* life expectancy, while individuals must plan to pay themselves over a longer life expectancy. An individual under a DC plan will want to avoid the risk of running out of income if they live longer than average. Because individuals must plan for this, they must accumulate more money in their individual DC plans than compared to a pooled DB plan.

Consider the following graph for a group of 1000 female teachers retiring at age 62 with the same annual benefit needs.

Female Teachers, Retirement Age 62



The red bars represent the amounts paid through a pooled DB plan. The amounts increase as COLAs are given, and decrease as the number of retirees falls from 1000 initially to zero by age 110. But if these workers each had their own DC accounts, they would need more money because they do not know when they will die. Consequently, the gray bars are the extra amounts included in their accounts no longer needed as they die. The amounts are not wasted; they go to the estates of the deceased workers. They just become death benefits rather than retirement benefits.

Maintenance of Portfolio Diversification

DB plans can maintain a well-diversified portfolio over time since DB plans do not age the same way an individual ages. To protect against market shocks, individuals in DC plans are advised to shift toward more conservative investments as they age, sacrificing some expected return. Lower returns mean more money must be contributed to deliver the same level of benefits.

Superior Investment Returns

Assets in DB plans are professionally managed. Despite their best efforts, individuals tend to underperform when it comes to investing in DC plans. Pooled investments in DB plans can lower expenses for two reasons:

- Large group pricing negotiation
- Individual recordkeeping and member investment education are not required, and far fewer investment transactions

Studies generally have shown that DB plan returns outperform DC plans by at least 1% annually. Even a mere 1% differential generates tremendous efficiencies in capital accumulation; more than 20%. These studies include:

- Towers Watson 1995-2008 study found that large DB plans outperformed their comparable workers’ DC performance by 1.27% per year
- CEM Benchmarking 1998-2005 found a 1.80% difference
- Recent Ohio experience shows a similar DC return shortfall; STRS DC return has been 1.3% lower than DB returns over ten years

Employer Cost Risk Under DB

The most important disadvantage of DB from the employer/taxpayer point of view is that DB plans traditionally put the risk on the employer contribution rate. In the vast majority of jurisdictions, the employer essentially has a “blank check” to pay whatever it costs to maintain the pension promise. Because of the linkage of investment returns with general economic conditions, these contribution increase requirements often coincide with government revenue shortfalls, creating a “double whammy” for government budgets. Similarly, in times when government budgets are stronger, it is often coincident with high market returns and apparent overfunding of the DB plans.

Note that this DB weakness has been successfully addressed in Ohio, with fixed employer contributions and the discipline of a 30-year funding requirement. The result in Ohio is public employee retirement systems that have the structural and efficiency advantages of DB plans with the fixed cost of DC plans, and employees at risk for lower benefits or higher contributions if the experience does not match the assumptions.

Asymmetric DB Risk and Reward

The typical DB plan faces the dilemma that what goes up can’t come down. This is summarized in the following table:

Actuarial Assumptions vs. Actuarial Experience

During Periods Where Actuarial Experience is <i>More Favorable</i> than Actuarial Assumptions Predict	During Periods Where Actuarial Experience is <i>Less Favorable</i> than Actuarial Assumptions Predict
Strong investment return	Weak investment return
Plan becomes overfunded, but:	Plan becomes underfunded
Benefits are sometimes increased	Benefits are rarely decreased
Contributions may be decreased, reserves are rarely established	Contributions need to be increased, but there are no reserves to tap
Result is a plan which is only slightly overfunded	Result is an underfunded plan
Only modest surplus	Potentially high unfunded liabilities

Philosophical Concerns with DB and DC

There are several philosophical reasons to favor DC relative to DB. These include:

- Most private sector workers do not have DB plans other than Social Security
- DB requires establishment of a government-run benefit system, while DC may be more substantially privatized
- These pooled DB funds shift responsibility from the individual to the state
- Public DB funds can sometimes be run with the influence of organized labor
- Large unfunded liabilities can occur under DB
- These unfunded liabilities may increase future taxes

Other Important DB DC Considerations

This analysis is by no means exhaustive. Perhaps an insurmountable obstacle in Ohio to moving toward DC (even if other criteria pointed to such a move) is inertia. The Ohio systems are longstanding functioning DB plans covering hundreds of thousands of Ohioans. These workers have grown up with the DB and expect it to continue. It would be extremely disruptive to shift from the current model to only DC.

Among other considerations are:

- In favor of retaining DB
 - DB more easily facilitates adequate disability benefits
 - DB more easily facilitates adequate death benefits
 - Workers are not at risk of outliving their retirement savings
 - Without DB or Social Security, workers have no safety net
 - DB is much more popular with most workers
 - DB facilitates full career employment
- In favor of replacing DB with DC only
 - DC provides more portable benefits
 - DC allows workers to participate in their retirement and investment decisions
 - DC promotes an ownership society
 - DC is more popular with short service workers
 - DC facilitates hiring of younger workers
 - DC may better facilitate an objective to substantially reduce employer funding for retirement

Recommendations

We recommend that Ohio retain the DB model with DC choice, subject to other changes outlined in this report.

2.9 Health Care and Connection with Pension Funding

As mentioned previously, Ohio pension systems have a unique structure. Pensions are funded based on traditional actuarial techniques with a 30-year maximum on funding accrued liabilities. Health care benefits are not funded in the same way in Ohio, or elsewhere.

The typical statewide retiree health care plan in the United States is funded on a pay-as-you-go (PAYG) basis with minimal accumulated assets dedicated to pre-funding. The result is a steeply escalating cost due to health care inflation and an increasing number of retirees. GASB requires calculations of health care costs for accounting purposes on an accrual basis that assigns costs to the periods worked rather than the periods in which benefits are paid. In addition, GASB requires that the discount rate assumption accurately reflects the rate of return on assets dedicated to paying the retiree medical benefits. This means that a PAYG system, which pays retiree medical benefits from the employers' annual budgets and not a dedicated trust, must use a discount rate close to the rate of return on cash. We are not aware of any statewide health care plan which funds and dedicates assets to a health care fund based on GASB accounting requirements. The result is a significantly higher accounting cost for retiree health care and a substantial disparity between the accounting expense reported (under GASB) and the amounts of benefits currently paid, which is often the extent of the employer current "funding."

Ohio's approach to funding health care is quite different in two important ways.

First, the dedicated employer funding (14% of pay for general employees) is intended to finance all post-retirement benefits – pension and health care. There is no expectation that additional funds will be available from employer or other resources (other than the special payroll surcharge for SERS for lower-paid employees) to pay for health care benefits in the future. Unlike PAYG practices, the employers in Ohio will not have escalating costs for retiree health care benefits. However the benefits paid must also be managed accordingly since increased employer contributions through a PAYG practice is not realistic in Ohio due to the current funding structure.

Secondly, the Ohio systems follow a much stronger funding practice for retiree health care benefits than is common. All five retirement systems historically dedicated more than the PAYG amounts for retiree health care benefits, which has resulted in a comparatively significant asset accumulation. Ohio currently has more assets dedicated to retiree health care benefits than any other state. The Pew Center on the States reported that in 2006, Ohio had set aside \$11 billion for health care benefits, five times as much as in Alaska, the state with the next largest fund. These accumulated assets and their investment income, along with continuing allocation of a portion of the employer post-retirement benefits funding, finance the health care benefits.

The question for Ohio is what level of health care contribution is affordable long-term based on the expected allocation of employer funding for health care, and what is the best basis to judge

that affordability. At one extreme, a best actuarial practice may be to fund according to actuarial practices and assumptions (with allowance for health care cost trends) similar to those used for assessing the long-term funding costs of the retirement benefits, and similar to GASB. The other extreme is to pay whatever contributions remain after allocating to retirement under a 30-year plan. Actuarial funding would dedicate significantly higher contributions to health care, requiring much deeper cuts in either retirement or health care benefits in order to meet 30-year plans. The other extreme will deplete the health care assets and require harsh benefit cuts at the time of depletion. A reasonable alternative would be to use a solvency period test for an extended period.

The last several years has seen a significant reduction in the employer contribution allocated to health care in the Ohio systems due to the investment losses and the funding needs for retirement benefits. In practice, each system must balance the retirement plan needs with the long-term needs for health care sustainability. In doing so, the systems make decisions as to the amount of health care benefits to provide in a given year based on future solvency estimations.

Recommendations

The current Ohio funding approach is much more rigorous than in most states, but it must be stronger in order to avoid increasing contributions or larger cuts in health care benefits. We recommend that the systems determine a desirable, or at least acceptable, level of health care benefits and then strive to have the health care systems sustainable in perpetuity.

As to funding, we would like to see a long-term goal of moving toward actuarial funding. This is a high ideal, which could take 35-40 years to attain. As long as the retirement benefits are targeted to become 100% funded and the health care fund is projected to remain solvent for at least another 30 years, then at the end of the 30-year period, substantial funds could be available to raise the health care trust funding level. Our projections show that the health trusts would then become fully funded within five to ten years following the full funding of the retirement trusts. This is a desirable situation.

In the short run, we recommend that systems carefully analyze the amount of health care benefits that can be provided based on a reasonable solvency period, but work toward a more rigorous funding standard. Failure to do so will result in generational equity issues and painful, severe cuts in health care benefits a few years in the future.

For example, OPERS has targeted retiree health care benefits at the level that can be supported by 4% contributions. SERS (whose workers retire at later ages) has targeted a lower level of benefits, roughly equivalent to 2% contributions. Both approaches are appropriate for their respective groups.

As the pension boards are being given authority to make limited reductions to the retirement benefits and currently have the authority to make substantive modifications to the health care

benefits (for example, by modifying cost sharing and coverage), we recommend that the boards have the authority to modify or eliminate the Medicare Part B premium subsidy benefit.

Discussion of health care benefits and plan provisions is in section 2.11.

2.10 Funding Policies

While actual funding policies around the country vary in practice, the elements of the annual contribution rate are fairly standard.

The actuary calculates an annual contribution rate, which is generally the “normal cost” or value of benefits assigned to the next year, plus an amortization of the Unfunded Actuarial Liability (UAL), both determined as a percentage of payroll. The UAL is the shortfall of the assets relative to the value of benefits assigned to all the past years.

Normal Cost

By far the most common pension funding method used for public pensions, and the one used by all Ohio systems, is the Entry Age Normal Actuarial Cost Method, known simply as “Entry Age,” or “EAN.” To understand how this method works, imagine that you are just beginning your career and want to decide how much of your paycheck you should save for retirement.

In order to make a prudent decision, one would make a series of assumptions based on answers to these questions:

- When am I going to retire?
- How much will I need to live on once I’ve retired?
- How long will I live after retirement?
- What investment return will I earn on my savings?
- What is my salary going to be when I retire?

Once these questions are answered, one could figure out mathematically how much is needed to save from each paycheck. It would build up with investment return to an amount from which you could withdraw the amount needed to live on, and it would run out exactly when you die. This is very similar to EAN. Actuaries calculate the contribution rate needed for each employee at the time they start their career, or their “entry age.” The most important difference in EAN from this individual example is that rather than asking “How much will I need to live on?” the pension plan formula is used instead. Another difference is that actuaries use numerous assumptions as to retirement age, age at death, salary growth, likelihood of disability, and more. In the simple single individual illustration, single assumptions for retirement age and age at death are used.

Once this EAN normal cost is determined, the next step is to figure out if the plan is ahead or behind in the funding. Based on how far along each employee is in their career, one can

calculate how much should be in the pension fund based on the prior EAN contributions. This is what is called the Actuarial Liability (AL). To the extent the plan does not have this amount in assets; a UAL exists.

Most plans these days have a UAL, in part because of recent investment losses, but in other states because the full costs have not been contributed or benefits have been improved without immediate full funding. So in addition to funding the normal cost, a prudent funding policy would also fund part of the UAL.

Amortization of Unfunded Liability

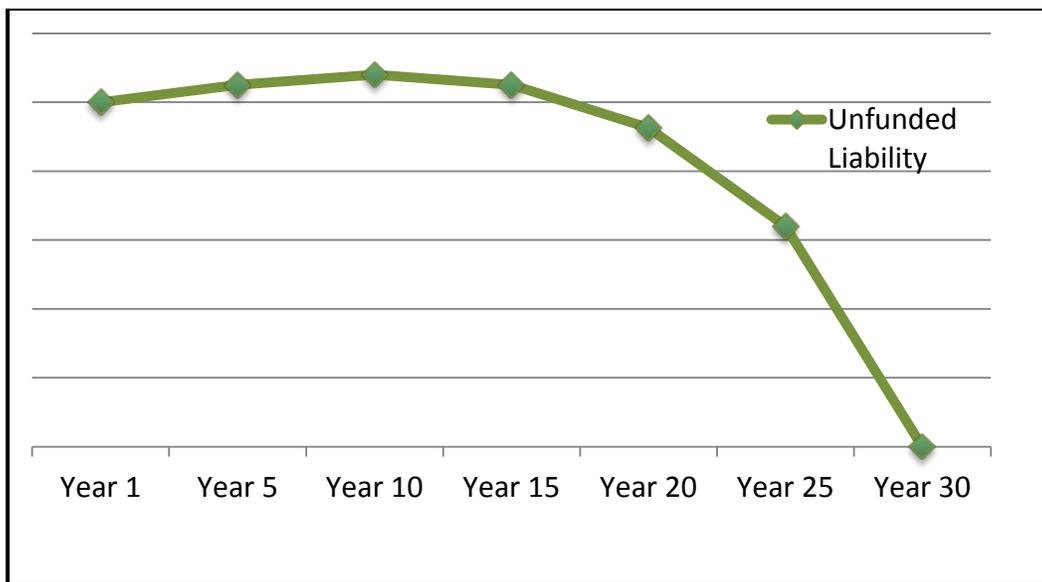
There are several ways to fund the UAL. They can be considered as analogous to a mortgage. The typical home mortgage payment is a fixed dollar payment over 30 years. But public pension amortizations sometimes have a couple of modifications which tend to reduce the payment amount.

The first modification is to base the amortization not as a fixed amount, but as an amount which increases as payroll increases. This is what many public pension funds do – the amortization schedule increases by a fixed amount (often 4%) each year.

The second modification is analogous to refinancing. Each year, the target is to ensure that amortization meets the 30-year period. Many systems utilize this method every year, “rolling” the amortization perpetually at 30 years, and never getting down to 29, let alone getting to be fully funded. Ohio’s 30-year funding plan benchmark essentially uses this technique.

It is important to keep in mind that unfunded liabilities are driven substantially by investment results. In order to reduce them immediately, earned benefits must be reduced. Other benefit reductions will accelerate the time period for funding, but slowly. A typical 30-year funding practice results in gradual increase in unfunded liabilities for about 15 years before declining, but only if the actuarial assumptions are met. The following simple graph illustrates how UAL increases then decreases over a 30-year period.

Unfunded Actuarial Liability Over 30-Year Period



If the systems consistently reset to 30 years, the UAL will never be paid off and will increase in nominal dollars. The UAL as a share of employers’ payroll will decrease, however, albeit slowly as a result of the continual reset to 30 years.

Tangible Impact of Actuarially Determined Contribution

In Ohio as elsewhere, the actuarially determined contribution is the sum of the normal cost and the amortization of unfunded liability. But the tangible impact of this actuarially determined contribution can vary extensively from jurisdiction to jurisdiction. In Ohio, this amount may be used as the amount of the contributions dedicated to retirement benefits in a given year, with the remainder allocated to retiree health care. In recent years, therefore, an amount assigned to health care has diminished due to the needs of the retirement plans. The retirement allocation currently does not satisfy a 30-year actuarially determined contribution for STRS, OP&F or HPRS.

Pension systems in general fall into two categories. In one, the employer pays the actuarially determined contribution. In the other, the employer pays a fixed amount specified by law, which may or may not satisfy the actuarially determined contribution, particularly in poor economic times.

Another key consideration is the impact of unanticipated negative experience. About half the time, one would expect that the actuarially determined contribution would increase from the prior year. Unfortunately, this has happened frequently in recent years as the market losses during the early years of the last decade, and more recently the 2008-2009 market losses, are recognized. The question of what happens as a result of this negative experience can be illustrated in the following table.

Impacts of Actuarially Determined Contributions

	Automatic	Legislative or Board Action
Burden is on taxpayers	Employer contributions can automatically increase	Legislature or board can take action to increase employer contributions
Burden is on public employees	Benefits can automatically decrease or employee contributions can automatically increase	Legislature or board can take action to reduce benefits or increase employee contributions

Negative unanticipated experience can therefore result in:

- Increases in employer funding that is automatic or require legislative/board action, or
- The burden of change put on the employer (taxpayers) through higher contributions or on the members by reducing benefits and/or increasing member contributions

The most common method for pension systems, particularly in past, is to place the burden automatically on the employer through increased contributions. The concept of a shared sacrifice approach is increasing in prevalence as governments are finding themselves unable or unwilling to increase costs for retirement funding.

Ohio currently has a collection of approaches. There is clearly no automatic employer contribution increase. There are effectively quasi-automatic decreases in future health care benefits as the systems allocate less money to health care to keep the pensions appropriately funded. The systems recommend action through their 30-year plans, but in order to implement their 30-year plans, legislation is generally required. The recent Senate initiative is to give systems more independent authority to stay within their 30-year targets through certain changes.

Recommendations

The Ohio approach of requiring the systems to manage within a fixed contribution is an extremely effective technique to maintain employer costs at an acceptable level. Very few pension systems in the US have this rigor in shifting the risk of unfavorable experience to the employees in the form of potentially reduced future retirement or health care benefits and/or increases in employee contributions. This mechanism utilizes the efficiencies of defined benefit plans without the risk of a blank check to the employers. It is an effective and responsible discipline and effectively caps the 14% of pay employer contribution for general employees. We recommend that Ohio maintain this basic structure.

We further recommend that each system develop thoughtful practices as to how they will adapt to both negative and positive experience in terms of reducing future benefit promises, improving funding position for health care and retirement, and potentially unwinding prior benefit reductions. These are challenging decisions that demand prudent and active policy development and should include consideration of reserves established in the good times to absorb some or all of the unfavorable experience in the bad times that may avoid or lessen the need for benefit reductions. ORSC can assist the systems in developing guidelines for this decision-making.

We also believe that the 30-year plan benchmark is an acceptable standard, but should be considered an absolute minimum, not an ideal. We believe that the 30-year period should not be perpetually reset. This is essential in order to become fully funded and have capacity to fund health care. Assuming that plans are effective in 2013, a declining 30-year period essentially means that plans will be fully funded in 2043 and health care will be fully funded about 2050. Compared to pension systems around the country, the Ohio practice is strong due to adherence to a standard (while many other states simply ignore or defer the actuary's recommended funding requirements), but the standard itself is not onerous, particularly with no current requirement for a declining 30-year funding standard.

In light of the evolving national pension funding standards, and due to the changing Governmental Accounting Standards (which is discussed in 2.15), we encourage ORSC and the systems to develop model funding policies. As noted, we do not believe that perpetual re-setting of the amortization period to 30 years is prudent. We also believe that the amortization of future actuarial gains and losses should be amortized over periods shorter than 30 years, more in the 15 to 20 year range. Should benefits be improved in the future, we recommend short amortization periods for the funding of those improvements, or ideally fully funding the cost in advance from reserves or past favorable experience.

If the next few years see investment returns in excess of the systems' expectations, we encourage the pension systems to first shore up retiree health care and pension funding before considering unwinding any benefit reductions or employee contribution increases that resulted from enactment of this legislation.

2.11 Health Care Benefits Available from Limited Resources

The Ohio Retirement Study Council Health brochure has the following overview of the health benefits provided by the Ohio retirement systems.

In 1974, the five state retirement boards were given broad discretionary authority to provide health care coverage to retirees and their dependents. However, the pension systems' primary obligation, by law, is to provide pension benefits to retired public employees. Unlike pension benefits, which become vested upon retirement, health care benefits are not a vested right under Ohio's public pension laws. Therefore, the boards

are authorized to change the premiums, eligibility and level of health care benefits at any time. A 2004 ruling by the Tenth District Court of Appeals (Ohio Association of Public School Employees, et al. v. School Employees Retirement System Board, et al.) upheld the discretionary nature of health care benefits in a lawsuit that had attempted to prevent the SERS Board from making changes to its health care plan. The Ohio Supreme Court declined to review the decision in 2005.

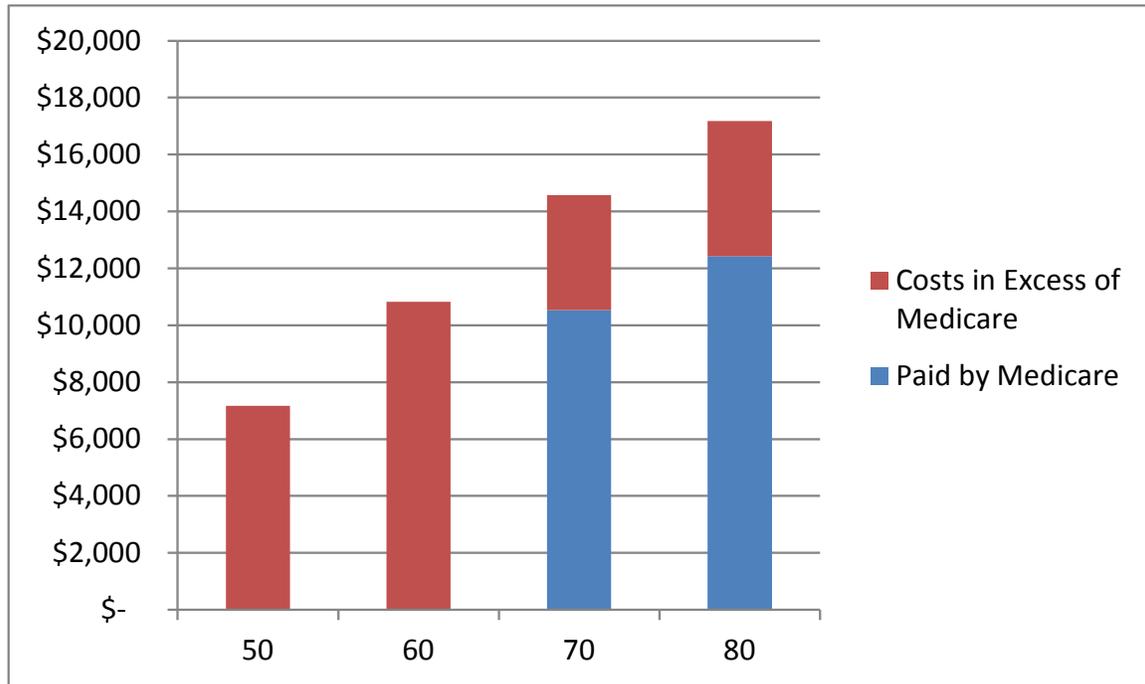
Since 1974 each system has provided some level of comprehensive hospital, medical and prescription drug coverage. In 1977, the systems were required statutorily to reimburse benefit recipients for Medicare Part B premiums (medical). Retirees who do not qualify for Medicare Part A (hospital) are provided equivalent coverage under the systems' health care plans. A 1986 federal law change extends Medicare coverage to all employees hired on or after April 1, 1986.

By law, any health care costs borne by the retirement systems must be financed by employer contributions only. The retirement systems' actuaries review annually the amount of contributions required to fund vested pension benefits. Contributions in excess of what is needed to support those benefits can be allocated to health care. Beginning in 2006, Medicare began offering a prescription drug benefit known as Medicare D. Pension plans like Ohio's that offer a prescription drug plan receive a subsidy from Medicare.

This structure essentially makes health care subordinate to retirement benefits. Yet, each system attempts to provide meaningful health care benefits available based on the employer funding available after satisfying the long-term costs of the retirement benefits. Recent investment losses put health benefits more at risk, as more contributions are necessary to return the retirement systems to a 30-year funding target.

Although Ohio public employees covered by the five Ohio systems are not covered under Social Security, most current employees are covered under Medicare due to a 1986 mandate. This means that health care costs for retired individuals prior to Medicare eligibility are much higher than once on Medicare due to the very significant Medicare maximum allowable provider charges and re-imburement schedule. So the greatest employee health care coverage need tends to be pre-Medicare. This is shown in the following illustration, based on actuarial assumptions for one of the systems.

Sample Annual Individual Health Care Costs



This age-cost relationship creates a higher retiree health care burden on OP&F and HPRS because their workers tend to retire at younger ages. As a result, any structural changes to either the retirement plan benefits or the pre-Medicare health care benefits that result in delayed retirements (particularly until age 65 or later when employees become eligible for Medicare) will generate cost savings not only from the health care side, but from the pension side also.

The level of benefit varies considerably based on the retirement system. Most systems offer some combination of HMO (Health Management Organization), PPO (Preferred Provider Organization) or indemnity benefit plans, both before and after eligibility for Medicare. After Medicare, all systems subsidize some or the entire Medicare Part B premium.

Systems pay all or a part of the health care premium for retirees and spouse, sometimes depending on service at retirement.

The following table illustrates a few benefit features.

System	Most common pre-Medicare option	Most common post-Medicare option	Share of premium paid by the system for full career retiree		Monthly Part-B Reimbursement Rate
			Current	Proposed	
SERS	Medical Mutual PPO	Aetna Medicare Plan	85%	85%	\$45.50
OPERS	Medical Mutual PPO	Humana Medicare Advantage	100%	90%	\$96.40
STRS	Medical Mutual PPO	Aetna Medicare Advantage	72%	63%	\$29.90 - \$52.83
OP&F	United Health care	AARP	75%	75%	\$99.90
HPRS	Medical Mutual MMO	Aetna Medicare Advantage	91%	85%	\$96.40

Note that while OP&F did not propose to reduce the subsidy for full career retirees, the amounts are proposed to be tied to years of service

The costs also vary by group.

Health Care Facts for Ohio’s Public Retirement Systems*

System	Average Annual Receipt per Recipient	Annual Health Costs as % of Payroll
SERS	\$4,592	7.8%
OPERS	\$10,008	12.5%
STRS	\$5,222	5.6%
OP&F	\$6,296	8.6%
HPRS	\$5,309	10.2%

* ORSC Health Care brochure, March 2012

The costs shown above are the average and total health care benefits paid by the plan for the last year, from the actuarial reports. The annual health care costs as a percent of payroll illustrate:

- The maturity of the systems’ retirees and active employees
- The high pay-as-you-go costs currently
- The significantly higher current costs compared to the current employer allocation to health care benefits

Because some of the future costs of health care benefits have been pre-funded (although at significantly lesser funded ratios than the retirement benefits), earnings from the existing

assets of the health care fund are also available to meet the current and future health care costs.

However, with a declining employer allocation to health care that is less than needed to meet the costs of currently retired members and future retirees, a rapidly escalating cost and utilization of health care, and a relatively modest accumulation of dedicated assets for health care benefits compared to accumulated costs, the assets will decline resulting in insolvency and leaving only the current employer allocation to pay for current health care coverage.

According to ORSC's *Health Care Facts for Ohio's Public Retirement Systems* (March 2012), the insolvency dates for the five systems range from 2021 to 2043 based on current employer allocations to health care. With rapidly increasing health care costs, that is very probable, absent significant changes. Consequently, new contributions plus investment return on existing assets must be more than net payouts to meet a long-term solvency test. This can only be accomplished either through increased health care contributions (which require decreased pension costs) or decreased health care payouts.

The systems are taking various measures to reduce the ongoing health care cost, including:

- Encouraging later retirement, to reduce the pre-Medicare period
- Modifying premium subsidies based on service
- Negotiating the best rates possible with carriers
- Shifting recipients toward more efficient delivery systems; more managed care
- Eliminating or reducing the Part B subsidy to their minimum required amount
- Increasing the retiree share of premium payment
- Limiting coverage for spouses
- Increasing deductibles and co-pays
- Evaluating enrollment in the national health care program, should it prove more economical

In short, in spite of all the efforts to manage health care costs in Ohio and elsewhere, they continue to escalate at a rate nationally that is much higher than inflation—as much as twice inflation and more. Under the current program, each system is attempting to pay a percentage of the employee (and in some cases spousal) costs for reasonable health care coverage. As a result, the costs are high without frequent benefit changes and subject to continuing escalation due to medical costs. An analogy would be providing a fixed lifetime benefit that increases each year without limit and that historically is much greater than inflation.

In recognition of these cost pressures and the limited funds available for retiree health care, two far different approaches are used in some other jurisdictions; a fixed dollar subsidy, and health savings accounts.

Fixed Dollar Subsidies

Some states have much less of a history of providing retiree health care benefits, particularly those in the West with less union influence. Some of these offer access to health care coverage, but provide only a fixed dollar subsidy toward the cost of health care benefits, rather than a percentage of health care premiums. The net premium amount paid by the member is whatever remains after subtracting the subsidy. The allowance can be based on service, and can be a higher amount before Medicare eligibility.

The most significant advantage to this approach is that a defined benefit approach is retained, but the plan is not subject to health care cost inflation. The subsidy can be indexed with a fixed COLA as is provided in the retirement plan, or periodically increased based on affordability and funding progress.

In the absence of periodic increases to the subsidy that match premium increase, more costs are obviously shifted to employees in this approach.

While this approach is not the most desirable from an employee perspective, it may be a reasonable alternative to continually rebalancing the percentage premium payments and other changes. It also may be a more realistic long-term model as to what is reasonably affordable given the pressure on employer contributions to health care and to achieve more generational equity.

Transition with the current program would require consideration of the current dollar value of the premium sharing formulas in setting a future fixed subsidy rate.

Individual Health Accounts

Another approach used in the private sector, but rarely in the public sector, is to fund a defined contribution amount, which builds with investment return and is used after retirement to pay for health care premiums and out of pocket health care costs. This effectively changes the health care plan from the current premium sharing approach to a defined contribution plan and limits the plans' payments to the amounts available in the savings account.

As a practical matter, transition from the current arrangement to this approach would be difficult except for new or very young employees who would have ample time to build up adequate funds in the savings account by retirement age, unless the benefits under the current program are frozen and pro-rated based on service as of the transition date. Another disadvantage is that this arrangement, being pre-funded, could increase costs in the short term, as moneys are needed for both current retirees and future retirees. The funds would essentially be paying for both current workers and prior workers at the same time until the plans are fully funded or significant changes are made such as the fixed dollar subsidy described above.

A partial solution to this catch-up funding problem would be for the accounts to be in the form of a cash balance account rather than an actual DC account. The cash balance accounts would be credited a notional return independent of the actual fund earnings. If that notional rate is lower than the actual fund earnings rate, the funding cost for these accounts is reduced significantly.

Health Savings Accounts

Under current law, if employees are covered under a High Deductible Health Plan (HDHP), they are able to create a Health Savings Account (HSA) with a contribution of up to \$3,250 in 2013 (\$6,450 for family). An HDHP must have a deductible of at least \$1,250 per individual or \$2,500 per family in 2013. The contribution can be made by either employer or employee. Voluntary individual accounts are another very viable alternative. This HSA can build up a balance for use at retirement.

Because of the wide variety of employers for whom Ohio public employees work, it is not currently a simple solution to incorporate HSAs. Our understanding is that most public employees of the State do not have an HDHP and HSA option. Some school districts and municipalities may currently offer HDHPs and HSAs. Some workers might be saving up significant balances in their HSAs which they may eventually plan on using for retiree health coverage, but this is likely a very small group.

HSAs are not common in the public sector in part because active health care benefits are relatively generous. But an HDHP is compatible with such plans. The employers could establish HDHPs as an option and fund a significant amount of the HSA with the cost differential between the richer health plan and the HDHP. In theory, this should drive down individual health costs because the employee is more concerned with saving costs so that their HSA does not need to be tapped.

Tax Implications

It is important to consider, for all workers and particularly for higher income workers, that health care savings and benefits are tax deductible and payable tax free when structured appropriately, while retirement savings and benefits are not tax free, but tax deductible and tax deferred. This means that it is much more efficient for workers to forgo one dollar of salary and receive future health care benefits than to forgo a dollar of salary and receive future retirement income benefits. Consequently, it may be desirable from a tax implication to reduce pension benefits before reducing health care benefits, all other things being equal.

However, all other things are not equal.

- Retirement income is based on pay and service and provides a fairly consistent value based on those factors
- The typical indemnity retiree health plan pays much higher benefits to those who retire early and receive benefits prior to Medicare than for those who retire later.

- Health benefits are not pay related, so shifting dollars to health from retirement income shifts dollars toward the lower paid from the higher paid.
- In Ohio, retirement income benefits are much more secure under current law than are health care benefits.

Recommendations

We recommend that the retirement boards continue to be given discretion to make the necessary changes to health care necessary to achieve very long-term health care solvency. If the health care plans remain solvent for 30 years, and the retirement plan is fully funded at that time, we estimate that the health care fund could be 100% funded within five to ten years if the funds used to pay off the unfunded retirement liabilities are shifted to pay off the unfunded retiree health care liabilities.

Target health contributions range from about 1% of pay for STRS to more than 4% for OP&F. Each system tries to manage within this “budget.” The systems may wish to establish a minimum health care target based on the most likely long-term contributions that are affordable. Because the systems may need to reduce the current benefits until this standard is met, they may wish to identify a certain level of minimum health care benefits and then adjust retirement benefits as necessary to meet the funding standard for that benefit level.

Systems should be disciplined in the annual balance of retirement and health benefits to meet the funding standards proposed. Systems should also be free to reduce or eliminate the Medicare part B subsidy.

Systems should also be encouraged to consider a fixed dollar health care benefit in lieu of the current health cost based plan. HSAs, including voluntary HSAs should be rigorously explored.

Finally, encouraging later retirement ages should be a priority change for the systems because of its effectiveness in reducing both health and retirement costs, and consistency with increased longevity.

2.12 Legal Framework for Change

This report is not a legal analysis; we are not attorneys. The information discussed below is, however, an attempt to provide a general summary of the potential legal issues surrounding retirement benefit reductions.

In the private sector, the rules with regard to benefit reductions in retirement plans are fairly clear. Namely, changes cannot reduce the accrued benefit of the employee (the anti-cutback provision). This would mean, for example, that future benefits for current employees could be modified at will, as long as the benefit earned to date is protected. This would also protect the actual retirement benefit currently being paid to a retired employee, but protection of future

COLA benefits for currently retired employees (or even for current active employees) is unclear. It should be noted that private sector retirement plans rarely have COLAs.

In the public sector, the rules are unclear and dependent upon a number of factors including state law, retirement statutes, and legal precedent. However, as a general statement, any change in retirement benefit levels for current employees or retirees is not without risk of legal challenge based on a number of theories.

The first and most frequent argument against retirement benefit reduction is the contract theory between the employer and the worker. Under the contract clause of the United States Constitution, a state cannot impair a contract, except in limited circumstances – when the change in the contract is justified by an important, reasonable and necessary public purpose. State financial problems, inadequate retirement plan funding, or “actuarial necessity” are possible justifications for benefit reductions. A variety of additional legal hurdles must be considered for impairment, such as does the action taken substantially impair the contract, if the necessity of the changes “were unforeseen and unintended by the legislature” when the contract was formed, if a less drastic action could have been implemented, or if the state could have achieved its goals without the cut?

A state always retains its power to amend a contract using its “police power,” but these hurdles are very onerous.

Additional arguments against benefit reductions include promissory estoppel and property rights that avoid the need to prove the existence of a definitive contract. However, these theories have generally not been as persuasive a legal argument against benefit cuts as have contract rights.

To the extent that pensions are property, they are protected under the Fifth and Fourteenth Amendments to the U.S. Constitution from seizure without due process of the law, or just compensation. For example, in Ohio arguably a reduction in pension benefits with the intent to protect retiree health care benefits could meet the just compensation threshold.

Some state courts have ruled that employees covered by pensions have legitimate retirement expectations, and that these expectations may constitute property rights that the legislature cannot deprive them of these rights without due process of law.

The precise term of what plan provisions constitute a contract and/or property interest is not clear. For example, it could be at the moment that the member is vested, or once the member has met retirement eligibility. Some courts have ruled that a COLA is not a contract or property right until it is actually granted. On the other hand, it appears that in some states the contract and/or property right include all the terms and provisions of the retirement plan at the time the employee first became a member.

Some state constitutions provide additional specified protections of worker benefits. For example, some states have provided that a reduction is permissible only if balanced by “comparable new advantages to that employee.”

State actions to reduce retirement benefits have frequently resulted in class action lawsuits seeking reversal of the changes. Some of the litigation has been prompted by marketing efforts of national law firms seeking class action candidates. However, plaintiff pension lawsuits are expensive and risky, and in the absence of financial backing by organized employee groups, may not have adequate funding for the lengthy process. For example, in Colorado and Minnesota, a cut in COLA was determined by the district courts to be permissible (even for current retirees), but the plaintiffs did not appeal the Minnesota ruling and have not significantly expanded their original unsuccessful arguments in the Colorado appeal

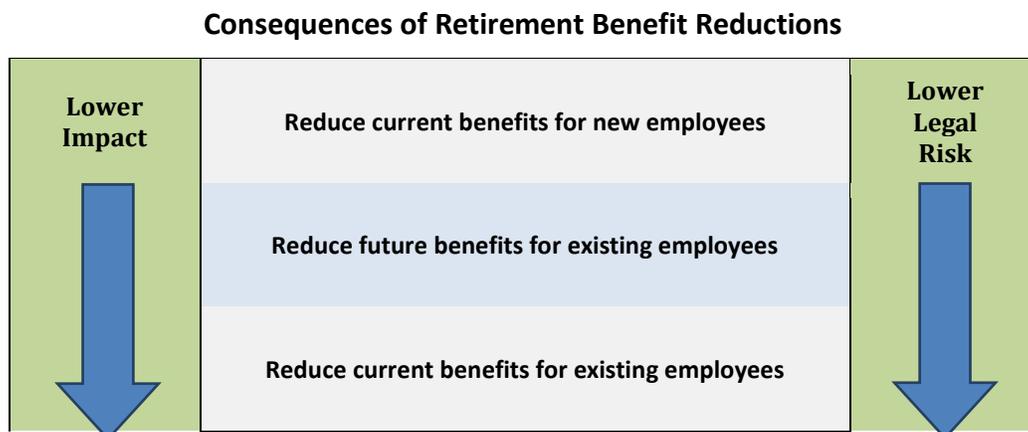
Specifically with regard to the climate in Ohio, two factors may be important:

- State law has established a 30-year funding standard and requires the systems to recommend changes to the Legislature to stay within the 30-year requirement
- Ohio courts have apparently ruled that public pension plans create property interests rather than contract rights (e.g., Horvath v. State Teachers Ret. Bd., (1998)).

In summary, before any retirement benefit reduction can be successfully challenged, the first hurdle is to ascertain whether the benefit reduction is a breaking of a real or implied contract or alternatively a reduction of a property right. If not, a reduction is presumably permissible. If so, the challenge must also satisfy the onerous criteria discussed above.

Retirement benefit reductions for workers not yet hired are clearly legal, but any other changes have the risk of an uncertain legal challenge. For the systems in a more severe financial state, the necessity or “justification” requirement precipitating action could be a stronger argument.

The following chart summarizes the tradeoff between effectiveness and legal risk of different retirement benefit reductions.





In this report, we have not reflected the legal arguments against potential benefit reductions in our comments or recommendations.

2.13 Actuarial Assumptions

Our analysis of the 30-year plans is based on the assumptions used by each system in determining the required contributions of the plan benefits. These assumptions have been developed by each system based on the advice of their independent consulting actuaries and investment consultants, actuarial standards of practice, and detailed periodic experience analyses as well as long-term asset/liability projections.

The purpose of this brief review of a complex subject is to compare the assumptions used with common peer practices and provide some background on the basis of their development.

Economic Assumptions

Economic assumptions simulate the impact of economic forces on the amounts and values of future benefits. They have a significant impact on actuarial liabilities and must be set with a great deal of caution emphasizing the very long-term nature of pension obligations.

Key economic assumptions are the assumed rate of investment return and assumed rates of future salary increase.

Economic assumptions are normally defined by an underlying inflation assumption. By “inflation,” we mean price inflation, as measured by increases in the Consumer Price Index (CPI). The inflation assumption underlies all the other economic assumptions. It impacts both investment return and salary increases. The underlying inflation assumption for the five systems ranges from 2.75% for STRS, 3.0% for OPERS and HPRS, to 3.25% for SERS and OP&F. These levels of inflation are slightly higher than the recent experience, but very consistent with many peers, and solidly in the generally accepted range.

While inflation has been relatively low over the last ten years, if we look back over a period of 25 or more years, annual inflation has averaged above 3%. We recognize that most of the investment consulting firms, in setting their capital market assumptions, currently assume that inflation will be less than 3%. The following table illustrates the inflation assumptions by each of the five systems’ investment consultants.

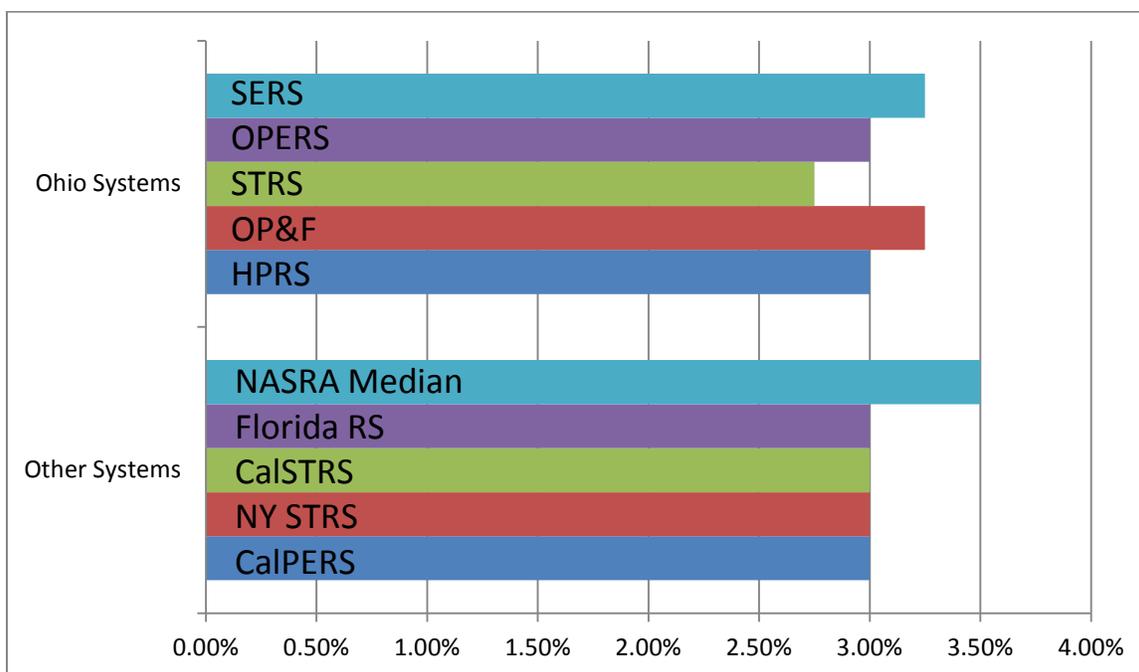
Investment Consultants Inflation Assumptions

System	Investment Consultant	Inflation Assumption
SERS	Summit Strategies	2.50% or less
OPERS	Mercer	2.80%
STRS	Callan	2.50%
OP&F	Wilshire	2.50%
HPRS	Hartland	Not explicitly reported
Average		2.57% or less

However, the investment consulting firms usually set assumptions based on a five or ten year outlook, while actuaries must make projections over a much longer time frame.

Another source for predicting future inflation is the Treasury bond market. The current inflation indexed bond yield for bonds maturing in 2042 is 0.770% plus actual inflation. The yield for long non-indexed treasury bonds maturing in 2042 is 3.383%. This means that the bond market is predicting long term (30 years) inflation of about 2.613% (3.383% – 0.770%). The Public Funds survey prepared by Keith Brainard on behalf of the National Association of State Retirement Administrators (NASRA) and National Council on Teacher Retirement (NCTR) shows that the median inflation rate assumed for large statewide retirement systems is currently 3.50%. As shown in the following chart, four large peers use assumptions consistent with Ohio’s.

Inflation Rate Assumptions



As a result of the decrease in inflationary expectations cited above, actuarial inflation assumptions have been modestly falling nationwide in general.

The Social Security Administration actuaries project a phase-in of their intermediate inflation assumption from 1.9% in 2012 to 2.8% by 2019.

Reasons for decreasing the inflation assumption include:

- The 10-year average CPI is well under 3%.
- Even the 75 year average CPI is just over 3%.
- Social Security uses 2.8%.
- The bond market predicts inflation of 2.6% over 30 years.
- Most investment consultants' capital market assumptions are under 3%.
- Most economists predict inflation (albeit over shorter periods) of under 3%.
- Using inflation rates higher than necessary push up nominal investment return expectations, which are the most visible and controversial of the actuaries' assumptions.

Reasons not to lower the inflation assumption include:

- Most other systems still use 3% or higher.
- The 30-year average CPI (including the high inflation early 1980s) is over 4%.
- Current inflation rates are at about the assumed level

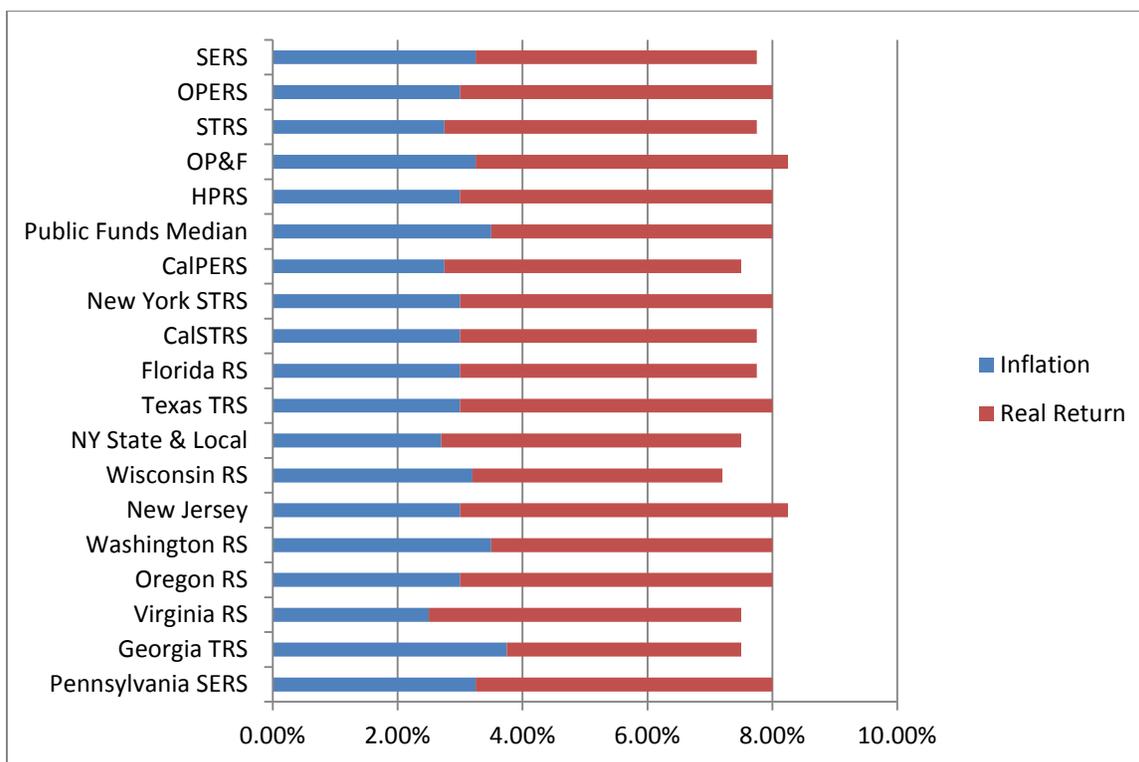
We believe that an appropriate inflation assumption long-term is 2.50% to 3.25%. This is in line with the average for the last 20 years, and a little below the long-term historical average. On balance, we believe that although the evidence for lowering the assumption is strong, the assumed rates are reasonable, and a bit conservative.

Investment Return Assumption

There has been much controversy over investment return assumptions in recent years. Past investment performance, even averaged over a ten-year period, is not a reliable indicator of future investment performance. The asset allocation of the trust will most significantly impact the overall performance, so returns achieved under a different allocation are not meaningful. More significantly, though, the real rates of return for many asset classes, especially equities, vary so dramatically from year to year that even a 10-year period may not be long enough to provide reasonable guidance.

The following chart shows that Ohio systems investment assumptions are very consistent with peers.

Retirement Systems Investment Assumptions

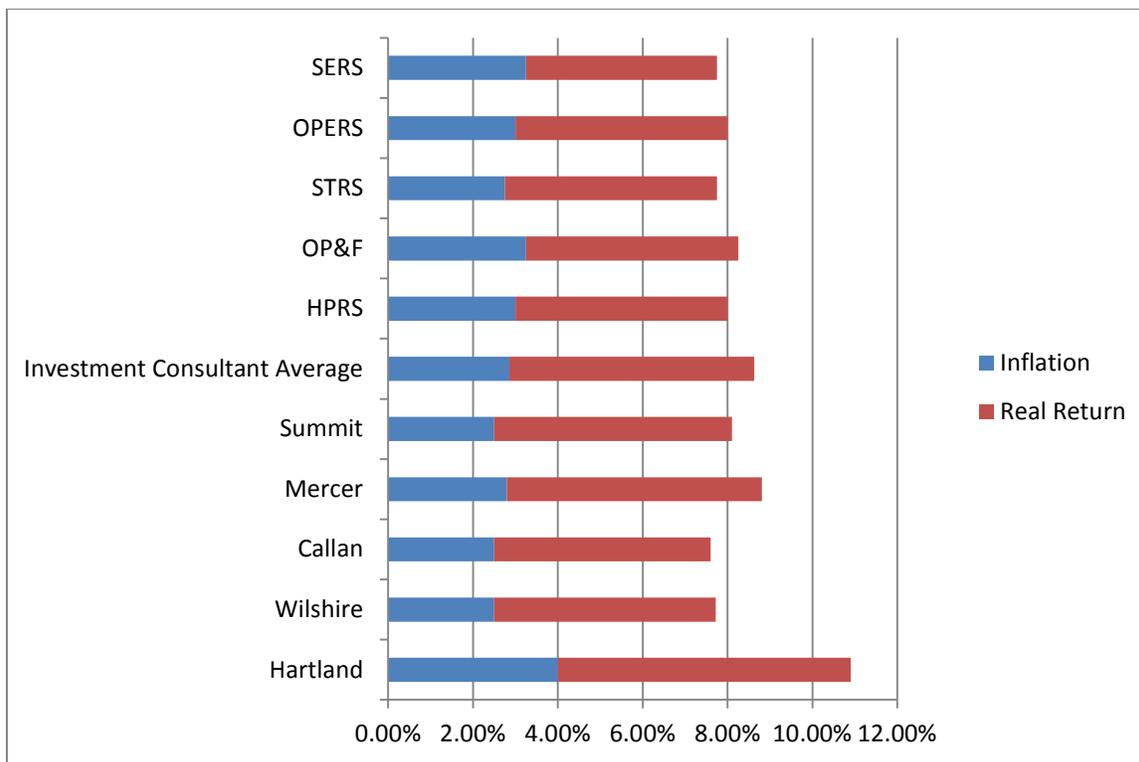


The public plan survey mentioned previously shows that 8.00% remains the median investment return assumption for statewide retirement systems. However, because most investment consulting firms have reduced their expected returns for most asset classes, including traditional domestic equities and domestic fixed income investments, the current assumption is less conservative than it was five or ten years ago under those outlooks.

Actual returns can vary significantly from this assumption. For example, the Wilshire Monte Carlo simulation for OP&F produces a median net return of about 8.6%. The same analysis shows that even over a period of 10 years, there is still about a 25% chance that the average net return for the period could exceed 11.14% and about a 25% chance that it could be less than 6.10%. As discussed above, we concluded that there is about a 25% chance that returns over a five year period will average 5% or below.

Furthermore, investment consultants have provided their best expectations for future investment income, and their expectations are shown below in comparison with the Ohio systems current assumptions.

Investment Consultants' Inflation and Return Assumptions



The assumed rate of return is a strong estimate of what actuaries believe the very long-term return will be and has historically been based on very long-term capital market returns. Essentially, that means they believe there is about a 50/50 chance that returns will exceed that target.

We agree that a return assumption in the range of 7.75% to 8.25% is reasonable. However, we also believe that the systems and the ORSC have to consider the possibility of lower returns and to actively prepare for that possibility. That is the purpose of our “stress tests” as discussed.

There has been considerable debate in the actuarial and financial community in the past five years over the appropriateness of using an actuarial investment return assumption that anticipates future returns on a fund that includes any risky assets such as equities. Some academics argue that actuarial assumptions should anticipate bond returns only and therefore be much lower than the 8% common practice. Although this has some interesting theoretical tenets, the practical ramifications are profound. Actuaries and investment professionals really do expect to earn more than simply bond returns from the diversified pension funds in the long run. Ignoring this expectation would generate much higher costs to the current generation of taxpayers or significantly reduce benefits for current generation of retirees and workers.

Wage Growth Assumptions

The wage growth assumption is a combination of:

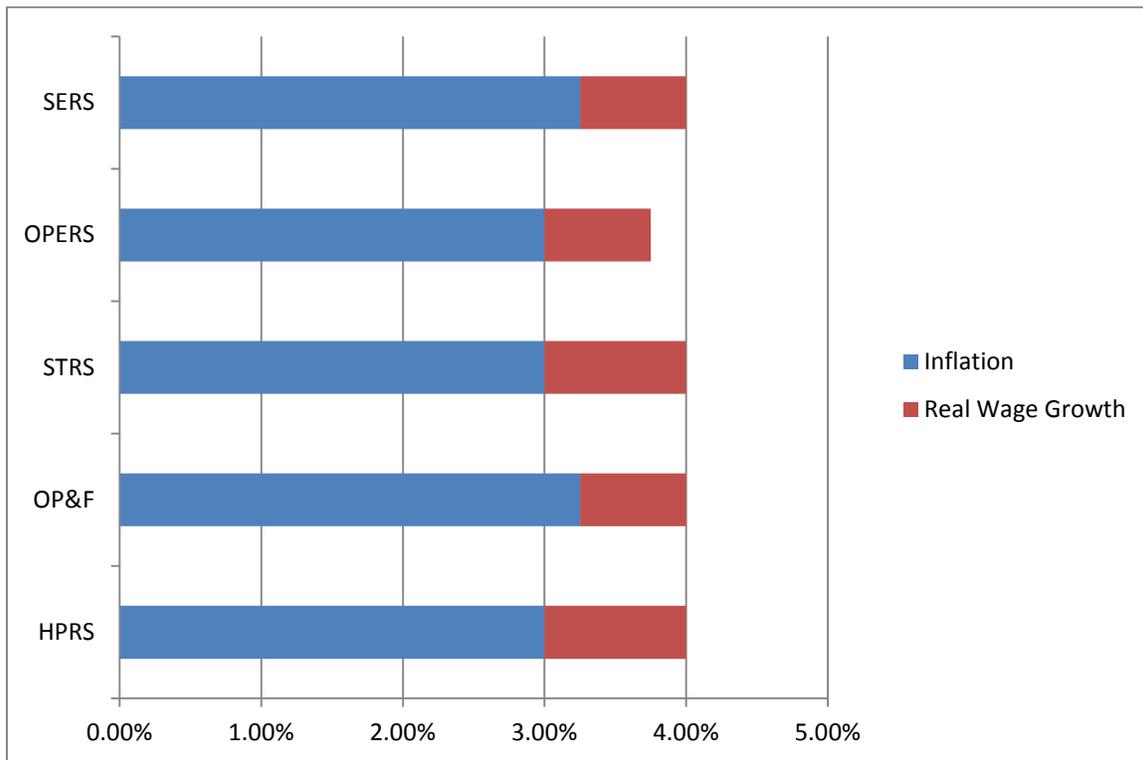
- A general wage growth assumption (inflation + a standard of living increase).
- A merit scale assumption (promotion and longevity).

The general wage growth assumption is economic in nature. It reflects the general growth in a pay scale. The merit scale reflects movement through a given pay scale both in terms of longevity and promotion.

The data on pay does not distinguish these sources of pay increase. As a result, the actuary must consider these sources of pay increase in setting a wage growth assumption.

The following table illustrates the nominal wage growth assumptions used by each of the systems.

Nominal Payroll Growth Assumptions



As you can see, four of five systems use a payroll growth rate of 4%. One minor exception not noted on the graph is that STRS assumes it will be only 3.5% for the next seven years, then 4.0% beyond that period. We find these assumptions reasonable and consistent with practice nationally.

Salary Increase Rates

In order to project future benefits, the actuary must project future salary increases. All members are assumed to get an increase of 4% for general wage growth plus an additional merit salary increase. The merit increase rates vary by age and service. The total increases range from 22% for first year school employees to 3.25% for teachers who are age 65 or older.

The following table provides sample salary growth rates.

Sample Salary Growth Rates

System	Rate for early career (Highest Rate)	Rate for 40 year old with 10 years of service	Rate for late career (Lowest Rate)
SERS	22.00%	4.00%	4.00%
OPERS	8.30%	5.80%	4.70%
STRS	12.75%	6.05%	2.75%
OP&F	11.00%	5.00%	5.00%
HPRS	14.00%	5.00%	4.30%

In general, salaries may increase for a variety of reasons:

- Across-the-board increases provided by the employer for all workers.
- Across-the-board increases for all workers of a classification
- Increases to a statewide minimum salary schedule
- Additional pay for additional duties, such as teaching in a summer program
- Step or service-related increases
- Increases for acquisition of advanced degrees or specialized training
- Promotions
- Bonuses, if available
- Merit increases, if available

The actuaries develop salary scales based on extensive reviews of past practices by age and service, combined with forward looking core inflation. The assumptions used by the five systems appear reasonable.

Consistency with Actuarial Standards of Practice

Actuarial Standard of Practice Number 27 governs the “Selection of Economic Assumptions for Measuring Pension Obligations” and was developed by the Actuarial Standards Board of the American Academy of Actuaries. We find that the economic assumptions for the Ohio systems were selected in accordance with this standard.

Demographic Assumptions

Demographic assumptions simulate the movement of members into and out of membership and between status types. Key demographic assumptions are:

- Benefit recipient mortality.
- Retirement patterns among active members.
- Turnover among active members.

In addition, a number of other demographic assumptions have substantially less impact, such as:

- Disability incidence and mortality and recovery among disabled benefit recipients.
- Mortality among active members.
- Retirement from vested terminated membership status.
- Probability of terminating members taking a refund.
- Distribution of option selection.
- Percent of active members who are married and the relationship of the ages of members and spouses.

Demographic assumptions for huge public employee retirement systems such as the Ohio systems are normally established by statistical studies of recent actual experience. Such studies underlie the assumptions used in the valuations.

Demographic assumptions are reviewed in reference to actual experience over a three to five year period. Actual experience during that period is compared to that expected based on the actuarial assumptions then in use. This relationship is measured with a ratio of actual experience to expected experience. This is known as the A/E ratio. If the A/E ratio is equal to 1.00, the actual experience has been precisely forecast by the assumptions. If that ratio is greater than 1.00, the assumption has underestimated actual experience. If the ratio is less than 1.00, the assumption has overestimated actual experience. A review of the patterns of these ratios determines whether an adjustment is needed and will help to determine the adjustment.

Once it is determined whether or not an assumption needs adjustment, setting the new assumption depends upon the extent to which the current experience is an indicator of the long-term future.

1. Full credibility may be given to the current experience. Under this approach the new assumptions are set very closely to recent experience.
2. Alternatively, the recent experience might be given only partial credibility (the new assumptions may be set by moving in the direction of the new experience without going “all the way”).
3. Finally, if there are forces that will render it atypical of the future, such knowledge is taken into account.

For the most part, the actuaries have chosen to develop assumptions based on 1, above. This is the normal approach to setting demographic assumptions for credible data from very large public employee retirement systems.

Mortality of Benefit Recipients

Mortality is a unique actuarial assumption in that it is expected to improve with time. Seventy year-old retirees today have lower mortality rates than their parents did when they were 70 and it is expected that their children will have lower mortality rates still when they are 70. Actuarial valuations of pensions need to consider the mortality of today's retirees as well as the retiree mortality of today's active members who have not yet retired.

The most robust way to account for improving mortality is to use a generational mortality basis where lower mortality is assumed for future generations than for current generations. This is a relatively new actuarial practice, not yet widely used in the public sector, but gaining popularity in light of new actuarial standards of practice. Three of the five systems use some form of generational mortality. Those that do not may be deferring the use in part because of the complexities that would result in the actuarial equivalent option factors.

In addition, the best way to predict future mortality improvement is a topic of debate in the actuarial community. A recent article in the New England Journal of Medicine argues that current extrapolation models used to predict future mortality may overstate future mortality improvements. The authors conclude "the steady rise in life expectancy during the past two centuries may soon come to an end." Recent publicity on obesity as a new epidemic lends credence to this thought.

Following is a table showing the various mortality tables used by the five systems.

Mortality Tables and Adjustments

System	Mortality Table	Adjustment
SERS	1994 Group Annuity Mortality Table	Set back 1 year
OPERS	RP 2000 Combined Tables	Males – Increase by 10% Females – Project to 2025
STRS	RP 2000 Combined Tables	Projected to 2022 using Scale AA Males under 90 – 2 year setback Females under 80 – 4 year setback Females 80 - 89 – 1 year setback
OP&F	RP 2000 Combined Tables	Set forward 1 year for police Set back 1 year for firefighters Set forward 1 year for beneficiaries
HPRS	RP 2000 Combined Tables	Projected to 2020 using Scale AA

We find the assumptions to be typical with current practices and reasonable, particularly because of the rigorous analysis of each experience study that has led to the choice of these tables.

Service Retirement

Like the other major demographic assumptions, retirement rates are analyzed based on past experience. It is important to keep in mind that reductions in pension or health care benefits may likely delay retirement. These have been considered to some extent in the analysis of the 30-year plans. Consequently, there is some possibility that retirements will delay more than anticipated, generating favorable actuarial experience.

We reviewed the rates used by the five systems and find them to be reasonable and in line with typical practices.

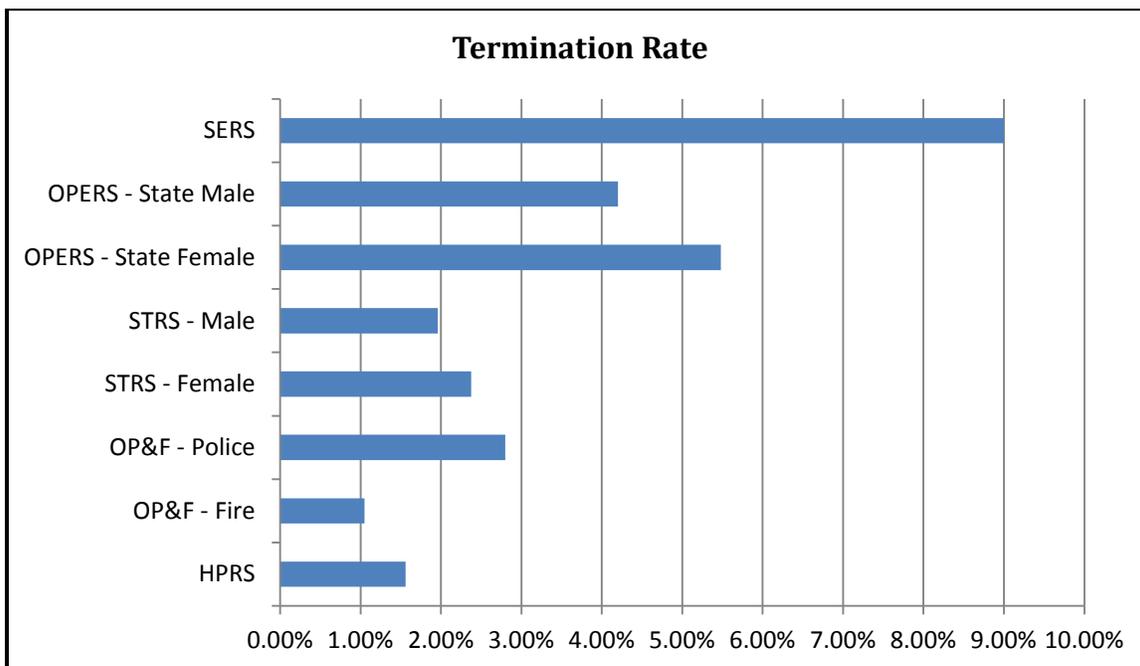
Disablement

Like other demographic assumptions, disablement rates are rigorously analyzed at each experience study. Rates used by the five systems appear to be reasonable, and reflective of the experience analysis. Disability benefits are discussed in section 2.16.

Withdrawal

Actuaries analyze withdrawal assumptions by age, service or both. For comparison purposes, following is a graph showing sample termination assumptions for a 35 year old with five years of service.

Sample Termination Assumptions: Age 35, Five Years of Service



Unlike investment return or inflation, withdrawal rates do differ from system to system because of various labor factors. In the aggregate, these rates appear to be reasonable.

Other Assumptions

Many other minor assumptions are used but were not explicitly studied or analyzed including:

- Age difference between husbands and wives for future annuitants.
- Children’s ages for future disabled members.
- Future sick leave accrual utilization.
- Distribution of option selection.
- Percent of active members who are married.

Consistency with Actuarial Standards of Practice

Actuarial Standard of Practice Number 35 governs the “Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations,” developed by the Actuarial Standards Board of the American Academy of Actuaries. We have reviewed this standard in light of the actuaries’ development of demographic assumptions for the Ohio systems. We find that the assumptions appear to be selected in accordance with this standard.

2.14 Pooling, Coordination of Benefits, and Other Issues

The major thrust of this report is to explore the 30-year plans of the systems and to consider the best alternatives to assure sustainability of the retirement plans and continue to provide a

meaningful health care benefit within the current resources. While operational or administrative efficiencies, or minor plan structure changes, may help the sustainability goals, they will not solve the funding problems facing the Ohio systems. The primary focus should in our opinion be placed on meaningful benefit and/or employee contribution changes rather than relatively minor other issues. Nevertheless, they are important subordinate issues.

The Ohio retirement systems do coordinate and collaborate in several areas. For example, the executive directors of the systems communicate regularly on common issues and, of course, serve together on the ORSC as non-voting but important members. Legislative and communications staffs of each system also meet regularly to discuss relevant common issues.

The Ohio retirement systems also have explored areas to create efficiencies by working together including:

- pooling of purchases in order to maximize their efficiencies and buying power, and
- coordination of benefits for members whose employment status makes them ineligible for their current plan and eligible for another Ohio system, or who become entitled to benefits from another program in addition to the Ohio plans.

Pooling and Purchasing of Services

In 2010, a subcommittee was formed to discuss how the Ohio pension systems could collaborate to save money, preserve resources and improve the quality of services. Purchasing delegates representing each of the systems met several times throughout 2011 to discuss shared services. They identified several potential areas including:

- fiduciary insurance;
- information technology hardware;
- copy paper & office supplies;
- cellular service;
- printing;
- disability services;
- health care consulting; and
- wellness programs.

Generally, pooling and purchasing of service is most advantageous to smaller pension funds in order to attain the cost and efficiency advantages due to the economies of scale. The Ohio systems are among the largest systems in the country and each system independently would typically be able to negotiate price efficiencies.

However, the systems concluded that some opportunities were more viable than others. Some examples follow.

Health Care Administration

OP&F asked United Healthcare (UHC), their vendor, about pooling the administration of retiree health care plans. UHC indicated that health care price negotiations were not likely to be significantly improved because of making the employee pool bigger and the current membership was adequate for effective price negotiation. In addition, because premiums are based on past experience, pooling additional retirees would not impact the actual costs for each system, it would merely combine them. Modest savings in administrative costs could result from pooling, but that would be dependent upon the benefit standardization efforts and options offered. In addition, the rate from pooling could misalign the cost for each group from their own experience. For example, a system with healthier membership could end up subsidizing the systems with higher cost users of health care.

Management Liability Insurance

Four systems and Ohio's Deferred Compensation Program issued a joint RFP for Management Liability Insurance. They chose the firm, ARC Excess, as the appointed insurance broker who is now obtaining quotes from the insurance companies for policies to be effective September 15, 2012. They anticipate saving as much as \$250,000 without giving up favorable terms and conditions. Group negotiations could even improve terms and conditions.

Pharmacy Benefits Manager

The retirement systems share special counsel fees when they have common projects and the same counsel. A key example of this was the drafting and negotiation of the Pharmacy Benefits Manager (PBM) contract with Express Scripts. Although there were separate contracts for each system, the block negotiating resulted in more favorable rates than had they not pooled.

This PBM contract facilitated the creation of the Rx Ohio Collaborative, established by The Ohio State University. The Rx Ohio Collaborative allows various state entities, including the retirement systems, to negotiate improved contract and pricing terms through membership in the collaborative. Their estimate of savings is about \$300 million for the 400,000 covered lives.

Information Technology

The systems have shared IT services, sometimes resulting in cost savings. One example is when SERS, OPERS and STRS shared programming work on a custom records retention tool for email. They are also sharing custom Web page coding for an upcoming online data exchange. The systems are also eligible to receive pricing available under the state term schedule. Although they can typically receive more favorable pricing without utilizing the state term schedule, they generally verify those rates before finalizing IT purchases.

Investment Management Pooling

Opportunities for investment management efficiencies were not analyzed by the subcommittee, but investment management fees are the most significant expenses of the systems. Cost savings achieved in this area could be significant.

A similar analysis of the large Illinois retirement systems yielded the following findings.

- First, it was not recommended that the systems assets be pooled, due to:
 - tremendous disruption from consolidation
 - changes in system autonomy
 - desire for more investment expertise in state employment
 - disharmony between current investment strategies of the systems
 - lack of desire for a single more powerful entity
 - other intangible factors
- Savings were estimated at \$21 million per year
- Transition costs would be \$31 to \$48 million depending on market volatility at the time of transition. These costs are comprised of:
 - commissions
 - market impact cost
- The costs and savings would equate to a 1.5 to 2.5 year payback period
- The above analysis was based on three large Illinois Systems with \$65 billion of assets at the time. Ohio's five systems now have approximately \$165 billion in assets, so one would expect both larger savings and costs than Illinois by a factor of 2-3.
- The Investment Subcommittee of the Pension Modernization Task Force unanimously recommended to the Illinois General Assembly to not pursue investment consolidation as proposed by the State Treasurer.

System Consolidations

The ultimate in pooling would be to merge some or all of the systems. As we interviewed the Councilmembers, it was clear that consolidation of the systems was not a current goal or purpose of this analysis. A more rigorous analysis of system merging is beyond the scope of this study, but a few words are appropriate.

Consolidation may be particularly appropriate to facilitate uniformity of benefits among employees with similar jobs or even among all public employees. However, our interviews have not detected a strong desire for uniformity.

Consolidation is also sometimes considered to achieve other objectives including ease of employee movement among any and all public employment opportunities within the State, to achieve economies of scale, or to combine poorer funded plans with better funded ones.

Finally, a consolidation or merger might be a legislative or executive branch management preference to facilitate oversight responsibilities.

There are certain groups of employees which might make sense to merge into one system:

- Public safety workers now in OPERS Law Enforcement division, OP&F, and HPRS
- Education workers now in SERS, OPERS Universities, and STRS

In many states and jurisdictions, these classifications of workers are covered by the same plan, while in Ohio there has been a long history of the current separate structure and assignment of workers to separate systems. Although there may be a philosophical or oversight appeal to some consolidation of the membership, the disruption and transition issues of change would be substantial. There would clearly be a need to maintain the benefit differences that currently exist at least for current members unless each member were “topped up” to the more favorable benefits. In that case, there would be real and significant costs for the additional benefits.

Recommendation

We recommend that the systems continue to seek opportunities to pool purchasing, as has been done with the 2010 subcommittee. We do not recommend combining systems or investment operations.

Administrative and Investment Costs

The Ohio systems retain an independent firm, CEM, to evaluate and compare its administrative and investment expenses by function and area of responsibility. The CEM analysis is extensive and provides a detailed analysis of how the Ohio systems compare to their peers.

The following illustrates a simple overall comparison of the fees (as a percentage of fund assets) for both administrative and investment related functions for each system as summarized in the latest CAFR of each system.

Administrative and Investment Costs as a Percentage of Fund Assets*

	SERS	OPERS	STRS	OP&F	HPRS
Administration	0.24%	0.10%	0.11%	0.16%	0.11%
Investment Management	0.88%	0.22%	0.31%	0.35%	0.73%
Total	1.12%	0.32%	0.42%	0.51%	0.84%

* from Systems' most recently published CAFR reports, computed as percent of beginning-of-year assets.

As an overall benchmark not related to size or complexity, the Public Fund Survey conducted by the National Association of State Retirement Administrators determined an average annual public retirement fund total administrative and investment cost of less than 0.50% of assets.

The level of administrative and investment costs is dependent upon a number of factors including benefit complexities, size of fund, efficiency, investment style, internal and external management, and services performed.

Findings

The overall level of administrative and investment expenses are consistent with national findings for OPERS, STRS, and OP&F. Both SERS and HPRS have significantly higher costs, particularly related to investment management fees. The relatively small asset base of HPRS may contribute to its relatively high costs.

The ORSC may wish to evaluate the reasons for the apparent comparatively high costs for both HPRS and SERS.

Coordination of Benefits

Worker Transfers

When a worker changes from coverage in one retirement system to another, final benefits are reduced because the employee starts over in the new system unless there is a coordination of benefits or a reciprocity agreement. A coordination of benefits effort is common practice around the country, particularly for intra-state transfers, but with a wide disparity of practices. SERS, PERS, and STRS, for example, have reciprocal arrangements so that the system from which the worker had the largest amount of service is responsible for the benefit payment. At retirement, the worker receives benefits under the terms of that system as if all the employment was covered by that system. The system ultimately responsible for payment receives the member contributions plus employer contributions from the system that is not paying the benefit.

The situation for uniformed members is slightly different. All five systems allow uniformed employees the ability to get service credit for time under the uniformed plan by paying to the new system the amount of contributions refunded from the prior uniformed system. However, there is no coordination of benefits for workers joining OP&F or HPRS from SERS, OPERS or STRS. This is consistent with the maximum age requirement typical in public safety. Whenever there is a portability of benefits, there is an actuarial loss compared to non-portability. The system acquiring the liability for new workers does not receive the full value of that liability. The amount of the actuarial loss may be negligible, as long as roughly the same numbers of workers transfer in as out of a system.

Other systems nationally have different approaches, but the intent is the same—to lessen the loss of benefits due to changes in employment and frequently to facilitate mobility within the state. In some, there is a pro-rata share of benefit paid, so that the system paying the benefit does not generate an actuarial loss.

Often, there is no reciprocal ability at all. This is one of the motivations for statewide teacher systems. In Colorado, for example, Denver Public Schools (DPS) was not in the statewide PERA. So when teachers transferred in or out of DPS from another Colorado school district, pension credit was lost. This had the undesired effects of lack of mobility prior to retirement eligibility, followed by high likelihood of moving across town and taking a job at another district following retirement. Another example is in Missouri, where the Kansas City and St. Louis school districts are not in the Public School Retirement System of Missouri, but there is some sharing of service credit for teachers who transfer.

A change in employment that involves moving out of state is very infrequently subject to reciprocity agreements.

Benefit Offsets

Retirement benefits (as well as disability and pre-retirement survivor benefits) in the public sector for states with Social Security coverage have historically been designed to be independent of Social Security and are designed to replace an adequate level of pay including Social Security benefits. The retirement plan provides a defined benefit according to the plan terms and Social Security provides a separate benefit with no attempt to directly coordinate the two benefits. An alternate approach would be to provide a larger gross benefit from the retirement plan that offsets Social Security benefits so a more precise income replacement target can be attained. This latter approach is rarely used in the public sector for retirement benefits.

It would be very unusual for a non-Social Security coverage state to offset Social Security benefits against any state retirement plan benefits under the theory that any Social Security benefits were earned as a result of employment in the private sector or perhaps from employment as a public employee that also had Social Security coverage.

Offsets have been most commonly used in disability income plans because of the concern of overuse and over payment of this benefit. Some disability plans in the private sector or public sector may include an offset for:

- Employer Long Term Disability (LTD) insurance
- Social Security disability
- Workers compensation
- Unemployment compensation
- Earned income
- Third party settlements
- Annual annuity payable from a defined contribution balance

Disability offsets can be very difficult to administer and challenging to uncover. The savings from offsets may not significantly exceed the administrative costs and controversy of the offsets. Often the offsets are only considered once a maximum total disability benefit is

available from all sources, or a minimum disability benefit is payable. Finally, where offsets do occur, the level of benefits must be considered.

A 2006 survey conducted by North Carolina Retirement System reported that only 13 states offset for Social Security Disability—and all of these states had Social Security coverage. One challenge of offsets is ascertaining what other sources of income are available. The same NC survey asked about this and found that:

- 21 states ask recipients to report outside income
- 14 states require tax documents to be submitted
- 12 states communicate directly with other benefit organizations such as the Social Security Administration

OPERS is proposing a Social Security Disability Income offset in their 30-year plan.

Recommendation

As each system considers reductions in benefits as they develop their 30-year plans, they should analyze the appropriateness of various offsets. The coordination of benefits approach for worker transfers in Ohio is reasonable.

Return to Work

The ability to retire from public employment and return to work with the same (or another public employer) in the same or another job and receive a benefit while employed (double-dipping) has been the subject of much discussion nation-wide.

Critics cite the following objections:

- Retirement benefits should only be paid when completely retired
- Immediate re-employment with same employer in same job is a sham and not a legitimate retirement
- Potential costs to the systems due to encouraging early retirement

Supporters believe:

- Employees should be entitled to benefit when earned upon retirement regardless
- Employers need the ability to hire experienced employees
- Social Security has no penalty for work after normal retirement
- Retirement patterns are not influenced significantly

It is our understanding that the Ohio systems provide the following benefits upon reemployment after retirement:

- The retirement benefit (including the COLA) continues, but forfeited for up to two months if employment is in the first two months after retirement
- Employee and employer contributions are made during reemployment
- If subsequent retirement is before age 65 (60 for public safety employees), only

employee contributions plus interest refunded

- If subsequent retirement is after age 65 (60 for public safety employees), employee contributions plus a 50-100% employer match plus interest refunded
- Generally, health care is provided by the employer and not the system, with a few exceptions

This practice implies the following public policy:

- Ohio system members are entitled to system retirement benefits upon retirement, regardless of reemployment with public employers (except for the initial two month potential suspension)
- Subsequent employment does not entitle the employee to an additional defined benefit
- No employer funded benefit upon reemployment is provided unless the employee retires again after normal retirement age
- At retirement, a relatively modest cash balance is paid
- Health care coverage is not generally the responsibility of the retirement system during reemployment

The current Ohio practice is reasonable and avoids the common practice of permitting reemployed retirees to earn an additional defined benefit (triple-dipping). It also provides some beneficial funding to the systems since the value of the cash balance account is less than the additional employer contributions. We have not seen any studies of the cost of the current practices to the systems or the prevalence of retire/rehire, but we doubt that the incremental cost is significant.

Public perception is an important consideration and the current practice does not preclude a common criticism of “Friday to Monday retirements” engineered by an employee and willing employer that permits essentially unbroken employment in the same job with the same employer at the same pay merely to permit the commencement of retirement benefits while remaining employed. The two-month suspension of retirement benefits in that instance is not a significant deterrent.

A philosophical belief that retirement benefits should not be paid during any public employment would make any solution other than complete suspension of retirement benefits during reemployment unsatisfactory. That would be an unusual practice for all instances of reemployment.

Recommendations

The current practice is reasonable for instances of reemployment in a different job and with a different employer since in most instances that would represent a definite break in the employer-employee relationship. Part-time or temporary employment after retirement is an attractive source of experienced personnel and allows employees to supplement retirement income for a period of time.

However, the current practice does not effectively address the most common criticism of continued employment with the same employer, and particularly with the same employer in the same job. To discourage that practice, the suspension period could be extended to:

- 6 months for reemployment with the same employer within 60 days but not in the same job and
- 12 months (or even for the entire duration of the reemployment) for return to work with the same employer in the same job within 60 days of termination of employment)

Alternatives to benefit suspension that would still discourage the practice include:

- Paying the retirement benefit but not the COLA during the reemployment
- Paying a reduced retirement benefit (with no subsidy for payments before normal retirement age) during the reemployment, and no COLA

2.15 Government Accounting Standards Board (GASB) Potential Impact

GASB Statements No. 25 and 27, as currently effective, have fairly flexible provisions for calculating annual pension costs. These are used not only for accounting purposes, but often for purposes of determining the cash contribution requirement. Most conventional actuarial cost methods are permitted, including the Entry Age method used by the Ohio pension systems. GASB 25 and 27 also permit amortization of unfunded liabilities over periods up to 30 years, amortization based on increasing payroll, and rolling amortization. The methods used by all five systems satisfy current GASB rules. But GASB is about to change significantly.

The most important GASB changes will impact all public systems and public employers. First, employers will be required to show a liability on their balance sheet of their portion of the plan's unfunded liabilities based on the market value of plan assets. Second, the new standards will result in a break between accounting and cash funding. Remember that GASB is the Governmental *Accounting* Standards Board, and not the Government *financing* Standards Board. They're reminding us of this distinction.

GASB 25 and 27 have a concept known as Annual Required Contribution (ARC). But GASB has no authority over what a pension *contribution* should be, only authority of what is to be reported as an accounting cost. The ARC was widely accepted, however, as a prudent bogey for what should be *contributed* into a pension. Nearly all jurisdictions, including the five Ohio systems, attempted to contribute the ARC. Many considered whether a government contributed ARC was a red flag or gold star. For example, in the widely-cited 2010 Pew Center on the States report, *Trillion Dollar Gap: Underfunded State Retirement Systems and the Road to Reform*, Ohio was one of 16 states lauded as a "solid performer" for pensions and one of nine "solid performers" for health care, in large part because of Ohio's history of having the ARC contributed.

But beginning in 2014 with the more rigid GASB standards and the explicit divorce between accounting and cash contributions, virtually all plans and government employers will report two

numbers – the GASB accounting cost, and their own “actuarially determined” contribution, and these numbers will be quite different. Key components of the GASB changes include:

- No more Actuarial Required Contribution
- Each individual employer required to report much more information including
 - Individual share of pension system annual accounting costs
 - Unfunded liabilities to be reported on individual government balance sheet
- Higher and more volatile annual pension accounting costs due to:
 - Shorter amortization periods
 - Limited asset smoothing
 - Lower interest rates depending on funded status

This will likely create confusion and misinterpretation among the public. While legislation will hopefully pass in Ohio that will “solve” the current pension program funding difficulties, once the new GASB provisions become public, it may appear that this was not the case. Communication of the facts will be an important responsibility of the pension systems and knowledgeable public officials. And because each public employer will be reporting these numbers on their specific balance sheets, this change will be very apparent.

Several organizations, including the National Governors Association, Council of State Governments and National Conference of State Legislatures are in the process of considering and developing model funding policies which may be adopted by various states and municipalities. We recommend that Ohio seriously consider adopting model funding policies.

2.16 Disability

Disability benefits in a retirement plan are an important element of income protection, particularly in high-risk jobs such as police officers and firefighters. However, they also may significantly add to the costs of the program due to the potentially very long lifetime payment period starting from young ages and the amount of the benefits. Therefore, the determination of eligibility for this benefit is a very important procedure to limit the benefits to those unable to continue working.

One simple measure to judge the frequency and duration of disability benefits is to compare the current number of members drawing disability benefits compared to those drawing retirement benefits. The following table provides the ratio for the Ohio systems.

Proportion of Ohio Public Retirement System Recipients Receiving Disability Benefits	
OP&F	35%
OPERS	15%
HPRS	10%
SERS	8%
STRS	5%

In our experience, that ratio would typically be no more than 5-10% for non-uniform employees and perhaps 10-18% for uniform employees. A current random sample of several statewide retirement plans for non-uniform employees and large city retirement plans for police officers and firefighters showed average ratios of 5% and 11%, respectively.

We note that OPERS has proposed changes in their disability benefits under their 30-year plan.

Recommendation

The percent of retirees drawing disability benefits are much higher than expected for OP&F and OPERS. A review of the definition of disability under each system and the initial and continuing disability determination procedure would be advisable.

2.17 Methodology for Stress Tests, Including Development of “Worst Case”

Each Ohio retirement system developed their own 30-year funding plan, which is designed to result in a fully funded plan after 30 years if all actuarial assumptions are met over that period. But actuarial assumptions are never precisely realized, so it is very likely that the systems will find that the 30-year plans were either too onerous or insufficient. The most critical disparity is if the plans are insufficient.

In order to analyze this, we performed “stress tests” to forecast the funding situation after five years under a plausible “worst case” scenario. We developed this worst case scenario based on the investment return assumptions analyzed through recent asset-liability modeling (ALM) studies conducted by each of the systems.

We chose to focus on the investment return assumption for several reasons. Investment return assumptions are the actuarial assumptions with the highest variability relative to the assumption, and this variability has the most significance. For example, while a typical assumption would be an 8% return, it is quite common to see an actual investment return less than 0% or more than 15% in any given year. This has a powerful influence on the unfunded liability and pension costs ultimately even though actual investment return is smoothed over a

number of years in practice. Consider a 70% funded plan that is expecting an investment return of 8% but actually earns 0%. In simple terms, the liability would grow by 8%, but the assets would stay flat. This 70% funded plan would drop to 65% based on one year's result. Other actuarial assumptions have neither that level of volatility nor influence. If 1000 retirees are expected to die, for example, it would be rare that less than 900 would die. A liability based on expectation of 1000 deaths but with only 900 deaths might increase by one or two percent. This is much less significant than the investment return impact. Even salary growth is less potent than investment return. It is possible (but not likely) to imagine pay raises 5% higher than the actuary expected, but that would only increase part of the liability by 5%, for a total impact of around 3% -- again, much less powerful than investment return.

There is not likely a significant positive correlation between unusual investment return and unusual other actuarial experience. If there were to be a high positive correlation, then it would be more statistically accurate to pair a bad investment return scenario with a corresponding bad (actuarially bad) scenario based on other assumptions. We are not aware of any studies analyzing such a correlation, certainly not specific to Ohio. It could be that when returns are low, it is because of poor economic conditions. In that case, the poor economic conditions would tend to keep salary increases low, worker turnover low, and perhaps retirement incidence low. But of those three, the salary and retirement impact would offset the actuarial losses caused by poor investment return, while only the turnover would be positively correlated. Consequently, we do not believe it is necessary or accurate to tack on other unfavorable actuarial experience to unfavorable investment experience, and investment experience alone suffices for a stress test analysis.

Investment return is the easiest of the actuarial assumptions to describe, communicate, and think about. We all are in tune with investment return far more than other actuarial assumptions. While we are basing our stress tests on investment return alone, it is also a proxy for other types of unfavorable actuarial experience.

Each of the pension systems have conducted robust ALM analyses where the volatility of investment return has been thoroughly studied with variance, variability and volatility quantified into quartiles and percentiles.

Findings from the various ALM studies include:

- SERS conducted an ALM study in 2010 by Summit Strategies. The study found an expected rate of return of 8.10% with standard deviation of 12.40%. SERS reports did not contain specific calculations by their consultants developing a five year worst case, but we can use statistical analysis to calculate that there is a 25% chance that average returns over 5 years will be 5.21% or less.
- PERS had an ALM study conducted in 2009 by Mercer. Their baseline arithmetic mean expected return was 8.81% with a standard deviation of 12.88%. From this, we can estimate that the five year 25th percentile worst case return is 5.89%.

- STRS in February, 2012 was presented with findings from their consultants, Callan. They found that using their current asset allocation targets, there was a 25% probability that the five year average rate of return would be 3.2% or less. They found that over ten years, there was a 25% chance that returns would average 4.3% or less. That the ten-year average worst case is higher than the five-year average worst case is because it is more unlikely to have a longer period of low returns than a shorter period of low returns. These worst cases were lower than those determined from three other systems' ALM studies, probably due to the relatively high volatility that Callan estimated the fund would have. Their expected return was 7.59% and they used a standard deviation of returns of 14.5%, highest of the five studies analyzed.
- OP&F has been conducting a series of ALM studies since 2009 with Wilshire. Their initial results found that using their current asset allocation targets, there was a 25% probability that the five year average rate of return would be 5.09% or less. This was consistent with their expected return of 8.59% and standard deviation of 11.95%. Since the initial 2009 report, the OP&F assumed median return has decreased to 7.72%. Using that figure and their standard deviation, we calculate a 25th percentile worst case five year return average or 4.90%. OP&F is in the early stages of another asset liability study and assumptions will change again.
- HPRS conducted an ALM study in 2007 with Harland & Co. They did not explicitly calculate the 25th percentile figure, but did report their median expected return of 10.90% with standard deviation of 10.7%. Using statistical analysis and normalizing to an 8.0% return expectation, we estimate a five year 25th percentile return of 6.37%. This is considerably higher than the other three studies, primarily due to the high expected return of 10.90% and lower assumed standard deviation of 10.70%. Because this study was the oldest of the five, before the 2008-2009 market correction, and because of the highest median expected return by far, we normalized HPRS results to their 8.00% investment return assumption. Because the other ALM studies had median expected return within 1% of the actuarial rate of return, no such adjustment is necessary.

The following table summarizes these results.

Development of "Worst Case" Assumption

System	Median Anticipated Return	Risk	Actuarial Assumption	Calculated Worst Case
SERS (2010)	8.10%	12.40%	7.75%	5.20%
OPERS (2009)	8.81%	12.88%	8.00%	5.90%
STRS (2011)	7.60%	14.50%	8.00%	3.20%
OP&F (2009-2010)	7.72%	11.95%	8.25%	4.90%
HPRS (2007)	10.90%	10.70%	8.00%	6.40%
Averages	8.63%	12.49%	8.00%	5.10%

Note that this analysis is somewhat simplistic and based on five very different ALM studies with unique purposes. However, it is useful in determining a rough idea of plausible worst case five-year investment returns. As a result of this analysis, we base our worst cases on a five year period of a 5% annual investment return.

The analysis that follows in each system's specific chapter looks at what position the system would be in after five years of worst case returns. This is used to illustrate the kinds of further 30-year plan changes that might be needed should results turn out worse than expected. We roughly estimate a 25% likelihood of this scenario, or worse.

As a converse, there is also about 25% likelihood that returns will average 11% or better over the next five years. Although we have not quantified these "best case" alternatives, we would strongly encourage the system Boards to be cognizant of both possibilities, and always be thinking about what actions they would take under both a worst case and best case alternative. There is a fifty-fifty chance that one of those two scenarios will exist after five years.

2.18 Introduction to Review of Each System's 30-Year Plan

In the following sections, we have analyzed each of the Ohio systems and projected their future funded status based on:

- No changes
- Adoption of the proposed 30-year plan with all assumptions realized, and
- What would happen over the next several years in a worst case environment

Pension Reform

The significant decrease in assets caused by the 2008 financial crisis and changing demographics required all pension systems to consider a reasonable pension reform plan. In June of 2009, the ORSC requested that each system develop a plan in accordance with S.B. 82, which requires that the system's funding period be within 30 years.

Various sections of the Ohio Revised Code specify that each system "shall establish a period of not more than thirty years to amortize the ... unfunded actuarial accrued pension liabilities."

Each system must meet the following requirements.

"The ...board shall establish a period of not more than thirty years to amortize the ...retirement system's unfunded actuarial accrued pension liability. The board shall adopt a plan that specifies how it proposes to meet the thirty-year amortization period not later than If in any year the period necessary to amortize the unfunded actuarial accrued pension liability exceeds thirty years, as determined by the annual actuarial valuation required by section...of the Revised Code, the board, not later than ninety days after receipt of the valuation, shall prepare

and submit to the Ohio retirement study commission and the standing committees of the house of representatives and the senate with primary responsibility for retirement legislation a report that includes the following information:

- (A) The number of years needed to amortize the unfunded actuarial accrued pension liability as determined by the annual actuarial valuation;
- (B) A plan approved by the board that indicates how the board will reduce the amortization period of the unfunded actuarial accrued pension liability to not more than thirty years;
- (C) Whether the board has made any progress in meeting the thirty-year amortization period.”

Each system would determine the actuarial impact of potential changes in contributions and/or benefits. Several proposed changes were recommended by the ORSC as a result of the collaborative efforts of the ORSC staff and each retirement system.

Work Plan

Using the results of the most recent actuarial valuation of each system, we developed a projection model to estimate the current and future funding period for each system and solvency for the Health Care Fund assuming no changes in order to provide an initial reference point.

Our model:

- used assets and liabilities from the most recently completed actuarial valuation as our starting point,
- incorporated the actuarial value of assets - a smoothing method by which a portion of the difference between the market value of assets and the expected market value of assets is recognized.

We then enhanced the model to incorporate the results of our independent analysis of each system’s proposed 30-year plan assuming the actuarial assumptions are met each year in the future.

But actuarial assumptions are never precisely realized, so it is very likely that the proposed 30-year plan will be either too onerous or insufficient. The disparity which is most critical is if the plan is insufficient. In order to analyze this, we performed stress tests as outlined in section 2.17 above.

Worst Case and Best Case

The analysis focused on worst case because those are the most difficult decisions and because investment returns since last fiscal year end have been lower than expected. But there are certainly possibilities that long-term actuarial experience could turn out to be better than expected. If this is to occur, the Boards should prioritize actions to take among the possibilities:

- Accelerate the funding period and improve the retirement plan funded ratio

- Build reserves to minimize future benefit reductions
- Improve the health care plan funded ratio
- Unwind benefit cuts made subsequent to the currently proposed 30-year plan
- Unwind any member contribution increases (made subsequent to the currently proposed 30-year plan)
- Reduce employer contributions
- Roll back the benefit increases made through this proposed 30-year plan
- Improve health care benefits

In general it seems unlikely that experience will be so favorable that any of the last three alternatives would be implemented. Nevertheless, it is extremely helpful for the Boards to prioritize potential actions in advance.

Chapter Three: Findings on School Employees Retirement System of Ohio (SERS)

This section discusses our findings from the technical analysis of the SERS 30-year plan. This chapter is not complete on its own. To understand the context of the analysis, please review at least the Table of Contents, Chapter One, and Sections 2.1, 2.17, and 2.18 before reading this chapter.

3.1 System Overview

The School Employees Retirement System of Ohio (SERS) was created in 1937 to serve Ohio's non-teaching public school employees at public and charter K-12 schools, Ohio community colleges, and the University of Akron. Members of SERS include school bus drivers, custodians, secretaries, cafeteria workers, teacher's aides, administrative and support staff, treasurers, and business managers.

SERS provides retirement, disability, and survivor benefits, as well as access to post-retirement health care to retirees and beneficiaries. Health care is funded only after the pension obligation is funded; Ohio statutes further limit the annual contribution paid to both pensions and health care to 14% (not including the SERS health care payroll surcharge, discussed later in this report).

SERS current membership includes approximately 125,000 active members and 67,000 members in receipt of benefits. Assets are held in a trust for the exclusive benefit of the plan's participants. SERS has approximately \$10.6 billion in assets as of June 30, 2011 for pension and health care benefits, making it the fourth largest public pension system in Ohio and 63rd largest in the United States.

SERS is governed by a nine-member Retirement Board, with four members elected by the active members, two members elected by retirees, a Governor-appointee, a House Speaker and Senate President-appointee, and an investment expert appointed by the Ohio state Treasurer.

Participation in SERS is mandatory. SERS members are not covered by Social Security but contribute 10% of their annual salary to SERS. SERS employers currently contribute 14% of members' salaries, the maximum allowable under current Ohio statute.

Every year, an actuarial valuation is performed by an independent actuary that determines the employer contribution rates to fund the basic retirement system benefits as well as the retiree health care fund. The most recent valuation was performed as of June 30, 2011, and is the basis for our analysis presented throughout this report.

Pension Reform

The history of SERS 30-year plan includes:

- 2008 Senate Bill 148 made changes increasing age and service retirement eligibility for those hired after May 14, 2008
- August 2009, SERS Board recommended to ORSC that two additional years to age and service requirements be required for those retiring after August 1, 2015
- In response to February 2012 Senate requests, SERS “grandfathered” those with 25 years of service as of the transition date, which was delayed from August 1, 2015, to August 1, 2017

SERS is in a relatively strong funding position. For each of the past five years and historically since the enactment of the 30-year funding requirement, the funding period has been at 30 years or less, freeing up a reasonable (but significantly declining) portion of the contributions to fund health care benefits.

3.2 Analysis of Current Program

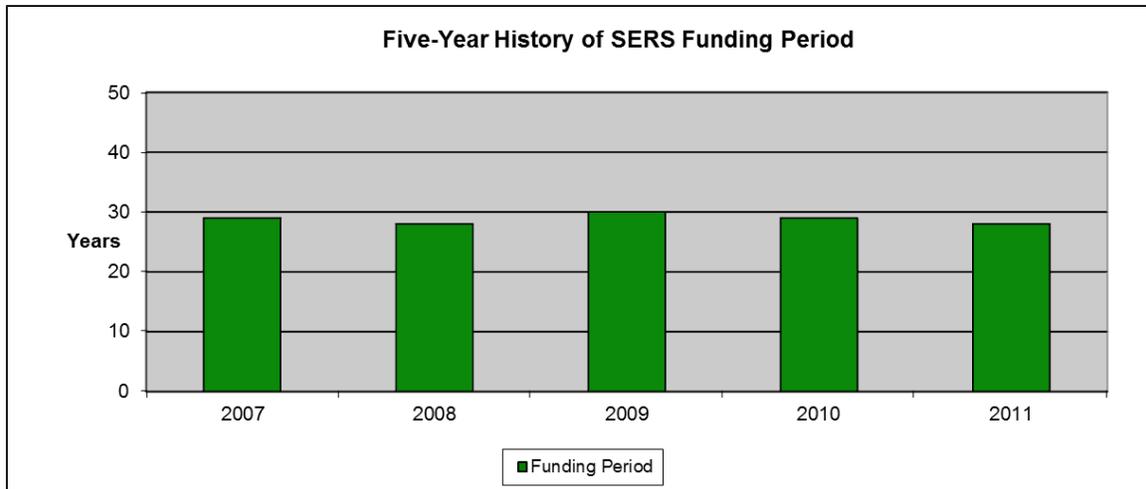
Funding Period and Contribution Rates

Effective in 1997, S.B. 82 required that each Ohio public retirement system establish a 30-year funding target for funding pensions. The funding period is the number of years required to liquidate the unfunded accrued liability. The following table and chart show a five-year history of the funding period, along with the member and employer contribution rates and the allocation of employer contribution between pension and health care.

Five-Year History of SERS Funding Period and Contribution Rates

Valuation as of June 30	Funding Period Years	Contribution Rates		Employer Allocation	
		Member	Employer	Pension	Health Care*
2011	28	10.00%	14.00%	13.45%	0.55%
2010	29	10.00%	14.00%	12.57%	1.43%
2009	30	10.00%	14.00%	13.54%	0.46%
2008	29	10.00%	14.00%	9.84%	4.16%
2007	28	10.00%	14.00%	9.82%	4.18%

* In addition to this amount, a 1.50% payroll surcharge is available for health care.

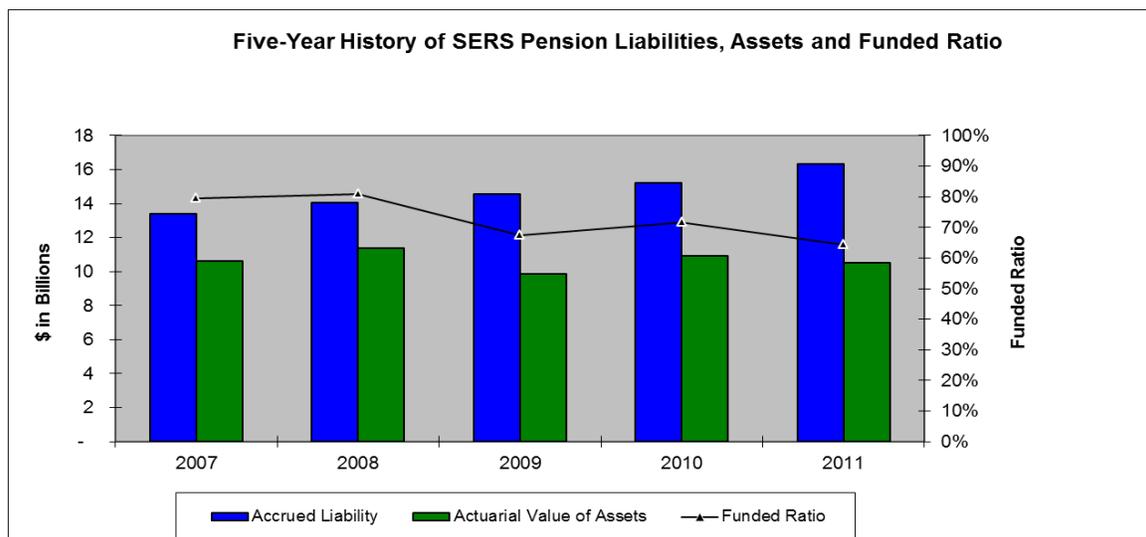


Funded Ratios

The System’s funded ratio is the actuarial value of assets divided by the accrued liability. The following table and chart show a five-year history of the System’s pension funded ratio.

Five-Year History of SERS Pension Funded Ratio
(\$ in millions)

Valuation as of June 30	Accrued Liability	Actuarial Value of Assets	Unfunded Accrued Liability	Funded Ratio
2011	\$16,325	\$10,513	\$5,812	64.4%
2010	\$15,221	\$10,909	\$4,312	71.7%
2009	\$14,582	\$9,836	\$4,746	67.5%
2008	\$14,061	\$11,372	\$2,689	80.9%
2007	\$13,374	\$10,640	\$2,734	79.6%

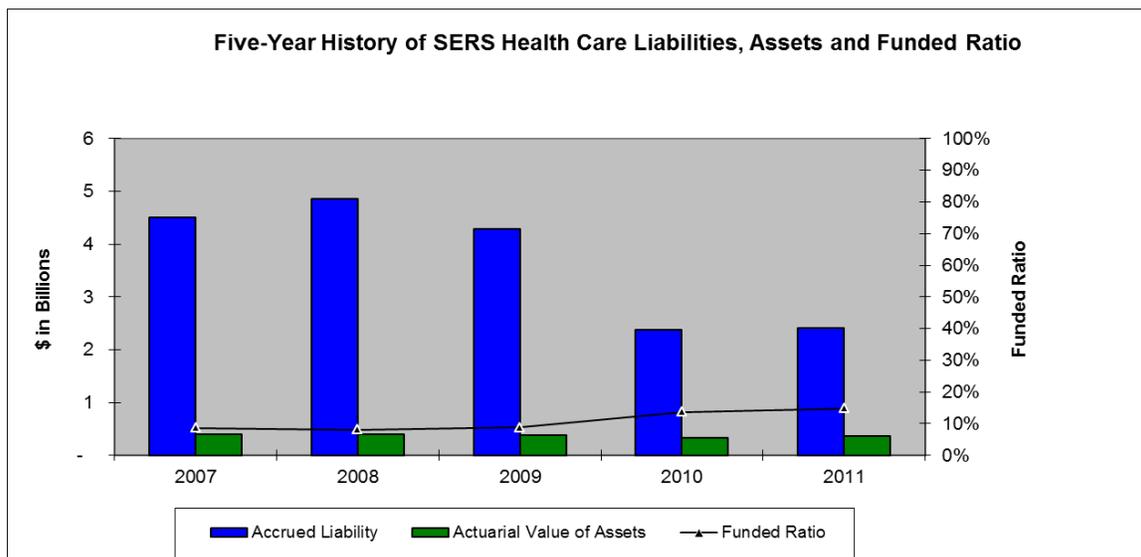


The following table and chart show a five-year history of the System’s health care funded ratio.

**Five-Year History of SERS Health Care Funded Ratio
(\$ in millions)**

Valuation as of June 30	Accrued Liability	Actuarial Value of Assets	Unfunded Accrued Liability	Funded Ratio
2011	\$2,410	\$356	\$2,054	14.8%
2010	\$2,369	\$325	\$2,044	13.7%
2009	\$4,280	\$376	\$3,904	8.8%
2008	\$4,859	\$393	\$4,466	8.1%
2007*	\$4,513	\$391	\$4,122	8.7%

* Valuation date was January 1, 2008, and in 2008 changed to June 30 valuations.



Current Program Projection Assuming No Benefit Changes

The most recent actuarial valuations were performed by Cavanaugh Macdonald Consulting as of June 30, 2011, and show the following for the Retirement System and the Health Care Fund.

**Current Funding Position
(\$ in millions)**

System	Accrued Liability	Actuarial Value of Assets	Funded Ratio	Funding/Solvency Period
Retirement	\$16,325	\$10,513	64.4%	Fully funded in 28 years
Health Care	\$2,410	\$356	14.8%	Insolvent in 10 years

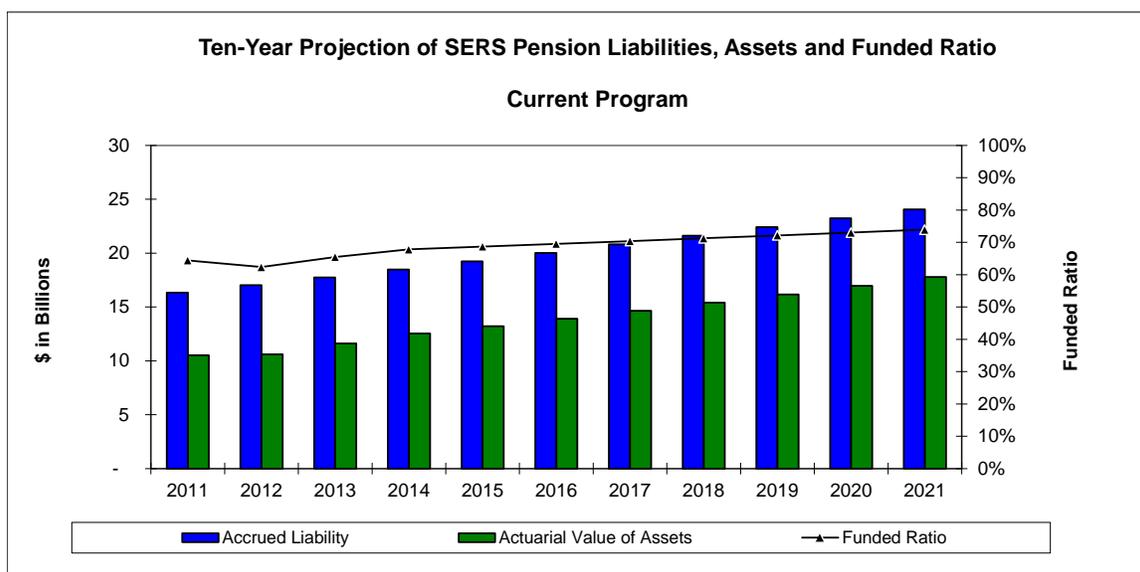
Section 3309.49 of the Ohio Revised Code limits the total employer contribution rate to 14% of pay. Employer contributions in excess of those required to support the basic retirement system benefits are allocated to the retiree health care fund. The results of this valuation show an employer normal cost rate and unfunded actuarial accrued liability rate of 1.72% and 11.73%, respectively, for a total retirement employer rate of 13.45%.

The valuation results show that the UAL was amortized over a period of 28 years on a closed amortization basis. A closed amortization is an amortization that will decline by one year each year.

Based on a total retirement employer rate of 13.45%, the remaining employer contribution rate of 0.55% is allocated to the retiree health care fund. At this rate, the health care fund would run dry in 2022.

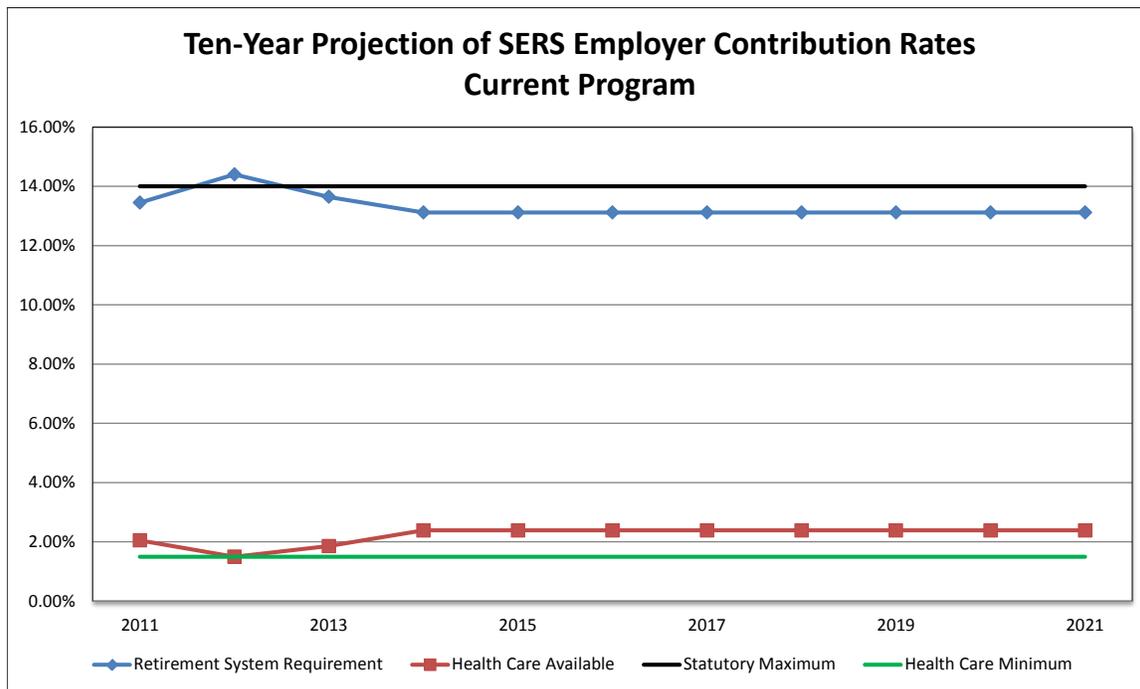
For 2011, the market value exceeds the actuarial value of assets, a result of deferred recognition of prior year gains and losses. Projecting assets using the investment return rate assumption of 7.75%, we note that the market value will exceed the actuarial value of assets until 2014, at which time all deferred asset gains and losses will be recognized and the market value will equal the actuarial value of assets.

On this basis, and assuming that (1) actuarial assumptions are met, and (2) the retirement contributions will continue to be made over a declining 28-year period, our Current Program funding model projection of retirement system liabilities, actuarial value of assets and the funded ratio is shown below.



Section 3309.491 of the Ohio Revised Code requires each employer to contribute an amount that will be needed to fund the cost of providing future health care benefits to SERS retirees. The annual “payroll surcharge” is limited to 1.5% of total SERS pay. SERS employers currently

contribute a payroll surcharge of 1.5% of payroll. Below are the projected contribution rates under the Current Program.



Findings

Our projections show that without change, the declining 30-year funding target for retirement benefits would not be met in 2012 and 2013, but would be met thereafter, due to the asset smoothing basis. Similarly, a decrease in the employer health care funding amount would occur for fiscal years 2012 and 2013 and subsequently increase to 0.89% (plus the 1.5% payroll surcharge) for 2014. Assuming all actuarial assumptions are met, the declining funding period is maintained and the employer rates noted above are contributed, we expect the health care fund to remain solvent through 2022 under these conditions.

3.3 Proposed 30-Year Plan

SERS’ latest reform plan, as passed by the Senate, is summarized below and applies to members retiring August 1, 2017, and later. Employees who will have 20 years of service as of August 1, 2012, are effectively grandfathered under the current provisions if they continue to work and earn service credit.

Proposed Plan Changes

	Current Program		Proposed Program
	SERS members hired before 5/14/2008	SERS new hires on or after 5/14/2008	SERS Members retiring on or after 8/1/2017
Retire with no reduction	Age 65 with 5 years of service, or Any age with 30 years of service	Age 65 with 10 years of service, or Age 55 with 30 years of service	Age 67 with 10 years of service, or Age 57 with 30 years of service
Early retirement	Age 60 with 5 years of service, or Age 55 with 25 years of service	Age 62 with 10 years of service, or Age 60 with 25 years of service	Age 62 with 10 years of service, or Age 60 with 25 years of service
Early retirement reductions	3% per year before age 65, 5% per year of service less than 30	Actuarially reduced with service guarantees	Actuarially reduced from the lesser of age 67 or the age at which the member would achieve 30 years of service, with service guarantees
Allocation to Health Care	Increase from 0.55% to estimated 1.43%; plus an employer health care surcharge of 1.5%		
Purchase Service Credit	Require member to pay 100% of liability resulting from purchase		

Cavanaugh Macdonald performed an actuarial analysis of the initial ORSC proposed benefit changes based on the June 30, 2008, actuarial valuation of the System.

The SERS staff provided opportunities for their stakeholders to share their insights and concerns via a series of advocacy group meetings. At their August 21, 2009, Board meeting, the SERS Board unanimously voted to recommend to the ORSC modifications to the eligibility criteria and early retirement reduction factors for members retiring on or after August 1, 2015. Further, the Board recommended repealing the eligibility criteria and early retirement reduction factors implemented for SERS members who established membership on or after May 14, 2008, as a result of S.B. 148.

In early 2011, Cavanaugh Macdonald updated the cost analysis using the June 30, 2010, valuation results and estimated a reduction of the normal contribution rate and UAL amortization rate of approximately 1.54% of pay. The results were again updated using the June 30, 2011, valuation with a modification of the plan provisions so that the eligibility criteria and early retirement factors would be effective for members retiring on or after August 1, 2017 (previously 2015).

Valuation Assumptions

In developing the liabilities for the SERS 30-year plan, Cavanaugh Macdonald assumed that the plan changes would not affect the retirement patterns of members who will be eligible to retire prior to August 1, 2017. Further, the actuarial assumptions were modified to reflect expected behavior for those members not eligible for retirement by August 1, 2017. First, no members were assumed to elect early retirement, and second, the rates of retirement in the first year of eligibility for unreduced retirement were set at 28% for every age from the current age-related rates.

Financial Impact

The impact of the proposed retirement eligibility changes for members retiring August 1, 2017, and later is a decrease in the normal cost rate of 0.54% of pay and a decrease in the unfunded actuarial accrued liability (UAL) rate of 0.38% of pay, for a total rate decrease of 0.92% of pay. This equates to a dollar contribution decrease of approximately \$26 million based on the results of the June 30, 2011, valuation.

The benefit changes reduced the total present value of benefits by almost 2%, but reduced the employer normal cost rate by 30% and the employer UAL amortization rate by 3%. As a result, the expected future employer costs of the plan are reduced by 7%, or by 0.92% of pay.

Summary of Employer Costs

	Current Program	Proposed Program	Difference
Employer Normal Cost Rate	1.72%	1.18%	(0.54)%
UAL Amortization Rate	11.73%	11.35%	(0.38) %
Total Employer Cost	13.45%	12.53%	(0.92) %

Another way to consider this reduction is that under the current program, workers get pensions worth 11.72% of pay at a contribution of 10%, for a total economic value of 1.17 times their contributions. Future workers would get 10.66% value at a cost of 10% for a net value of 1.06 times their own contributions. This results in a reduction of 9% in economic value as shown below and illustrates the significance of the changes made. Although the changes made to SERS were only 2% in terms of the total present value of benefits, the small value remaining to the SERS workforce demonstrates that the plan is near the tipping point where there is little or no net value of the pension provided by the employer.

	Current Program	Proposed Program: Today (mixed workforce)	Proposed Program: Ultimate (all future workers)
Total Normal Cost	11.72%	11.18%	10.66%
Member Contributions	10.00%	10.00%	10.00%
Value to Member	1.72%	1.18%	0.66%
Decreased Value (% of pay)	NA	0.54% of pay	1.06% of pay
Decrease in Member Value	NA	Down 31%	Down 62%
Decrease in Total Pension Value	NA	Down 5%	Down 9%

Static Test of Proposed 30-Year Plan Changes

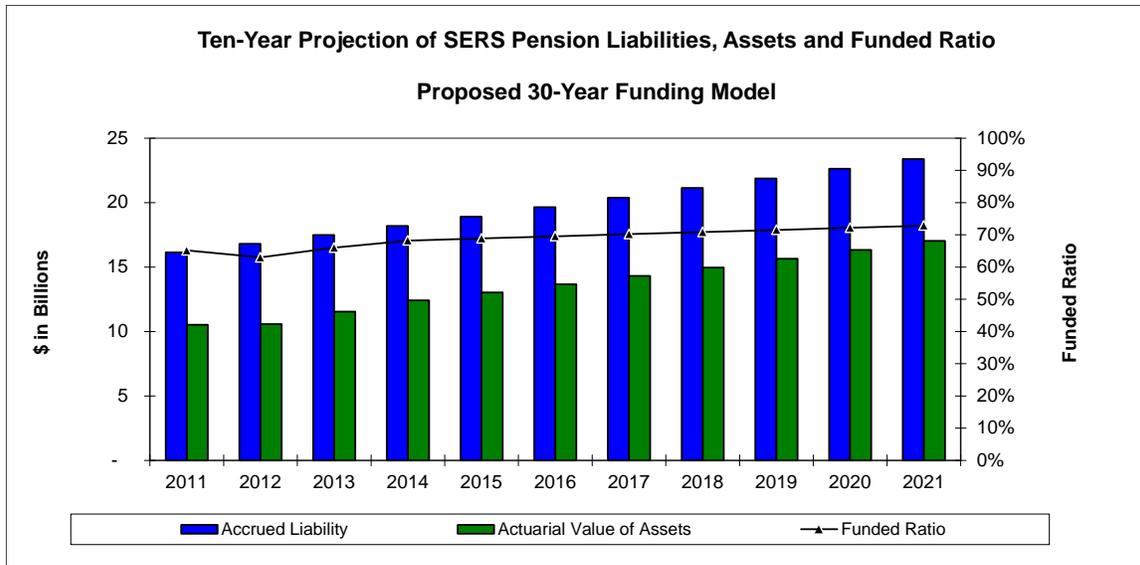
Using the results of the June 30, 2011, actuarial valuation and the proposed 30-year plan changes as outlined in the February 16, 2012, letter from Cavanaugh Macdonald, we independently determined the impact on the normal cost rate and the unfunded actuarial accrued liability rate. Our independent determination of the decrease in the normal cost rate and decrease in the UAL amortization rate was within an acceptable range of the Cavanaugh Macdonald work and validated the immediate impact of the 30-year plan.

Proposed 30-Year Plan Projection

Our model further verified the impact of the change in employer contribution rates as a result of implementing the proposed 30-year plan. The proposed plan changes result in an employer normal cost rate and unfunded actuarial accrued liability rate of 1.18% and 11.35% of pay, respectively, for a total employer rate of 12.53% of pay as of 2011. The remaining employer contribution rate of 1.47% of pay is available to allocate to the retiree health care fund.

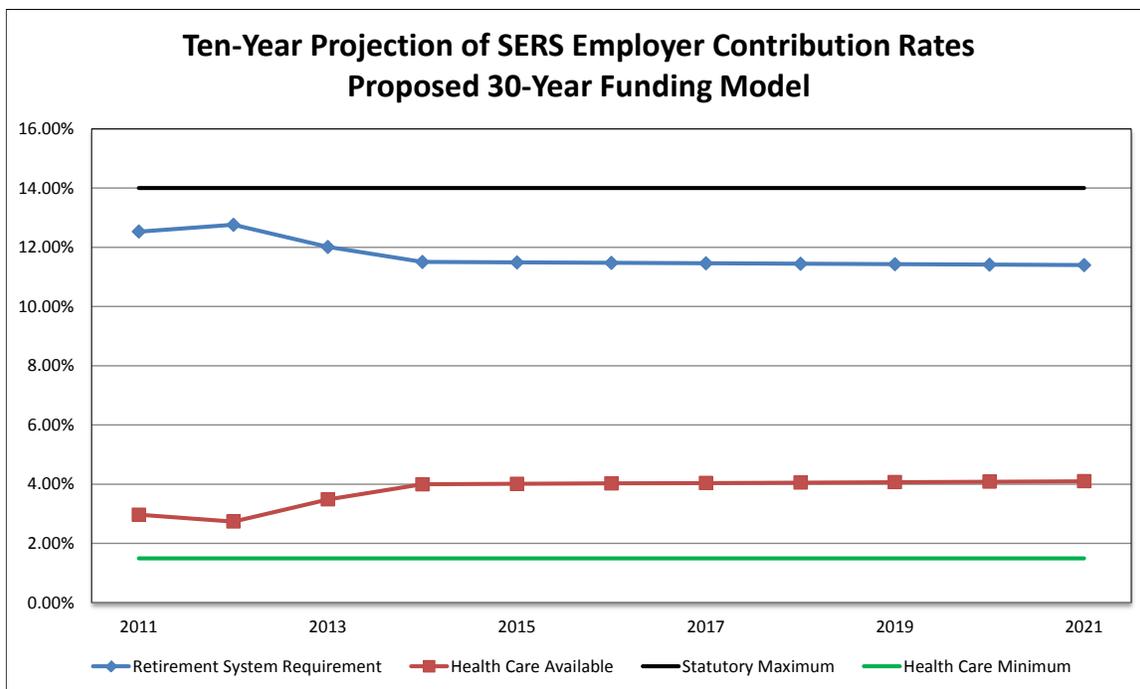
The unfunded actuarial accrued liability was amortized over a period of 28 years on a closed amortization basis in 2011. Our proposed 30-Year plan projection model shows that the UAL for 2012 can be amortized over 27 years and maintain an employer contribution rate within the 14% of pay statutory limit. This means that if all assumptions are met and contributions developed in our model are contributed in a timely manner, the UAL can be fully funded by 2039.

Over time, the employer normal cost rate is expected to decline by an additional 0.52% of pay once all active employees' benefits are under the revised structure. This will result in a slow and gradual decline in the employer normal cost rate over the next 30-40 years. This has been taken into account in the projections made in this report.



Cavanaugh MacDonald calculated that, based on the current health care contribution of 2.97% (1.50% surcharge plus 1.47% of the 14% allocated to health care) and assuming all actuarial assumptions are met, the health care fund will remain solvent indefinitely. We agree.

The following chart illustrates the required retirement contribution and health care contributions under the proposed 30-year funding model.



Findings

The 30-year plan will accomplish the twin funding objectives for both retirement and health care benefits long-term if all net deferred gains are considered and all assumptions realized. The mechanics of the asset-smoothing basis, however, will result in a temporary failure to accomplish both objectives in 2012 and 2013. This could be alleviated with a reasonable minor modification to the asset-smoothing basis.

3.4 Stress Testing of Proposed 30-Year Plan

The analysis that follows looks at what position SERS would be in after this year of poor investment return plus five more years of worst case investment returns, and illustrates the additional plan changes that might be required should results turn out worse than expected.

Year 1 Analysis

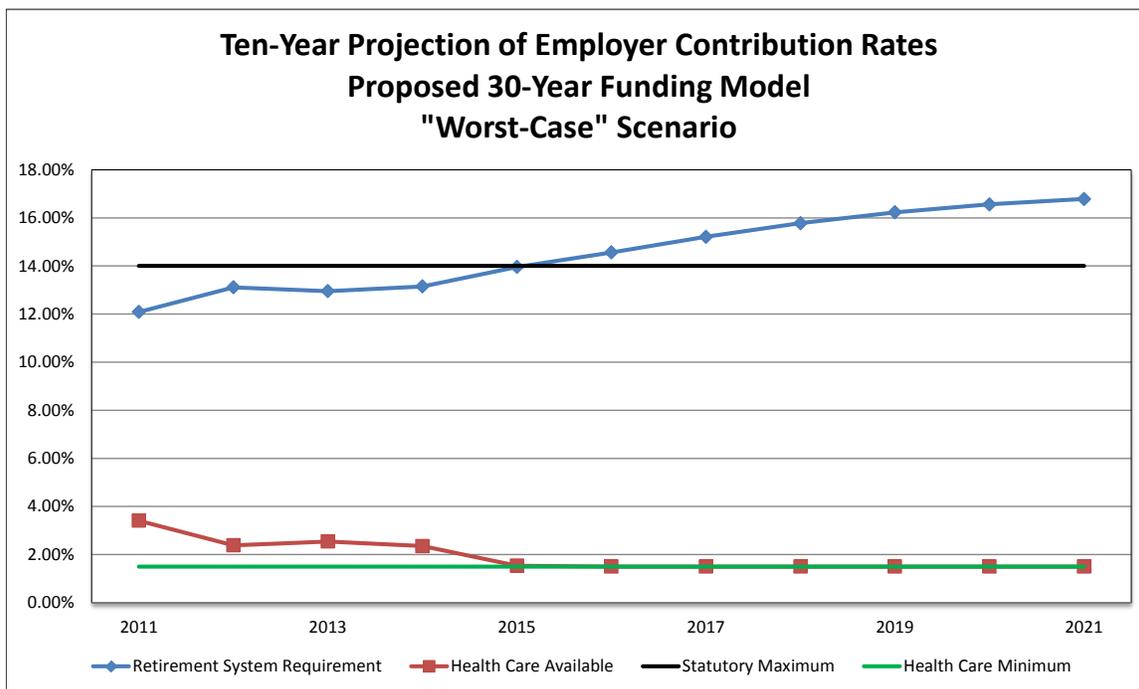
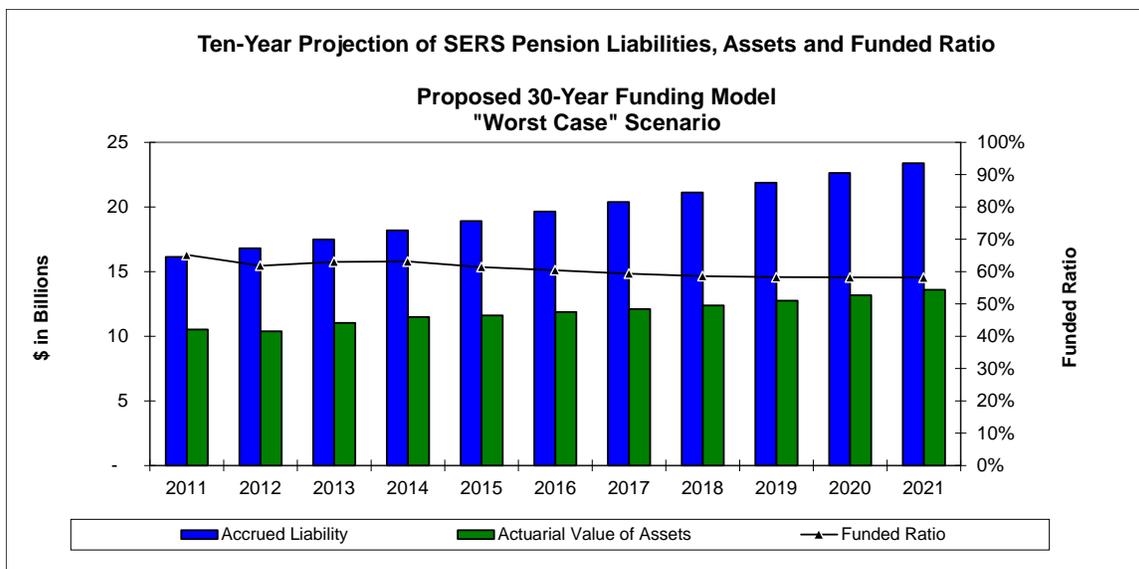
We tested the viability of the proposed 30-year plan using SERS' actual asset return for the period July 1, 2011, through April 30, 2012, of 2.56%, provided to us by the SERS staff. Based on the equity markets through June 2012, we estimate that the plan will have earned roughly 0% from July 1, 2011, through June 30, 2012.

As a result, we expect the proposed 30-year plan to fall outside the twin objectives of 30-year declining funding period for retirement and long-term solvency for health care as of the July 1, 2012, valuation. The projection from July 1, 2012, would also anticipate depletion of the health care trust by 2024. This is because the actuarial losses result in a need to contribute 13.12% of the 14.00% of pay employer contribution toward the retirement benefit, leaving only 0.88% for health care.

This would suggest immediate additional action would be required to attain the funding objectives, such as a reduction in the present value of retirement benefits of approximately 1%. As a benchmark, the reduction in the present value of retirement benefits as a result of the 30-year plan discussed above was about 2%.

Multiple Year Analysis

Assuming no changes to benefits and the extended "worst case" investment scenario, the retirement plan would not meet the 30-year funding objective and the health care funding would rapidly diminish and be eliminated by 2016. The health care fund would be totally depleted in 2019. The charts shown below illustrate the pension funding position and required contributions.



Even after the investment markets stabilize, the deferral impact of asset smoothing would require eventual recognition of the poor market performance unless the markets actually recover from the five-year period of poor returns. We forecast that even as of the actuarial valuation of June 30, 2020, the plan funding situation continues to deteriorate as a result of the five year period (actually six, including this past year) of poor returns.

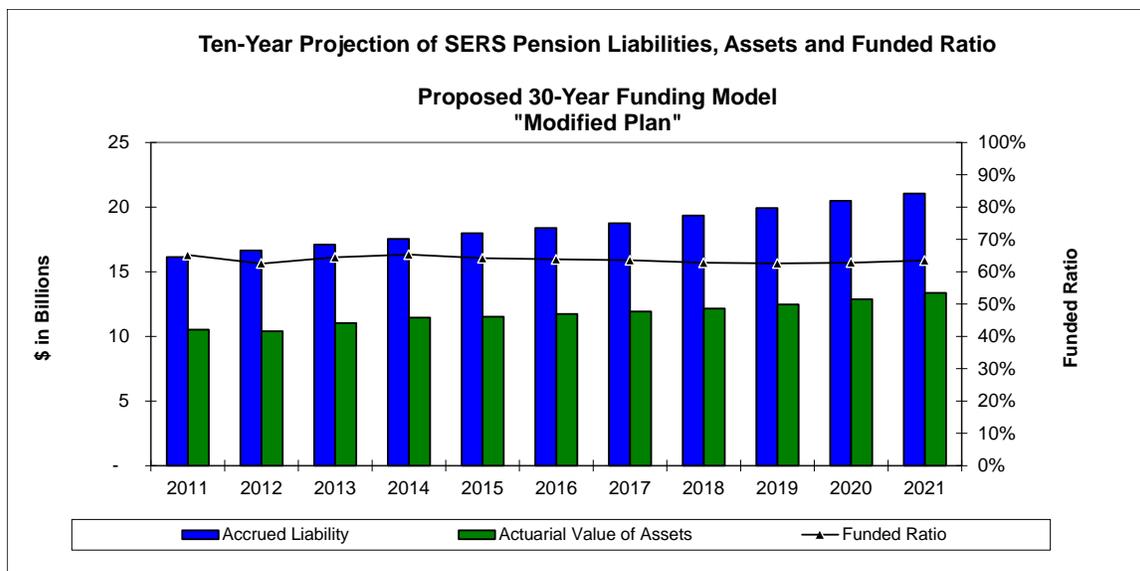
Summary of Retirement Benefit Reductions Required

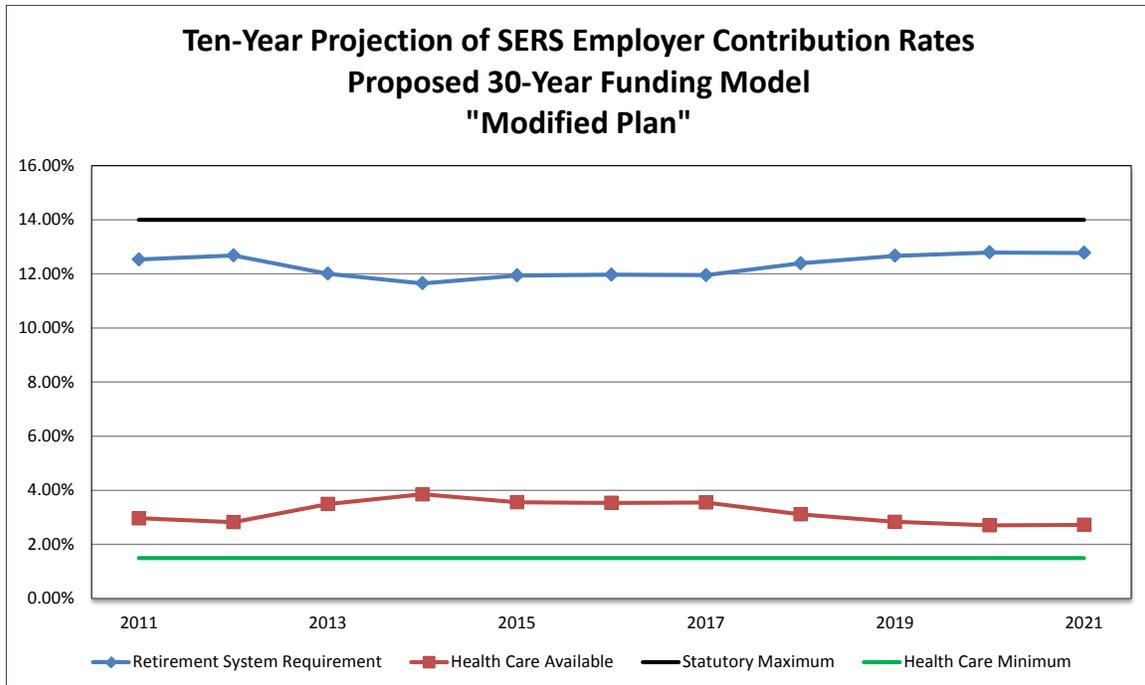
The following table summarizes the poor investment return in this worst case hypothetical case and illustration of possible actions that results in the “modified plan” that stays within the funding goals.

Hypothetical Benefit Reductions as Consequence of Poor Returns

Year Ending June 30	Investment Return	Hypothetical Actions Taken
2012	0.00%	Reduce retirement benefits by 1%
2013	5.00%	Reduce retirement benefits by another 1.2%
2014	5.00%	Reduce retirement benefits by another 1.3%
2015	5.00%	Reduce retirement benefits by another 1.2%
2016	5.00%	Reduce retirement benefits by another 1.2%
2017	5.00%	Reduce retirement benefits by another 1.3%
2018	7.75%	No more changes needed

Shown below is an estimate of a 10-year projection of liabilities, assets, and funded ratios and employer contribution rates for both the retirement system and health care fund under a modified plan scenario described above.

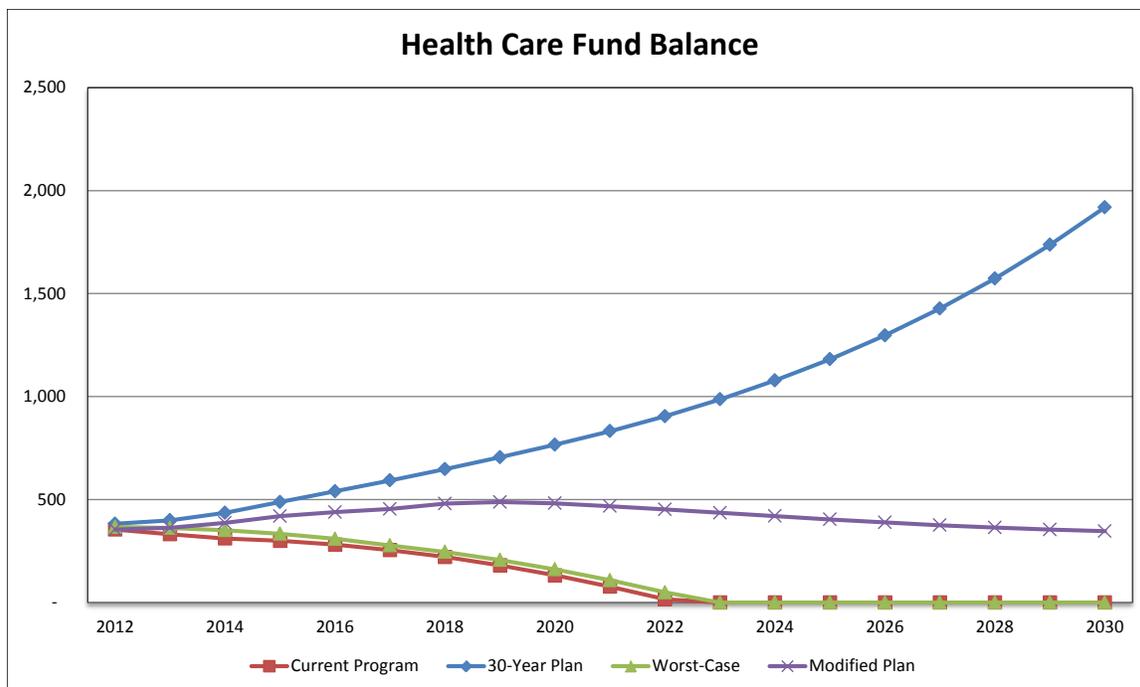




Cumulatively, retirement benefit reductions of 7.4% during this period of extended poor investment performance would be required. This illustrates a painful process of making relatively small changes to the plan each year to stay barely within the 30-year retirement funding and long-term solvency objectives.

Summary of Projections

The following graph is another way to consider the projections discussed above.



All the scenarios assume that the retirement benefits are funded according to a 30-year funding horizon, with remaining contributions being made to the health care fund. In this way, the health care fund balance chart can illustrate the general condition of both systems combined under various scenarios. The **Current Program** line (red squares) shows that without any action, the health care fund is expected to be depleted by about 2022. The **30-Year Plan** line (blue diamonds) builds up a substantial health care fund which would remain solvent throughout the 30-year period.

The next two lines are based on the worst case investment return of 0% from July 2011 through June 2012, followed by five years of 5% annual return and 7.75% thereafter. The **Worst Case** line (green diamonds) shows that the health care fund is depleted by about 2019 absent further modifications. The **Modified Plan** (violet Xs) line shows that with the changes discussed above, the health care trust will barely remain solvent. Keep in mind that once the 30-year retirement funding period expires, large contributions will be available for health care and it, too, will be fully funded – about five to ten years after the pension becomes fully funded.

Recommendations

If an extended period of poor investment returns occurs, frequent and significant additional benefit changes will be required to stay within the funding objectives.

We recommend that the Board develop a rigorous process for potential change and act each year as necessary to maintain the twin objectives of long-term health care solvency and 30-year retirement plan funding. The Board might also wish to make slightly larger reductions to provide for a cushion in case markets do not rebound, as was the case in this hypothetical

worst case scenario. Conversely, if experience turns out to be more favorable than expected (which we believe is equally likely), the Board should have authority to reverse some of the changes made, subsequent to those taken to date.

As noted above, even if further poor returns do not materialize, it is very likely that the next actuarial valuations will show that additional significant benefit reductions are required in order to maintain a 30-year funding period for retirement benefits and long term solvency of health care benefits.

3.5 Summary of Plan Provisions

The Plan Provisions for the Retirement System and Health Care Program as well as the major assumptions utilized in the most recent actuarial valuations are shown below.

Summary of Plan Provisions		
Contributions	Members:	10%
	Employer Pension:	14%
	Employer Health Care:	Surcharge of 1.5% plus contributions not required to finance basic benefits
Final Average Salary (FAS)	Three highest years	
Normal Retirement Allowance	Members prior to May 14, 2008: Age 65 and 5 years of service or 30 years of service	2.2% of FAS times service up to 30 years plus 2.5% of FAS times service over 30 years. Minimum: \$86 times years of service
	Members after May 13, 2008: Age 65 with 10 years of service or age 55 with 30 years of service	
Early Retirement Allowance	Members prior to May 14, 2008: Age 55 with 25 years of service or age 60 with 5 years of service	Normal Retirement Allowance multiplied by a percentage based on service
	Members after May 13, 2008: Age 62 with 10 years of service or age 60 with 25 years of service	Actuarial equivalent of Normal Retirement Allowance, subject to a minimum based on service
Disability Retirement Allowance	Permanently disabled with at least 5 years of service Members prior to July 29, 1992 who did	Normal Retirement Allowance based on service at the later of date of

Summary of Plan Provisions		
	not elect * below	disablement or age 60. Minimum: 30% of FAS Maximum: 75% of FAS
	Members after July 28, 1992 or Members prior to July 29, 1992 and elected	Greater of (i) 45% of FAS or (ii) lesser of 60% of FAS or Normal Retirement Allowance
Death Benefit (while eligible to retire)	Same amount that would have been paid had the member retired and elected the 100% joint and survivor form of payment.	
Death Benefit (in-service)	At death of a member with at least 1½ years of service, survivor allowance are payable to a qualified spouse, qualified child and/or qualified parent. Member must have ¼ of a year of service credit within 2½ years prior to death, and not be receiving a retirement benefit.	
Vesting	Not eligible for any benefits	Refund of contributions without interest
	Members prior to May 14, 2008 with at least 5 years of service	Deferred allowance at age 60
	Members after May 13, 2008, with at least 10 years of service	Deferred allowance at age 62
Cost of Living Adjustment (COLA)	3% of base benefit on each anniversary of initial date of retirement	
Medicare Part B	Retirees with at least 10 years of service at retirement reimbursed \$45.50 per month.	
Post-Retirement Death Benefit	Lump sum benefit of \$1,000	
Service Retirement Eligibility	Members prior to May 14, 2008	Age 60 and 5 years of service or 30 years of service or age 55 and 25 years of service
	Members after May 13, 2008	Age 62 with 10 years of service or age 55 with 30 years of service or age 60 with 25 years of service
Disability Retirement Eligibility	Permanently disabled for at least 12 months with at least 5 years of service	

Summary of Plan Provisions			
Death-in-Service Eligibility	Beneficiary receiving monthly benefits due to death of a member		
Premium Payments (Member Percentage)	Year of Service at Retirement	Retired on or before July 1, 1989	Retired August 1, 1989 through July 1, 2008
	5-9	50.0%	N/A
	10-14	17.5%	100.0%
	15-19	17.5%	50.0%
	20-24	17.5%	25.0%
	25 and over	17.5%	17.5%
	Year of Service at Retirement	Retired on or after August 1, 2008	Disability Retirements
	5-9	N/A	50.0%
	10-19	100.0%	33.0%
	20-24	50.0%	33.0%
	25-29	30.0%	17.5%
	30-34	20.0%	17.5%
	35*	15.0%	17.5%
	* 1% reduction for each year over 35		
	Year of Service at Retirement	Spouses of Retirees	Children of Members
1.5-24	100.0%	70.0%	
25-29	90.0%	70.0%	
30 and over	80.0%	70.0%	
Dental Coverage	Available to members at the full cost.		
Investment Return	Retirement: 7.75% per annum		
	Health Care: 5.25% per annum		

Summary of Plan Provisions	
Payroll Growth	4.00% per annum, compounded annually
Price Inflation	3.25% per annum, compounded annually
Asset Valuation Method	Retirement: Smoothing method, recognizing 25% of the gain or loss each year. The actuarial value of assets must be within 80% and 120% of the market value Health Care: Market value
Normal Cost Rate	Constant
Expected Benefit Payments	Provided by Cavanaugh Macdonald
Funding Philosophy	<i>Primary Responsibility:</i> (1) at the time benefits commence, sufficient funds will be available to provide retirement, disability and survivor benefits along with Medicare Part B reimbursements and lump sum death benefits (basic benefits) and (2) financing so that contribution rates remain approximately level and (3) balance the needs of members for proper funding of basic benefits with the desire to receive appropriate level of health care coverage
Funding Objectives	<p>A. Primary consideration given to career school employee</p> <p>B. Amortize unfunded actuarial accrued liability over a closed period, decreasing one year with each actuarial valuation. Board may approve alternative schedule over the short term.</p> <p>C. Achieve an 80% funded ratio</p> <p>D. After satisfying B. and C., Board may choose to</p> <ol style="list-style-type: none"> 1. improve the funded ratio 2. achieve a 20-year solvency period for the Health Care Fund 3. Improve benefits 4. reduce employee and/or employer contributions

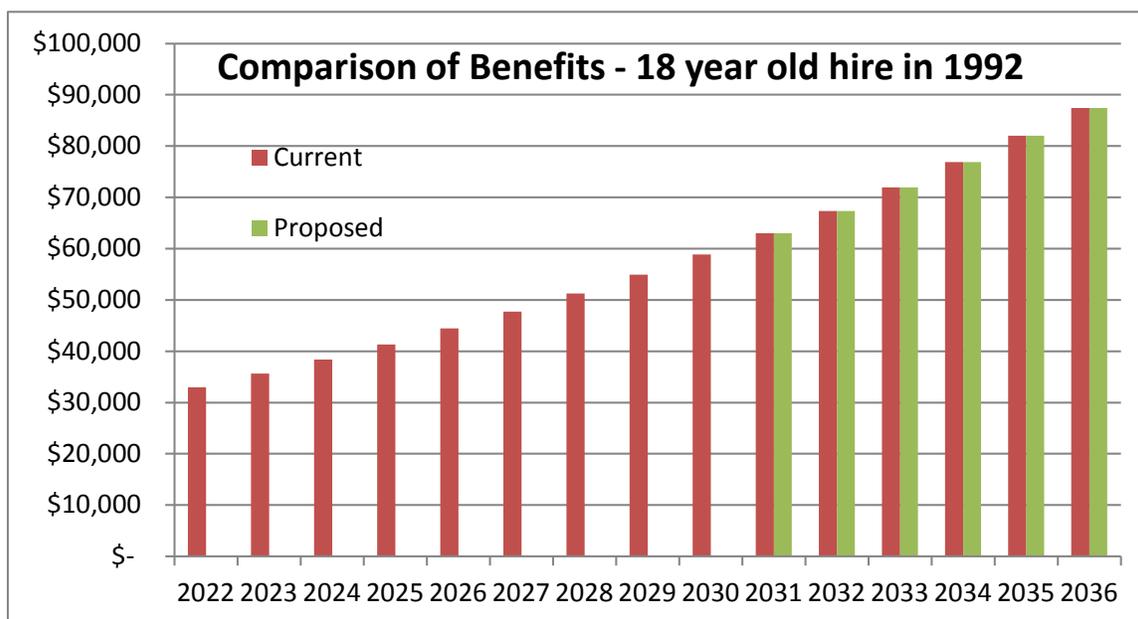
3.6 Other Issues

Analysis of Transition

The SERS proposed 30-year plan will require some employees to work longer or will provide lower benefits at early retirement due to early retirement reductions. Consequently, it is important to carefully consider how the transition would work. A poorly designed transition would result in a “rush to the door” where individuals would retire before a certain date in order to preserve expected benefits. Conversely, the most fair and generous transition would be one where the benefit reductions only apply to individuals who have not yet been hired. That extreme would result in very minimal cost savings in the short run.

We have analyzed the transition feature in the SERS proposal and find it to be a reasonable balance between fairness and cost. SERS effectively exempts anyone with more than 20 years of service as of July 1, 2012, from the new retirement age requirements as long as they continue to work and earn service credit. This means that the most extreme case is someone who will have just less than 20 years of service at the 2012 transition date.

Consider a worker hired at age 18 in July 1992. Under the current provisions, this individual could expect to retire 10 years from now in July 2022 at age 48 with a benefit of 66% of pay. Under the proposed provision, the employee would have to wait until age 57 to retire. The benefit at age 57 under the proposed plan is at the same 88.5% of pay benefit payable at retirement age 57 under the current program. This is shown in the following chart under the assumption that this worker’s average pay would be \$50,000 at age 48.



The above example is a worst case illustration. For example, employees hired at age 25 (much more likely than age 18) under the same circumstances can currently retire at normal retirement at age 55. Under the new rules, the employee must wait until age 57.

Similarly, a current mid-career employee may be expecting to retire in 10 years at age 55 with 25 years of service. This employee will have to wait an additional five years to retire and will receive a benefit that is about 10% less, due to the early retirement reductions.

Note the following:

- The average age at employment for current SERS members is 38.5 years. The average employee will need to work until age 67 rather than age 65 for normal retirement and will be able to retire at age 62 at early retirement rather than the current age 60.
- Due to the relatively low pay and high age at employment of the average SERS worker, early retirement is not practical for many employees.
- Less than 1% of the SERS retiree group is under age 50.
- Finally, the combination of the 20 years of service grandfathering and the 2017 effective date for the new retirement eligibility requirements give members adequate time to plan.

Consequently, we believe that the SERS proposed transition rules are reasonable.

Adequacy of Health Care Benefits

SERS has made numerous changes to the health care benefits over the years. In 2011, SERS adopted a “pay-as-you-go” approach to funding the health care program. Retiree premiums and plan design changes are adjusted annually to project funding revenue in order to maintain a balanced health care budget. For example, 100% of the premium is paid by most retirees with less than 20 years of service.

The SERS proposed plan results in contributions to health care of 1.5% plus roughly 2.5%, for a total of 4%. This amount is sufficient to provide benefits at approximately the same level as today and result in long-term solvency. The SERS retirement age is the oldest of the five systems, meaning that they have proportionately less time in the more expensive pre-Medicare period than the others. SERS is also the lowest paid group, meaning that 4% of payroll is less per person than for the other groups.

On balance, we find that the current level of health care benefits is a reasonable objective, and the proposed 30-year plan will maintain health care at these current levels if all assumptions are realized.

3.7 Overall Findings and Recommendations

Relatively modest changes in the SERS benefits were required to meet the 30-year requirement.

The SERS approach to extending retirement eligibility requirements is beneficial to both the retirement plan and the health care program, and addresses the cost pressure from improved life expectancy. The proposed 30-year plan is a reasonable approach given the funded status of the system, and it does satisfy the dual objectives of 30-year funding and long term health care solvency as of the June 30, 2011, and is projected to continue to meet the funding objectives for both the retirement and health care programs under the current assumptions based on conditions existing as of June 30, 2011.

However, the 30-year plan does not provide any significant margin for future adverse experience. As a result, frequent changes would be required in a poor investment-return cycle to meet the funding standards as noted in the stress test above.

The total normal cost rate for the current benefit structure means that most current employees are receiving a much smaller share of the employer funding than have employees nearing retirement and retirees. If additional benefit reductions are required, equity would suggest that benefits for current retirees (i.e., benefits with the COLAs) should also be considered.

Over 46% of the present value of future benefits is due to currently retired and inactive members. As a result, a 3% required reduction in benefits must be nearly 6% if the reduction is limited to currently active employees.

Other overall recommendations and alternative approaches for the future that are applicable to all systems are summarized in Chapter Two and Chapter Eight.

Chapter Four: Findings on Ohio Public Employees Retirement System (OPERS)

This section discusses our findings from the technical analysis of the OPERS 30-year plan. This chapter is not complete on its own. To understand the context of the analysis, please review at least the Table of Contents, Chapter One, and Sections 2.1, 2.17, and 2.18 before reading this chapter.

4.1 System Overview

The Ohio Public Employees Retirement System (OPERS) was created in 1935 to serve Ohio's public employees. Members of OPERS include state, county, municipal, law enforcement, health department, park and conservancy employees.

OPERS provides retirement, disability and survivor benefits as well as access to post-retirement health care to retirees and beneficiaries. Health care is funded only after the pension obligation is funded; Ohio statutes further limit the annual contribution paid to both pensions and health care to 14% for state and local government employees and 18.1% for law enforcement and public safety employees.

OPERS current membership includes approximately 349,000 active members, 453,000 inactive members and 185,000 members in receipt of benefits. Assets are held in a trust for the exclusive benefit of the plan's participants. OPERS has approximately \$74.0 billion in assets as of December 31, 2011 for pension and health care benefits, making it the largest public pension system in Ohio and 11th largest in the United States.

OPERS is governed by an eleven-member Retirement Board, with five members elected by the active members, two members elected by retirees, the director of administrative services, a Governor-appointee, a House Speaker and Senate President-appointee and the Ohio Treasurer-appointee.

Participation in OPERS is mandatory. OPERS members are not covered by Social Security but contribute a percentage of their annual salary to OPERS. State and local employees contribute 10% of pay, public safety employees contribute 11.5% (increasing to 12% in 2013 and later) and law enforcement employees contribute 12.1% (increasing to 12.6% in 2013 and 13% in 2014 and later). OPERS employers currently contribute 14% of state and local government members' salaries and 18.1% of public safety and law enforcement members' salaries, the maximum allowable under current Ohio statute.

Every year, an actuarial valuation is performed by an independent actuary and determines the employer contribution rates to fund the basic retirement system benefits as well as retiree

health care fund. The most recent valuation was performed as of December 31, 2010. In October, 2011, the Board approved changes in the demographic actuarial assumptions and re-set of actuarial value of assets to the market value of assets. This is the basis for our analysis presented throughout this report.

Pension Reform

The history of OPERS 30-year plan includes:

- November 2009, OPERS Board recommended to the legislature a series of changes to benefits designed to strengthen the pension system and with the added goal of maintaining adequate funding for health care. These included previous requests by OPERS to reform service purchase credit and minimum earnable salary.
- 2010, no legislative action was taken pertaining to the proposed changes
- 2011, HB 69 and SB 3 were introduced as placeholder bills pending this study
- February 2012, OPERS Board modified original proposal somewhat, in response to Senate requests, and to update.
- May 16, 2012, Senate passes Senate Bill 343.

OPERS is in a relatively strong funding position. For each of the past five years, and historically since the enactment of the 30-year funding requirement, the funding period has been at 30 years or less, freeing up a reasonable (but significantly declining) portion of the contributions to fund health care benefits.

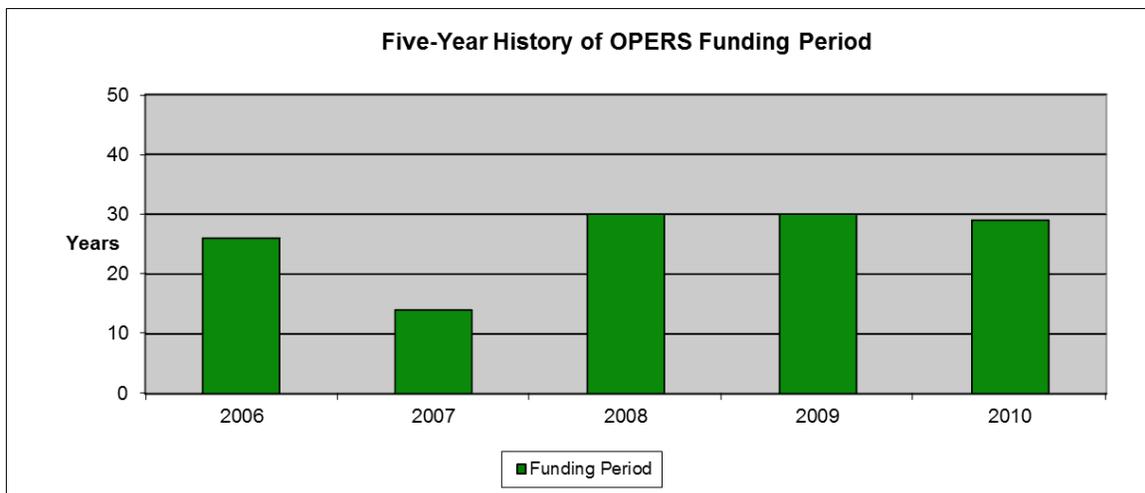
4.2 Analysis of Current Program

Funding Period and Contribution Rates

Effective in 1997, S.B. 82 required that each Ohio public retirement system establish a 30-year funding target for funding pensions. The funding period is the number of years required to liquidate the unfunded accrued liability. The following table and chart show a five-year history of the funding period along with the member and employer contribution rates and the allocation of employer contribution between pension and health care.

Five-Year History of Funding Period and Contribution Rates

Valuation as of December 31	Funding Period Years	Year for Which Rates Apply	Contribution Rates		Employer Allocation	
			Member	Employer	Pension	Health Care
2010	29	2013	10.09%	14.15%	13.15%	1.00%
2009	30	2012	10.08%	14.15%	10.15%	4.00%
2008	30	2011	10.06%	14.15%	10.15%	4.00%
2007	14	2010	10.00%	14.14%	9.14%	5.00%
2006	26	2009	10.00%	14.13%	8.25	5.88

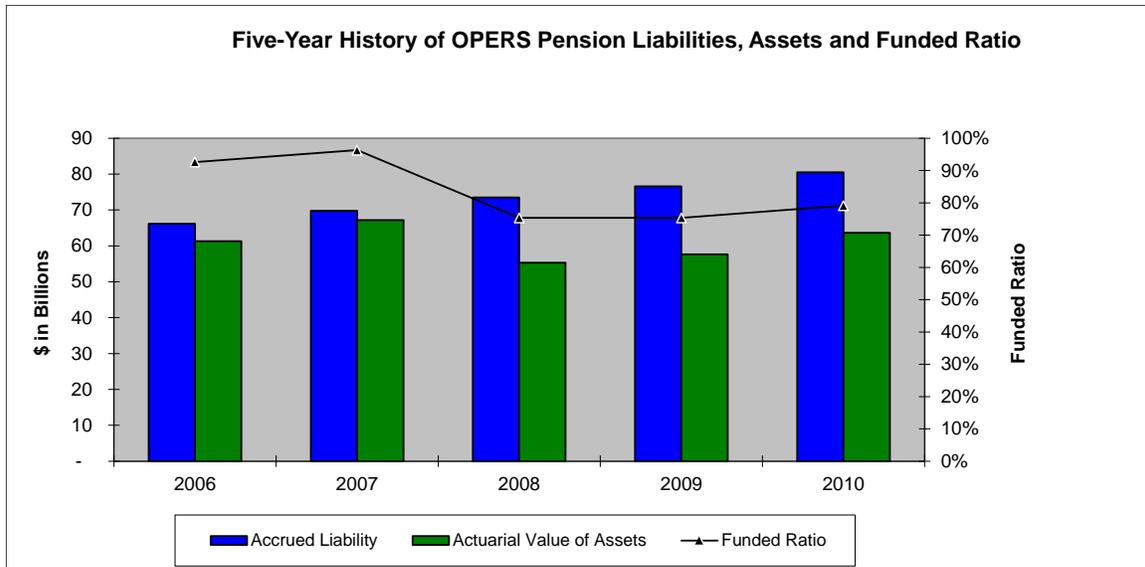


Funded Ratios

The System’s funded ratio is the actuarial value of assets divided by the accrued liability. The following table and chart show a five-year history of the System’s pension funded ratio.

**Five-Year History of Pension Funded Ratio
(\$ in millions)**

Valuation as of December 31	Accrued Liability	Actuarial Value of Assets	Unfunded Accrued Liability	Funded Ratio
2010	\$80,485	\$63,649	\$16,836	79.1%
2009	\$76,555	\$57,629	\$18,926	75.3%
2008	\$73,466	\$55,315	\$18,151	75.3%
2007	\$69,734	\$67,151	\$2,583	96.3%
2006	\$66,161	\$61,296	\$4,865	92.7%

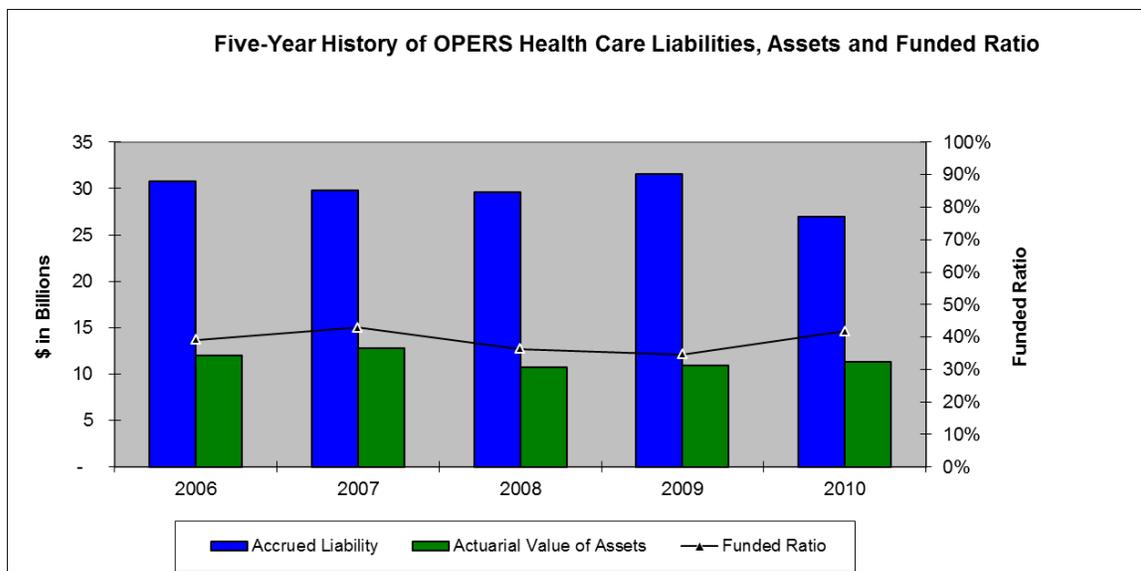


The following table and chart show a five-year history of the System’s health care funded ratio.

**Five-Year History of Health Care Funded Ratio
(\$in millions)**

Valuation as of December 31	Accrued Liability	Actuarial Value of Assets	Unfunded Accrued Liability	Funded Ratio
2010*	\$26,929	\$11,267	\$15,661	41.8%
2009	\$31,558	\$10,936	\$20,622	34.7%
2008	\$29,623	\$10,748	\$18,875	36.3%
2007	\$29,825	\$12,801	\$17,024	42.9%
2006	\$30,748	\$12,025	\$18,723	39.1%

*Based on prior actuarial assumptions



Current Program Projection Assuming No Benefit Changes

The most recent actuarial valuations were performed by Gabriel, Roeder, Smith & Company (GRS) as of December 31, 2010. Since then, there have been changes to the actuarial assumptions including reduction in payroll growth rate from 4.00% to 3.75% and other demographic changes. In addition, the actuarial value of assets was reset to the market value of assets as of January 1, 2011. Based on these changes, our calculations show the following for the Retirement System and the Health Care Fund.

**Current Funding Position
(\$ in millions)**

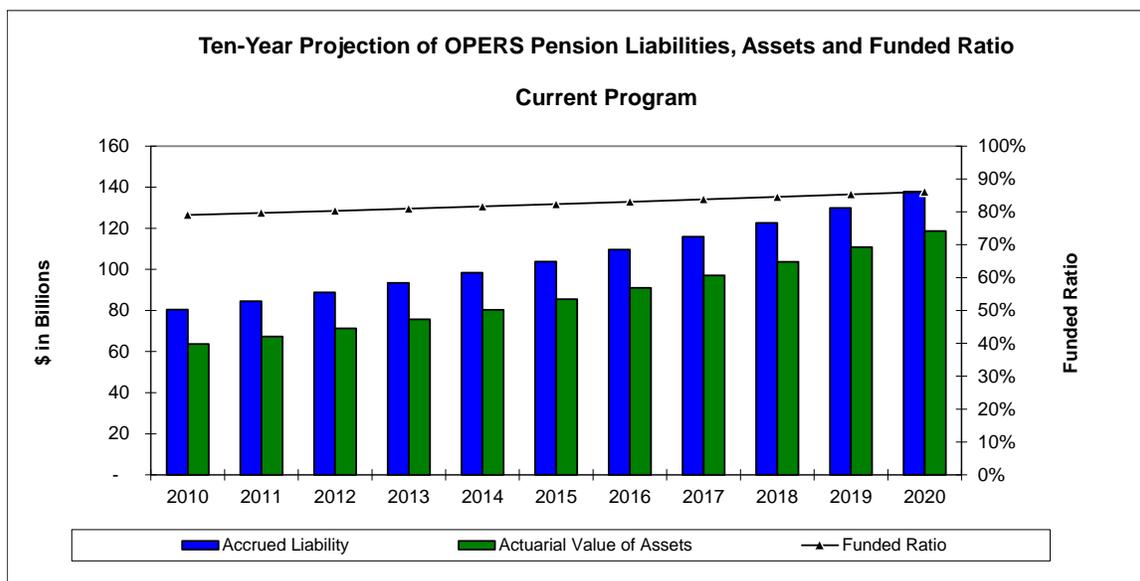
System	Accrued Liability	Actuarial Value of Assets	Funded Ratio	Funding/Solvency Period
Retirement	\$80,485	\$63,649	79.1%	100% funded in 30 years
Health Care	\$26,929	\$11,267	41.8%	Insolvent in 12 years

Sections 145.48 and 145.49 of the Ohio Revised Code, respectively, limit the total employer contribution rate to 14% of pay for state and local employers and 18.1% for public safety and law enforcement employers. OPERS currently allocates 4% of pay toward retiree health care, with the amount scheduled to decrease to 1% in 2013 and 0% in 2014 if pension reform is not enacted. Employer contributions in excess of these amounts are allocated to fund the retirement system benefits.

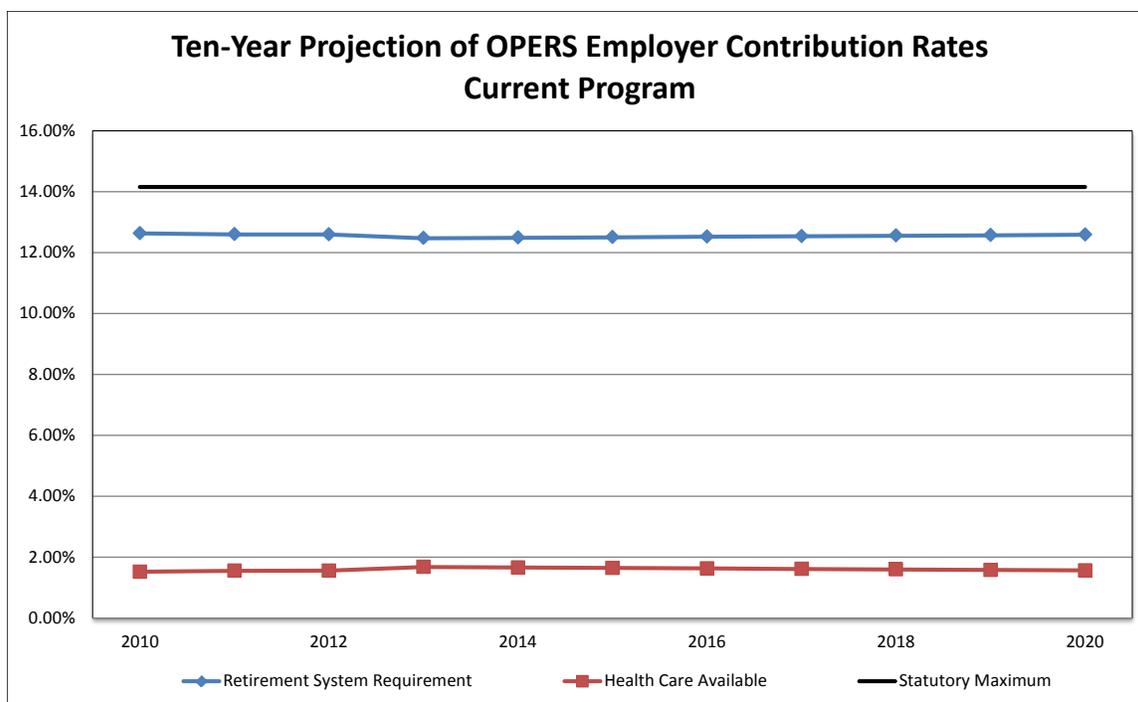
The results of this valuation show an employer normal cost rate and 30-year unfunded actuarial accrued liability (UAL) rate of 5.30% of pay and 7.33% of pay, respectively, for a total retirement employer funding rate of 12.63% of pay. Because 1% of payroll is allocated for health care and 13.15% is allocated to retirement, we calculate that this allocation is sufficient to amortize the unfunded liability over less than 30 years - actually over about 26 years.

However at the 2013 funding rate of 1% of pay to health care (which we project increasing to almost 2% over time as shown below), we calculate that the health care fund would run dry in 2023. This is one of the reasons that OPERS sees urgency in adoption of their 30-year plan.

On this basis, and assuming that (1) actuarial assumptions are met, and (2) the retirement contributions will continue to be made at the 30-year rate, our current program funding model projection of retirement system liabilities, actuarial value of assets and the funded ratio is shown below.



Health care funding is on a modified pay-as-you-go basis, and a percent of covered payroll, as defined by the OPERS Board, is used to pay retiree health care expenses. For 2012 and 2013, the Board defined allocation to health care was 4% and 1%, respectively. Below are the projected contribution rates as if the retirement unfunded liability is amortized over a declining 30 years, beginning in 2010 under the current program. Note that the funds available for health care grow to nearly 2% over the period.



Findings

Our projections show that without change, the declining 30-year funding target for retirement benefits would be satisfied, leaving 1% to 2% of pay available for health care. Assuming all actuarial assumptions are met, 1% to 2% is contributed to health care as planned and the employer contributions are made, we expect the health care fund to remain solvent only through 2023 and the retirement plan to be fully funded within 30 years. Consequently there is a need for a plan change in order to free up additional contributions for health care.

4.3 Proposed 30-Year Plan

Many of the changes recommended by the OPERS Board are subject to a transition plan based on the member's eligibility for retirement. Group eligibility is determined as follows:

- **Group A** is comprised of members eligible to retire under the current eligibility requirements or who will become eligible to retire in the five-year period following the bill's effective date. These members are grandfathered under current age and service eligibility requirements, benefit formula, final average salary and the age and service reduction factors. COLA proposed changes will apply.
- **Group B** was initially comprised of members who will become eligible to retire under the current eligibility requirements in the 10-year period following the bill's effective date and those who have at least 20 years of service. Some changes were made to Group B in response to the Senate's request for more gradual grandfathering provisions.

Group B members are grandfathered under current benefit formula and final average salary. Other changes will apply.

- **Group C** is comprised of all members who will not become eligible to retire under the current eligibility requirements within the 10-year period following the bill’s effective date or those who do not have at least 20 years of service on the bill’s effective date and those hired after the bill’s effective date. All changes will apply.

The major provisions of OPERS’ latest reform plan, as passed by the Senate, are summarized in the following table.

Proposed Plan Changes

	Current Program	Proposed Program
Age and Service Retirement Eligibility	General Division <i>unreduced benefit:</i> <ul style="list-style-type: none"> • Any age with 30 years of service • Age 65 with 5 years <i>reduced benefit:</i> <ul style="list-style-type: none"> • Age 55 with 25 years of service • Age 60 with 5 years 	Group B <i>unreduced benefit:</i> <ul style="list-style-type: none"> • Any age with 32 years of service • Age 52 with 31 years • Age 66 with 5 years <i>reduced benefit:</i> <ul style="list-style-type: none"> • Age 55 with 25 years of service • Age 60 with 5 years Group C <i>unreduced benefit:</i> <ul style="list-style-type: none"> • Age 55 with 32 years of service • Age 67 with 5 years <i>reduced benefit:</i> <ul style="list-style-type: none"> • Age 57 with 25 years of service • Age 62 with 5 years
	Law Enforcement (LE) <i>unreduced benefit:</i> <ul style="list-style-type: none"> • Age 48 with 25 years of LE service • Age 52 with 25 years of PS or combination of LE and PS service • Age 62 with 15 years of LE or PS service <i>reduced benefit:</i> <ul style="list-style-type: none"> • Age 48 with 25 years of PS service or combination of LE and PS service • Age 52 with 15 years of LE or PS service 	Group B <i>unreduced benefit:</i> <ul style="list-style-type: none"> • Age 50 with 25 years of service • Age 64 with 15 years <i>reduced benefit:</i> <ul style="list-style-type: none"> • Age 48 with 25 years of service • Age 52 with 15 years Group C <i>unreduced benefit:</i> <ul style="list-style-type: none"> • Age 52 with 25 years of service • Age 64 with 15 years <i>reduced benefit:</i> <ul style="list-style-type: none"> • Age 48 with 25 years of service • Age 56 with 15 years

	Current Program	Proposed Program
	<p>Public Safety (PS) <i>unreduced benefit:</i></p> <ul style="list-style-type: none"> • Age 48 with 25 years of LE service • Age 52 with 25 years of PS or combination of LE and PS service • Age 62 with 15 years of LE or PS service <p><i>reduced benefit:</i></p> <ul style="list-style-type: none"> • Age 48 with 25 years of PS service or combination of LE and PS service • Age 52 with 15 years of LE or PS service 	<p>Group B <i>unreduced benefit:</i></p> <ul style="list-style-type: none"> • Age 54 with 25 years of service • Age 64 with 15 years <p><i>reduced benefit:</i></p> <ul style="list-style-type: none"> • Age 48 with 25 years of service • Age 52 with 15 years <p>Group C <i>unreduced benefit:</i></p> <ul style="list-style-type: none"> • Age 56 with 25 years of service • Age 64 with 15 years <p><i>reduced benefit:</i></p> <ul style="list-style-type: none"> • Age 52 with 25 years of service • Age 56 with 15 years
Benefit Formula	General Division 2.2% of FAS for the first 30 years; 2.5% of FAS for years over 30	General Division 2.2% of FAS for the first 35 years; 2.5% of FAS for years over 35
Final Average Salary (FAS)	Three highest years.	Five highest years.
Cost-of-living Allowance	3% simple.	Average percentage change in the Consumer Price Index up to a maximum of 3%.
Age and Service Reduction Factors	Retired under a reduced benefit, under age 65 or have less than 30 years of service, a reduction factor established in statute.	Retired under a reduced benefit, under age 67 or have less than 32 years of service, a reduction factor determined by the actuary.
Effective Date of Benefits	First of the month following the later of: <ul style="list-style-type: none"> • Attainment of age and service eligibility • Termination of public employment 	Same as current program plus a date that is 90 days prior to the date of application
Alternative Benefit Formulas	<ul style="list-style-type: none"> • \$86 times years of service, or • Member’s accumulated contributions times 2 	Eliminates alternative benefit formulas
Minimum Earnable Salary	Monthly contribution based on compensation of \$250 to earn full-time credit.	Monthly threshold of \$750, \$875 and \$1,000 to earn full-time credit January 1 following bill’s effective date, next January 1 and next January 1, respectively. Indexed thereafter.

	Current Program	Proposed Program
Disability Program	The bill makes several changes to OPERS disability program, including provisions concerning exclusions from coverage, standards for disability determinations, leave of absence, forfeiture, continued employment, and offset of Social Security disability insurance payments.	

GRS performed an actuarial analysis of the OPERS proposed benefit changes. The initial analysis was based on the December 31, 2009, actuarial valuation of the System, and then updated using the December 31, 2010, valuation results. It has not yet reflected the poor investment return of 2011.

This latest analysis produced an estimated normal cost contribution reduction of 2.59% of pay and a UAL amortization rate reduction of 1.39% of pay. This means that the total normal cost decreased as a result of the changes from 15.39% under the current program to 12.80% under the proposed program. This is a decrease of 17% in the normal cost value of the pension benefits. We estimate that the normal cost will decrease by another 0.91% of pay once all OPERS members are those hired after the transition date. This would result in future total normal costs of 11.89% of pay, or 23% lower in value than the current benefits.

Another way to consider this reduction is that under the current program, workers get pensions worth 15.39% of pay at a contribution of 10.09%, for a total economic value of about 1.5 times their contributions. Future workers would get 11.89% value at a cost of 10.27% for a net value of only about 1.2 times their own contributions. This results in essentially a 69% reduction in economic value as shown below and illustrates the significance of the changes in total for future employees.

The following table illustrates these figures.

	Current Program	Proposed Program: Today (mixed workforce)	Proposed Program: Ultimate (all future workers)
Total Normal Cost	15.39%	12.80%	11.89%
Member Contributions	10.09%	10.09%	10.27%
Value to Member	5.30%	2.71%	1.62%
Decreased Value (% of pay)	NA	2.59% of pay	3.68% of pay
Decrease in Member Value	NA	Down 49%	Down 69%
Decrease in Total Pension Value	NA	Down 17%	Down 23%

Valuation Assumptions

In developing the liabilities for the OPERS 30-year plan, GRS modified the assumed rates of retirement to estimate the financial impact of increasing the normal retirement age. As a result of the experience study, numerous other actuarial assumptions were changed from those used in the prior actuarial valuations, including the payroll growth rate.

Financial Impact

As noted above, the impact of the proposed pension reform plan is a decrease in the normal cost rate of 2.59% of pay and a decrease in the 30-year UAL rate of 1.39% of pay, for a total rate decrease of 3.98% of pay.

The benefit changes reduced the present value of benefits by 5%, but reduced the employer normal cost rate by 48% and the employer UAL amortization rate by 17%. As a result, the expected future 30-year employer costs of the plan are decreased by 31%, or by 3.98% of pay.

Summary of Employer Costs

	Current Program*	Proposed Program	Difference
Employer Normal Cost Rate	5.30%	2.71%	(2.59)%
UAL Amortization Rate	7.33%	5.94%	(1.39)%
Total Employer Cost	12.63%	8.65%	(3.98)%

* Based on our calculations as of December 31, 2010 and 30-year funding period

Static Test of Proposed 30-Year Plan Changes

Using the results of the December 31, 2010 actuarial valuation and the proposed 30-year plan changes as outlined in the March 12, 2012 letter from GRS, we reviewed the impact on the normal cost rate and the unfunded actuarial accrued liability rate. Our independent determination of the decrease in the normal cost rate and decrease in the UAL amortization rate was within an acceptable range of the GRS work and validated the immediate impact of the 30-year plan.

Proposed 30-Year Plan Projection

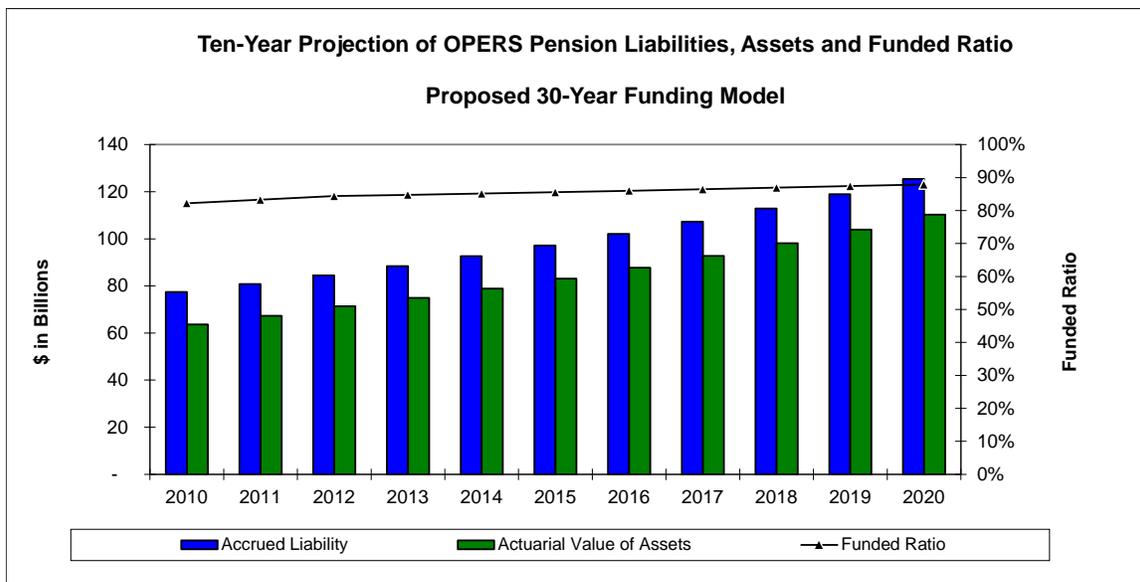
Our model further verified the impact of the change in employer contribution rates as a result of implementing the proposed 30-year plan. The proposed plan changes result in an employer normal cost rate and unfunded actuarial accrued liability rate of 2.71% and 5.94% of pay, respectively, for a total employer rate of 8.65% of pay. The remaining employer contribution rate of 5.50% of pay is available to allocate to the retiree health care fund.

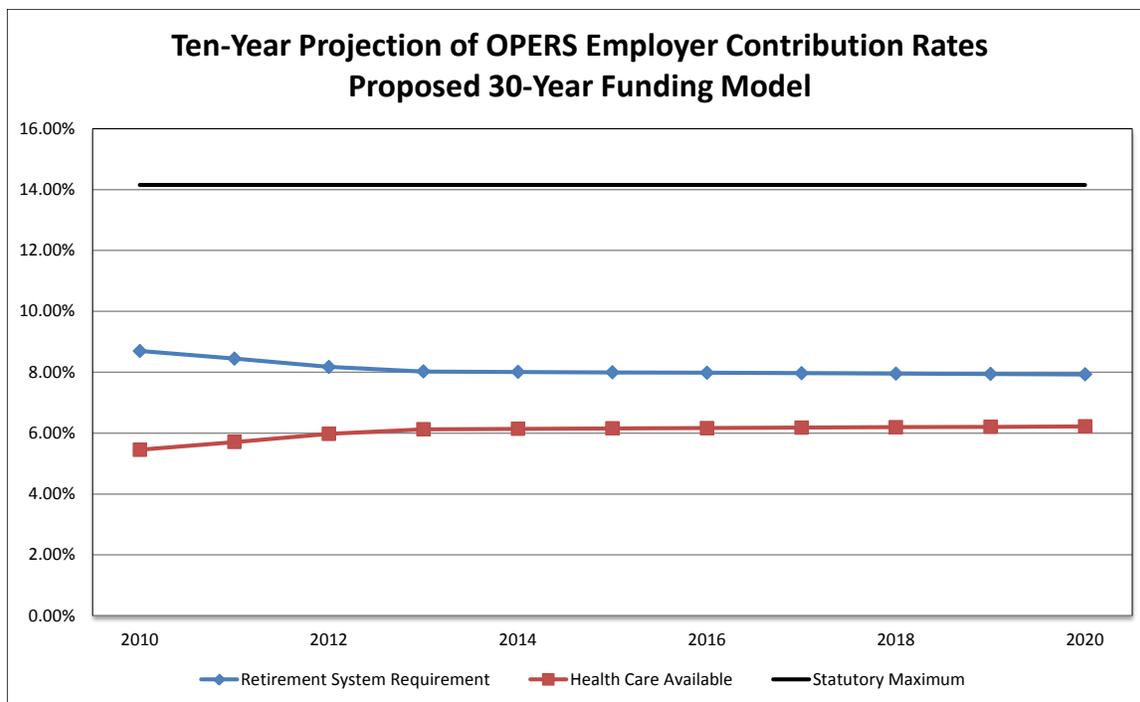
OPERS intends to modify their health care benefits in such a manner as to remain permanently solvent as long as contributions of 4.00% of pay are made to the health care fund. This would provide a meaningful level of health care benefits while keeping on the road to full funding of the retirement program. At the benefit levels proposed, this is a reasonable approach.

Our calculations are consistent with this. This means that the proposed 30-year plan does satisfy the objectives of fully funding the unfunded actuarial liability over no longer than 30 years, with health care benefits expected to remain solvent indefinitely as long as health benefits equivalent to HCPP 3.0 (as discussed in section 4.6) are implemented. OPERS estimated that the current health care provisions would be sustainable only if contributions of 7.6% of pay were made to the health care trust. This is what OPERS refers to as the “self-funding rate.” A 7.6% self-funding rate is not consistent with the current contribution and retirement benefit levels. OPERS estimates that the health care fund would be depleted in 14 years absent reductions in health benefits. We find this estimate to be reasonable. We did not duplicate that 14 year OPERS calculation, but agree that a 4.0% health care program is more appropriate in tandem with the new retirement plan costs than is the current 7.6% plan.

Over time, the employer normal cost rate is expected to decline by an additional 0.91% of pay once all active employees’ benefits are under the revised structure. This will result in a slow and gradual decline in the employer normal cost rate over the next 30-40 years. This has been taken into account in the projections made in this report.

The UAL was amortized over a period of 30 years on a closed amortization basis in 2011 for our calculations. Below is a projection of the accrued liability, assets and funded ratio under the proposed 30-year funding plan and projection of contribution rates for both the retirement plan and health care plan.





Findings

The 30-year plan will accomplish the twin funding objectives for both retirement and health care benefits long-term if all assumptions realized as of the December 31, 2010 actuarial valuation and health care benefits are reduced in a manner equivalent to HCPP 3.0. We project that contributions of more than 6% of pay could be available for health care; however the current level of health care benefits requires 7.6% of pay and the modified health care plan requires about 4% of pay. Based on this projection, a margin of about 2% of pay is available above the expected funding costs of both retirement and health care benefits as modified. However, the impact of the low investment returns during 2011 are not reflected in this analysis, but will be addressed in the next section.

4.4 Stress Testing of Proposed 30-Year Plan

The analysis that follows looks at what position OPERS would be in after the poor investment return of 2011 plus five more years of “worst case” investment returns, and illustrates the additional plan changes that might be required should results turn out worse than expected.

Short Term Analysis

We tested the viability of the proposed 30-year plan using OPERS’ actual asset return for the 2011 calendar year of 0.22%, provided to us by the OPERS staff. Based on the equity markets through June 2012, and OPERS returns through April, we estimate that the plan will have earned roughly the actuarial rate from January 1, 2012 through June 30, 2012. Consequently,

we base our worst case scenario on returns of 5% per year for the five-year period from July 1, 2012, through June 30, 2017.

As a result, we expect the proposed 30-year plan to still remain within the twin objectives of 30-year declining funding period for retirement and long-term solvency for health care as of the December 31, 2011, valuation as long as health care benefits can be supported by about 4% contributions.

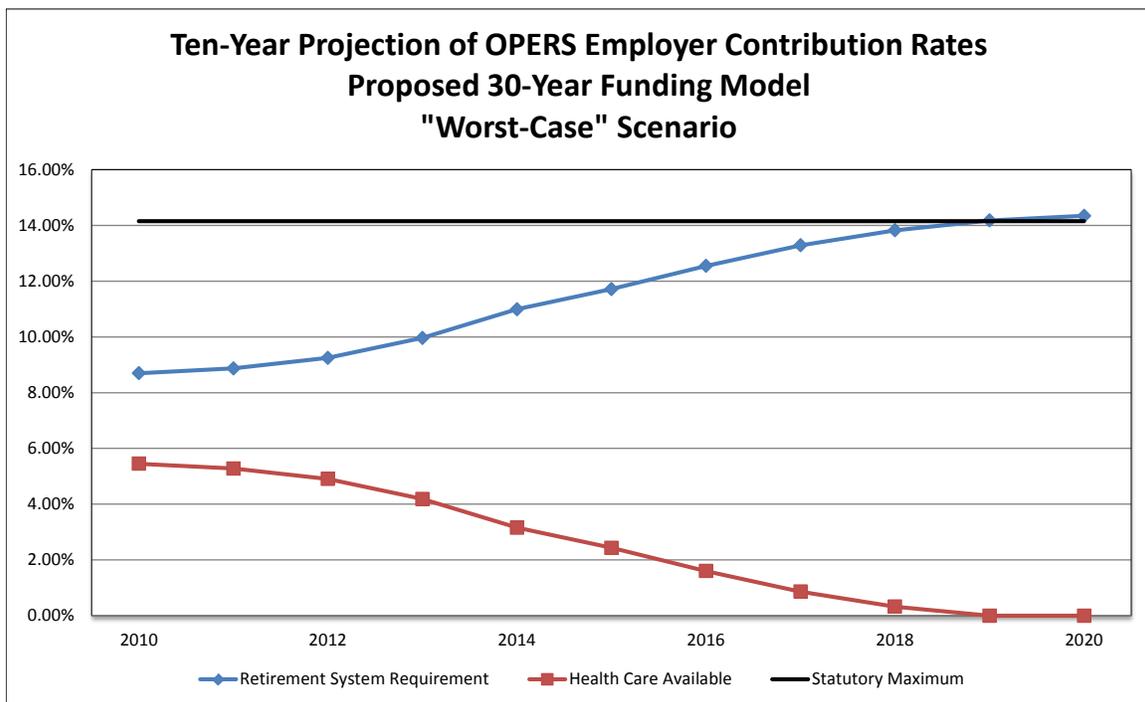
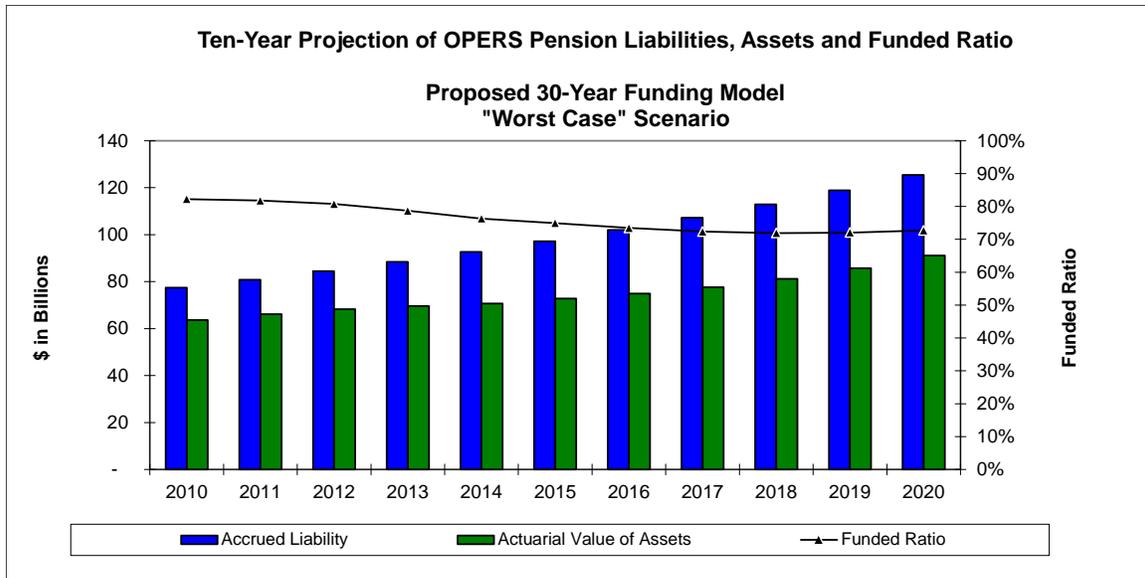
But assuming calendar year 2012 investment returns of 6.5% (half a year at 8% and half a year at 5%), we project that the December 31, 2012, actuarial valuation will show that the plan cannot become 100% funded by 2042 if 4% is funded to the health care account. However, if OPERS implements their HCPP 3.0 level of health care benefits, then a reduced amount could be directed to health care, sufficient to keep the pension funded over 30 years and the health care solvent indefinitely.

Multiple Year Analysis

Assuming no changes to benefits and the extended worst case investment scenario, the retirement plan would not meet the 30-year funding objective by the end of 2016. Because the health care fund has substantial assets, it is not projected to be eliminated within 30 years, as long as the health care benefits are reduced as anticipated by OPERS in the HCPP 3.0 plan.

To remedy this funding situation, benefits would need to be reduced further. For example, another 0.6% reduction in total projected value of retirement benefits as of December 31, 2016, would be sufficient to maintain 30-year retirement funding (actually 26 years by then, if the 30-year period started when the law was effective in 2013). By the end of the five years of poor returns, cumulative reductions of retirement benefits of about 1.5% would be required.

The charts shown below illustrate the pension funding position and required contributions absent any changes.



The plan funding situation would continue to deteriorate as a result of the five year period of poor returns unless benefit changes were made.

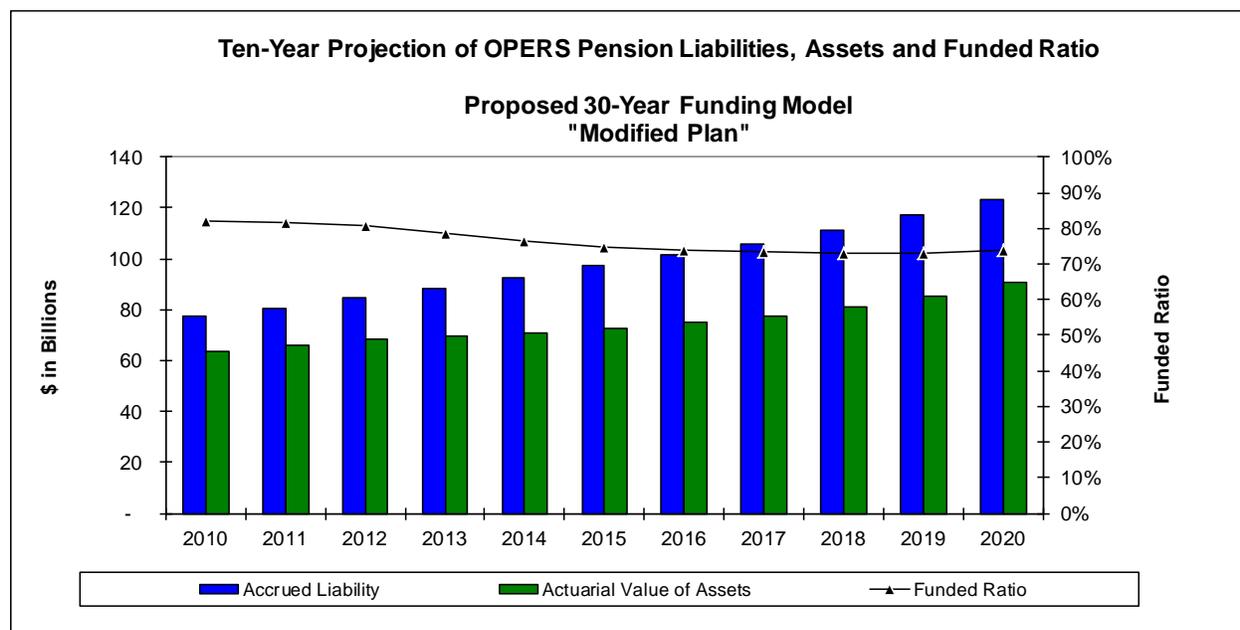
Summary of Retirement Benefit Reductions Required

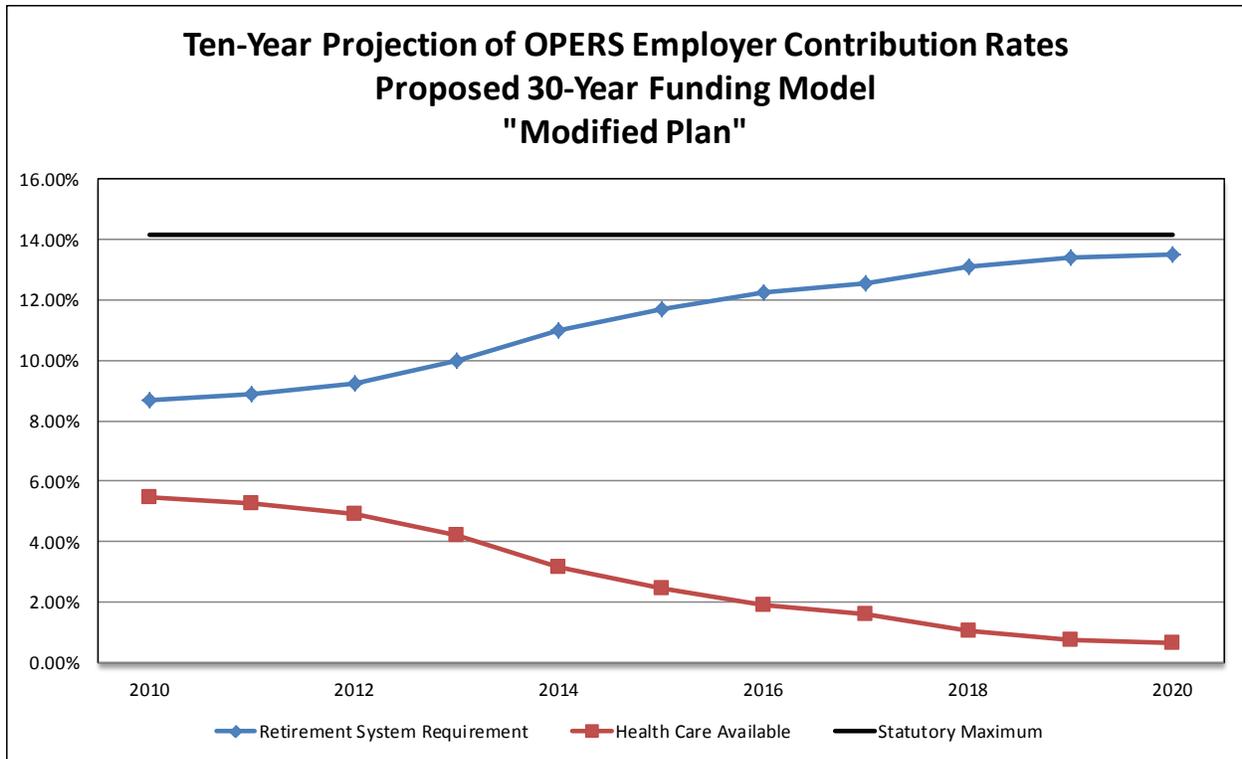
The following table summarizes the poor investment return in this worst case hypothetical case and illustration of possible actions that results in the “modified plan” that stays within the funding goals.

Hypothetical Benefit Reductions as Consequence of Poor Returns

Year Ending December 30	Investment Return	Hypothetical Actions Taken
2011	0.22%	No changes needed – Can provide health care benefits under HCPP 3.0
2012	6.50%	No changes needed
2013	5.00%	No changes needed
2014	5.00%	No changes needed
2015	5.00%	No changes needed
2016	5.00%	Reduce retirement benefits by 0.6%
2017	6.50%	Reduce retirement benefits by another 0.8%
2018	8.00%	No more changes needed

An estimate of a ten-year projection of liabilities, assets and funded ratios and employer contribution rates for both the Retirement system and Health Care Fund under a modified plan scenario (i.e., with periodic additional benefit reductions) described above is shown below:

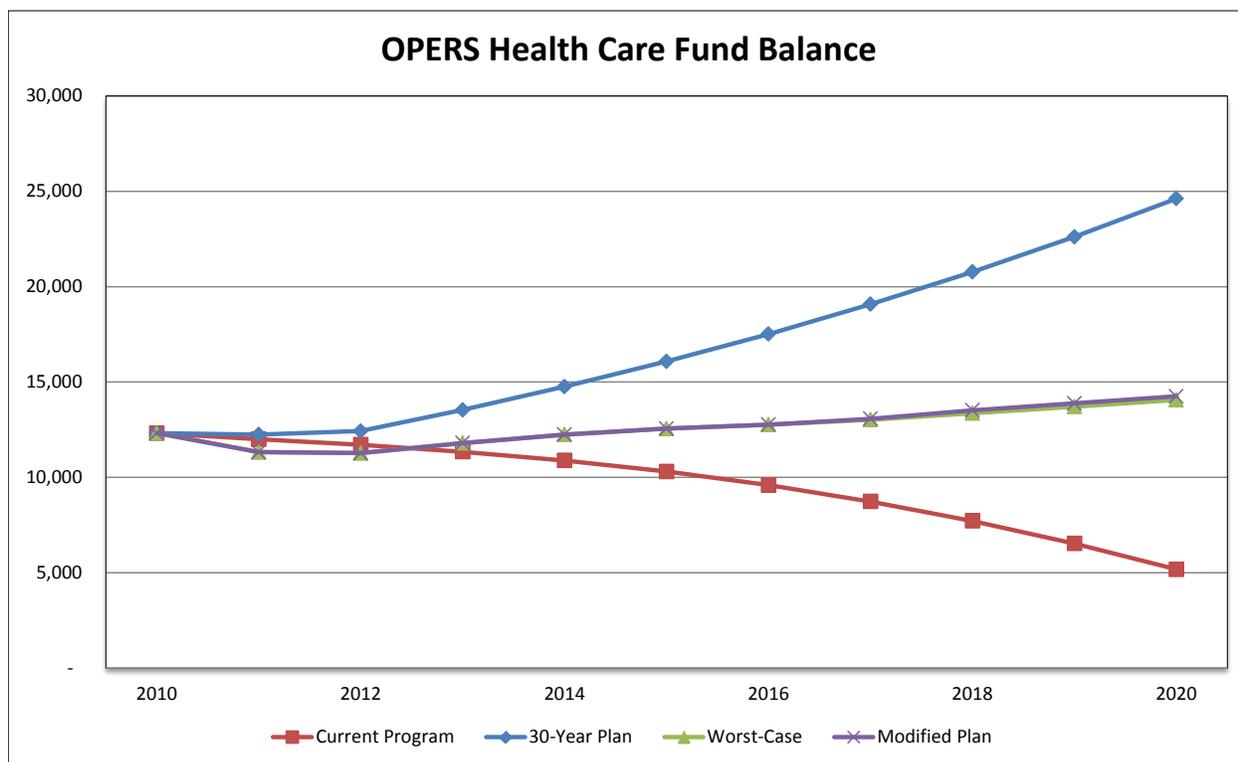




Cumulatively, retirement benefit reductions of about 1.5% during this period of extended poor investment performance would be required. This compares to a reduction of 5% of the value of benefits under the current 30-year plan.

Summary of Projections

The following graph is another way to consider the projections discussed above.



All the scenarios assume that the retirement benefits are funded according to a 30-year funding horizon, with remaining contributions being made to the health care fund. The “Current Program” scenario is based on the current level of health care benefits, while the other three lines are based on the new plan, including the OPERS HCPP 3.0 level of health benefits. This health care fund balance chart can illustrate the general health of both systems combined under various scenarios. The **Current Program** line (red squares) shows that without action, the health care fund is expected to become depleted about 2024. The **30-Year Plan** line (blue diamonds) builds up a substantial health care fund which would remain solvent throughout the 30-year period and in fact would provide funds in excess of that needed to support the HCPP 3.0 program.

The next two lines are based on the worst case investment return of five years of 5% annual return and 8.00% thereafter. The **Worst Case** line (green diamonds) shows that the health care fund is increasing only gradually absent further modifications. The **Modified Plan** line (violet Xs) shows that with the slight changes discussed above the health care trust will grow throughout the 30-year period. Keep in mind that once the 30-year retirement funding period expires, large contributions will be available for health care and it too will be fully funded – about five to ten years after the pension becomes fully funded.

Recommendations

If an extended period of poor investment returns occurs, additional benefit changes will be required to stay within the funding objectives. We recommend that the Board have a rigorous process in place and act each year as necessary to maintain the twin objectives of long-term health care solvency and 30-year retirement plan funding. The Board might also wish to make slightly larger reductions to provide for a cushion in case markets do not rebound, as was the case in this hypothetical worst case scenario. Conversely, if experience turns out to be more favorable than expected (which we believe is equally likely), the Board should have authority to reverse some of the changes made subsequent to those taken to date.

4.5 Summary of Plan Provisions

The Plan Provisions for the Retirement System and Health Care Program as well as the major assumptions utilized in the most recent actuarial valuations are shown below.

Summary of Plan Provisions		
Contributions	State and Local Government	10.0%
	Law Enforcement	11.1% (increasing to 13%) 10.5% (increasing to 12%)
	Public Safety	14.0%
	State and Local Employer Pension	18.1%
	Law Enforcement Employer Pension	
	Employer Health Care	2010–5% 2011-2012–4% 2013–1% 2014 and later–0%
	Final Average Salary (FAS)	Three highest years
Age and Service Retirement – State and Local Government	Age 60 and 5 years of service or age 55 with 25 years of service or 30 years of service	DB Plan: Greater of 2.2% of FAS times service up to 30 years plus 2.5% of FAS times service over 30 years or \$86 times years of service, adjusted by “Reduced Retirement” below
	Age 60 and 5 years of service or age 55 with 25 years of service or 30 years of service	Combined Plan: 1% of FAS times service up to 30 years plus 1.25% of FAS times service over 30 years, adjusted by

Summary of Plan Provisions		
	Age 55	<p>“Reduced Retirement” below plus balance in DC accounts</p> <p>Maximum: lesser of 100% times FAS or Section 415 limit Minimum: twice member’s savings fund balance</p> <p>Member-Directed Plan: balance in DC accounts</p>
Reduced Retirement – State and Local Government	Less than 30 years of service and younger than age 65	<p>Age 58 or 25 years – 75%</p> <p>Age 59 or 26 years – 80%</p> <p>Age 60 or 27 years – 85%</p> <p>Age 61 – 88%</p> <p>28 years – 90%</p> <p>Age 62 – 91%</p> <p>Age 63 – 94%</p> <p>29 years – 95%</p> <p>Age 64 – 97%</p>
Age and Service Retirement – Public Safety and Law Enforcement	<p>Public Safety: Age 52 and 25 years of service or age 62 with 15 years of service</p> <p>Law Enforcement: Age 48 and 25 years of service or age 62 with 15 years of service</p> <p>Age 52 and 15 years of service</p>	<p>2.5% of FAS times service up to 25 years plus 2.1% of FAS times service over 25 years</p> <p>1.5% of FAS times service</p> <p>Maximum: 90% times FAS or Section 415 limit Minimum: twice member’s savings fund balance</p>
Reduced Retirement – Public Safety and Law Enforcement	Age 48 and 25 years of service	<p>Age 48 – 75%</p> <p>Age 49 – 80%</p> <p>Age 50 – 86%</p> <p>Age 51 – 93%</p>
Disability (Original)	Five years of service and under age 60. Waive service requirement for law enforcement members	<p>Service member would have at age 60 times the greater of 2.2% of FAS or \$86. Maximum – 75% of FAS Minimum – 30% of FAS</p>

Summary of Plan Provisions		
Disability (Revised)	Five years of service and under age 60. Waive service requirement for law enforcement members	Maximum of 45% of FAS or Service times 2.2% of FAS, no reduction for early. Maximum – 60% of FAS
Survivor’s Benefits	Death of Active or Deferred eligible to retire:	100% J&S Benefit
	Death of Active or Deferred not yet eligible to retire:	A percent of FAS based on number of qualified dependents
Partial Lump Sum Option (PLOP)	Effective January 1, 2004	Receive a partial lump sum along with a reduced monthly allowance
Cost of Living Adjustment (COLA)	3% of original benefit per year	
Health Care	Eligible for a comprehensive medical expense health care plan and reimbursement for Medicare Part B for retirees with 10 or more years of service	
Lump Sum Death Benefit	Lump sum benefit between \$500 and \$2,500 based on service credit at retirement	
Investment Return	Retirement: 7.75% per annum	
	Health Care: 5.25% per annum	
Payroll Growth	4.00% per annum, compounded annually	
Price Inflation	3.25% per annum, compounded annually	
Asset Valuation Method	Retirement and Health Care: Smoothing method, recognizing 25% of the gain or loss each year. The actuarial value of assets must be within 88% and 112% of the market value	
Normal Cost Rate	Constant	
Expected Benefit Payments	Increases by expected health care trend rate	

Summary of Plan Provisions	
Funding Objectives	<p>A. Correct underlying issues</p> <p style="padding-left: 20px;">Longer life expectancy</p> <ul style="list-style-type: none"> • Eliminate unfair subsidization of benefits of subsets of members <p style="padding-left: 20px;">Encourage member engagement in their retirement</p> <p>B. Restore health care funding to a level of 4% per year</p> <p>C. Ensure amortization period remains under 30 years through 2012 in order to give the investment market time to recover</p>

4.6 Other Issues

Minimum Earnable Salary

Under the current provisions, an employee who earns as little as \$250 per month is eligible to earn OPERS benefits. On its face, this may not seem to be a flaw in retirement program design, as retirement benefits are tied to salary, and a lifetime low wage earner would typically also have commensurately low benefits. But two serious financial problems can occur as a result of covering such low-paid, typically part-time, workers.

- One is that such an individual can work many years at the low salary, then work just a few years at a higher salary and earn benefits whose value far exceeds the contributions made on the individual's behalf.
- Secondly, these individuals would receive valuable health care benefits through OPERS that far exceed the funding.

Since an individual earning just \$250 per month would very likely have another source of income, it is appropriate that the individual's primary income should be the source for retiree health insurance.

We strongly support OPERS efforts to increase the minimum earnable salary to more appropriate levels, such as \$1,000 per month, and indexing the limit. It is hard to think of more glaring abuse of a retirement system than allowing a \$250 per month individual to receive retiree health care or earn a full lifetime retirement benefit based on only three to five years of full-time salary coupled with decades of minimally compensated public service.

Salary Spiking and Contribution Based Benefit Cap

OPERS has proposed a novel approach to minimize salary spiking. Salary spiking is the ability for a member to increase their salary for a short period (up to five years) and receive a lifetime of

higher pension benefits, although the majority of their public service was at lower earnings. The most extreme example would be someone earning just \$250 per month for decades who goes into full time well-paid public service for a few years just before retirement as noted above.

The Contribution Based Benefit Cap (CBBC) is proposed as a further test on benefits. Essentially, CBBC compares the benefit with the accumulated contributions and restricts benefits which have an abnormally high ratio of benefit to accumulated contributions. The vast majority of public service employees have a consistent ratio of benefit to accumulated contributions. Those who spike their salaries would “beat the system” and have a much higher ratio. The CBBC is designed to limit benefits to an appropriate level.

We also support this approach.

Board Authority

The initial version of SB 343 included an important provision which was not in the final bill. This provision would give the OPERS Board the authority to make limited additional changes to benefits and member contributions in order to maintain a soundly funded pension and health care system.

As mentioned elsewhere in this report, we believe that board authority to modify benefits without legislation is a critical tool for sound retirement system management and consistent with the fiduciary responsibility of the Board. Without such tools, adverse experience can cause a significant drain on actuarial soundness and a delay in action. We strongly support adding limited board authority to make appropriate changes.

Analysis of Transition

The OPERS proposed 30-year plan will require some employees to work longer or will provide lower benefits at early retirement due to early retirement reductions. Consequently, it is important to carefully consider how the transition would work. A poorly designed transition would result in a “rush to the door” where individuals would retire before a certain date in order to preserve expected benefits. Conversely, the most fair and generous transition would be one where the benefit reductions only apply to individuals who have not yet been hired. That extreme could result in minimal cost savings in the short run.

We have analyzed the transition feature in the OPERS proposal and find it to be a reasonable balance between fairness and cost. OPERS grouped all current employees into three groups (A, B and C) based on their age and service at transition. The various groups are subject to different features of the new benefits provisions.

Consequently, we believe that these OPERS proposed transition rules very well thought-out and reasonable.

Adequacy of Health Care Benefits

OPERS has made numerous changes to the health care benefits over the years. In 2003, OPERS adopted a Health Care Preservation Plan (HCPP) where they limited the choice of health care coverage available to retirees, and imposed various premium sharing approaches depending on various tiers of recipients. They established a self-supporting-rate (SSR) concept to fund the health care program.

HCPP 2.0 was effective in 2007, which implemented various cost savings features, such as wellness, disease management, a Medicare Advantage avenue, member cost sharing, and more restrictive spouse eligibility. Funding rates, as established by the Board had typically ranged from 4% to 7% through 2012. But the funding rate is scheduled to decrease to 1% in 2013 and 0% in 2014, causing OPERS to realize that further changes are in order.

OPERS estimates that the current benefit level would require ongoing contributions of 7.6% of pay to be permanently sustainable. The 30-year plan is designed to support health care contribution rates of 4.0%, which the board believes can provide a meaningful and appropriate retiree health care program. We agree and support this approach.

In order to sustain health care within the 4.0% funding framework, OPERS has developed HCPP 3.0, which has the following features:

- Transition to a minimum age of 60 and 20 years of service for future health care coverage
- Premium sharing based on age and service ranging from:
 - 51% paid by OPERS for employees retired at age 60 with 20 years of service, to
 - 90% paid by OPERS for employees retired at age 65 and 32 years of service
- No coverage for spouses under 65, no allowance for spouses
- Allowance for dependents at half of retiree's allowance
- No Medicare Part B reimbursement
- Medicare Connector model for post-65
 - Large purchasing pool
 - This plan is financed in part by an allowance from OPERS based on service
- OPERS sponsored plan for those under 65
- Limitations on health care for members on disability
- Increased low income based subsidy

Most of these provisions have transition rules. The OPERS board has approved these changes in draft and is in the process of gathering stakeholder feedback. They are expected to consider these alternatives later this year.

On balance, we find that the level of health care benefits under HCPP 3.0 is a reasonable objective, and that, in combination with the proposed 30-year plan can be maintained at this level if all assumptions are realized.

4.7 Overall Findings and Recommendations

Relatively modest changes in the OPERS retirement benefits were required to stay within the 30-year requirement because of its comparatively strong funded status.

The OPERS approach to extending retirement eligibility requirements is beneficial to both the retirement plan and the health care program and addresses the cost pressure from improved life expectancy. The proposed 30-year plan is a reasonable approach given the funded status of the system and does satisfy the dual objectives of 30-year funding and long term health care solvency (with the changes to the health care plan described above) as of the December 31, 2010, actuarial valuation.

The 30-year plan provides a modest margin for future adverse experience (about 2% of pay) if all assumptions are realized, but the poor returns from 2011 are likely to use up much of that margin. As a result, future changes to meet the funding standards may be required in an extended poor investment return cycle.

The total normal cost rate for the current benefit structure means that most current employees are receiving a much smaller share of the employer funding than have employees nearing retirement and retirees. If additional benefit reductions are required, equity would suggest that benefits for current retirees (i.e., the COLA) should also be considered.

Nearly 44% of the present value of future retirement benefits under OPERS is due to currently retired and inactive members. As a result, a 3% required reduction in benefits must be nearly 6% if the reduction is limited to currently active employees.

We support the OPERS health care approach under their HCPP 3.0 with a 4% contribution toward health care. The provisions of SB 343 as approved are a major step toward a long-term solvency of both a reasonable retirement and health care program.

We strongly encourage the reinstatement of the board authority provisions to make additional changes to stay within the funding objectives.

Other overall recommendations and alternative approaches for the future that are applicable to all systems are summarized in Chapter Two and Chapter Eight.

Chapter Five: Findings on State Teachers Retirement System of Ohio (STRS)

This section discusses our findings from the technical analysis of the STRS 30-year plan. This chapter is not complete on its own. To understand the context of the analysis, please review at least the Table of Contents, Chapter One, and Sections 2.1, 2.17, and 2.18 before reading this chapter.

5.1 System Overview

The State Teachers Retirement System of Ohio (STRS) was created in 1920, as an alternative to separate local school district retirement plans. Members of STRS include teachers and faculty members of public boards of education, state-supported colleges and universities, and the state of Ohio and its political subdivisions.

STRS provides retirement, disability and survivor benefits as well as access to post-retirement health care to retirees and beneficiaries. Health care is funded only after the pension obligation is funded. Ohio statutes further limit the annual contribution paid to both pensions and health care to 14% of salaries.

STRS current membership includes approximately 184,000 active members, 153,000 inactive members and 133,000 retired members and beneficiaries. Assets are held in a trust for the exclusive benefit of the plan's participants. STRS has approximately \$66.8 billion in assets as of June 30, 2011 for pension and health care benefits.

STRS is led by an eleven-member Retirement Board, with five elected contributing members, two elected retired members and the superintendent of public instruction. There are also three investment members, one appointed by the Governor, one appointed by the Ohio state Treasurer and one appointed jointly by the Senate President and the Speaker of the House.

Participation in STRS is mandatory except for full-time higher education members who may select an alternative retirement plan. STRS members are not covered by Social Security but contribute 10% of their annual salary to STRS. STRS employers currently contribute 14% of members' salaries, the maximum allowable under current Ohio statute.

Every year, an actuarial valuation is performed by an independent actuary and determines the employer contribution rates to fund the basic retirement system benefits as well as retiree health care fund. The most recent valuation was performed as of July 1, 2011 and is the basis for much of our analysis presented throughout this report.

Pension Reform

The history of STRS 30-year plan includes:

- September 2009, STRS Ohio presented a 30-year funding plan to the ORSC, which was estimated to reduce the funding period from infinite to 33.4 years. The recommended plan:
 - Increased member and employer contributions by 0.5% per year, beginning July 1, 2011 for members and July 1, 2016 for employers, to a total of 2.5%
 - Increased final salary averaging (FAS) period from 3 years to 5 years beginning August 1, 2015
 - Increased years of service required for retirement, beginning August 1, 2015
 - Changed the benefit formula to 2.2% per year of service for the first 30 years of service; 2.5% thereafter, beginning August 1, 2015. Eliminated the 35-year enhanced benefit
 - Reduced COLA to 2% for current retirees and 1.5% for members retiring after July 1, 2011
- October 2010, STRS Ohio revised the 30-year plan as follows:
 - Implemented a transition period to increase eligibility to 35 years of service
 - Delayed COLA of 2% for members retiring after July 1, 2011 beginning 36 months after date of retirement
 - Board seeks authority to set a three-, four- or five-year FAS
- January 2011, STRS Ohio presented a revised 30-year funding plan as follows:
 - Eliminated the provision to increase employer contributions and further amended the increase in member contributions to 3%, phased-in 1% per year beginning July 1, 2012, with Board authority to increase to 4%.
 - Increased age and service requirements to include a minimum age of 60 and 35 years of service beginning August 1, 2023.
 - Benefit formula of 2.2% per year of service for all service (eliminated the 2.5% calculation for years 31 and above).
 - FAS calculation would be on the five highest years of earnings beginning August 1, 2015.
 - Delayed COLA of 2% for members retiring after July 1, 2012, beginning 60 months after the date of retirement.
- March 2012, STRS Ohio revised actuarial assumptions, which created the need to revise the 30-year funding plan
- April 2012, STRS Ohio revised the 30-year funding plan, which estimated to reduce the funding period from infinite to 36 years. This plan passed the Senate in May as SB 342. The plan included the following modifications from earlier plans:
 - Increase member contributions by 4%, phased-in 1% per year beginning July 1, 2013

- o Smoothed transition for changes in retirement eligibility – the age 60 and 35 years of service requirement becomes effective August 1, 2026.
- o Implemented one-year COLA suspension for all current retirees.

Since 2009, the STRS funding period has been infinite, meaning at the current contribution rates, the system would not be able to pay off its unfunded liability. STRS currently allocates 1% of payroll towards health care benefits, with the remaining employer contribution (currently 13%) allocated to retirement benefits.

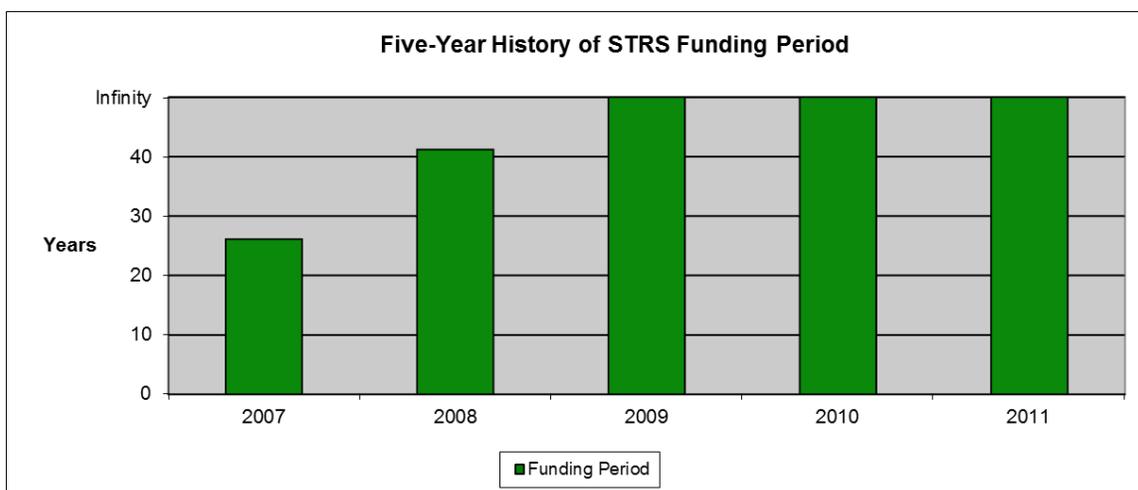
5.2 Analysis of Current Program

Funding Period and Contribution Rates

Effective in 1997, S.B. 82 required that each Ohio public retirement system establish a 30-year funding target for funding pensions. The funding period is the number of years required to liquidate the unfunded accrued liability. The following table and chart show a five-year history of the funding period along with the member and employer contribution rates and the allocation of employer contribution between pension and health care.

Five-Year History of STRS Funding Period and Contribution Rates

Valuation as of July 1	Funding Period Years	Contribution Rates		Employer Allocation	
		Member	Employer	Pension	Health Care
2011	Infinity	10.00%	14.00%	13.00%	1.00%
2010	Infinity	10.00%	14.00%	13.00%	1.00%
2009	Infinity	10.00%	14.00%	13.00%	1.00%
2008	41.2	10.00%	14.00%	13.00%	1.00%
2007	26.1	10.00%	14.00%	13.00%	1.00%

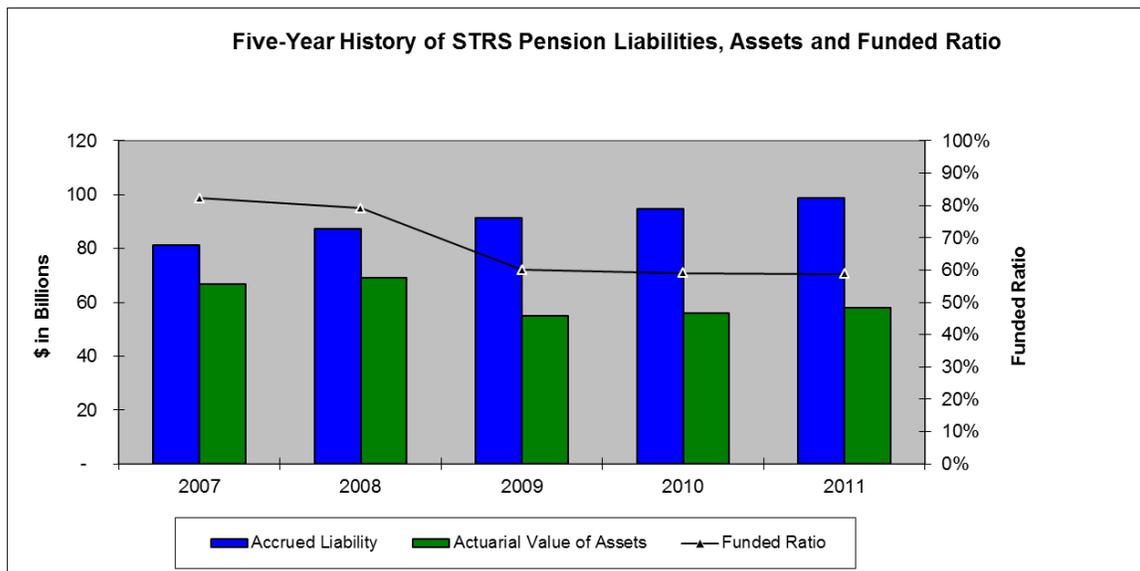


Funded Ratios

The System’s funded ratio is the actuarial value of assets divided by the accrued liability. The following table and chart show a five-year history of the System’s pension funded ratio.

**Five-Year History of STRS Pension Funded Ratio
(\$ in millions)**

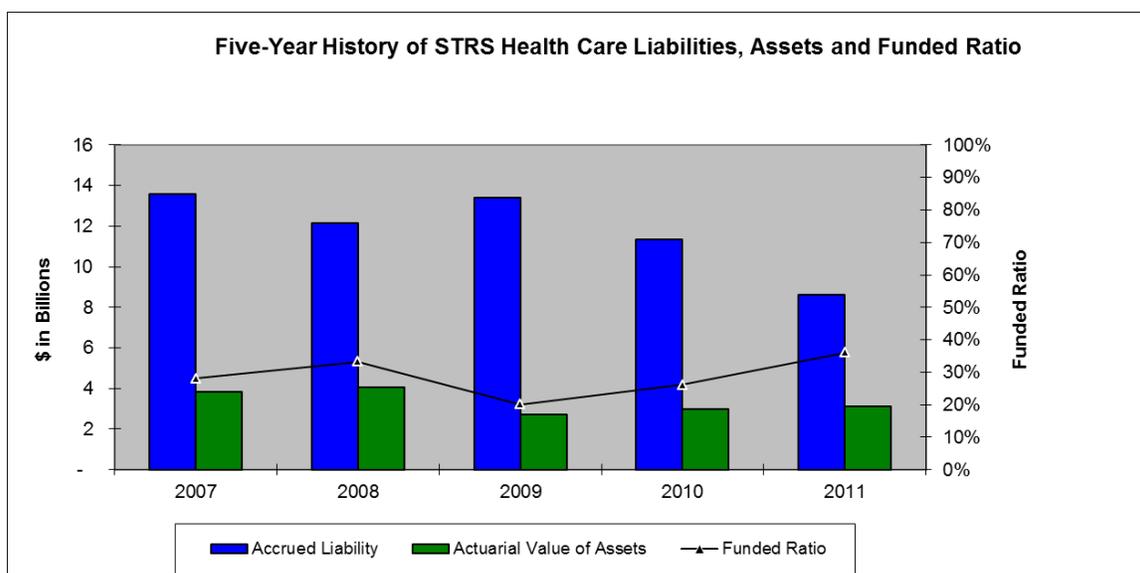
Valuation as of July 1	Accrued Liability	Actuarial Value of Assets	Unfunded Accrued Liability	Funded Ratio
2011	\$98,766	\$58,111	\$40,656	58.8%
2010	\$94,721	\$55,946	\$38,774	59.1%
2009	\$91,441	\$54,903	\$36,538	60.0%
2008	\$87,432	\$69,198	\$18,234	79.1%
2007	\$81,127	\$66,672	\$14,455	82.2%



The following table and chart show a five-year history of the System’s health care funded ratio.

**Five-Year History of STRS Health Care Funded Ratio
(\$ in millions)**

Valuation as of January 1	Accrued Liability	Actuarial Value of Assets	Unfunded Accrued Liability	Funded Ratio
2012	\$5,094	\$2,968	\$2,126	58.3%
2011	\$8,631	\$3,109	\$5,523	36.0%
2010	\$11,355	\$2,968	\$8,387	26.1%
2009	\$13,414	\$2,694	\$10,720	20.1%
2008	\$12,171	\$4,038	\$8,133	33.2%



Current Program Projection Assuming No Benefit Changes

The most recent actuarial valuations for pension and health care were performed by PricewaterhouseCoopers (PwC) as of July 1, 2011, and January 1, 2012, respectively, and show the following for the Retirement System and the Health Care Fund:

**Current Funding Position*
(\$ in millions)**

System	Accrued Liability	Actuarial Value of Assets	Funded Ratio	Funding/Solvency Period
Retirement	\$102,370	\$58,111	56.8%	Infinite funding period
Health care	\$4,420	\$2,968	67.1%	Insolvent in 38 years

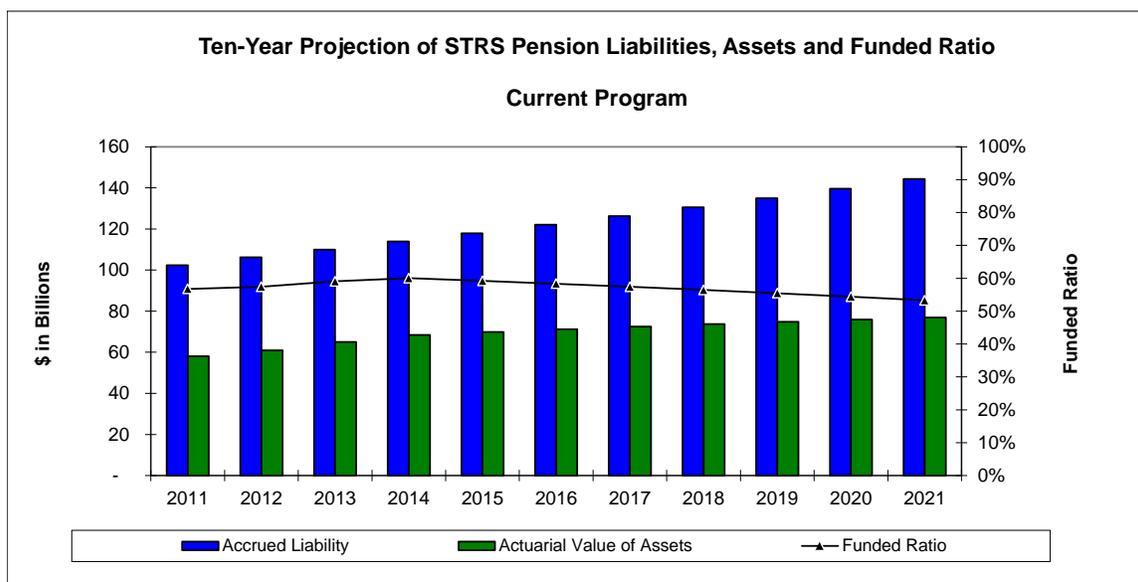
* Based on March, 2012, assumption changes as a result of recent experience.

Section 3307.28 of the Ohio Revised Code limits the total employer contribution rate to 14% of pay. STRS allocates 1% of pay toward retiree health care. Employer contributions in excess of 1% are allocated to fund the retirement system benefits. The results of this valuation updated with assumption changes as a result of the recent experience study show an employer normal cost rate and unfunded actuarial accrued liability (UAL) rate of 5.17% and 7.83%, respectively, for a total retirement employer rate of 13% of pay. Note that this unfunded actuarial accrued liability rate of 7.83% was calculated based on what is left after 1% is allocated for health care and 5.17% is allocated to normal cost. The true total 30-year amortization cost would be 24.93% of pay, not 7.83%, resulting in a total employer contribution requirement of 30.10%. Consequently, the valuation results show that the current employer retirement contribution rates are inadequate to amortize the UAL on any basis and the employer contribution allocated to the retirement plan is currently meeting only 43% of the 30-year funding requirement. An

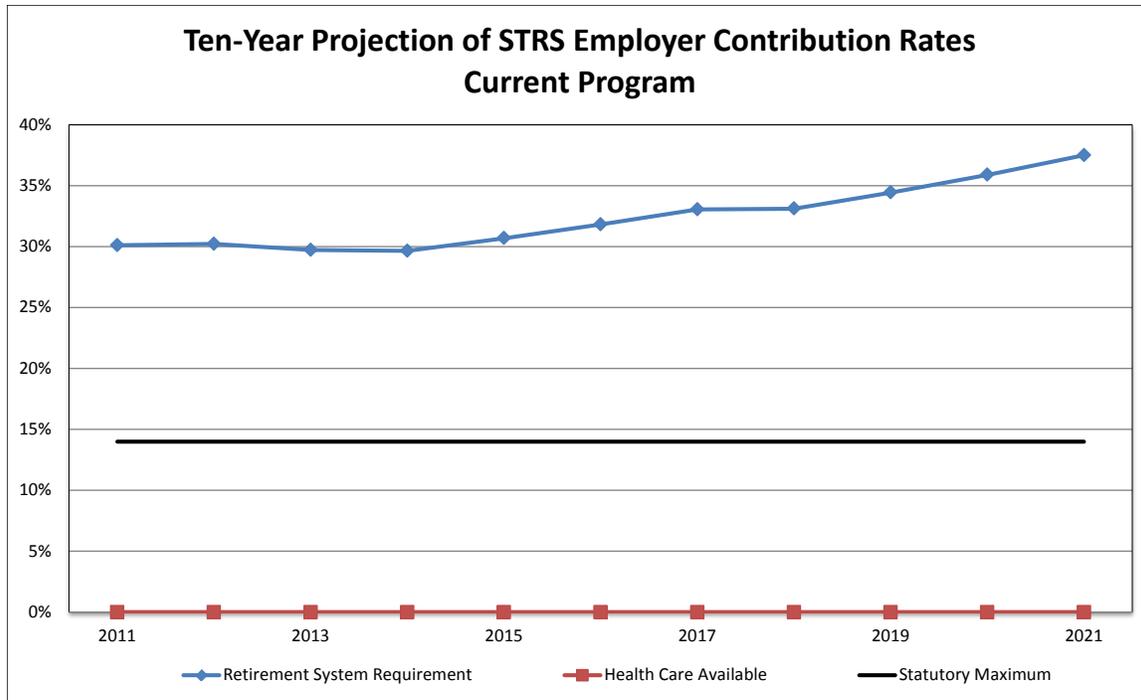
additional employer contribution of 17.1% of pay would be required to meet the 30-year funding requirement.

Based on the health care employer rate of 1% and the remaining contributions allocated to the retirement system, we estimate that the health care fund would run dry in 2047 and the funded ratio for retirement benefits would deteriorate to 35% within 30 years.

On this basis, and assuming that (1) actuarial assumptions are met, and (2) the retirement contributions will continue to be made at the current employee and employer contribution rates, our current program funding model projection of retirement system liabilities, actuarial value of assets and the funded ratio is shown below.



As discussed above, health care funding is on a modified pay-as-you-go basis. The Board defined allocation to health care was 1%, leaving only 7.83% of pay toward the amortization of the unfunded liability. Below are the projected contribution rates under the current program as if the retirement unfunded liability is amortized over 30 years as required beginning in 2012.



Findings

Our projections show that without change, the funded status of the plan will significantly decline and the declining 30-year funding target for retirement benefits would not be met for 2012 or any year in the future. In fact, if the entire 14% of pay employer contributions were made to the retirement plan, less than half the required contribution would be made for the next several years and less than 40% by the end of the 10-year period. In other words, additional employer funding of 16-25% of pay would be required. If all the employer contributions were going to retirement benefits, and none to health care, we would expect the health care fund to remain solvent only through 2028. With 1% going toward health care, as is current policy, the health fund will run out of funds by 2047 and the retirement fund will be only about 35% funded in 30 years. Clearly, significant changes are required for this program to remain viable.

5.3 Proposed 30-Year Plan

STRS’ latest reform plan, as passed by the Senate, is summarized below.

Proposed Plan Changes

	Current Program	Proposed Program
Member Contributions	10%	10% through June 30, 2013 11% effective July 1, 2013 12% effective July 1, 2014 13% effective July 1, 2015 14% effective July 1, 2016
Service Retirement Eligibility – Unreduced Benefits	Age 60 with 5 years of service or any age with 30 years of service	<p>First eligible to retire on or before July 1, 2015 – age 65 with 5 years of service or any age with 30 years of service</p> <p>First eligible to retire between August 1, 2015 and July 1, 2017 – age 65 with 5 years of service or any age with 31 years of service</p> <p>First eligible to retire between August 1, 2017 and July 1, 2019 – age 65 with 5 years of service or any age with 32 years of service</p> <p>First eligible to retire between August 1, 2019 and July 1, 2021 – age 65 with 5 years of service or any age with 33 years of service</p> <p>First eligible to retire between August 1, 2021 and July 1, 2023 – age 65 with 5 years of service or any age with 34 years of service</p> <p>First eligible to retire between August 1, 2023 and July 1, 2026 – age 65 with 5 years of service or any age with 35 years of service</p> <p>First eligible to retire on or after August 1, 2026 – age 65 with 5 years of service or age 60 with 35 years of service</p>

	Current Program	Proposed Program
Service Retirement Eligibility – Reduced Benefits	Age 60 with 5 years of service or Age 55 with 25 years of service	<p>First eligible to retire on or before July 1, 2015 – age 60 with 5 years of service or age 55 with 25 years of service</p> <p>First eligible to retire between August 1, 2015 and July 1, 2017 – age 60 with 5 years of service or age 55 with 26 years of service or any age with 30 years of service</p> <p>First eligible to retire between August 1, 2017 and July 1, 2019 – age 60 with 5 years of service or age 55 with 27 years of service or any age with 30 years of service</p> <p>First eligible to retire between August 1, 2019 and July 1, 2021 – age 60 with 5 years of service or age 55 with 28 years of service or any age with 30 years of service</p> <p>First eligible to retire between August 1, 2021 and July 1, 2023 – age 60 with 5 years of service or age 55 with 29 years of service or any age with 30 years of service</p> <p>First eligible to retire August 1, 2023 and later – age 60 with 5 years of service or any age with 30 years of service</p>
Benefit Formula	<p>2.2% for service up to 30 years plus 2.5% for year 31 and 2.6% for year 32, and then increased by 0.1% for each additional year up to 35 years.</p> <p>If the member has 35 or more years of service, 2.5% for service up to 30 years plus 2.5% for year 31 and 2.6% for year 32, then increased by 0.1% for each additional year.</p>	<p>Eliminates the 35-year enhanced benefit. New formula would be 2.2% for all years of service.</p> <p>Members eligible to retire on July 1, 2015 – the greater of:</p> <ul style="list-style-type: none"> a) Benefit under new formula and b) Benefit as of July 1, 2015 under current formula
Final Average Salary	Three highest years	For retirements on or after August 1, 2015, five highest years

	Current Program	Proposed Program
COLA	3% on original base benefit	<ul style="list-style-type: none"> • Members who retired any time before July 1, 2013, would not receive a COLA during 2014 fiscal year • Members who retire effective July 1, 2013, would not receive a COLA on July 1, 2014 • After missing one COLA, retirees would resume COLA at 2% per year • Members retiring after July 1, 2013, receive a 2% COLA, beginning on the fifth anniversary of retirement

PwC performed an actuarial analysis of the initial ORSC proposed benefit changes based on the July 1, 2009 actuarial valuation of the System. This plan brought the pension plan funding period from infinite to 33.4-years. In October 2010, the STRS Board approved changes to the pension reform plan originally adopted in 2009, which brought the pension fund to a 35-year funding period. Early in 2011, the STRS Board further revised the 30-year plan, which brought the funding period to 30 years. With the adoption of assumption changes in early 2012, further changes were needed to the 30-year plan, and the Board subsequently adopted additional changes to the 30-year plan, which revised the funding period from infinite to 36 years, and resulted in an employer normal contribution rate of 0.86% and a UAL amortization rate of 16.14%, based on the 4% increase in member contribution rates fully phased in. This means that the total normal cost decreased as a result of the changes from 15.17% under the current program and after the assumption changes to 10.86% under the proposed program. This is a decrease of 28% in the normal cost value of the pension benefits. We estimate that the normal cost will decrease by another 0.98% of pay once all STRS members are those hired after the transition date. This would result in future total normal costs of 9.88% of pay, or 5.29% lower in value than the current benefits.

Another way to consider this reduction is that under the current program workers get pensions worth 15.17% of pay at a contribution of 10.00%, for a net value of 5.17% of pay. Future workers would get 9.88% value at a cost of 14.00% for a net value of -4.12%. This is comparable to a reduction of more than 9% of pay.

One might ask why a worker would be willing to pay 14.00% of pay for benefits with an actuarial value of only 9.88%. One answer is that the actuarial value is based on a rate of investment return that a typical worker cannot get in the marketplace. Another is that they do get valuable retiree health care benefits in addition to the pensions. These are compelling reasons, but as the relationship between worker contributions and actuarial normal cost turns negative, enhanced scrutiny is appropriate. This demonstrates that STRS has proposed significant reductions in retirement benefits in order to meet a 30-year plan.

The following table illustrates some of these figures.

Summary of Member Costs and Contributions

	Current Program	Proposed Program: by 2016 (mixed workforce)	Proposed Program: ultimate (future workers only)
Total Normal Cost	15.17%	10.86%	9.88%
Member Contribution	10.00%	14.00%	14.00%
Net Value to Member	5.17%	-3.14%	-4.12%
Decreased Value (% of pay)	NA	8.31% of pay	9.29% of pay
Decrease in Member Value	NA	Down 161%	Down 180%
Decrease in Total Pension Value	NA	Down 28%	Down 35%

Valuation Assumptions

In developing the liabilities for the STRS 30-year plan, PwC refined the assumed rates of retirement to estimate the financial impact of increasing the normal retirement age.

Financial Impact

The impact of the proposed pension reform plan is a decrease in the employer normal cost rate of 8.31% of pay and a decrease in the 30-year UAL rate of 6.53% of pay. Because the 30-year plan as presented does not result in a 30-year amortization of the unfunded actuarial accrued liability, the total employer rate remains at 14%. If the plan as presented were amortized over a 30-year period, the UAL rate would be 18.40%, for a total employer rate of 19.26%. While the initial employer rate under the proposed 30-year plan exceeds the statutory maximum of 14% for the next five years, the estimated rate will decline each year as the increase in member contributions is phased-in, the mitigating rate of 3.5% of DC members' payroll is contributed and the deferred gains are fully recognized. Although the proposed 30-year plan does not quite satisfy the objectives of fully funding the unfunded actuarial liability over no longer than 30 years initially, health care benefits are expected to remain solvent indefinitely and the retirement system is projected to meet the 30-year requirement by 2016 and be 100% funded by 2041.

The benefit changes reduced the total present value of benefits by 15%, reduced the employer normal cost rate by 83% and decreased the employer UAL amortization rate by 26%. As a result, the expected future 30-year employer costs of the plan are decreased by 36%, or by 10.84% of pay.

Summary of Employer Costs

	Current Program	Proposed Program	Difference
Employer Normal Cost Rate	5.17%	0.86%	(4.31)%
UAL Amortization Rate	24.93%	18.40%	(6.53)%
Total Employer Cost	30.10%	19.26%	(10.84)%

* Based on July 1, 2011, valuation, assumption changes adopted March 2012 and 30-year funding period

Static Test of Proposed 30-Year Plan Changes

Using the results of the July 1, 2011, actuarial valuation, assumption changes adopted March 2012 and the proposed 30-year plan changes as outlined in the May 10, 2012, letter from PwC, we reviewed the impact on the normal cost rate and the unfunded actuarial accrued liability rate. Our independent determination of the decrease in the normal cost rate and decrease in the UAL amortization rate was within an acceptable range of the PwC calculations and validated the immediate impact of the 30-year plan.

Proposed 30-Year Plan Projection

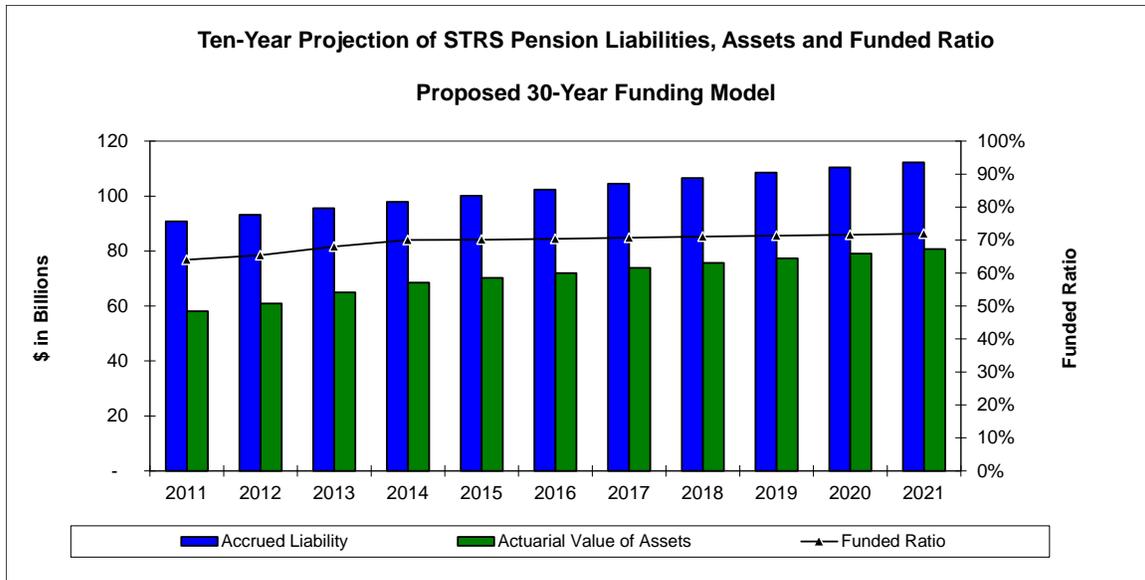
Our model further verified the impact of the change in employer contribution rates as a result of implementing the proposed 30-year plan. The proposed plan changes result in an employer normal cost rate and unfunded actuarial accrued liability rate of 0.86% and 18.40% of pay, respectively, for a total employer rate of 19.26% of pay. But since the maximum employer contribution is 14.00% of pay and of that, 1.00% is allocated to health care, only 13.00% of the 19.26% contribution is available for retirement benefits. Once the member contributions increase to 14.00%, and with projected phase-in of actuarial investment gains, we project that by 2016, the required employer contribution will fall slightly below 13.00%. This analysis does not reflect actuarial investment losses from July 2011 through June 2012.

The STRS' actuaries estimate that the health care fund will remain solvent indefinitely. This assumes a current health care contribution of 1%; all actuarial assumptions are met, including a 7.75% investment return, and implementation of the plan design changes for 2013.

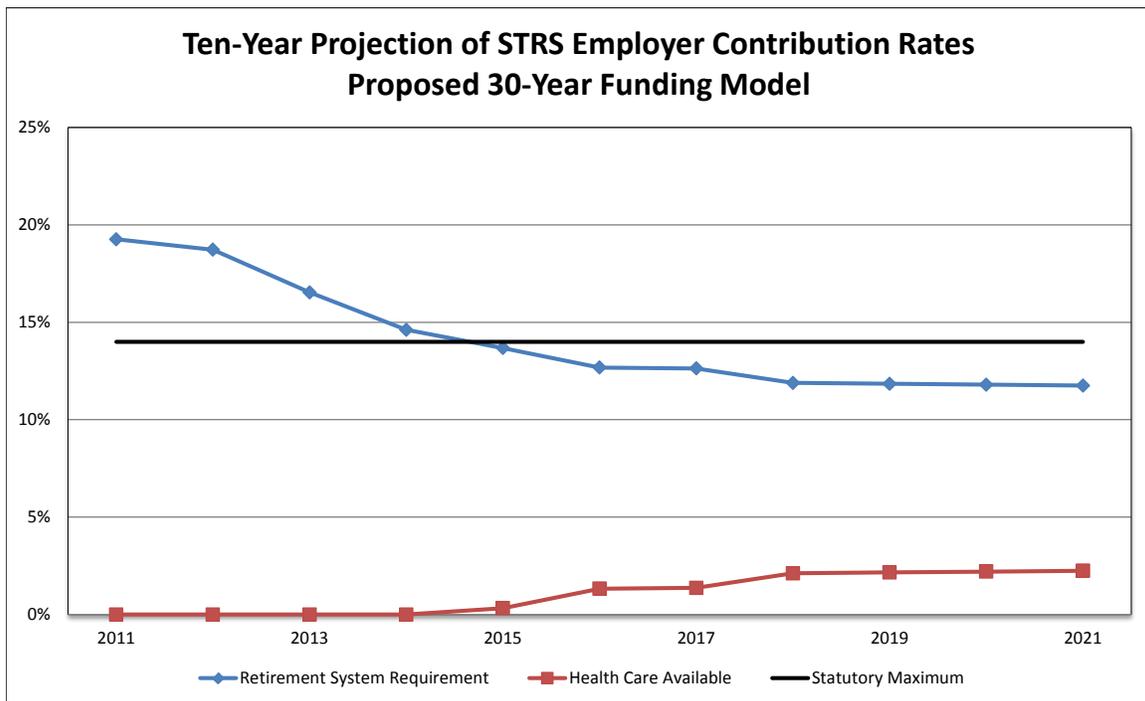
Our calculations are consistent with theirs. This means that although the proposed 30-year plan does not quite satisfy the objectives of fully funding the unfunded actuarial liability over no longer than 30 years, health care benefits are expected to remain solvent indefinitely.

Over time, the employer normal cost rate is expected to decline by an additional 0.98% of pay once all active employees' benefits are under the revised structure. This will result in a slow and gradual decline in the employer normal cost rate over the next 30-40 years. This has been reflected in the projections made in this report.

The UAL was amortized over a period of 30 years on a closed amortization basis as of July 1, 2011. Since the proposed 30-year plan was developed, investment returns have been weak. We used this latest 2011 actuarial valuation as the basis for our projections, and will reflect the poor returns in the "Stress Test" section of this report. We determined that under the proposed 30-year plan, the UAL cannot be amortized over 30 years while maintaining the current employer contribution rates within the 14% of pay statutory limit as of July 1, 2011, but is expected to meet the 30-year requirement by 2015 and later.



The chart following illustrates that the required retirement contributions under the current program will decrease each year as the increase in member contributions is phased-in, the mitigating rate of 3.5% of DC members’ payroll is contributed and the deferred gains are fully recognized, resulting in additional available allocations to the health care fund over the period.



Findings

Although the 30-year plan was not adequate as of the July 1, 2011 actuarial valuation, if all actuarial assumptions are met after that date, the plan would meet the 30-year funding

objective by 2015. This is because an increase in member contributions will be phased-in over the next five years, the mitigating rate of 3.5% of DC members' payroll is contributed and approximately \$3 billion of existing deferred investment gains are realized.

5.4 Stress Testing of Proposed 30-Year Plan

The analysis that follows looks at what position STRS would be in after five years of "worst case" investment returns, and illustrates the additional plan changes that might be required should results turn out worse than expected.

Year 1 Analysis

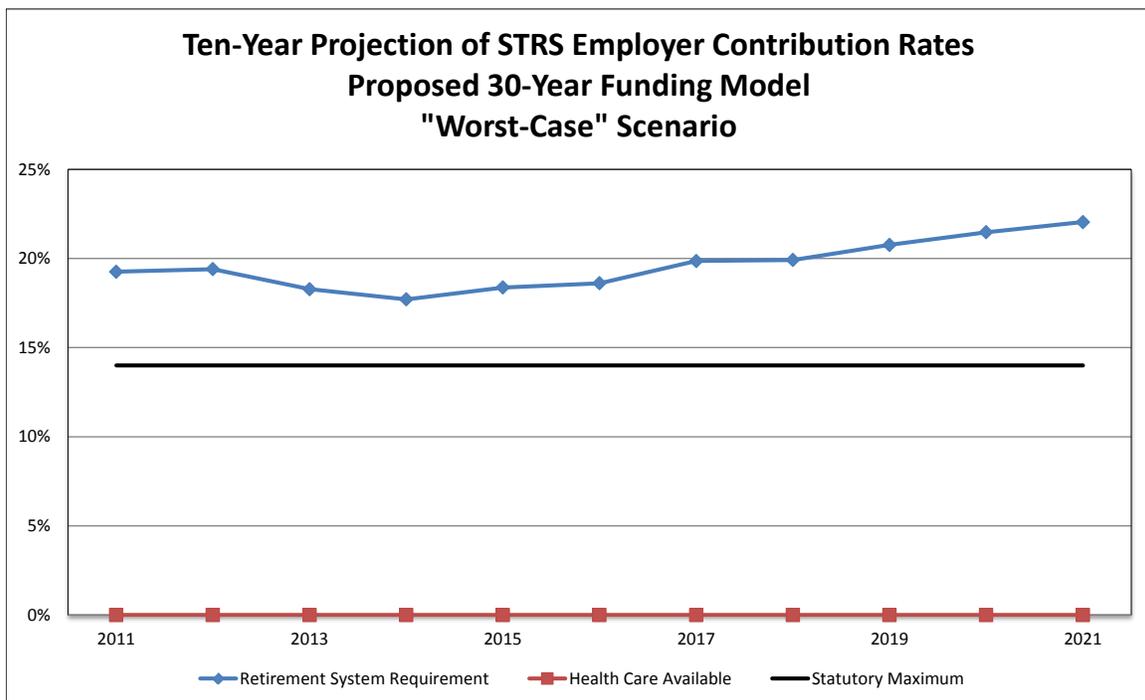
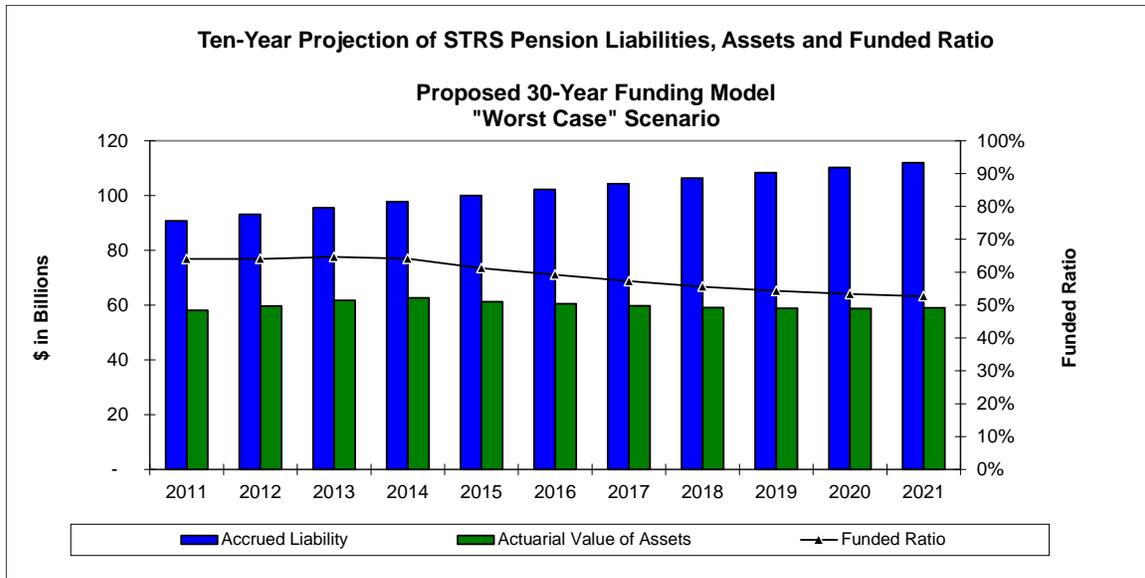
We tested the viability of the proposed 30-year plan using STRS' actual asset return for the period July 1, 2011 through April 30, 2012 of 3.50%, provided to us by the STRS staff. Based on the poor equity markets through June 2012, we estimate that the plan will have earned roughly 0% for the period of July 1, 2011 through June 30, 2012. In the time following our calculations, STRS reports that earnings for this period were estimated to be 2.2%, so actual results may be slightly more favorable than reported here if all other actuarial assumptions did not produce an actuarial loss.

As a result of the poor returns, we expect the proposed 30-year plan to fall outside the twin objectives of 30-year declining funding period for retirement and long-term solvency for health care as of the July 1, 2012, valuation. The projection from July 1, 2012, would also anticipate depletion of the health care trust by 2042. The 13% employer contributions toward retirement benefits would not be adequate to amortize the retirement unfunded liabilities by 2042.

Under this scenario, immediate additional action would be required to attain the funding objectives, equal to a reduction in the present value of retirement benefits of approximately 1.7%. As a benchmark, the reduction in the present value of retirement benefits as a result of the 30-year plan developed above and passed by the Senate was about 15%.

Multiple Year Analysis

Assuming no changes to benefits and the extended worst case investment scenario, the retirement plan would continue to fall short of the 30-year funding objective, by an increasing margin. By 2041, the plan would be only 49% funded and the full health care fund would be depleted in 2038. The charts shown below illustrate the pension funding position and required contributions.



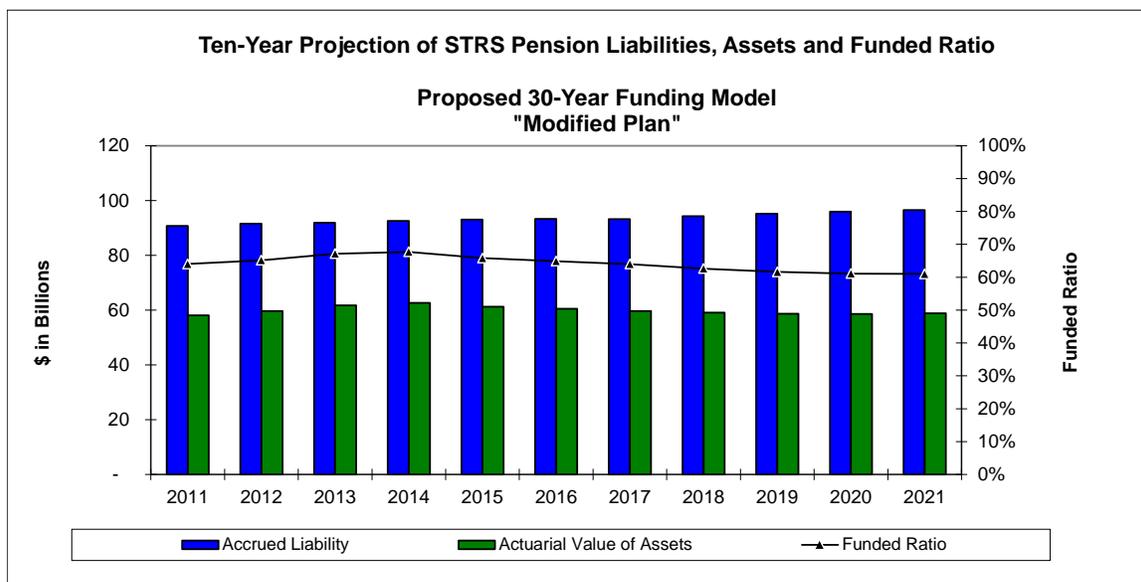
Summary of Retirement Benefit Reductions Required

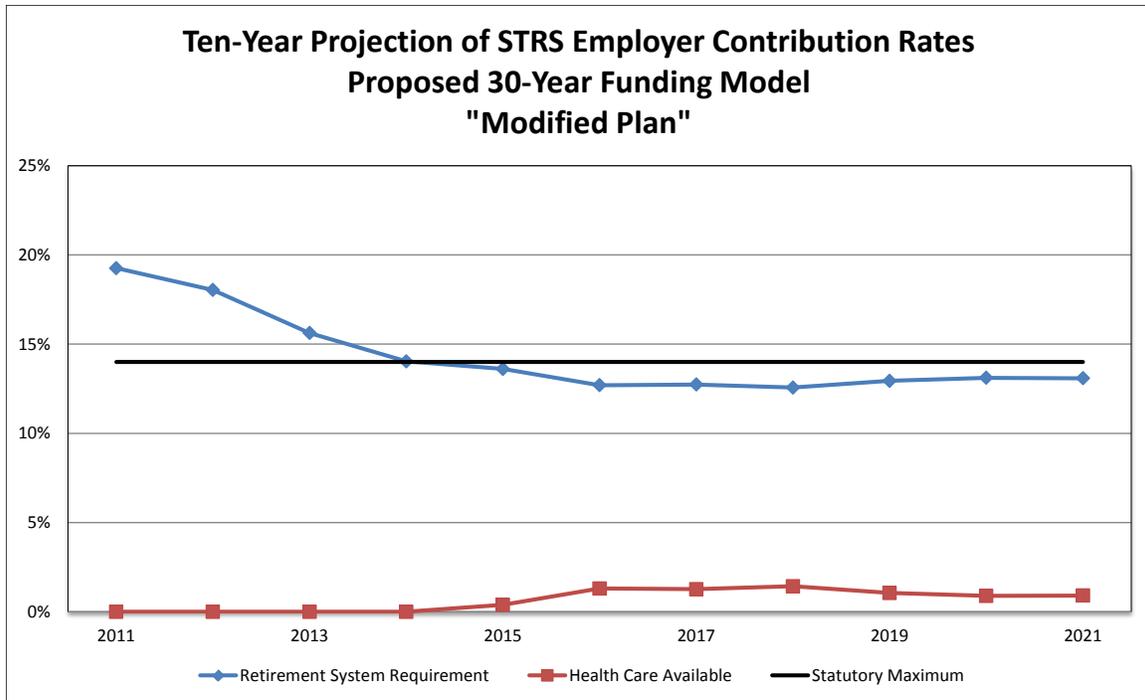
The following table summarizes the poor investment return in this worst case hypothetical case and illustration of possible actions that results in the “modified plan” that stays within the funding goals.

Hypothetical Benefit Reductions as Consequence of Poor Returns

Year Ending June 30	Investment Return	Hypothetical Actions Taken
2012	0.00%	Reduce retirement benefits by 1.7%
2013	5.00%	Reduce retirement benefits by another 2.0%
2014	5.00%	Reduce retirement benefits by another 1.4%
2015	5.00%	Reduce retirement benefits by another 1.4%
2016	5.00%	Reduce retirement benefits by another 1.4%
2017	5.00%	Reduce retirement benefits by another 1.4%
2018	7.75%	No more changes needed

Shown below is an estimate of a 10-year projection of liabilities, assets, and funded ratios and employer contribution rates for both the retirement system and health care fund under a modified plan scenario described above.

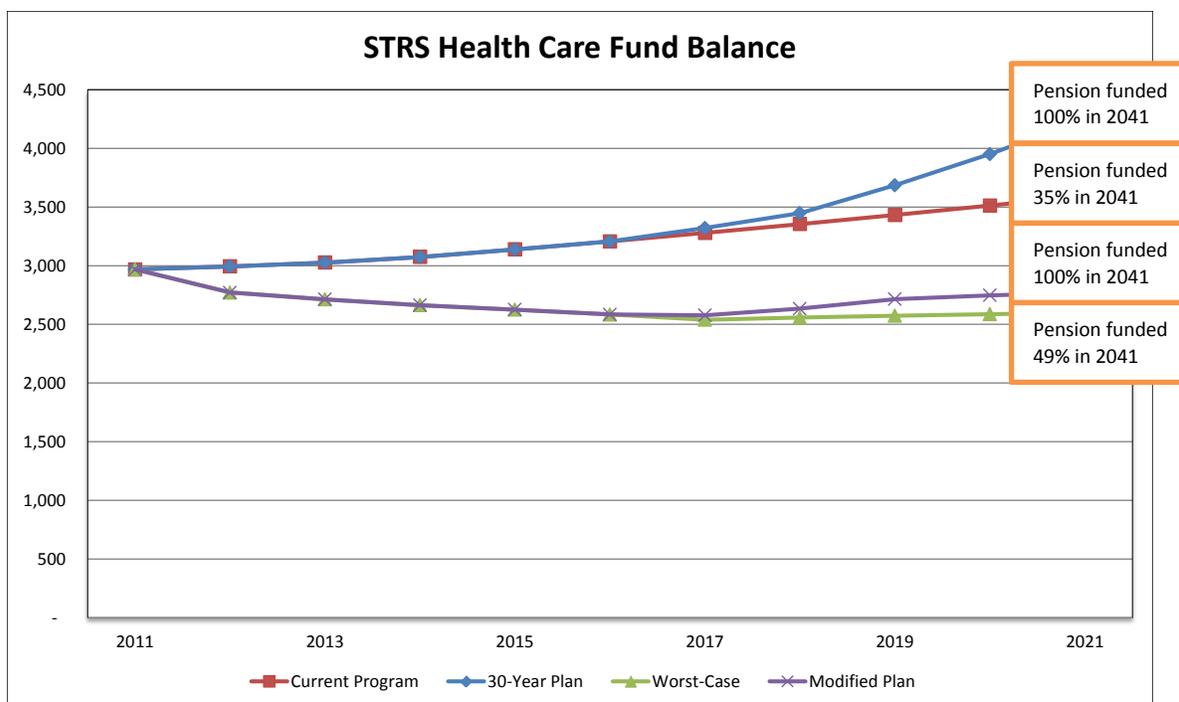




Cumulatively, retirement benefit reductions of more than 9% during this period of extended poor investment performance would be required. This illustrates a painful process of each year making changes to the plan to stay within the 30-year retirement funding and long-term solvency objectives.

Summary of Projections

The following graph is another way to consider the projections discussed above.



All the scenarios assume that the retirement benefits are funded according to a 30-year funding horizon, but with at least 1% being made to the health care fund. In this way, the health care fund balance chart can illustrate the general condition of both systems combined under various scenarios. Keep in mind that the STRS health care benefits are relatively small. The **Current Program** line (red squares) shows that without any action, the health care fund is expected to continue to grow modestly. The **30-Year Plan** line (blue diamonds) builds up a substantial health care fund which would also remain solvent throughout the 30-year period.

The next two lines are based on the worst case investment return of 0% from July 2011 through June 2012, followed by five years of 5% annual return and 7.75% thereafter. The **Worst Case** line (green diamonds) shows that the health care fund remains stagnant, but is depleted by about 2038 absent further modifications. Note that the retirement plan would only be 49% funded within 30 years under that scenario. The “**Modified Plan**” line (violet Xs) shows that with the changes discussed above, the health care trust will remain solvent indefinitely. Keep in mind that once the 30-year retirement funding period expires, large contributions will be available for health care and it, too, will be fully funded – about five to ten years after the pension becomes fully funded.

Recommendations

If an extended period of poor investment returns occurs, frequent additional benefit changes will be required to stay within the funding plans. We recommend that the board have a rigorous process in place and act each year as necessary to maintain the twin objectives of long-term health care solvency and 30-year retirement plan funding. The Board might also wish to

make slightly larger reductions to provide for a cushion in case markets do not rebound, as was the case in this hypothetical worst case scenario. Conversely, if experience turns out to be more favorable than expected (which we believe is equally likely), the Board should have authority to reverse some of the changes made subsequent to those taken to date.

Even if future poor returns do not materialize, it is likely that the next actuarial valuation as of July 1, 2012, will show that additional modest benefit reductions are required in order to maintain a 30-year funding period for retirement benefits and long term solvency of health benefits.

5.5 Summary of Plan Provisions

The Plan Provisions for the Retirement System and Health Care Program as well as the major assumptions utilized in the most recent actuarial valuations are shown below.

Summary of Plan Provisions		
Contributions	Members	10%
	Employer Pension DB Plan	13%
	Employer Pension Combined Plan	13%
	Employer Pension DC Plan	10.5% in DC account; 3.5% toward UAL payment of DB Plan
	Employer Health Care	1%
Final Average Salary (FAS)	Three highest years	
Service Retirement (DB Plan)	Age 60 and 5 years of service or age 55 with 25 years of service or 30 years of service	Greater of 2.2% of FAS times service or 2.5% of FAS times service if member has 35 years or more or \$86 times years of service. Maximum: lesser of 100% times FAS or Section 415 limit Minimum: annuity provided by member's contributions with interest + a pension equal to the annuity + \$40 times years of service
Service Retirement (Combined Plan)	Hired on or after July 1, 2001 may elect Combined Plan. Age 60 and 5 years of service	Balance in DC account plus 1% of FAS times service

Summary of Plan Provisions		
Service Retirement (DC Plan)	Hired on or after July 1, 2001 may elect DC Plan. Termination after age 50	Balance in DC account
Reduced Retirement (DB Plan)	Less than 30 years of service and younger than age 65	Age 58 or 25 years – 75% Age 59 or 26 years – 80% Age 60 or 27 years – 85% Age 61 – 88% 28 years – 90% Age 62 – 91% Age 63 – 94% 29 years – 95% Age 64 – 97%
Early Retirement (Combined Plan)	Before age 60 with 5 years of service	Service retirement commencing at age 60.
Early Retirement (DC Plan)	Termination before age 50	Balance in DC account
Disability (DB Plan)	Completion of five or more years of service and permanently incapacitated for at least 12 months	Disability Retirement – minimum of 30% FAS to maximum of 75% FAS. Disability Allowance – minimum of 45% FAS to maximum of 60% FAS
Disability (Combined Plan)	Completion of 5 or more years of service and permanently incapacitated	Option to receive disability benefit under Defined Benefit Plan.
Disability (DC Plan)	Permanently incapacitated for the performance of duty	Balance in DC account
Survivor’s Benefits (DB Plan)	Death of Active or Deferred eligible to retire:	Option 1 benefit.
	Death of Active or Deferred not yet eligible to retire:	A percent of FAS based on number of qualified dependents
Survivor’s Benefits (Combined Plan)	30 years of service or age 55 with 25 years of service or age 60 with 5 years of service:	Elect to receive Option 1 benefit
	Did not meet eligibility requirements above:	A percent of FAS based on number of qualified dependents

Summary of Plan Provisions		
Survivor’s Benefits (DC Plan)	Upon death	Balance in DC account
Partial Lump Sum Option (PLOP)	One-time lump-sum option payment from six to 36 times the monthly Single Life Annuity. Monthly benefit is reduced based on PLOP selected.	
Cost of Living Adjustment (COLA)	DB Plan	3% of original benefit per year
	Combined Plan Service retirement benefit	Service retirement benefit not available; disability and survivor benefits - CPI up to 3% of original base benefit per year.
	DC Plan	Not available
Health Care	Eligible for a comprehensive medical expense health care plan. Not available for members of DC Plan.	
Lump Sum Death Benefit	Lump sum benefit of \$1,000 for DB Plan. An additional \$1,000 or \$2,000 retiree-funded death benefit is available for a monthly premium.	
Eligibility for Health Care Coverage	Service retirees with 15 or more years of service	Access to health care and premium subsidy
	Service retirees with less than 15 years of service and a benefit effective date prior to January 1, 2004	Access to health care but no premium subsidy
	Service retirees with less than 15 years of service and a benefit effective date after January 1, 2004	Not eligible for health care coverage
	Disability retirees	Access to health care and premium subsidy
	Survivors of deceased members	Access to health care. Premium subsidy at same level as retiree for 5 years
	Dependents of retirees and survivors	Eligible to enroll in health care coverage, but no premium subsidy. In 2013, must be eligible dependent of member.

Summary of Plan Provisions																
Premium Subsidy	<p>Retirees in DB or Combined Plan with 15 or more years of qualifying service credit. Subsidy for 2012 is 2.4% for each year of service credit, up to a maximum of 72%. The subsidy will decrease to 2.1% in 2015, phased-in as follows:</p> <table border="1"> <thead> <tr> <th>Plan year</th> <th>Subsidy per year of service</th> <th>Maximum subsidy</th> </tr> </thead> <tbody> <tr> <td>2012</td> <td>2.4%</td> <td>72%</td> </tr> <tr> <td>2013</td> <td>2.3%</td> <td>69%</td> </tr> <tr> <td>2014</td> <td>2.2%</td> <td>66%</td> </tr> <tr> <td>2015</td> <td>2.1%</td> <td>63%</td> </tr> </tbody> </table>	Plan year	Subsidy per year of service	Maximum subsidy	2012	2.4%	72%	2013	2.3%	69%	2014	2.2%	66%	2015	2.1%	63%
Plan year	Subsidy per year of service	Maximum subsidy														
2012	2.4%	72%														
2013	2.3%	69%														
2014	2.2%	66%														
2015	2.1%	63%														
Medicare Part B	Retirees and survivors are eligible to receive reimbursement based on years of service (16 and fewer years receive \$29.90 per month... 30 or more years receive \$52.83 per month)															
Dental Coverage	Available to members at full cost.															
Vision Coverage	Available to members at full cost.															
Investment Return	<p>Retirement: 7.75% per annum</p> <p>Health Care: 6.10% per annum</p>															
Payroll Growth	3.50% per annum for seven years, 4.00% per annum, thereafter															
Price Inflation	2.75% per annum, compounded annually															
Asset Valuation Method	Retirement and Health Care: Smoothing method, recognizing 25% of the gain or loss each year. The actuarial value of assets must be within 91% and 109% of the market value															
Normal Cost Rate	Constant															
Expected Benefit Payments	Provided by STRS															

5.6 Other Issues

Analysis of Transition

The STRS proposed 30-year plan made major changes in benefits in a number of ways. Consequently, it is important to carefully consider how a transition would work. A poorly designed transition could result in a “rush to the door” where individuals would retire before a certain date in order to preserve expected benefits. Conversely, the most fair and generous

transition would be one where the benefit reductions only apply to individuals who have not yet been hired. That extreme would result in very minimal cost savings in the short run.

We have analyzed the transition feature in the STRS proposal and find it to be a reasonable balance between fairness and cost. STRS is phasing in the increase in retirement age for those eligible to retire before 2026. This is a considerable amount of time for teachers to plan ahead. Most other provisions that are effective earlier have natural phase-in features such as COLAs or the elimination of the 35-year enhanced formula.

We believe that the transitions chosen by STRS are reasonable, particularly as modified earlier in 2012.

Adequacy of Health Care Benefits

STRS has made numerous changes to the health care benefits over the years, and has been trying to do more with less. With only 1% of pay going toward health care, STRS contribution is the lowest of the five Ohio systems. This is supplemented by a 67% funded health care fund which is projected to provide twice as much investment income as the 1% contributions.

STRS has made major steps to reduce the health care costs. These include reducing the subsidy multiplier from 2.4% per year of service in 2012 to 2.1% per year of service in 2015, and increasing deductibles and out-of-pocket limits.

A health care program funded by merely 1% of pay contributions is destined to produce only a modest level of benefits. STRS has a difficult challenge with trying to provide meaningful health care benefits with such a low contribution. STRS may wish to improve health care funding; either through further reducing retirement benefits, facilitating voluntary employee spending accounts, or increasing health care funding should actuarial experience improve.

5.7 Overall Findings and Recommendations

Significant changes in the STRS benefits were proposed in order to nearly meet the 30-year requirement. Additional modest changes will likely be required in the near future in order to satisfy the twin objectives of 30-year retirement funding and long-term health care solvency because of the recent investment results.

STRS had recommended a comprehensive 30-year plan that impacts existing and new employees as well as current retirees, and includes changes to retirement ages, employee contributions, the COLA for current and future retirees, final average pay, and the benefit formula. The STRS approach to extending retirement eligibility requirements for both current members and future hires is very beneficial to both the retirement plan and the health care program and addresses the cost pressure from improved life expectancy. The proposed 30-year plan is a reasonable approach given the funded status of the system. Although it does not

technically satisfy the dual objectives of 30-year funding and long-term health care solvency as of June 30, 2011, this is due to the items noted above and the delayed actuarial asset smoothing of recent strong investment returns, and not a material concern in our opinion. However the STRS 30-year plan is likely to fall somewhat short of the dual funding objectives as of June 30, 2012, due to poor returns in the fiscal year ending June 30, 2012.

We recommend that the STRS Board have the authority to make additional retirement benefit reductions so that the funding objectives can be met. The 30-year plan does not provide any margin for future adverse experience. As a result, frequent changes would be required in a poor investment return cycle to meet the funding standards.

The total normal cost rate for the current benefit structure means that current employees are receiving a much smaller share of the employer funding than have employees nearing retirement and retirees. This is a result in part of the very significant contributions required to amortize the unfunded obligations.

STRS is a very mature retirement system. 57% of the present value of future benefits is due to currently retired and inactive members. As a result, a 1% required reduction in benefits must be 2.4% if the reduction is limited to currently active employees. Because the total normal cost of the revised benefit structure will be significantly less than the increased employee contributions, it is not likely that significant additional benefit reductions can be justified for current, and particularly new, employees. If additional benefit reductions are required, equity may suggest that benefits for current retirees (i.e., the COLA) must by necessity be reduced further and/or accrued benefits or retirement eligibility requirements be reduced for existing employees.

Other overall recommendations and alternative approaches for the future that are applicable to all systems are summarized in Chapters Two and Chapter Eight.

Chapter Six: Findings on Ohio Police & Fire Pension Fund (OP&F)

This section discusses our findings from the technical analysis of the OP&F 30-year plan. This chapter is not complete on its own. To understand the context of the analysis, please review at least the Table of Contents, Chapter One, and Sections 2.1, 2.17, and 2.18 before reading this chapter.

6.1 System Overview

The Ohio Police & Fire Pension Fund (OP&F) was created in 1965, replacing 454 separate local police and firemen's relief and pension funds in Ohio. Members of OP&F include police officers and firefighters.

OP&F provides retirement, disability, and survivor benefits as well as access to post-retirement health care for retirees and beneficiaries. Health care is funded only after the pension obligation is funded. Ohio statutes further limit the annual contribution paid to both pensions and health care to 19.5% of police officers' salaries and 24% of firefighters' salaries.

OP&F current membership includes approximately 28,000 active police officers and firefighters, 18,000 retired members, and 8,000 beneficiaries and survivors. Assets are held in a trust for the exclusive benefit of the plan's participants. OP&F has approximately \$11.5 billion in assets as of December 31, 2011, for pension and health care benefits.

OP&F is led by a nine-member Retirement Board, with two members elected by the active police departments, two members elected by the active fire departments, one retired police officer, and one retired firefighter. There are also three investment members, one appointed by the Governor, one appointed by the Ohio state Treasurer and one appointed jointly by the Senate President and the Speaker of the House.

Participation in OP&F is mandatory. OP&F members are not covered by Social Security but contribute 10% of their annual salary to OP&F. OP&F employers currently contribute the maximum allowable under current Ohio statute. This now equates to 21.60% of total combined police and firefighter salaries.

Every year, an actuarial valuation is performed by an independent actuary and determines the employer contribution rates to fund the basic retirement system benefits as well as retiree health care fund. The most recent valuation was performed as of January 1, 2011, and is the basis for much of our analysis presented throughout this report.

Pension Reform

The history of OP&F 30-year plan includes:

- September 2009, OP&F presented a 30-year funding plan to the ORSC, which was estimated to reduce the funding period from infinite to 39 years. The major components of this plan are:
 - Increase member contribution rate from 10% to 12% in 0.5% increments
 - Increase police employer contribution rate from 19.5% to 24% in 0.5% increments
 - Normal service retirement age of 52 for new hires effective January 1, 2012
 - Delay COLA until age 55 for all members except beneficiaries
- January 2011, OP&F presented a revised 30-year funding plan to the ORSC, which was estimated to reduce the funding period from infinite to 36 years, deferring changes one year from original target dates and reduction to contribution to the health care fund from 4.8% to 4.2%
- February 2011, OP&F presented a revised 30-year funding plan to the ORSC, which was estimated to reduce the funding period from infinite to 30 years. The changes made to this plan include:
 - Reduce COLA (3% or CPI) for new hires or active members with less than 15 years of service
 - Phase-in increase to member contribution rate from 10% to 12.25%, 0.75% per year beginning in 2012.

Since 2003, the OP&F funding period has been infinite, meaning at the current contribution rates, the system would not be able to pay off its unfunded liability. OP&F currently allocates 6.75% of payroll towards health care benefits, with the remaining contribution (currently 14.85%) allocated to retirement benefits.

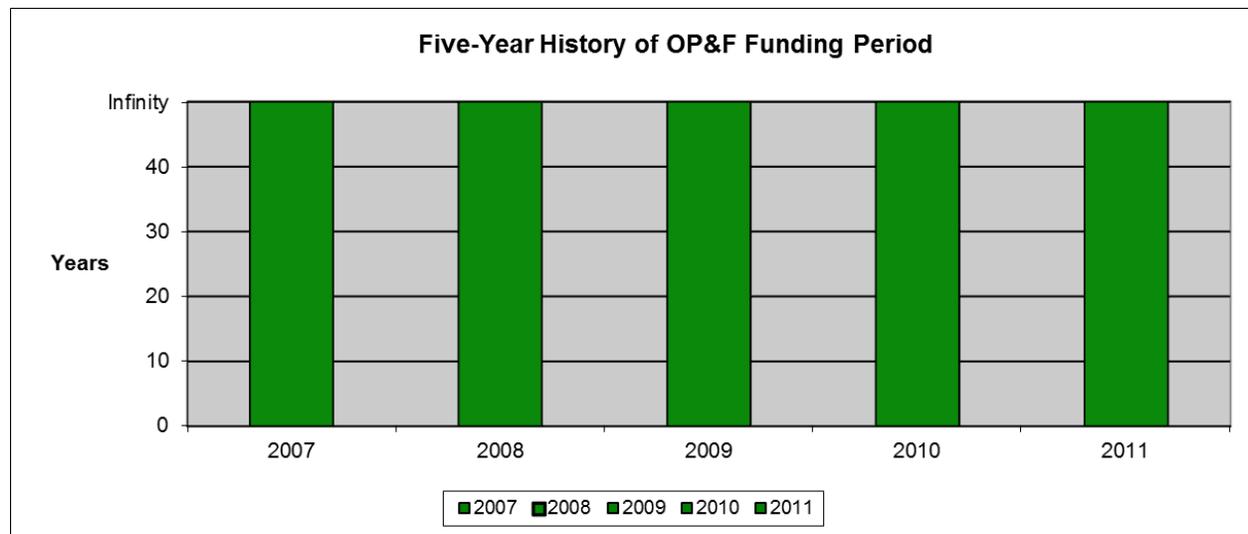
6.2 Analysis of Current Program

Funding Period and Contribution Rates

Effective in 1997, S.B. 82 required that each Ohio public retirement system establish a 30-year funding target for funding pensions. The funding period is the number of years required to liquidate the unfunded accrued liability. The following table and chart show a five-year history of the funding period along with the member and employer contribution rates and the allocation of employer contribution between pension and health care.

Five-Year History of OP&F Funding Period and Contribution Rates

Valuation as of January 1	Funding Period Years	Contribution Rates			Employer Allocation	
		Member	Employer		Pension	Health Care
			Police	Fire		
2011	Infinity	10.00%	19.50%	24.00%	14.85%	6.75%
2010	Infinity	10.00%	19.50%	24.00%	14.84%	6.75%
2009	Infinity	10.00%	19.50%	24.00%	14.82%	6.75%
2008	Infinity	10.00%	19.50%	24.00%	14.81%	6.75%
2007	Infinity	10.00%	19.50%	24.00%	14.81%	6.75%

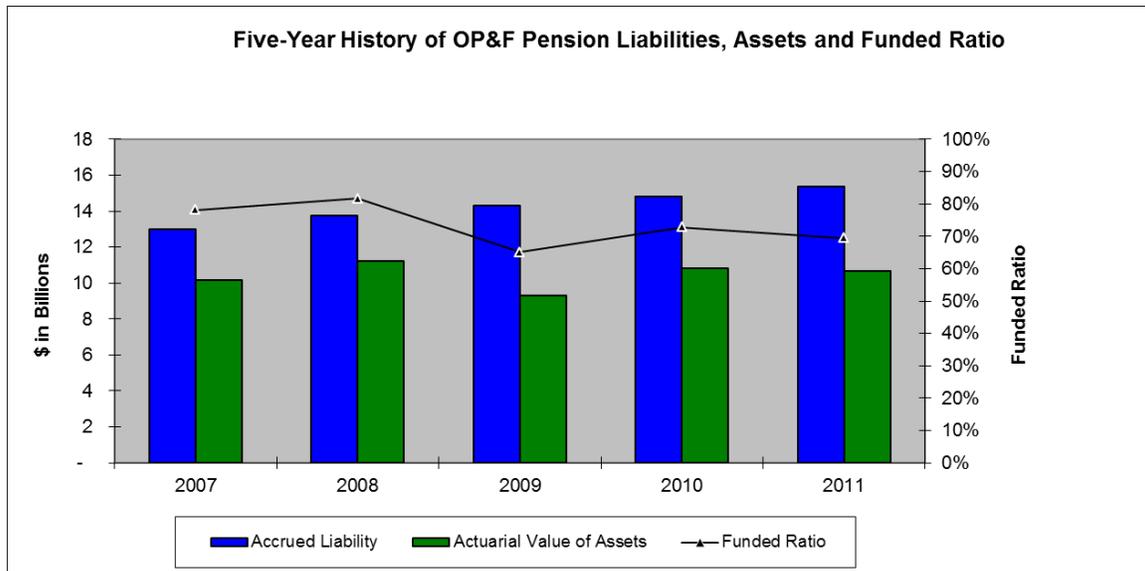


Funded Ratios

The System’s funded ratio is the actuarial value of assets divided by the accrued liability. The following table and chart show a five-year history of the System’s pension funded ratio.

**Five-Year History of OP&F Pension Funded Ratio
(\$ in millions)**

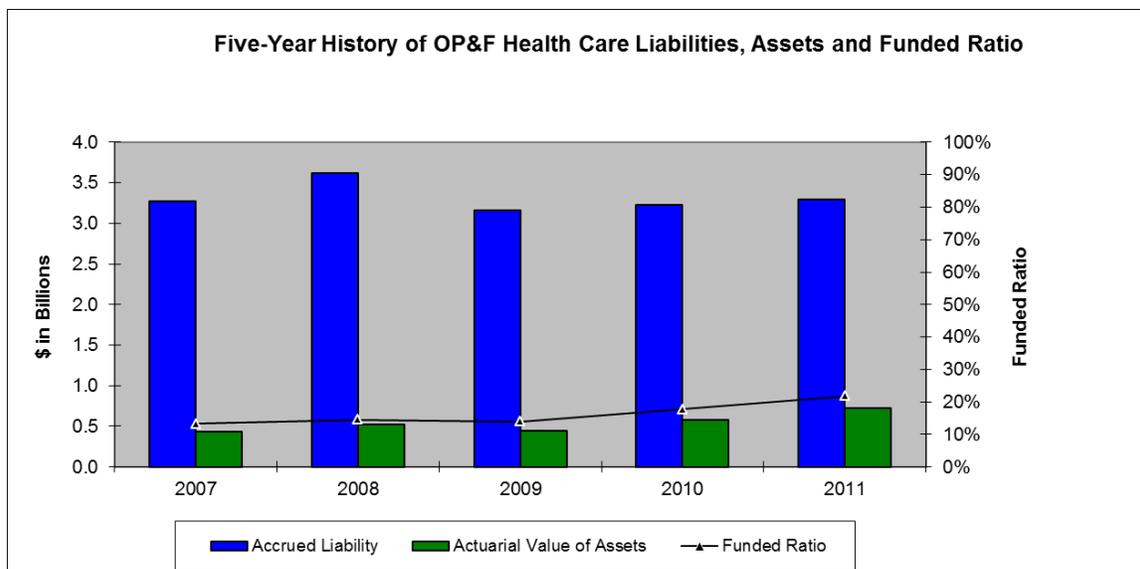
Valuation as of January 1	Accrued Liability	Actuarial Value of Assets	Unfunded Accrued Liability	Funded Ratio
2011	\$15,384	\$10,681	\$4,703	69.4%
2010	\$14,831	\$10,794	\$4,037	72.8%
2009	\$14,307	\$9,309	\$4,998	65.1%
2008	\$13,728	\$11,213	\$2,515	81.7%
2007	\$12,988	\$10,158	\$2,830	78.2%



The following table and chart show a five-year history of the System’s health care funded ratio.

Five-Year History of OP&F Health Care Funded Ratio
(\$ in millions)

Valuation as of January 1	Accrued Liability	Actuarial Value of Assets	Unfunded Accrued Liability	Funded Ratio
2011	\$3,295	\$717	\$2,578	21.8%
2010	\$3,232	\$573	\$2,659	17.7%
2009	\$3,164	\$439	\$2,725	13.9%
2008	\$3,623	\$527	\$3,096	14.5%
2007	\$3,274	\$437	\$2,837	13.3%



Current Program Projection Assuming No Benefit Changes

The most recent actuarial valuations were performed by Buck Consultants as of January 1, 2011, and show the following for the Retirement System and the Health Care Fund.

**Current Funding Position
(\$ in millions)**

System	Accrued Liability	Actuarial Value of Assets	Funded Ratio	Funding/Solvency Period
Retirement	\$15,384	\$10,681	69.4%	Infinite funding period
Health care	\$3,295	\$717	21.8%	Insolvent in 33 years

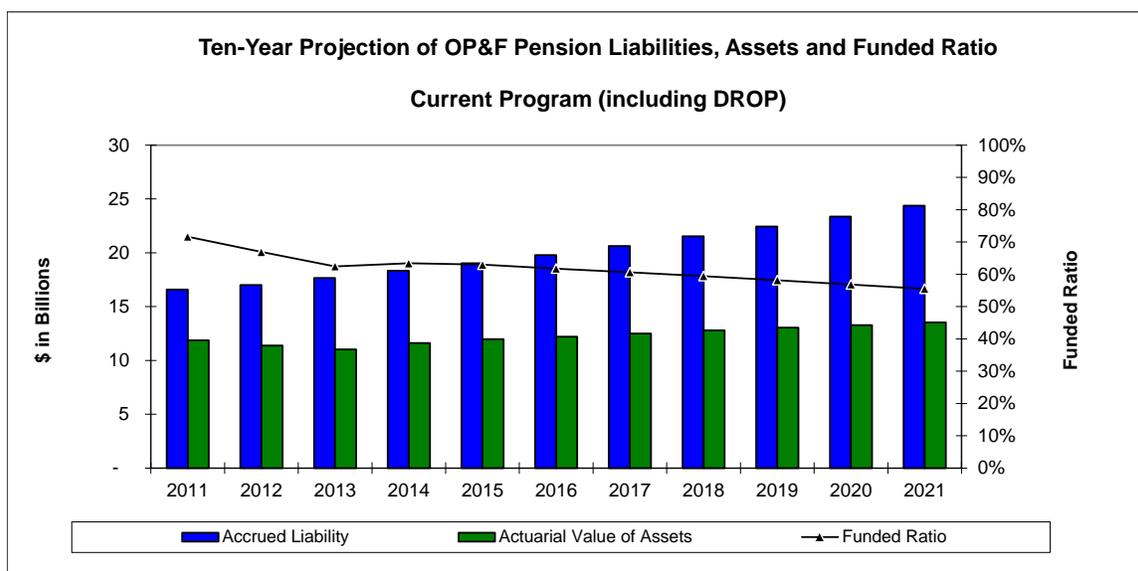
Sections 742.33 and 742.34 of the Ohio Revised Code, respectively, limit the total employer contribution rate to 19.5% of pay for police employers and 24% for firefighter employers. OP&F allocates 6.75% of pay toward retiree health care. Employer contributions in excess of 6.75% are allocated to fund the retirement system benefits.

The results of this valuation show an employer normal cost rate and unfunded actuarial accrued liability (UAL) rate of 12.30% and 2.55%, respectively, for a total retirement employer rate of 14.85%. Note that this unfunded actuarial accrued liability rate of 2.55% was calculated based on what is left after 6.75% is allocated for health care and 12.30% is allocated to normal cost. The true 30-year amortization cost would be 14.15% of pay for amortizing the unfunded liability. Adding the employer normal cost of 12.30% of pay, results in a total employer retirement contribution requirement of 26.45% of pay according to the Buck 2011 actuarial valuation report. Consequently, the valuation results show that the current employer retirement contribution rates are inadequate to amortize the UAL amortized on any basis and the employer contribution allocated to the retirement plan is currently meeting only 54% of the

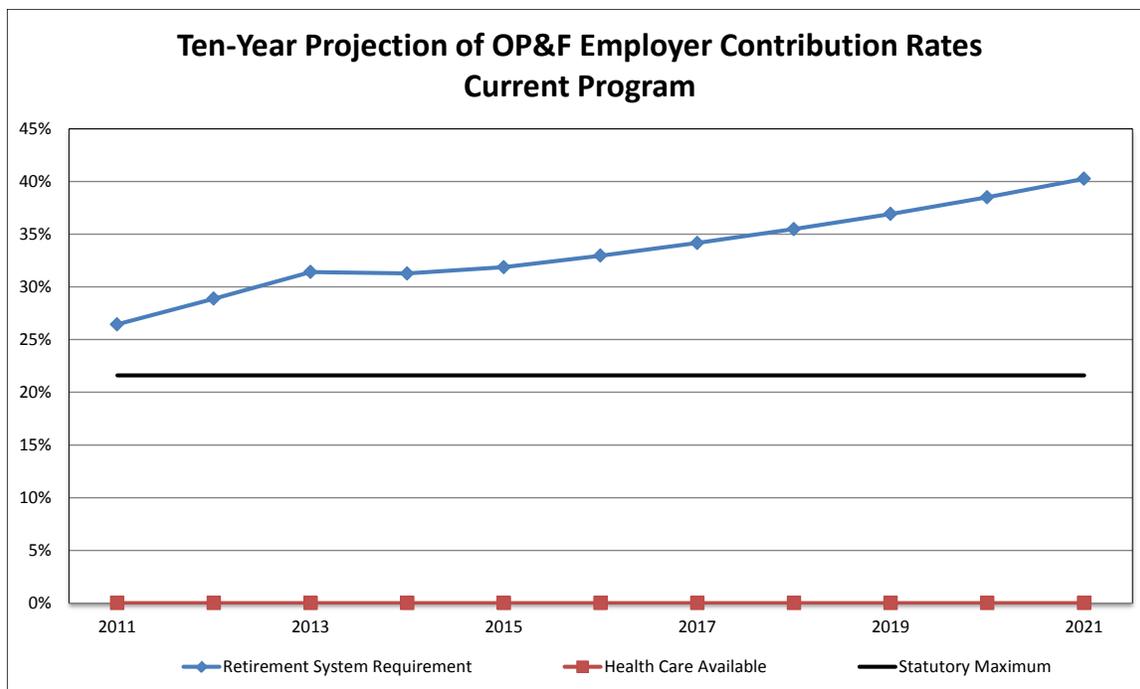
30-year funding requirement. An additional employer contribution of 11.6% of pay would be required to meet the 30-year funding requirement currently.

Based on the health care employer rate of 6.75% and the remaining contributions allocated to the retirement system, the health care fund would run dry in 2045 and the funded ratio for retirement benefits would deteriorate to 35% within 30 years.

On this basis, and assuming that (1) actuarial assumptions are met, and (2) the retirement contributions will continue to be made at the current employee and employer contribution rates, our current program funding model projection of retirement system liabilities, actuarial value of assets and the funded ratio (all including DROP) is shown below:



As discussed above, health care funding is on a modified pay-as-you-go basis. For 2010 and 2011, the Board defined allocation to health care was 6.75%, leaving only 2.55% of pay toward the amortization of the unfunded liability. Below are the projected contribution rates beginning in 2011 as if the retirement unfunded liability is amortized over 30 years as required under the current program.



Findings

Our projections show that without change, the funded status of the plan will significantly decline and the declining 30-year funding target for retirement benefits would not be met for 2011 or any year in the future. If all the employer contributions were going to retirement benefits, and none to health care, we would expect the health care fund to remain solvent only through 2018. With 6.75% going toward health care as is current policy, the health fund will run out of funds by 2045 and the retirement fund will be only about 35% funded in 30 years.

6.3 Proposed 30-Year Plan

OP&F’s latest reform plan is summarized below.

Proposed Plan Changes

	Current Program	Proposed Program
Member Contributions	10%	10% through July 1, 2013 10.75% July 2, 2013 – July 1, 2014 11.50% July 2, 2014 – July 1, 2015 12.25% July 2, 2015 and later
Normal Service Retirement Eligibility	Age 48	Age 48 Age 52 for new hires only
Cost of Living Adjustments	All retirees and surviving beneficiaries	Delay until age 55 (excluding beneficiaries)
DROP interest rate	5%	10-year Treasury rate with a 5% cap

	Current Program	Proposed Program
Average Annual Salary	Highest 3 years of contributions	Highest 5 years of contributions (members with less than 15 years of service at implementation date)
DROP Participation Period	Minimum 3 years	Minimum 5 years for active members not currently in DROP
Health care Premium Subsidy	Tie health care premium subsidy to year of retirement	Tie health care premium subsidy to years of service for active and deferred vested members
DROP COLA	Provided	Eliminate during DROP for active members not currently in DROP
DROP Member Contributions	The percentage of the member contribution that gets credited to their DROP accruals: 50% for years 1-2, 75% for year 3 and 100% for years 4-8	The percentage of the member contribution that gets credited to their DROP accruals: 50% for years 1-3, 75% for years 4-5 and 100% for years 6-8 for active members not currently in DROP
COLA	3% on original base benefit	Lesser of CPI or 3% for new hires and for active members with less than 15 years of service
Health care Contribution Rate	Currently, set at 6.75%	Reduce health care contribution rate to 4.69% in order to achieve 30-year pension funding

The OP&F Board took action on the DROP interest rate, the health care premium subsidy and the health care contribution rates, which are all items that are under their control. Other changes were included in SB 340.

Buck Consultants initially performed an actuarial analysis of the ORSC proposed benefit changes based on the January 1, 2009, actuarial valuation of the System. In early 2011 Buck updated the cost analysis using the January 1, 2010, valuation results and estimated an employer normal contribution rate of 6.48% and a UAL amortization rate of 10.42%, based on the member contribution rate fully phased in. This means that the total normal cost decreased as a result of the changes from 22.41% under the current program to 18.73% (6.48% + 12.25%) under the proposed program. This is a decrease of 16% in the normal cost value of the pension benefits. We estimate that the normal cost will decrease by another 0.59% of pay once all OP&F members are those hired after the transition date. This would result in future total normal costs of 18.14% of pay, or 19% lower in value than the current benefits.

Another way to consider this reduction is that under the current program, workers get retirement benefits worth 22.41% of pay at a contribution of 10% of pay, for a total economic value of more than two times (2.2 times) their contributions. Future workers would get 18.14% of pay value at a cost of 12.25% for a net value of almost 1.5 times their own contributions. This results in essentially a 50% reduction in economic value as shown below and illustrates the

significance of the changes in total for future employees. The following table illustrates some of these figures.

Change in Pension Value under Proposed Program

	Current Program	Proposed Program: at transition (mixed workforce)	Proposed Program: ultimate (future workers only)
Total Normal Cost	22.41%	18.73%	18.14%
Member Contribution	10.00%	12.25%	12.25%
Net Value to Member	12.41%	6.48%	5.89%
Decreased Value (% of pay)	NA	5.93% of pay	6.52% of pay
Decrease in Member Value	NA	Down 48%	Down 52%
Decrease in Total Pension Value	NA	Down 16%	Down 19%

Valuation Assumptions

In developing the liabilities for the OP&F 30-year plan, Buck modified the assumed rates of retirement to estimate the financial impact of increasing the normal retirement age. Estimates for 5-year and 10-year Treasury rates and the Consumer Price Index (CPI) were also utilized.

Financial Impact

The impact of the proposed pension reform plan is a decrease in the normal cost rate of 5.93% of pay and a decrease in the 30-year UAL rate of 1.79% of pay, for a total rate decrease of 7.72% of pay.

The benefit changes reduced the total present value of benefits by 7%, but reduced the employer normal cost rate by 48% and the employer UAL amortization rate by 15%. As a result, the expected future 30-year employer costs of the plan are decreased by 31%, or by 7.72% of pay.

Summary of Employer Costs

	Current Program*	Proposed Program	Difference
Employer Normal Cost Rate	12.41%	6.48%	(5.93)%
UAL Amortization Rate	12.21%	10.42%	(1.79)%
Total Employer Cost	24.62%	16.90%	(7.72)%

* Based on GASB calculations as of January 1, 2010, valuation and 30-year funding period. Discussion in Section 6.2 was based on January 1, 2011, valuation, so do not match this column.

Static Test of Proposed 30-Year Plan Changes

Using the results of the January 1, 2010, actuarial valuation and the proposed 30-year plan changes as outlined in the February 8, 2012, exhibit from Buck Consultants, we independently

determined the impact on the normal cost rate and the unfunded actuarial accrued liability rate. Our independent determination of the decrease in the normal cost rate and decrease in the UAL amortization rate was within an acceptable range of the Buck Consultants work and validated the immediate impact of the 30-year plan.

Proposed 30-Year Plan Projection

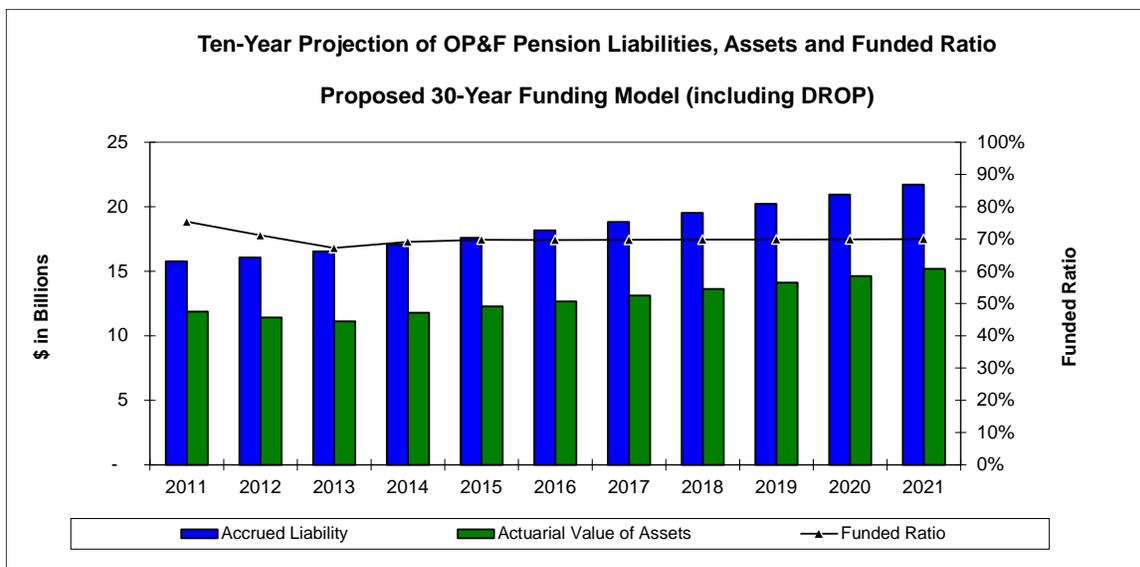
Our model further verified the impact of the change in employer contribution rates as a result of implementing the proposed 30-year plan. The proposed plan changes result in an employer normal cost rate and unfunded actuarial accrued liability rate of 6.48% and 10.42% of pay, respectively, for a total employer rate of 16.90% of pay. The remaining employer contribution rate of 4.69% of pay is available to allocate to the retiree health care fund.

Buck concluded that as of January, 2010, based on a proposed current health care contribution of 4.69% and assuming all actuarial assumptions are met they expect the health care fund to remain solvent through 2027.

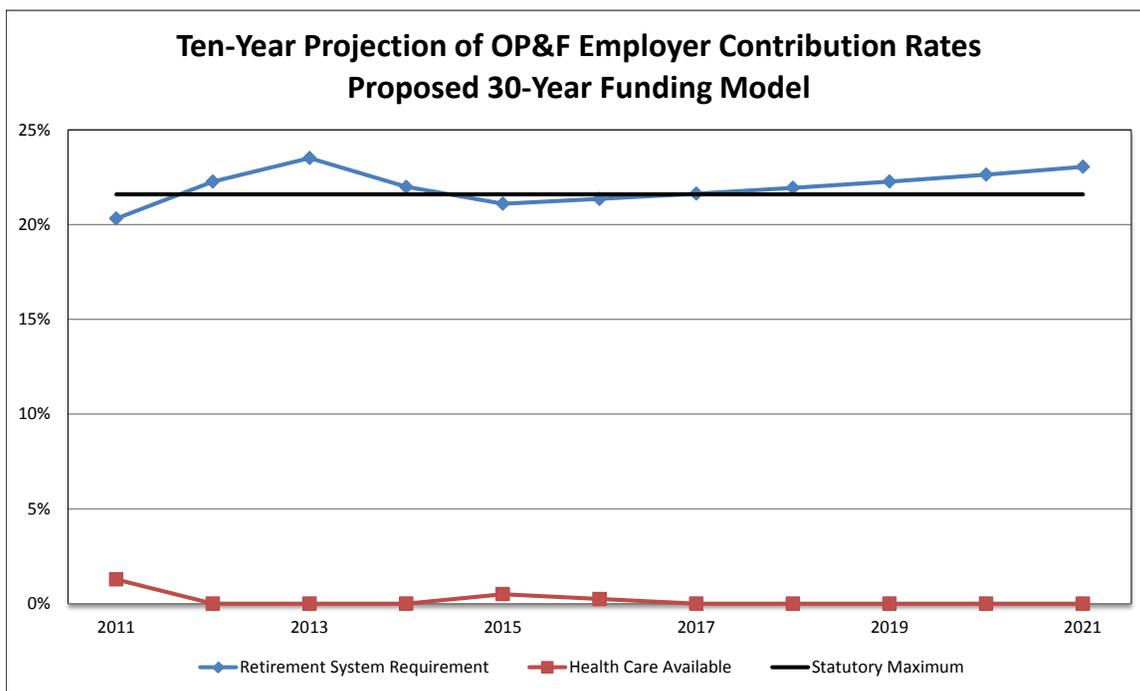
Our calculations are consistent with what Buck reported. This means that the proposed 30-year plan does not satisfy either of the objectives of fully funding the unfunded actuarial liability over no longer than 30 years (because of the impact of 2011 investment results), and permanent health care benefits solvency. Note also that the Buck analysis did not reflect the phase-in of member contribution increases. The additional 2.25% of pay is not effective immediately, but is phased-in and totally effective in 2015.

Over time, the employer normal cost rate is expected to decline by an additional 0.59% of pay once all active employees' benefits are under the revised structure. This will result in a slow and gradual decline in the employer normal cost rate over the next 30-40 years. This has been reflected in the projections made in this report.

The UAL was amortized over a period of 30 years on a closed amortization basis in 2010. Since the proposed 30-year plan was developed, Buck completed the January 1, 2011, actuarial valuation. This valuation reported an actuarial experience loss of \$397 million during 2010. We used this latest 2011 actuarial valuation as the basis for our projections and determined that under the proposed 30-year plan the UAL cannot be amortized over 30 years while maintaining the current employer contribution rates within the 19.50% and 24% of pay statutory limit as of January 1, 2011.



The chart following illustrates the required retirement contributions under the current program, and a resulting elimination of any allocation to the health care fund over the period.



In addition, because of the poor investment return during calendar year 2011, we anticipate that the proposed 30-year plan will be more inadequate once the 2012 valuation is considered.

In order to structure a program that meets the two objectives, our calculations show that a reduction in retirement benefits by another 8% or a comparable combination of reduction in

health care benefits and retirement benefits would be necessary if all future actuarial assumptions are met.

Findings

Although the 30-year plan was nearly adequate as of the 2010 actuarial valuation, as of 2011 it would not accomplish the twin funding objectives for both retirement and health care benefits long-term. This is due to a variety of factors:

- The 2010 30-year plan was not implemented as of 2010
- The 2010 30-year plan was calculated on a long-term basis as if member contributions of 12.25% commenced in 2010 rather than being phased in through 2015
- The 2010 30-year plan resulted in a health care contribution which was only projected to be solvent until 2027, not indefinitely as we would recommend
- Even though both 2009 and 2010 were good investment years, the 2010 30-year plan did not reflect even greater actuarial investment losses (from 2008) expected to be recognized after January 2010. These totaled \$1.6 billion as of January 2011

As a result, further reductions in benefits of approximately 8% must occur in order to maintain the funding objectives based on conditions as of January 1, 2011, and assuming all assumptions are met after that time.

6.4 Stress Testing of Proposed 30-Year Plan

The analysis that follows looks at what position OP&F would be in after five years of “worst case” investment returns, and illustrates the additional plan changes that might be required should results be worse than expected.

Year 1 Analysis

We tested the viability of the proposed 30-year plan using OP&F’s actual asset return of 8.17% for the period January 1, 2012, through April 30, 2012, provided to us by the OP&F staff. Based on the equity markets through June 2012, we estimate that the plan will have earned roughly 6% from January 1, 2012, through June 30, 2012. This is close enough to the actuarially assumed half-year return of 4.04% that our analysis is based on meeting the actuarial assumption for the first half of 2012, with the worst case returns from July 1, 2012, through June 30, 2017. We based our worst case on a 2012 full-year return of 6.6% — half a year at the assumed rate of 8.25% and half a year at the worst case rate of 5%. Our analysis also incorporates the 2.56% return that OP&F reported during 2011.

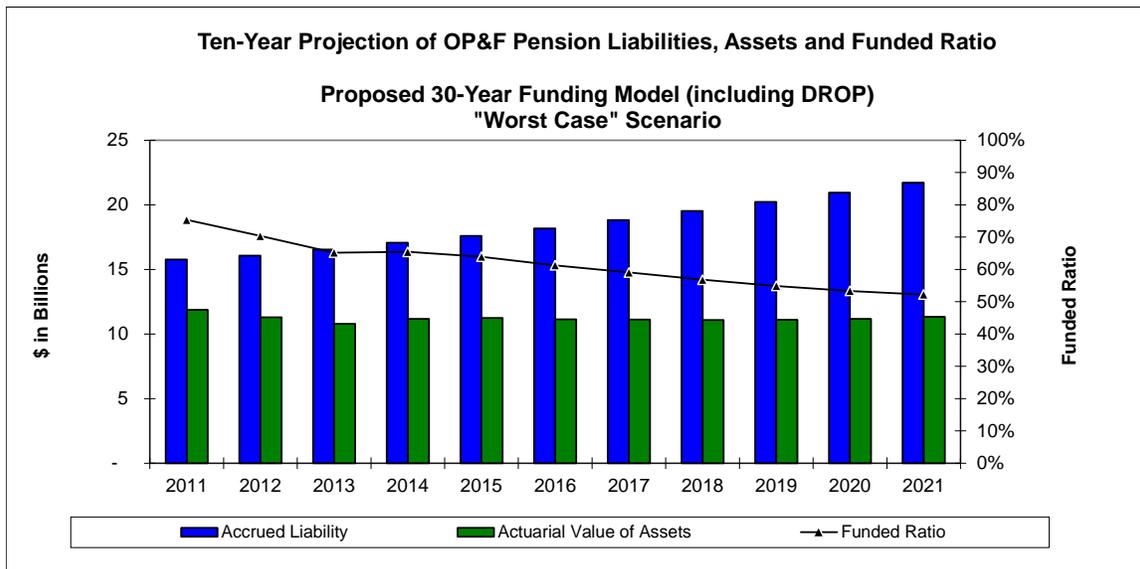
As a result, we expect the proposed 30-year plan to continue to fall outside the twin objectives of 30-year declining funding period for retirement and long-term solvency for health care as of the January 1, 2012, valuation. The projection would anticipate depletion of the health care

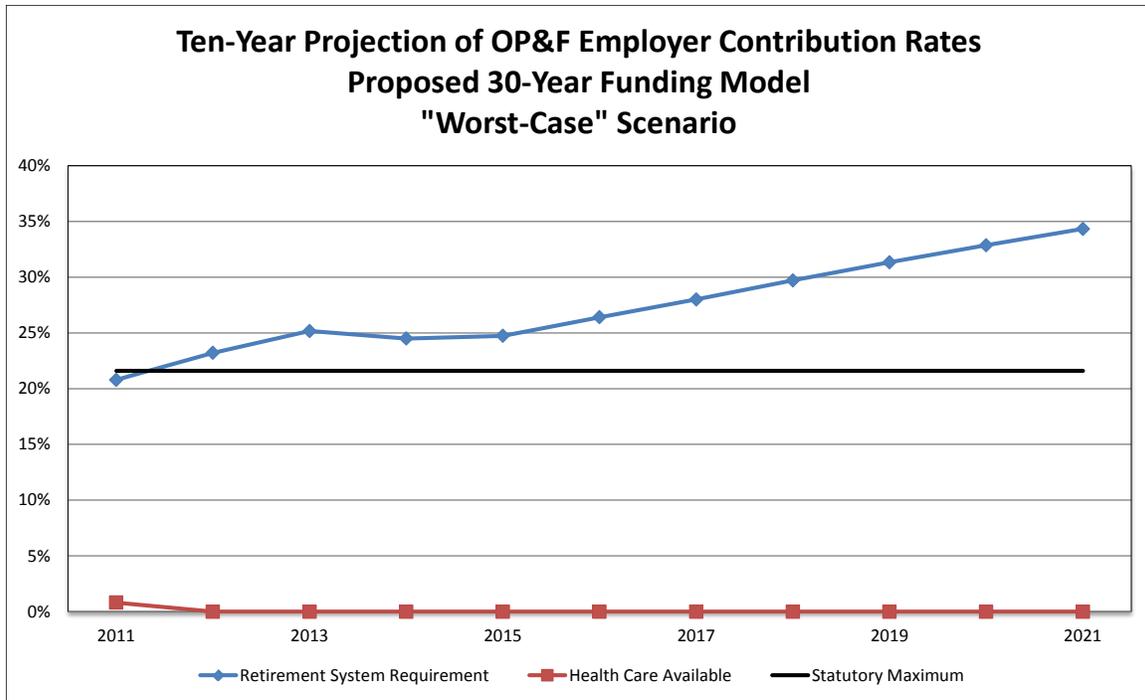
trust by 2028 and for the retirement fund to be only 48% funded at the end of 30 years. This is because the actuarial losses result in a need to contribute more than 25% of pay for a 30-year funding target, although the maximum employer contribution is 21.60% of pay. The 48% / 2028 projection discussed here assumes 16.91% employer contribution toward the retirement benefit, leaving 4.69% for health care as developed in the January 1, 2010, 30-year plan.

Under this scenario, immediate additional action would be required to attain the funding objectives, equal to a reduction in the present value of retirement benefits of approximately 12%. As a benchmark, the reduction in the present value of retirement benefits as a result of the 30-year plan developed above and passed by the Senate was about 7%.

Multiple Year Analysis

Assuming no changes to benefits and the extended worst case investment scenario, the retirement plan would continue to fall short of the 30-year funding objective by an increasing margin. By 2041, the plan would be only 48% funded and the health care fund would be totally depleted in 2028. The charts shown below illustrate the pension funding position and required contributions.





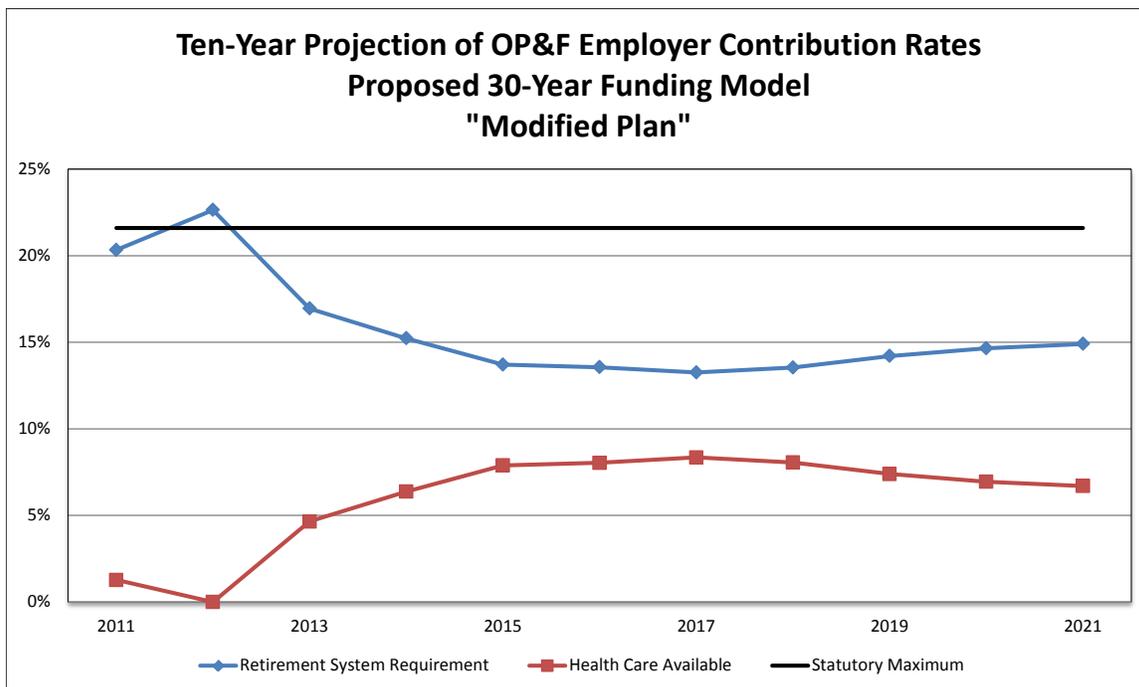
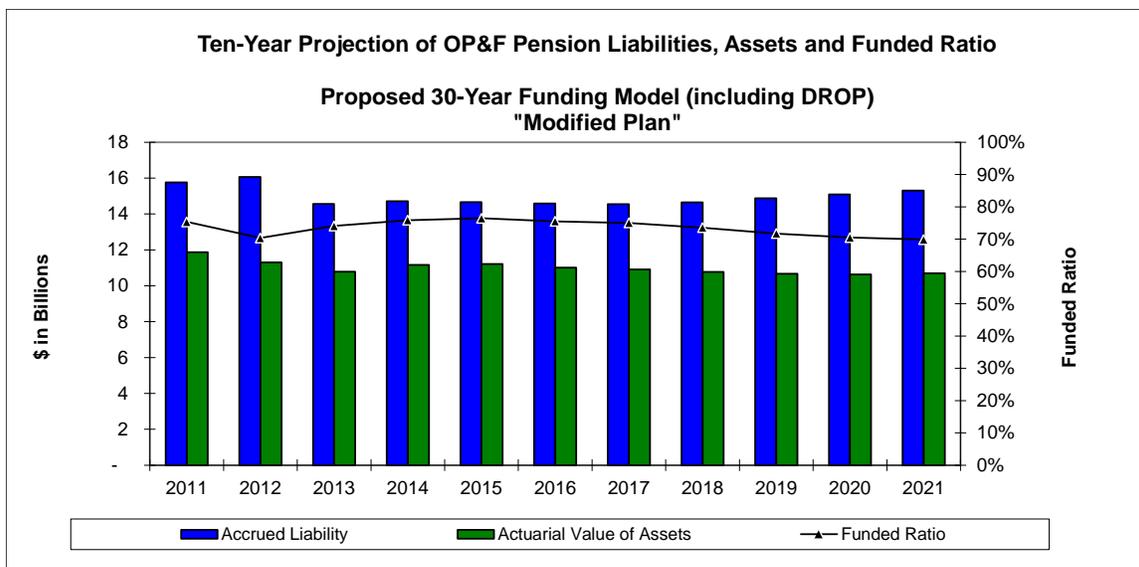
Summary of Retirement Benefit Reductions Required

The following table summarizes the poor investment return in this worst case hypothetical case and illustrates possible actions that result in the “modified plan” that stays within the funding goals.

Hypothetical Benefit Reductions as Consequence of Poor Returns

Year Ending December 31	Investment Return	Hypothetical Actions Taken
2012	6.61%	Reduce retirement benefits by 12%
2013	5.00%	Reduce retirement benefits by another 1.1%
2014	5.00%	Reduce retirement benefits by another 2.4%
2015	5.00%	Reduce retirement benefits by another 2.4%
2016	5.00%	Reduce retirement benefits by another 2.4%
2017	6.61%	Reduce retirement benefits by another 1.2%
2018	8.25%	No more changes needed

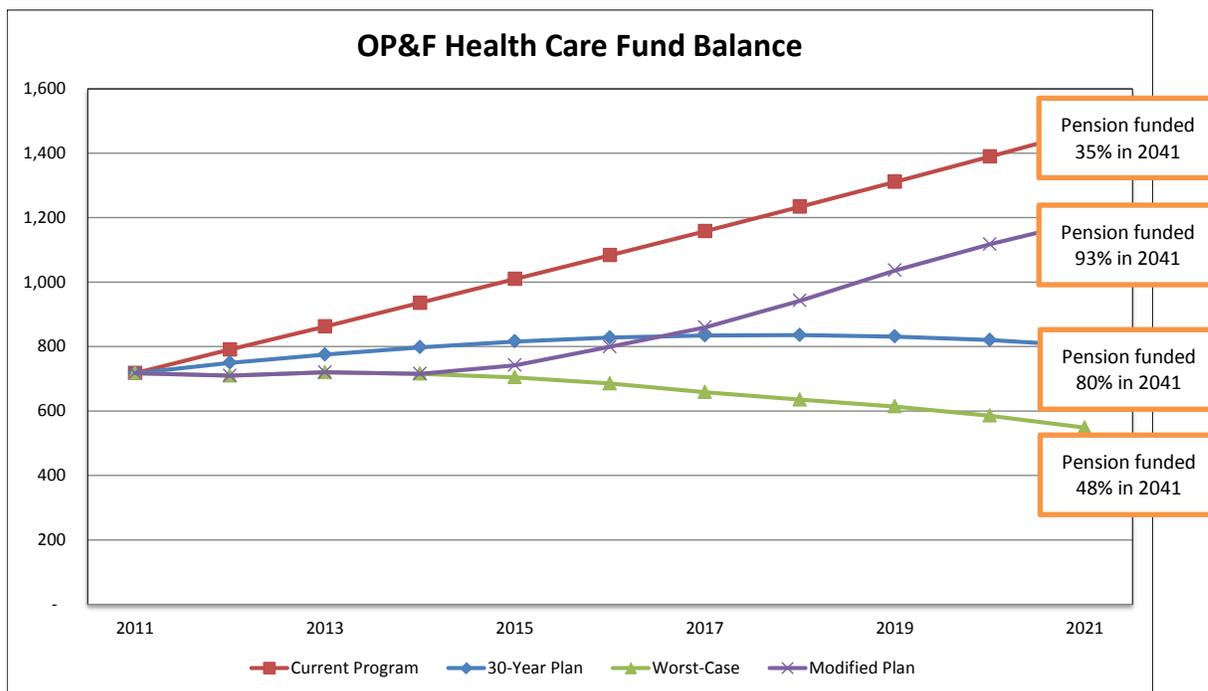
Shown below is an estimate of a 10-year projection of liabilities, assets, and funded ratios and employer contribution rates for both the retirement system and health care fund under a modified plan scenario, as described above.



Cumulatively, retirement benefit reductions of more than 20% during this period of extended poor investment performance would be required. This illustrates a painful process of each year making significant changes to the plan to stay within the 30-year retirement funding and long-term solvency objectives.

Summary of Projections

The following graph is another way to consider the projections discussed above.



These scenarios are not “apples to apples” because the health contributions vary and only the modified plan lines are based on the retirement plan being funded according to a 30-year funding horizon, with remaining contributions being made to the health care fund. The **Current Program** line (red squares) shows that with health contributions of 6.75% as is now contemplated, the health care fund is expected to continue to grow, but the pension would only be 35% funded in 30 years. The **30-Year Plan** line (blue diamonds) builds up a more modest health care fund based on 4.69% contributions. It would remain solvent only through 2030. The pension under that scenario would be 80% funded in 2041.

The next two lines are based on the worst case investment return of 5% from July 2012 through June 2017 and 8.25% thereafter. The **Worst Case** line (green diamonds), based on 4.69% contributions to health care, shows that the health care fund is depleted by about 2027 absent further modifications. Pension would be only 48% funded in 30 years. The **Modified Plan** line (violet Xs) shows that with the substantial changes discussed above, the health care trust will remain solvent and the pension would be 100% funded 30 years from 2013.

Keep in mind that once the 30-year retirement funding period expires, large contributions will be available for health care and it, too, will be fully funded — about five to ten years after the pension becomes fully funded.

Recommendations

If an extended period of poor investment returns occurs, frequent and significant additional benefit changes will be required to stay within the funding plans.

We recommend that the Board develop a rigorous process for potential change and act each year as necessary to maintain the twin objectives of long-term health care solvency and 30-year retirement plan funding. The Board might also wish to make slightly larger reductions to provide for a cushion in case markets do not rebound, as was the case in this hypothetical worst case scenario. Conversely, if experience turns out to be more favorable than expected (which we believe is equally likely), the Board should have authority to reverse some of the changes made subsequent to those taken to date.

As noted above, even if further poor returns do not materialize, it is very likely that the next actuarial valuations will show that additional significant benefit reductions are required in order to maintain a 30-year funding period for retirement benefits and long term solvency of health benefits.

6.5 Summary of Plan Provisions

The Plan Provisions for the Retirement System and Health Care Program as well as the major assumptions utilized in the most recent actuarial valuations are shown below.

Summary of Plan Provisions		
Contributions	Members:	10%
	Employers of Police Officers:	19.5%
	Employers of Firefighters:	24%
	Employer Health Care:	6.75%
Final Average Salary (FAS)	Three highest years	
Normal Service Retirement	Age 48 and 25 years of service	2.5% of FAS times service up to 20 years plus 2% of FAS for service over 20 and up to 25 years of service plus 1.5% of FAS times service over 25 years Maximum: 72% of FAS

Summary of Plan Provisions		
Service Commuted Retirement	15 years of service	Commencing at age 48 plus 25 years from full-time hire date. 1.5% of FAS times service
Age/Service Commuted Retirement	Age 62 and 15 years of service	2.5% of FAS times service up to 20 years plus 2% of FAS for service over 20 and up to 25 years of service plus 1.5% of FAS times service over 25 years Maximum: 72% of FAS
Permanent & Total Disability	No age or service requirement	72% of FAS
Partial Disability (On Duty)	No age or service requirement	Fixed benefit up to 60% of FAS. If 25 years of service or more, Normal Service Retirement amount
Non-Service Incurred Disability (Off Duty)	Any age and 5 years of service	Percent awarded by Board up to 60% of FAS.
Pre-Retirement Survivor Annuity	Death before retirement, and eligible for Normal Service or Age/Service Commuted retirement	50% J&S calculated as if decedent had retired effective the day following death
Statutory Survivor Benefit	At death of a member, survivor allowances are payable to a qualified spouse, qualified child and/or qualified parent.	
Termination Benefit	With 25 years of service	Normal Service Retirement commencing at age 48
	With 15 years of service	1.5% of FAS times years of service, commencing at age 48 and 25 years
	With less than 15 years of service	Refund of member's contributions
Cost of Living Adjustment (COLA)	Members retired prior to July 24, 1986	\$360 per year for Single Life Annuity (proportional reductions for optional payment plans)
	Members retired on or after July	Under 15 years of service at

Summary of Plan Provisions			
	24, 1986	retirement, 3% of base benefit COLA 15 or more years of service at retirement, a choice between terminal pay method at 3% of base benefit COLA	
Medicare Part B	Reimbursed up to the statutory maximum not less than \$96.40 per month		
Lump Sum Death Benefit	Lump sum benefit of \$1,000		
Deferred Retirement Option Plans (DROP)	Age 48 with 25 years of service	Normal Service Retirement determined at date of DROP entry. Receives annual COLA	
	Interest crediting rate	5%, compounded annually	
	Member contributions:		
	Years 1 and 2	50% of member's contributions (5% of pay)	
	Year 3	75% of member's contributions (7.5% of pay)	
	Years 4 – 8	100% of member's contributions (10% of pay)	
	Minimum participation	3 years	
	Maximum participation	8 years	
Eligibility for Coverage	Age 48 with 25 years of service or age 62 with 15 years of service		
Premium Payments (Percentage of premium paid by OP&F)		Retired on or before July 24, 1986	Retired after July 24, 1986
	Member Premium	75%	75%
	Spouses and children	50%	25%
Dental Coverage	Not available		
Investment Return	Retirement: 8.25% per annum		
	Health care: 6.00% per annum (used for GASB only)		

Summary of Plan Provisions	
Payroll Growth	4.00% per annum, compounded annually
Price Inflation	3.25% per annum, compounded annually
Asset Valuation Method	Smoothing method, recognizing 20% of the gain or loss each year. The actuarial value of assets must be within 80% and 120% of the market value
Normal Cost Rate	Constant
Expected Benefit Payments	Provided by Buck Consultants
Funding Objectives	<p>A. Financial</p> <ul style="list-style-type: none"> Reduce funding amortization period Continue to pay benefits and expense obligations when due Continue to improve funded status Control administrative costs and manage assets prudently Control spending through administrative operating budget Establish a plan to maintain a 30-year or less amortization period Preserve a discretionary health care option for eligible members <p>B. Retirement Benefits are sufficiently funded if</p> <ul style="list-style-type: none"> 30-year or less amortization period Funded status is 95% or greater Deferred investment gains and losses are fully smoothed into the actuarial value of assets <p>C. Health care Benefits are sufficiently funded if</p> <ul style="list-style-type: none"> Solvent for at least a fifteen-year future projection period

6.6 Other Issues

Analysis of Transition

The OP&F proposed 30-year plan made major changes in benefits in a number of ways for current employees, new hires, and current retirees. Consequently, it is important to carefully consider how a transition would work. A poorly designed transition could result in a “rush to the door” where individuals would retire before a certain date in order to preserve expected benefits. Conversely, the most fair and generous transition would be one where the benefit reductions only apply to individuals who have not yet been hired. That extreme would result in very minimal cost savings in the short run.

We have analyzed the transition feature in the OP&F proposal and find it to be a reasonable balance between fairness and cost. OP&F exempts anyone with more than 15 years of service from the change to five year average compensation. Most other provisions are effective either for all who have not retired or for those not yet hired. Perhaps the most onerous transition provision (which only applies for employees who retire at a very young age) is that the COLA is being deferred to age 55. This applies even to those individuals already retired. For example, someone who retired recently at age 48 is expecting 3% adjustments every year. However, once the provisions are in effect (July 2013 at the earliest, under SB 340), the COLAs will cease until age 55. But because this provision has been discussed for several years now, this loss of COLA will not come as a surprise and will be for a limited period. The net reduction of only 3% per year is a very gradual change to the retirees. We believe that this is a reasonable approach.

Other changes are also gradual and modest. One exception might be that the health premium subsidy will now be based on service. We find that with some flexibility in the development of the subsidy rates and their effective dates, this can be a reasonable transition, particularly given that health care benefits have never been guaranteed.

In total, we believe that the OP&F proposed transition rules are reasonable.

Adequacy of Health Care Benefits

OP&F has made numerous changes to the health care benefits over the years. In 2008, OP&F moved to a single national health care plan administrator to reduce administrative costs. The premium subsidies have been modified and under the plan will be based on a member’s age and service at retirement.

The OP&F proposed plan results in contributions to health care of 4.69%. This is an amount which is not quite sufficient to provide benefits at approximately the same level as today and result in long-term solvency. In order to preserve long term health care solvency and a 30-year retirement plan funding target, modest reductions must be made in either health care or retirement benefits. Although the balance between the two is at the discretion of the OP&F Board, we believe that health care benefits funded at the 4.69% level are near the minimum necessary for an adequate health care program for retired police officers and firefighters. This

is due to the early retirement ages of the members and the significant period in retirement before Medicare benefits are payable. Consequently, reductions in pension benefits may be more appropriate than in health care benefits. One possible exception may be the Medicare Part B subsidy, which is a health care benefit in the form of a dollar-based benefit, similar to a pension benefit. The Board may wish to have the authority to reduce or eliminate this benefit.

6.7 Overall Findings and Recommendations

Significant changes in the OP&F benefits were proposed in order to meet the 30-year requirement. However, significant additional changes would be required in order to satisfy the twin objectives of 30-year retirement funding and long-term health care solvency as noted.

The OP&F approach to extending retirement eligibility requirements for future hires is beneficial to both the retirement plan and the health care program and addresses the cost pressure from improved life expectancy. The proposed 30-year plan is comprehensive, very significant, and a reasonable approach given the funded status of the system, but does not fully satisfy the dual objectives of 30-year funding and long term health care solvency.

We recommend that the OP&F Board have the authority to make additional retirement benefit reductions so that the funding objectives can be met. Without significant improvement in the funded status of the system, the changes required will be as significant as the one currently proposed. Therefore, it is likely that additional changes in retirement ages, the benefit formula, or the COLA for current active members will be required. Possible additional, but less effective, approaches might include:

- Apply the increased full retirement age of 52 to certain short-service current employees.
- Apply the five year earnings average to a larger group of active employees.

The 30-year plan also does not provide any margin for future adverse experience. As a result, frequent changes would be required in a poor investment return cycle to meet the funding standards.

The total normal cost rate for the current benefit structure means that current employees are receiving a much smaller share of the employer funding than have employees nearing retirement and retirees.

Nearly 40% of the present value of future benefits is due to currently retired and inactive members. As a result, an 8% required reduction in benefits must be 13% if the reduction is limited to currently active employees. If additional benefit reductions are required, equity would suggest that benefits for current retirees (i.e., the COLA) should also be considered. Reasonable approaches include:

- Limit the COLA to the CPI for a broader group of active members and/or retirees
- Delay the COLA beyond age 52 to age 55
- Reduce the COLA for a temporary period of time

Other overall recommendations and alternative approaches for the future that are applicable to all systems are summarized in Chapter Two and Chapter Eight.

Chapter Seven: Findings on Highway Patrol Retirement System (HPRS)

This section discusses our findings from the technical analysis of the HPRS 30-year plan. This chapter is not complete on its own. To understand the context of the analysis, please review at least the Table of Contents, Chapter One, and Sections 2.1, 2.17, and 2.18 before reading this chapter.

7.1 System Overview

The Highway Patrol Retirement System (HPRS) was created in 1941 for troopers and communications personnel employed by the Highway Patrol. Today, membership in HPRS is limited to troopers with arrest authority and trooper cadets in training at the Highway Patrol Training Academy.

HPRS provides retirement, disability and survivor benefits as well as access to post-retirement health care to retirees and beneficiaries. Health care is funded only after the pension obligation is funded. Ohio statutes further limit the annual employer contribution paid to both pensions and health care to 26.50% of salaries.

HPRS current membership includes approximately 1,500 active members and 1,400 retired members, beneficiaries and survivors. Assets are held in a trust for the exclusive benefit of the plan's participants. HPRS has approximately \$681 million in assets as of May 31, 2012 for pension and health care benefits.

HPRS is led by an eleven-member Retirement Board, with five members elected by employees, two retired members and the superintendent of state highway patrol. There are also three investment members, one appointed by the Governor, one appointed by the State Treasurer and one appointed jointly by the Senate President and the Speaker of the House.

Participation in HPRS is mandatory. HPRS members are not covered by Social Security but contribute 10% of their annual salary to HPRS. HPRS employers currently contribute the maximum allowable under current Ohio statute. Total employer and employee funding for retirement and retiree health care equates to 36.50% of total HPRS salaries.

Every year, an actuarial valuation is performed by an independent actuary and determines the employer contribution rates to fund the basic retirement system benefits as well as retiree health care fund. The most recent valuation was performed as of December 31, 2010 and is the basis for much of our analysis presented throughout this report.

Pension Reform

The history of HPRS 30-year plan includes:

- September 2009, HPRS presented a 30-year funding plan to the ORSC, estimated to reduce the funding period from infinite to 30 years. The plan included:
 - Reduced COLA from 3% to 2%, except for certain over-65 retirees receiving an HPRS benefit less than 185% of the federal poverty level
 - Increase member contribution rate from 10% to 11% of pay
 - Increase final salary averaging (FAS) period from 3 years to 5 years
 - Delay COLA from age 53 to 60 for retirements on or after the effective date of legislation
- April 2011, HPRS Board adopted revised actuarial assumptions, which created the need to revise the 30-year funding plan
- April 2012, HPRS revised 30-year funding plan, estimated to reduce the funding period from infinite to 30 years. The revised plan includes changes from the 2009 plan plus:
 - Increased member contribution rate from 10% to 14%, subject to Board discretion
 - Reduced COLA to 0% to 3%, subject to Board discretion

Since 2008, the HPRS funding period has been infinite, meaning at the current contribution rates, the system would not be able to pay off its unfunded liability. HPRS currently allocates 1.75% of payroll towards health care benefits, with the remaining contribution (currently 34.75% of pay including member contributions) allocated to retirement benefits.

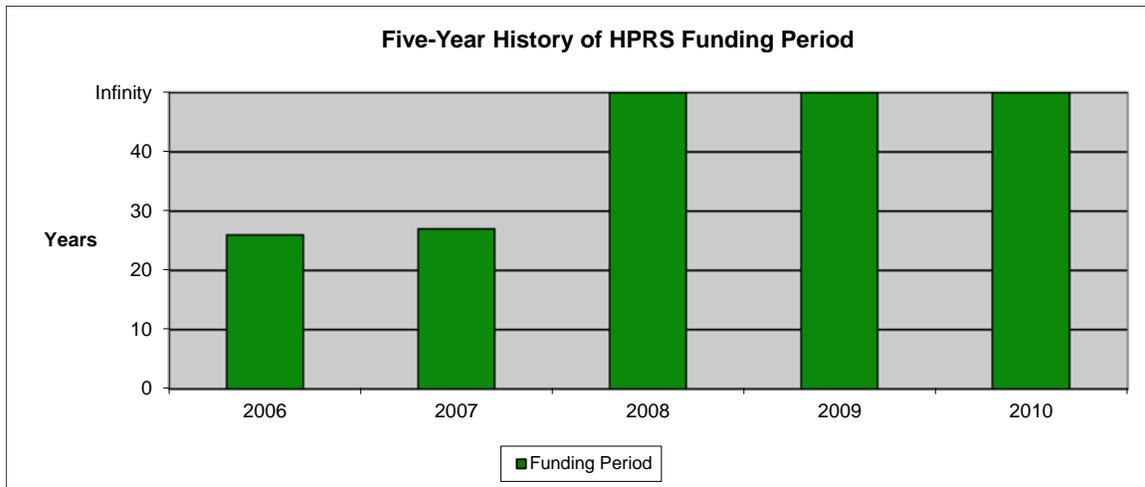
7.2 Analysis of Current Program

Funding Period and Contribution Rates

Effective in 1997, S.B. 82 required that each Ohio public retirement system establish a 30-year funding target for funding pensions. The funding period is the number of years required to liquidate the unfunded accrued liability. The following table and chart show a five-year history of the funding period along with the member and employer contribution rates and the allocation of employer contribution between pension and health care.

Five-Year History of HPRS Funding Period and Contribution Rates

Valuation as of December 31	Funding Period Years	Contribution Rates		Employer Allocation	
		Member	Employer	Pension	Health Care
2010	Infinity	10.00%	26.50%	24.75%	1.75%
2009	Infinity	10.00%	26.50%	23.75%	3.50%
2008	Infinity	10.00%	26.50%	22.00%	4.50%
2007	26	10.00%	26.50%	21.00%	5.50%
2006	27	10.00%	25.50%	21.00%	4.50%

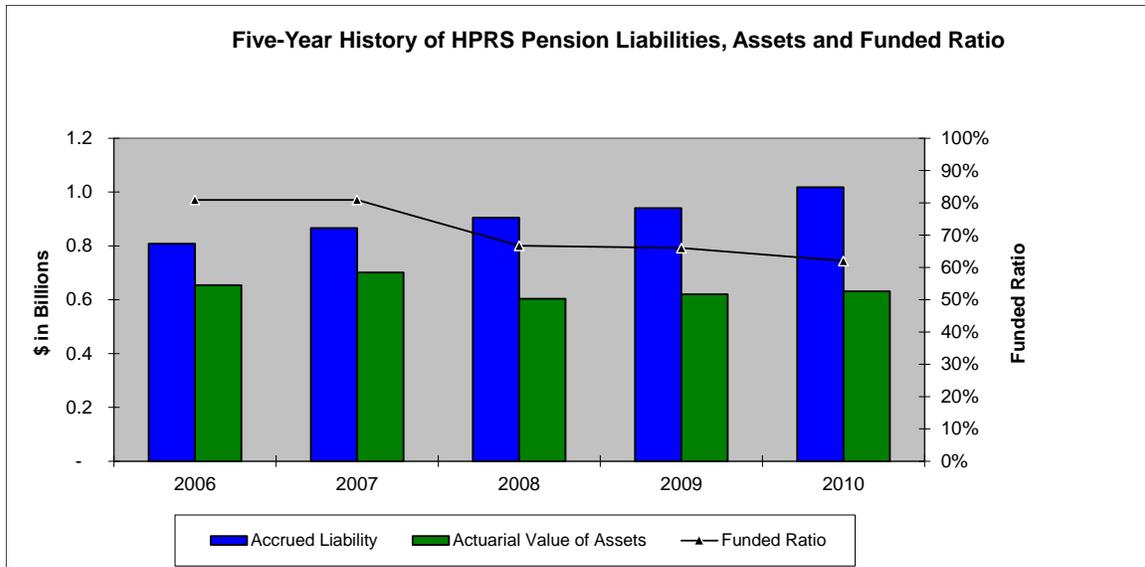


Funded Ratios

The System’s funded ratio is the actuarial value of assets divided by the accrued liability. The following table and chart show a five-year history of the System’s pension funded ratio.

**Five-Year History of HPRS Pension Funded Ratio
(\$ in millions)**

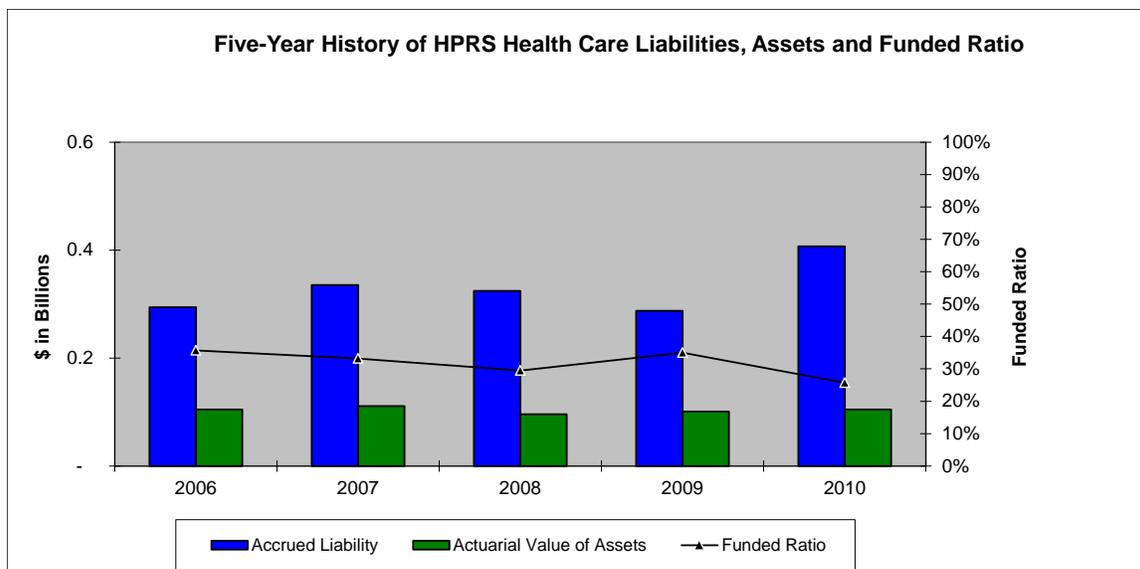
Valuation as of December 31	Accrued Liability	Actuarial Value of Assets	Unfunded Accrued Liability	Funded Ratio
2010	\$1,018	\$631	\$387	62.0%
2009	\$940	\$620	\$320	66.0%
2008	\$904	\$603	\$301	66.7%
2007	\$866	\$701	\$165	80.9%
2006	\$808	\$654	\$154	80.9%



The following table and chart show a five-year history of the System’s health care funded ratio.

Five-Year History of HPRS Health Care Funded Ratio
(\$ in millions)

Valuation as of December 31	Accrued Liability	Actuarial Value of Assets	Unfunded Accrued Liability	Funded Ratio
2010	\$407	\$105	\$302	25.8%
2009	\$288	\$101	\$187	35.0%
2008	\$324	\$96	\$228	29.5%
2007	\$335	\$111	\$224	33.2%
2006	\$294	\$105	\$189	35.7%



Current Program Projection assuming No Benefit Changes

The most recent actuarial valuations were performed by Gabriel Roeder Smith (GRS) as of December 31, 2010, and show the following for the Retirement System and the Health Care Fund.

**Current Funding Position
(\$ in millions)**

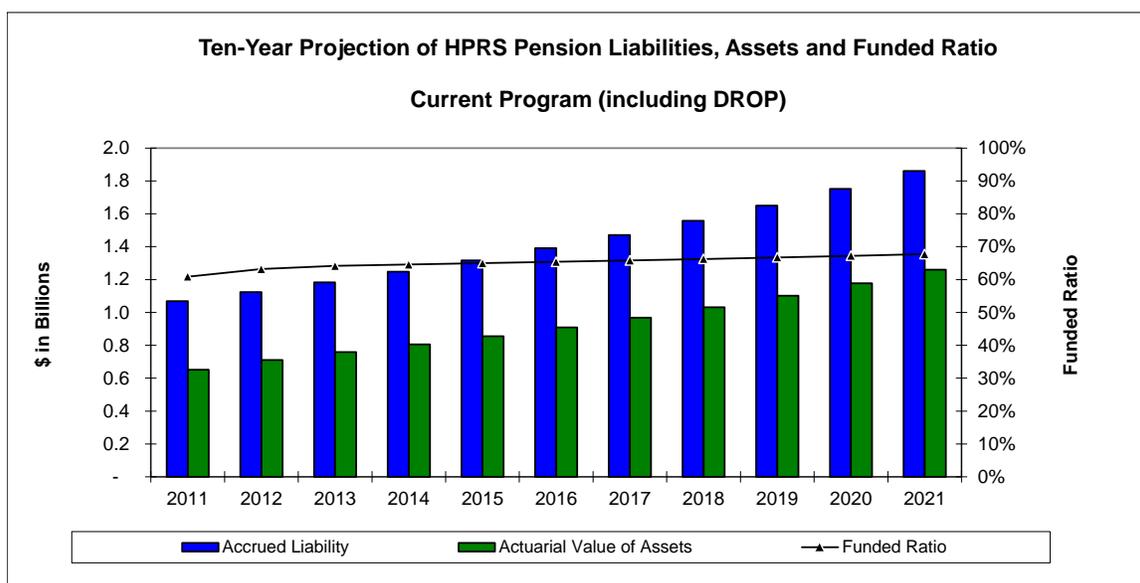
System	Accrued Liability	Actuarial Value of Assets	Funded Ratio	Funding/Solvency Period
Retirement	\$1,018	\$631	62.0%	Infinite funding period
Health care	\$407	\$105	25.8%	Insolvent in 14 years

Section 5505.15 of the Ohio Revised Code limits the total employer contribution rate to 26.50% of pay. HPRS currently allocates 1.75% of pay toward retiree health care. Employer contributions in excess of 1.75% are allocated to fund the retirement system benefits. The results of this valuation show an employer normal cost rate and unfunded actuarial accrued liability (UAL) rate of 11.72% and 13.03%, respectively, for a total retirement employer rate of 24.75% of pay available for retirement funding. Note that this unfunded actuarial accrued liability rate of 13.03% was calculated based on what is left after 1.75% is allocated for health care and 11.72% is allocated to normal cost. The true 30-year amortization cost of the unfunded liability would be 22.28% of pay for amortizing the unfunded liability. Adding the employer normal cost of 11.72% of pay, results in a total employer retirement contribution requirement of 34.00% of pay according to the GRS 2010 actuarial valuation report. Consequently, the valuation results show that the current employer retirement contribution rates are inadequate to amortize the UAL on any basis – and the employer contribution

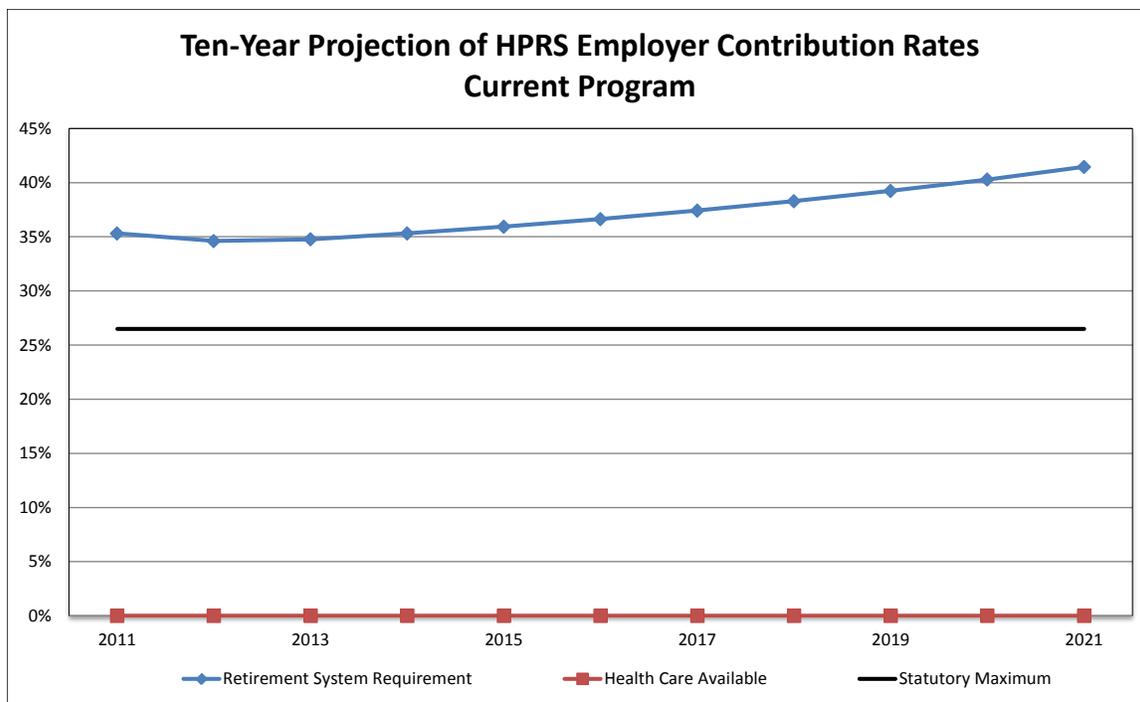
allocated to the retirement plan is currently meeting only 73% of the 30-year funding requirement. This is a shortfall of 9.25% of pay in employer funding.

Based on the health care employer rate of 1.75% and the remaining contributions allocated to the retirement system, the health care fund would run dry in 2025. It is interesting to note that even though HPRS is funding only 73% of the 30-year pension plan funding requirement, we project that the funded ratio will stay relatively stable over this period. This is partially due to the maturity of the plan and the deferred gains yet to be reflected. However, the 30-year employer contribution requirement will continue to increase over the period as shown below.

On this basis, and assuming that (1) actuarial assumptions are met, and (2) the retirement contributions will continue to be made at the current employee and employer contribution rates, our current program funding model projection of retirement system liabilities, actuarial value of assets and the funded ratio (all including DROP) is shown below.



As discussed above, health care funding is on a modified pay-as-you-go basis. For 2010 and 2011, the Board defined allocation to health care was 1.75%, leaving only 13.03% of pay toward the amortization of the unfunded liability. Below are the projected contribution rates beginning in 2011 as if the retirement unfunded liability is amortized over 30 years as required under the current program.



Findings

Our projections show that without change, the declining 30-year funding target for retirement benefits would not be met for 2011 or any year in the future. If all the employer contributions were going to retirement benefits, and none to health care, we would expect the health care fund to remain solvent only through 2022. With 1.75% going toward health care, as is current policy, the health fund will run out of funds by 2025, and the retirement fund will not meet the target of full funding in 30 years

7.3 Proposed 30-Year Plan

HPRS’ latest reform plan, as passed by the Senate, and the 2009 plan are summarized below.

Summary of HPRS Reform Plan

	Current Program	Proposed Program
Member Contributions	10%	10% - 14%, determined by the Board as deemed necessary to comply with actuarial valuation requirements. 11% (from the 2009 plan) assumed for purposes of the analysis below
Cost of Living Adjustments Delay	Commencing at age 53	Commencing at age 60, but only for retirements after the legislative effective date

	Current Program	Proposed Program
Final Average Salary	Highest 3 years of contribution salary	Highest 5 years of contribution salary for retirements after 2014
Cost of Living Adjustments Amount	3% on original base benefit	0% - 3% on original base benefit, determined by the Board. 2% (from the 2009 plan) used for purposes of the initial analysis below

GRS performed an actuarial analysis of the initial ORSC proposed benefit changes based on the December 31, 2009, actuarial valuation of the System. That plan brought the pension fund funding period from infinite to 30 years. With the adoption of assumption changes in early 2011, primarily reflecting improved mortality, further changes were needed to the 30-year plan, and the Board subsequently adopted additional changes to the 30-year plan which also reduces the funding period to 30 years,

Based on the GRS estimates, the 2009 proposed 30-year plan resulted in an employer normal cost of 7.54% of pay and a UAL amortization rate of 17.22% of pay, based on the member contribution rate of 11.0%. This means that the total normal cost decreased as a result of the changes from 21.72% of pay under the current program and after the assumption changes to 18.54% under the proposed program. This is a decrease of 15% in the normal cost value of the pension benefits.

Under the current program, workers get pensions worth 21.72% of pay at a contribution of 10.00%, for a net value of 11.72% of pay. Under the 2009 proposed program, workers would get an 18.54% of pay value at a cost of 11.0% for a net value of 7.54%. This is comparable to a reduction in value of 36%, or 4.18% of pay. The following table illustrates these figures:

Change in Pension Value under 2009 Proposed Program

	Current Program	Proposed Program
Total Normal Cost	21.72%	18.54%
Member Contribution	10.00%	11.00%
Net Value to Member	11.72%	7.54%
Decreased Value (% of pay)	NA	4.18% of pay
Decrease in Member Value	NA	Down 36%
Decrease in Total Pension Value	NA	Down 15%

Valuation Assumptions

In developing the liabilities for the 2009 HPRS 30-year plan, GRS did not modify any of the assumptions. Unlike the other system 30-year plans, HPRS did not propose any changes in

retirement eligibility. Consequently, no changes in the retirement patterns were assumed. GRS assumed that the Board would increase member contributions to 11% and reduce the COLA to 2% for purposes of this analysis.

Financial Impact

The impact of the 2009 proposed pension reform plan is a decrease in the employer normal cost rate of 4.18% of pay and a decrease in the 30-year UAL funding rate of 5.06% of pay, for a total rate decrease of 9.24% of pay.

The benefit changes reduced the total present value of benefits by 10%, but reduced the employer normal cost rate by 36% and the employer UAL amortization rate by 23%. As a result, the expected future 30-year employer costs of the plan are decreased by 27%, or by 9.24% of pay.

Summary of Employer Costs

	Current Program*	Proposed Program	Difference
Employer Normal Cost Rate	11.72%	7.54%	(4.18)%
UAL Amortization Rate	22.28%	17.22%	(5.06)%
Total Employer Cost	34.00%	24.76%	(9.24)%

* Based on GASB calculations as of December 31, 2010 valuation and 30-year funding period

Static Test of 2009 Proposed 30-Year Plan Changes

Using the results of the December 31, 2010 actuarial valuation and the 2009 proposed 30-year plan changes as outlined in the August 15, 2011 letter from GRS, we reviewed the impact on the normal cost rate and the unfunded actuarial accrued liability rate. Our independent determination of the decrease in the normal cost rate and decrease in the UAL amortization rate was within an acceptable range of the GRS work and validated the immediate impact of the 30-year plan.

Proposed 30-Year Plan Projection

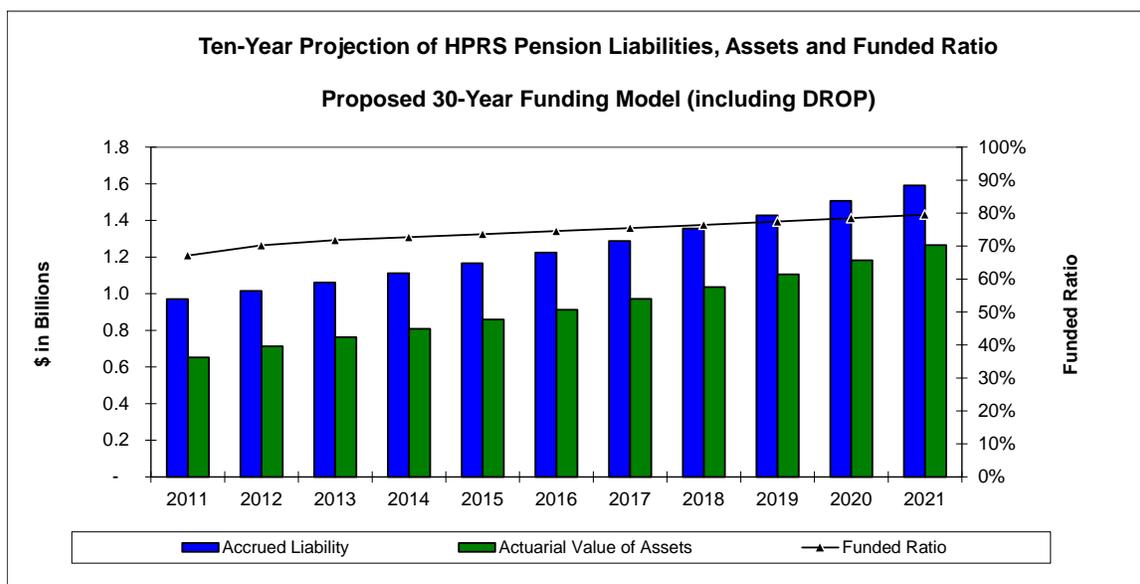
Our model further verified the impact of the change in employer contribution rates as a result of implementing the 2009 proposed 30-year plan. The proposed plan changes result in an employer normal cost rate and unfunded actuarial accrued liability rate of 7.54% and 17.22% of pay, respectively, for a total employer rate of 24.76% of pay. The remaining employer contribution rate of 1.74% of pay is available to allocate to the retiree health care fund. This was projected to increase to 2.81% available for health care as of December 31, 2016, as a result of the recognition of deferred investment gains.

As of December 31, 2010, based on a proposed 2011 health care contribution of 1.74%, increasing to 2.81%, and assuming all actuarial assumptions are met, we expect the health care

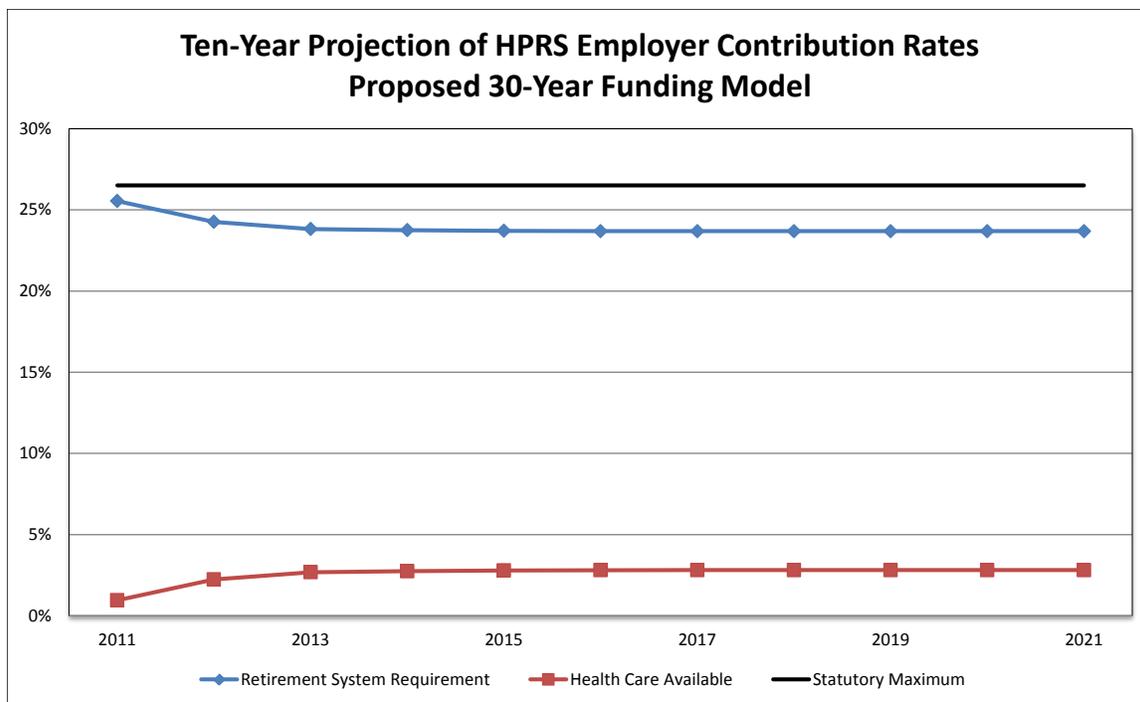
fund to remain solvent through 2025 and the retirement plan will meet the 30-year funding requirement.

This means that the 2009 proposed 30-year plan does not satisfy the objectives of fully funding the unfunded actuarial liability over no longer than 30 years, and indefinite health care benefits solvency. We did not explicitly test the plan approved under Senate Bill 345, but estimate that if the Board were to take all actions available (particularly reducing COLA), the plan would satisfy the objectives.

The UAL was amortized over a period of 30 years on a closed amortization basis in 2010. Since the 2009 proposed 30-year plan was developed, GRS completed preliminary results of the December 31, 2011 actuarial valuation. These results are consistent with our estimates. We used the December 31, 2010 actuarial valuation as the basis for our projections and determined that under the 2009 proposed 30-year plan, the UAL can be amortized over 30 years while maintaining the current employer contribution rates within the 26.50% of pay statutory limit. However the health care fund would be depleted in 2026.



The chart following illustrates the required retirement contributions under the current program.



As mentioned previously, these contribution levels, while adequate for 30-year funding of the retirement program, result in health care funding which leads to projected insolvency in 2026. There is some improvement as the investment gains from 2009 and 2010 are smoothed in, but because of the poor investment return during calendar year 2011, we anticipate that the proposed 30-year plan will be somewhat more inadequate once the 2012 valuation is considered.

In order to structure a program that meets the two objectives of a 30-year declining funding period for retirement and long-term solvency for health care, our calculations show that if all future actuarial assumptions are met after December 31, 2010, a reduction in retirement benefits by another 3.4% would be necessary (beyond the changes in the 2009 plan), in addition to increasing the member contributions to 14% of pay. As a point of reference, the change in the definition of final average salary from three years to five years and the reduction in COLA from 3% to 2% resulted in a 10% drop in present value of retirement benefits. So an additional, yet smaller, reduction is expected to be required to fit the program into the 30-year funding and a permanent health care fund solvency target. The Board has the authority to make such changes under SB 345.

Findings

The 2009 30-year plan was adequate as of the 2010 actuarial valuation for purposes of pension funding. However, as a result of insufficient contributions going toward health care, it is not expected to result in solvency for health care benefits long-term. If retirement benefits were reduced by another 3.4% and member contributions were increased to 14% at 1% per year for three years, additional contributions would be available for health care, and long-term solvency

is projected to be satisfied. This is based on conditions as of December 31, 2010 and assuming all assumptions are met after that time. Once the poor returns of 2011 are reflected, the change required will likely be more severe. If the Board were to reduce COLA further as permitted under SB 345, the funding objectives could be met.

7.4 Stress Testing of Proposed 30-Year Plan

The analysis that follows looks at what position HPRS would be in after five years of “worst case” investment returns, and 2011 investment loss of 2.7% as calculated by GRS and reported by HPRS. The analysis illustrates the additional plan changes that might be required should results turn out worse than expected.

Year 1 Analysis

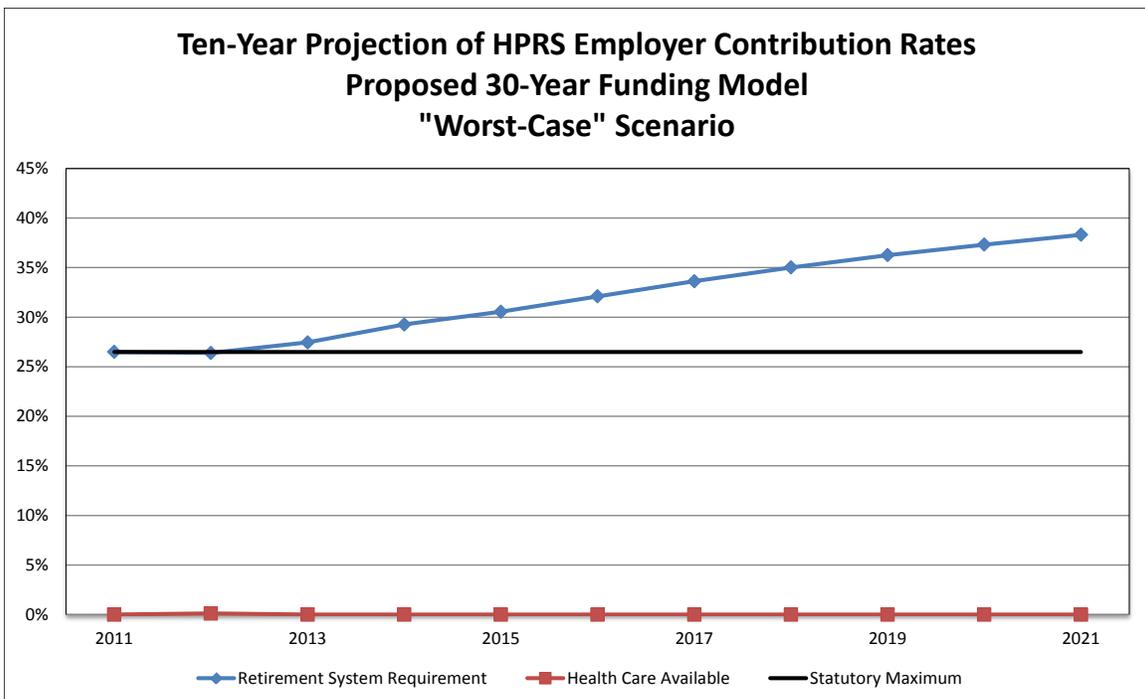
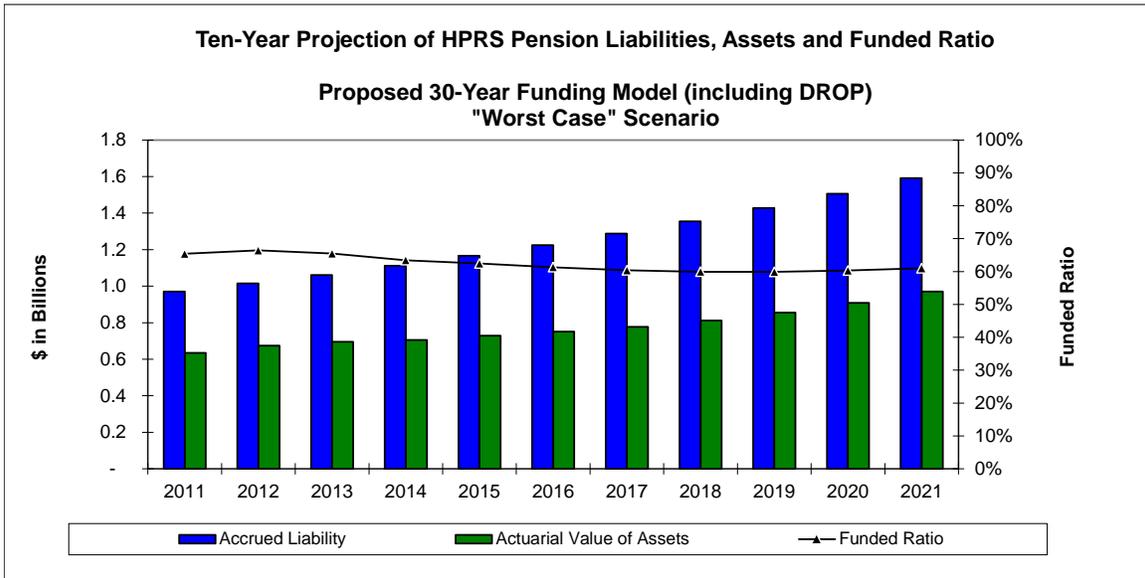
We tested the viability of the proposed 30-year plan using HPRS’s actual asset return for 2011 of -2.7% and returns from the period January 1, 2012 through April 30, 2012 of 7.37%, provided to us by the HPRS staff. Based on the equity markets through June 2012, we estimate that the plan will have earned roughly 5% from January 1, 2012 through June 30, 2012. This is close enough to the actuarially assumed half-year return of 4.0% that our analysis is based on meeting the actuarial assumption for the first half of 2012, with the worst case returns from July 1, 2012 through June 30, 2017. We based our worst case on a 2012 full year return of 6.5% —half a year at the assumed rate of 8% and half a year at the worst case rate of 5%. Our analysis also incorporates the -2.7% return that GRS calculated for HPRS during 2011.

As a result, we expect the proposed 30-year plan to continue to fall outside the twin objectives of 30-year declining funding period for retirement and long-term solvency for health care as of the December 31, 2012 valuation. The projection would anticipate depletion of the health care trust by 2023 and for the retirement fund to be only 90% funded at the end of 30 years because the actuarial losses result in a need to contribute more than 25% of pay for a 30-year funding target, although the maximum employer contribution is 26.50% of pay. The 90% / 2023 projection discussed here assumes 24.75% employer contribution toward the retirement benefit, leaving only 1.75% for health care as is currently anticipated.

Under this scenario, immediate additional action would be required to attain the funding objectives, equal to a reduction in the present value of retirement benefits of approximately 13% and increase member contributions to 14% over three more years. As a benchmark, the reduction in the present value of retirement benefits as a result of the 30-year plan developed above was about 10%. This was based on a 1% increase in member contributions, reduction in COLA to 2% and increased salary averaging period to five years. This bill approved by the Senate grants HPRS the authority to increase member contributions up to 14% and reduce the COLA entirely.

Multiple Year Analysis

Assuming no changes to benefits and the extended worst case investment scenario, the retirement plan would continue to fall short of the 30-year funding objective by an increasing margin. By 2021, the plan would be less than 60% funded and the health care fund would be totally depleted in 2022. The charts shown below illustrate the pension funding position and required contributions.



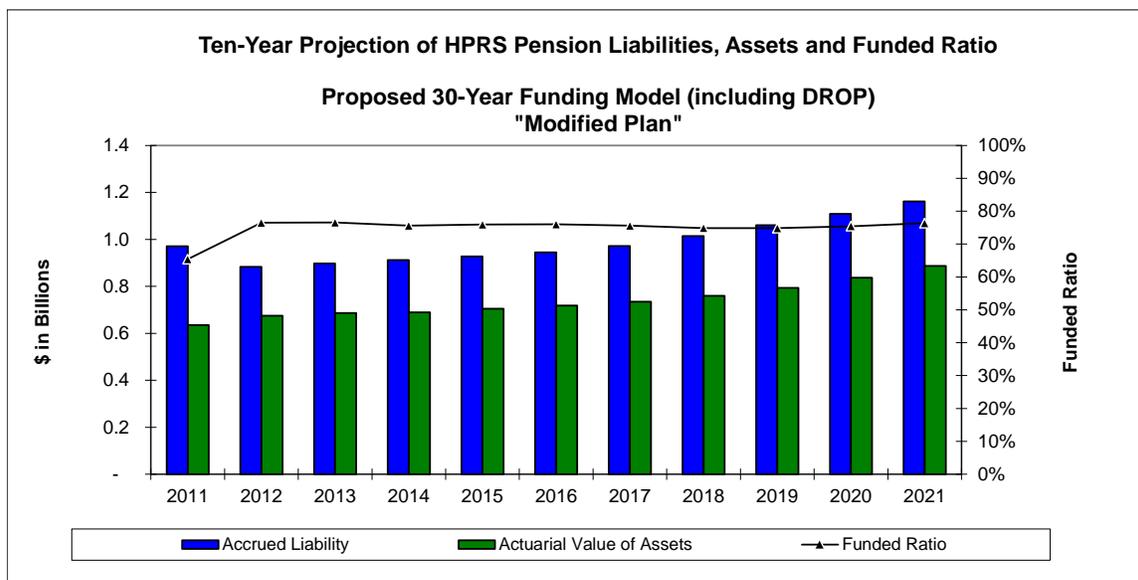
Summary of Retirement Benefit Reductions Required

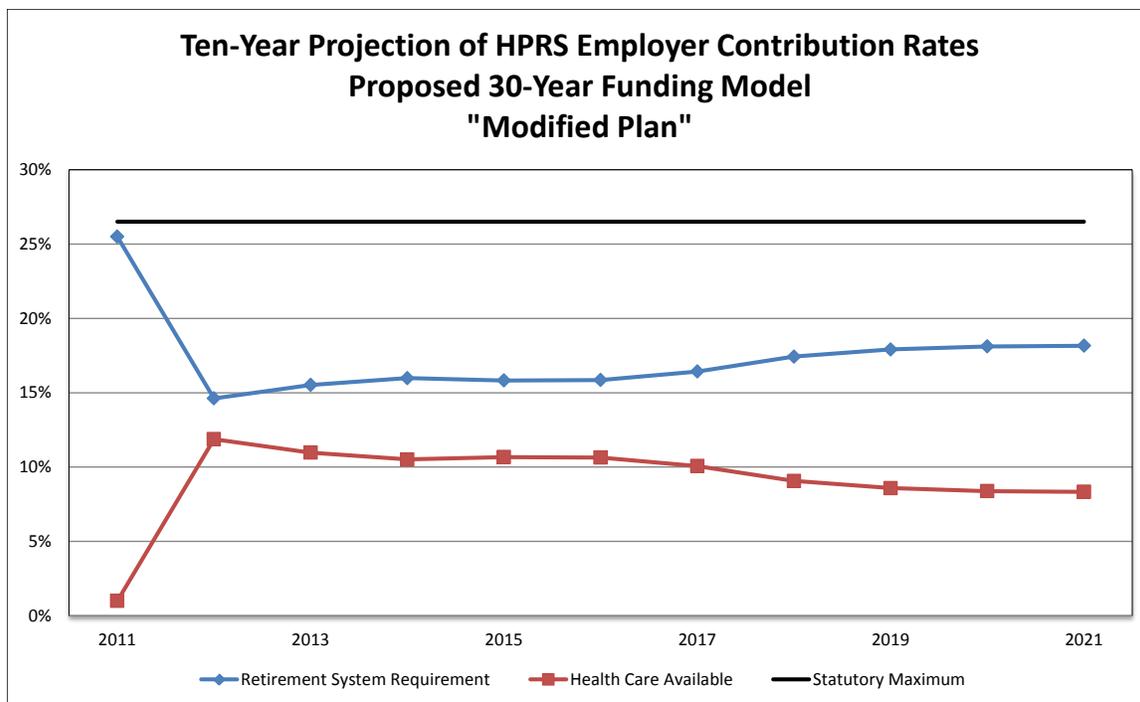
The following table summarizes the poor investment return in this worst case hypothetical case and illustration of possible actions that results in the “modified plan” that stays within the funding goals.

Hypothetical Benefit Reductions as Consequence of Poor Returns

Year Ending December 31	Investment Return	Hypothetical Actions Taken
2012	6.50%	Reduce retirement benefits by 13%
2013	5.00%	Reduce retirement benefits by another 2.4%
2014	5.00%	Reduce retirement benefits by another 2.4%
2015	5.00%	Reduce retirement benefits by another 2.4%
2016	5.00%	Reduce retirement benefits by another 2.3%
2017	6.50%	Reduce retirement benefits by another 1.3%
2018	8.00%	No more changes needed

An estimate of a ten-year projection of liabilities, assets and funded ratios and employer contribution rates for both the Retirement system and Health care Fund under a modified plan scenario described above (with additional benefit reductions) is shown below.

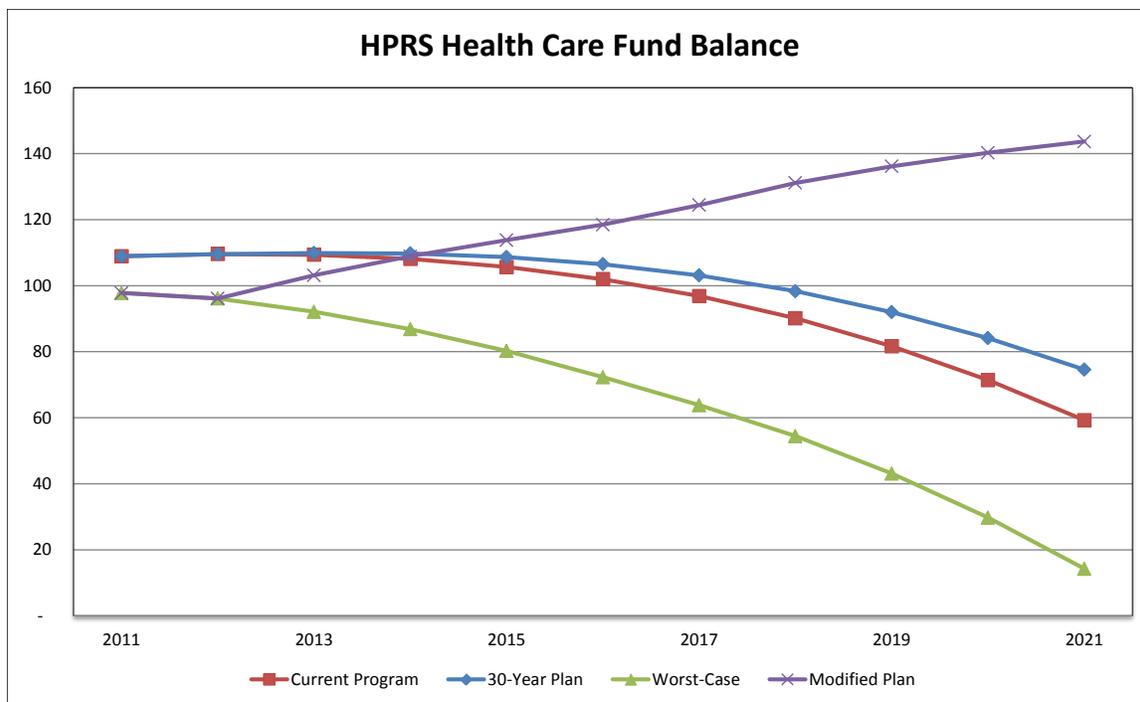




Cumulatively, retirement benefit reductions of about 25% during this period of extended poor investment performance would be required. This illustrates a painful process of each year making significant changes to the plan to stay within the 30-year retirement funding requirement and long-term health care solvency objectives. As can be seen from the graph above, the health care benefits currently being provided by HPRS require contributions of 9% to 10% of pay. This is a very high level of contribution and significant drain on the retirement funding. The HPRS Board should consider health benefit reductions as well as the retirement benefit reductions.

Summary of Projections

The following graph is another way to consider the projections discussed above.



These scenarios illustrate the inadequacy of current levels of health contributions if the retirement plan is being funded according to a 30-year funding horizon, with remaining contributions being made to the health care fund. The **Current Program** line (red squares) shows that with health contributions of 1.75% as is now contemplated, the health care fund is expected to decline and the pension would only be 79% funded in 30 years. The **30-Year Plan** line (blue diamonds) builds up a slightly stronger health care fund and accomplishes 100% pension funding in 30 years.

The next two lines are based on the worst case investment return of 5% from July 2012 through June 2017 and 8.00% thereafter. The **Worst Case** line (green diamonds), based on 1.75% contributions to health care shows that the health care fund is depleted in about 2022 absent further modifications. Pension would be only 78% funded in 30 years. The **Modified Plan** line (violet Xs) shows that with the substantial changes discussed above the health care trust will remain solvent, and the pension would be 100% funded in 30 years from 2011.

Keep in mind that once the 30-year retirement funding period expires, large contributions will be available for health care and it too will be fully funded – about five to ten years after the pension becomes fully funded.

Recommendations

If an extended period of poor investment returns occurs, frequent and significant additional benefit changes will be required to stay within the funding plans.

We recommend that the board have a rigorous process in place and act each year as necessary to maintain the twin objectives of long-term health care solvency and 30-year retirement plan funding. The Board might also wish to make slightly larger reductions to provide for a cushion in case markets do not rebound, as was the case in this hypothetical worst case scenario. Conversely, if experience turns out to be more favorable than expected (which we believe is equally likely), the board should have authority to reverse some of the changes made subsequent to those taken to date.

As noted above, even if further poor returns do not materialize, it is very likely that the next actuarial valuation will show that additional significant benefit reductions are required in order to maintain a 30-year funding period for retirement benefits and long term solvency of health benefits.

7.5 Summary of Plan Provisions

The Plan Provisions for the Retirement System and Health Care Program as well as the major assumptions utilized in the most recent actuarial valuations are shown below.

Summary of Plan Provisions		
Contributions	Members:	10%
	Employer Pension:	24.75%
	Employer Health Care:	1.75%
Final Average Salary (FAS)	Three highest years	
Age and Service Pension	Age 52 and 20 years of service or age 48 with 25 years of service	2.5% of FAS times service up to 20 years plus 2.25% of FAS for service over 20 and up to 25 years of service plus 2% of FAS times service over 25 years.
	Mandatory retirement at later of age 60 and 20 years of service	Maximum: 79.25% of FAS. Minimum: \$1,050/month.
Reduced Pension	At least 20 years of service but less than 25 years of service and is between the ages of 48 and 52	Age and Service Pension times: Age 48 – 75% Age 49 – 80% Age 50 – 86% Age 51 – 93%

Summary of Plan Provisions		
Deferred Pension	20 years of service	Age and Service Pension payable at age 52. Reduced at age 48. Unreduced if 25 or more years of service.
	15 years of service	1.5% of FAS times service, payable at age 55.
Disability (On-Duty)	No age or service requirement	Maximum of 61.25% of FAS and Age and Service Pension. Minimum: \$1,050/month.
Disability (Off Duty)	No age or service requirement	Maximum of 50% of FAS and Age and Service Pension. Minimum: \$1,050/month.
Survivor's Benefits	Death of Retiree:	Greater of \$900/month and 50% of Retiree benefit
	Death of Active or Deferred not yet eligible to retire:	\$900/month.
	Death of Active or Deferred eligible to retire:	Greater of \$900/month and 50% of benefit payable to retiree. Children's benefits are also payable.
Cost of Living Adjustment (COLA)	Retiree in receipt for 12 months.	3% each year after age 53.
Lump Sum Death Benefit	Lump sum benefit of \$5,000	
Deferred Retirement Option Plans (DROP)	No age or service requirement	Age and Service Pension determined at date of DROP entry. Receives annual COLA
	Interest crediting rate	Rate of return on a selected group of fixed income securities.
	Member contributions during DROP:	100% of member's contributions

Summary of Plan Provisions					
	Minimum participation prior to age 52:	3 years			
	Minimum participation on or after age 52:	2 years			
	Maximum participation	8 years			
Eligibility for Health Care Coverage	All retirees, survivors and dependents				
Premium Payments	<u>Retiree</u>	<u>Dependent Spouse</u>	<u>Dependent Children</u>	<u>Surviving Spouse</u>	<u>Surviving Children</u>
Medicare-Eligible	\$10	\$15	\$15	\$15	\$15
Non-Medicare Eligible	39	97	22	44	22
Dental	1	19	19	No fee	No fee
Vision	1	4	3	No fee	No fee
Life Insurance	12	0	17*		
	* Family coverage A monthly surcharge of \$39 added for tobacco use. Dependent Children must be Medicare-eligible to qualify.				
Medicare Part B	Reimbursed up to the statutory maximum not less than \$96.40 per month				
Investment Return	Retirement: 8.00% per annum Health Care: 5.00% per annum				
Payroll Growth	4.00% per annum, compounded annually				
Price Inflation	3.00% per annum, compounded annually				
Asset Valuation Method	Retirement and Health Care: Smoothing method, recognizing 25% of the gain or loss each year. The actuarial value of assets must be within 80% and 120% of the market value				
Normal Cost Rate	Constant				
Expected Benefit Payments	Provided in most recent actuarial valuation report for health care, projected for retirement system				

7.6 Other Issues

Analysis of Transition

The HPRS proposed 30-year plan made major changes in benefits in a number of ways for current employees, new hires, and current retirees. Consequently, it is important to carefully consider how a transition would work. A poorly designed transition could result in a “rush to the door” where individuals would retire before a certain date in order to preserve expected benefits. Conversely, the most fair and generous transition would be one where the benefit reductions only apply to individuals who have not yet been hired. That extreme would result in very minimal cost savings in the short run.

We have analyzed the transition feature in the HPRS proposal and find it to be reasonable balance between fairness and cost. Because the major changes proposed are increasing contributions, reducing COLAs and changing the earnings averaging period, we believe these changes are naturally phased in gradually and are quite reasonable.

Adequacy of Health Care Benefits

HPRS offers retiree health care coverage at a very modest cost to the retirees. In recent years, contributions of 4.50% to 5.50% of salary have been made to the fund to cover these benefits. Now that the funding situation is weakened, health care contributions will not be sufficient absent substantial reductions in retirement benefits.

The HPRS Board will have to make difficult decisions balancing the generous health care program with a decreasingly adequate retirement program. We would encourage the Board to evaluate significant reductions in the health care benefits in order to avoid retirement benefit cuts which jeopardize core retirement benefits. It is our understanding that the Board is currently taking substantial steps in this direction. One indication of the disparity between the value of the health care benefits being provided and the 1.75% contribution used to fund them is that the actuarially determined Normal Cost of the health care benefits was 11.98% of pay as of December 31, 2010. This is more than 10% of pay higher than the 1.75% contribution currently flowing into the health care fund. This is the major reason for the short anticipated solvency period of the health care fund.

Premium subsidies may need to be significantly modified, possibly based on a member’s age and service at retirement. The Medicare Part B supplement, while tax efficient, provides additional health care benefits at the ultimate expense of pension benefits. The board may wish to have the authority to reduce or eliminate this benefit.

7.7 Overall Findings and Recommendations

Significant changes in the HPRS retirement benefits were proposed in order to meet the 30-year requirement. The proposals appropriately gave the HPRS Board authority over how to implement these proposals and provide a mechanism to make additional changes as needed to

meet the funding targets. Significant actions within the proposals will be required in order to satisfy the twin objectives of 30-year retirement funding and long-term health care solvency as noted. Under SB 345 the HPRS Board has the tools necessary to take these actions.

We encourage HPRS to seek the authority to extend retirement eligibility requirements for future hires and possible existing members consistent with mandatory retirement ages. This can be beneficial to both the retirement plan and the health care program and addresses the cost pressure from improved life expectancy. The proposed 30-year plan is comprehensive, very significant, and a reasonable approach given the funded status of the system. At this point, only modest reductions are on the docket, but more significant reductions will likely be required to fully satisfy the dual objectives of 30-year funding and long term health care solvency. We encourage the Board to begin to make these difficult decisions in a disciplined and timely fashion.

We also recommend a 30-year plan that meets the funding objectives initially based on the facts known at that time and ideally provides a margin for future adverse experience. Otherwise, frequent changes would be required in a poor investment return cycle to meet the funding standards.

We find that the COLA reduction which would apply to both current retirees and future retirees is very reasonable. This is because 48% of the present value of future benefits is due to currently retired and inactive members. As a result, a 10% required reduction in benefits must be 19% if the reduction is limited to currently active employees. If additional benefit reductions are required, equity would suggest that benefits for current retirees (i.e., the COLA) should continue to be considered.

Other overall recommendations and alternative approaches for the future that are applicable to all systems are summarized in Chapter Two and Chapter Eight.

Chapter Eight: Summary of Analysis of 30-Year Plans and Future Considerations

8.1 Summary of Findings from Chapters Three through Seven

The 30-year plans for SERS, OPERS, STRS, and HPRS address and meet the funding objective for the retirement plan based on the conditions that existed at the time the plans were developed, but only based on limited funds allocated to health care. OPERS has proposed making significant changes to the health care plan as proposed in the HCPP 3.0 model. SERS and STRS proposed health care provisions supportable by contribution levels of 4.0% and 1% of pay, respectively. HPRS current health care benefits cost far more than the modest allowance allocated to health care and would be projected to be insolvent in 10-20 years.

While the OP&F plan changes are significant, they are not likely to meet the 30-year funding target currently and we estimate significant additional changes in benefits (8% if limited to the retirement plan) would be required to do so.

The twin objectives of 30-year funding for retirement benefits and long-term solvency for health care benefits are thus expected to be met under the conditions described above for SERS, OPERS, and STRS. Long term solvency for health care benefits under the current benefit terms and funds available are not likely to be achieved for OP&F and HPRS without significant changes.

However, the investment climate since those plans were developed make it likely that additional changes will be needed based on the next actuarial valuation results. Sustained periods of poor investment period will make even more significant changes necessary to meet the funding objectives.

The following table summarizes the current funded status of the systems before and immediately after the proposed changes, the additional benefit reductions that may be required this year because of the investment returns to date, and the additional benefit changes that may be required as a result of the multi-year stress test.

Summary of Key Funding Position Metrics

	SERS	OPERS	STRS	OP&F	HPRS
Employer Pension Cost Prior to Changes	13.45%	12.63%	30.10%	24.62%	34.00%
Statutory Maximum	14.00%*	14.00%	14.00%	21.60%	26.50%
Amount Available for Health Care	2.05%*	1.37%	<16.10%>	<3.02%>	<7.50%>
Employer Pension Cost After 30-Year Plan	12.53%	8.65%	19.26%**	16.90%	24.76%***
Amount Available for Health Care	2.97%*	5.35%	<5.26%>**	4.70%	1.74%***
Benefit Reduction as a Result of 30-year Plan	2%	5%	15%	7%	10%
Further Benefit Reduction Anticipated as of 2012 in order to meet Funding Targets	1%	0%	2%	12%	13%
Potential Further Benefit Reduction Anticipated 2012 - 2017 under Stress Test	6%	1%	7%	9%	12%

*SERS has additional 1.5% of pay available for health care. The amount available after the 30-year plan changes is expected to increase to about 4% of pay in the near term

**As the employee contribution increases are phased in and other changes reflected, the amount available for health care will increase to about 2-3% of pay and the employer pension funding requirement will decrease to about 12-13% of pay

*** As the employee contribution increases are phased in and other changes reflected, the amount available for health care will increase to about 2.5% of pay and the employer pension funding requirement will decrease to about 24% of pay

8.2 What-Ifs, Triggers, and Contingency Plans

Best practices in pension plan governance and structure often include triggers for specific actions under certain defined funding conditions. One event may trigger a specified action. For example, as discussed in Section 2.7, worker contributions in Utah will increase if the employer contribution is insufficient to meet the funding objectives. In South Dakota, Colorado, and Rhode Island, the annual amount of the cost of living adjustment (COLA) is tied to the funding position.

A trigger that automatically reduces benefits (or increases employee contributions) based on funding conditions has the following advantages.

- An immediate or future improvement in the funded status is accomplished when the trigger results in plan changes
- Employees understand in advance that certain benefits or terms are variable and at-risk, and are dependent upon the health of the system.

- This further strengthens the legal ability to reduce such benefits
- Once established, changes occur automatically and timely when triggered and no additional approvals are required
- Benefits are restored to the prior level when conditions change so the reduction may be temporary

A simple example that bases future COLA benefits on a funding trigger follows.

Example of COLA Based on Funding Triggers

Funding Period	COLA
More than 30 years	0%
30 years or fewer	3%, or CPI if less
Fully funded	Up to 5%, as necessary to catch up for prior COLAs not funded up to CPI

In Ohio today, a very important but fairly simple funding trigger mechanism is in place, since each year a system must satisfy a 30-year funding plan demonstrating that the fixed contributions can support the retirement benefit levels and amortize unfunded liabilities over a period not to exceed 30 years. This funding trigger itself is an example of best practices since it defines the minimally acceptable actuarial condition of the plans and requires each system to recommend to the Legislature changes to meet the 30-year requirement. Each system has responsibly accepted this disciplined approach by crafting extensive benefit changes and/or employee contribution increases to meet the 30-year requirement.

The fact that a trigger exists is a positive. However, in practice it has some limitations. The weaknesses of the current approach include:

- In general, provisions of the 30-year plans require legislative action in order to implement
- Required legislative action can create a significant time lag from the time that the 30-year plan is proposed and enacted
- The 30-year plans do not explicitly require a particular contribution to health care or a particular health care benefit and the health care plan itself is not subject to a funding standard comparable to the 30-year requirement for the retirement plans
- The flexibility to reduce the health care funding to shore up the retirement plan funding helps minimize the changes required to the retirement plan, but can also result in deferring needed or advisable health care benefit changes, potentially creating an employee equity issue long-term
- There is no objective guidance for “unwinding” an action taken under a 30-year plan, (e.g., rescinding a benefit reduction or decreasing a contribution increase)

While the 30-year parameter currently in place is generally viewed as an acceptable funding period, it should be noted that:

- A system that designs changes to exactly meet the 30-year requirement in one year has very little margin for unfavorable experience in any subsequent year(s). The result could be a need for frequent changes to stay within the 30-year requirement.
- Thirty years is a relatively long period, currently equal to the maximum period permitted under current GASB (or previously permitted under ERISA for corporate plans), but longer than currently under ERISA or permitted under GASB as recently modified
- If the amortization period remains at 30 years and does not decrease, or if the amortization period is reset at 30 years due to experience losses, no progress is made in actually funding the unfunded liabilities
- The amortization period is calculated on the basis of an expanding future payroll, which is an acceptable and common actuarial practice but results in no absolute amortization of unfunded liabilities for 15-20 years
- Actuarial assumptions, particularly the assumed rate of investment return are at the discretion of the pension board and actuary, and therefore subject to public scrutiny

The best approach in Ohio is to build on what is in place and working reasonably well, but with some modifications as discussed below.

The analysis of each system will illustrate how significant the future changes could be in five years under an unfavorable scenario.

Recommendations

We believe that the 30-year plan approach is a viable long-term strategy, but with a few additions and modifications.

- Encourage each system to develop future trigger-based automatic benefit changes based on each system's funded status for the reasons stated above.
- Give the system boards broad authority to make certain plan changes if necessary, either automatically or ad-hoc, to fit within the 30-year plan, including:
 - Reduce current benefit formula multipliers by up to 10%
 - Reduce cost of living adjustments
 - Increase member contributions by up to 4%, phased in over four years
 - Increase final average pay period up to seven years, with some grandfathering
 - Delay normal retirement age up to the Social Security retirement age for non-safety employees, and up to age 57 for public safety employees
 - Change early retirement benefits
 - Modify survivor and disability benefits
 - Enhance provisions designed to combat salary spiking and "fix" other inequitable benefit practices

- Modify actuarial equivalent benefit factors
- Reduction in share of health care benefits provided (as is already permitted)
- Encourage each system to develop, and communicate to the membership, a priority list of benefit and/or contribution changes that will be implemented if necessary to meet the 30-year requirement as well as the likelihood of future required action. The what-ifs included in each system's stress test are a good starting point for board consideration
- Give system boards broad authority to reverse the changes above, but only if the contributions are adequate to amortize the unfunded liabilities (after the benefit and/or contribution reversals) over 15 years or fewer
- Each system should develop a plan for the allocation of favorable experience among:
 - Higher funding of health care benefits
 - More rapid funding of unfunded liabilities
 - Building of reserves
 - Reductions in employer or employee contributions
 - Benefit increases to the extent reduced previously
- Institute a funding standard for the health care plans that either meets a:
 - Permanent solvency period, or
 - A 30-year funding plan based on appropriate funding assumptions and not GASB standards
- Require the systems to allocate sufficient employer funding to the health care plan to accomplish the funding standard, or reduce health care benefits so the standards are met
- If plans become over-funded in the future, there may be improvements in benefits beyond current levels, or decreases in contributions below the current levels, but only if the following conditions occur:
 - The Legislature approves the changes
 - The retirement benefits are more than 100% funded based on an assumed rate of investment return which is at least 1.0% less than the actuary's best estimate of assumed rate of investment return and the market value of assets funded ratio exceeds 120% (or development of a similar metric)
 - The health care benefits are prefunded over a 30-year timeline

8.3 Sustainability and Plan Design Issues

In recent years, the Ohio retirement systems have proposed a variety of effective measures to improve sustainability while preserving the essence of their plan design. One advantage of this approach is that each system has developed what they believe is best suited for their

membership based on extensive member communication and education. This approach also presents a variety of solutions and the systems and ORSC can learn from these approaches.

We have summarized our thoughts below on the changes proposed as well as an expansion of those changes if necessary to meet the funding objectives for the programs.

Building Upon Approaches Proposed by Retirement Systems

Managing health care benefits with a declining contribution

Each of the retirement systems is balancing health care benefits (which are not guaranteed) with retirement benefits (which may be guaranteed to a degree). The approach used by most is to try to manage the benefits paid out to a fixed total contribution for both, but generally providing a priority to funds needed for the retirement system. These health care contributions currently range from only 1% of payroll for STRS to more than 4% of payroll for OP&F, and have declined significantly over the last few years. We support the active management of health care benefits to the fixed total contributions. It is critical that the systems continue this process so that there is no sudden decrease in health care benefits as the health care funds near insolvency and members are prepared for the limited health care coverage supportable. Among the tools available for the systems to manage health care benefits are:

- Increasing member share of premium – This has been occurring regularly in Ohio and across the nation. Retirees are sharing in larger and larger portions of the costs.
- Basing premium on age and service – This is an effective technique to manage the high cost of pre-Medicare coverage. By linking the premium sharing to age and service, health care benefits are more equitably distributed between those who retire early and those who work longer. This approach has the added financial benefit of encouraging later retirement, which saves the systems both retirement and health care expenses.
- Limiting post-65 coverage to a connector approach – Because Medicare provides substantial benefits for these older retirees, it is less important to offer system-managed health care benefits. There are many Medicare supplement options in the marketplace and merely offering to share the costs is a reasonable and effective approach.
- Reducing or eliminating Medicare Part B subsidy – This benefit has more features of a retirement income replacement program than a health care program. Eliminating or reducing this benefit is a very straight-forward way to manage health care fund outlays and is a very transparent change.
- Reducing spouse and dependent coverage – As benefits for retirees are reduced, it is reasonable to also reduce or even eliminate spouse and dependent benefits at some point before implementing additional cuts to retired public employees. This also improves equity between retirees with spouses covered and those who do not need this benefit. It also can effectively shift costs to spouses and dependents employers' plans.
- General cost control measures, such as:

- Wellness initiatives
- Disability management, including coordinated requirements with federal programs or benefits adjustable after limited period
- Restrictions on purchased service credit for health care eligibility purposes
- Efficient administration of tangential benefits such as dental and vision
- Consolidation of health plans for more efficient administration, leverage, and cost control
- Restrictions on retroactive coverage
- Restrictions on re-entry
- Adjustments to low-income subsidies
- Coordination with active health care cost-control measures
- Other approaches to incent participation in spouses' plans, particularly for working spouses

Retirement ages

- Raising the full retirement age – With increasing life expectancy, increasing Social Security retirement ages, and private sector workers needing to work longer (to make up for the recent investment losses), raising retirement ages is a very logical and effective approach to manage retirement costs. It also is effective in reducing costly pre-Medicare health care costs.
- Discouraging early retirement by modifying early retirement subsidies –Substituting an “actuarial reduction” for retirement before a “normal” retirement age encourages workers to work longer and avoids a subsidy to those who retire before a full career. This structure makes early retirement more cost-neutral to the pension system and also minimizes pre-65 health care costs.

Reducing cost of living Increases

Lifetime cost of living benefits at 3% of the original benefit typically add 25% or more to the cost of the program. Even a small reduction in the COLA produces powerful long term cost savings with only a gradual impact to retirees.

- Deferring COLA – This reduction in benefits is limited to those who retire very early and has the advantageous feature of allowing workers to plan ahead. For example, the OP&F COLA delay to age 55 and elimination in the DROP are very transparent and clear to a member before they retire.
- Limiting COLA to inflation – Because COLA is designed to adjust for loss of purchasing power due to inflation; a limit of COLA to inflation is a very logical provision. Social Security benefits for private sector retirees do not adjust for more than inflation, so it is consistent that Ohio retirement benefits do not either.

Increasing member contributions

Gradual increases in the amounts that members pay toward their pensions is a sensible way to permit members to participate in the efficiency of defined benefit programs without increasing

costs to the taxpayers. These increases move the costs toward a 50/50 share between the employers and the employees.

Prevention of salary spiking

There are straight-forward responses to the inequitable practice known as salary spiking, where employees are able to increase their benefits just prior to retirement. Systems in Ohio and around the country are fighting salary spiking as an inequitable practice that benefits only a very few.

- Increasing the earnings averaging period – A change in the averaging period from three to five years, for example, makes salary spiking about half as effective and reduces benefits by about 4%. This is an effective technique to minimize spiking and modestly reduce benefits.
- Other anti-spiking measures – Additional techniques such as OPERS Contribution-Based-Benefit-Cap are helpful additional measures to combat the practice of salary spiking.

Reducing pension formula

Several systems have proposed minor modifications in the basic formula. Among them is the STRS elimination of the 35-year enhanced benefit feature.

Reducing value of DROP

DROP is a popular benefit for public safety workers. Minor changes such as COLA reduction, interest credit, changing contributions, and longer periods make it still valuable, but less so. These relatively minor modifications do add up to savings to the retirement systems and share the “pain” of benefit reductions with more employees.

Resolving inequities

- Tightening disability requirements – As discussed in Section 2.16, it is critical that disability benefits be reasonable and be paid only to truly disabled career employees.
- Service purchase rates – With underfunded plans, it does not make sense to allow individuals to purchase additional benefits at less than the full actuarial costs. The actuarial costs are already significantly lower than the price of any annuities which could be purchased in the insurance market. There is no need to offer an even lower price.
- Minimum earnable salary – The ability for someone to perform public service that warrants a low salary, then later receive lifetime health care benefits, or spend a few years in full-pay public service and retire with a lifetime pension, is a luxury which Ohio can no longer afford. Increasing this minimum salary is an effective way to combat what the public perceives as abuse and is not an equitable use of scarce resources. Full career public employees are losing pension and health benefits as a result of this feature.
- Eliminate or reduce benefits – Systems have been effectively modifying or eliminating certain tangential benefits, including:
 - OPERS long interest calculation
 - OPERS additional refund provision
 - STRS 35-year enhanced benefit

- OP&F DROP interest crediting rate
- Reducing or eliminating benefits upon reemployment after retirement

This report confirms that additional changes may be required in the future to stay within the funding objectives for both the retirement and health care benefits. The systems may opt to recommend an expansion of the changes in the current plans to the extent feasible, such as additional changes in retirement eligibility. However, other approaches may also be advisable or necessary.

As noted elsewhere, a fixed cap on employer retirement funding in Ohio and strict adherence to the funding objectives for both retirement and health care benefits as recommended in this report effectively transfer the risk away from the employers and directly to employees. This disciplined structure promotes early remedial actions and long-term sustainability.

The dramatic changes in retirement plan design in some systems have been proposed to minimize what is perceived to be an unlimited exposure by the employer to higher funding costs. This situation is not present in Ohio for the reasons outlined above and therefore does not necessitate that degree of change.

Nevertheless, any of the following approaches may merit further consideration now or in the future to (1) lower the overall cost structure of the systems, (2) build reserves to minimize potential frequent additional benefit reductions or (3) reduce the unfunded liabilities of the systems.

Other Approaches Beyond Those Proposed by Retirement Systems

Alternate retiree health care approaches

A significant concern is the sustainability of the retiree health care program due to medical cost trend rates and the declining allocation of employer contributions. Because of this linkage of pension funding with retiree health care funding, this is a critical concern to Ohio and the ORSC. Other employers have considered alternative designs that avoid the commitment of paying a percentage of a rapidly escalating lifetime cost to a basis that limits the payment, such as the following.

- Individual accounts – Health Savings Accounts (HSAs) have some prevalence in the private sector. For the transition reasons discussed in section 2.11, they would not be an ideal solution for Ohio public employees, although voluntary supplemental individual accounts could be helpful and should be seriously considered.
- Cash balance type individual accounts – An approach which minimizes the transition costs would be to use individual accounts, but with the accounts simply notional, accounts which grow at a system-credited rate, and to be later used for health care. As discussed in Section 2.11, such an approach has the appeal of a dedicated account build-up to the members. This does not significantly minimize the investment risk to the

system, and is a major structural change since those who retire later will have substantial health care coverage, while those retiring younger would not.

- Fixed dollar approach – This approach is similar to the Medicare Part B reimbursement, in that the system provides fixed dollar coverage rather than a share of health insurance premium. Ideally, this approach would also be based on credited service. For example, the plan might pay \$4 per month, per year of service (at a maximum of \$120 per month) toward health care premiums after age 65 and twice that amount before. This fixed benefit could be increased with a COLA, but typically is not. This approach shifts the risk of increasing health care costs to the retiree, since as health care premiums increase the retiree would need to pay the difference.
- Combination approach – a combination of the above approaches could be used. For example, a fixed dollar approach for retirees and current members based on current service and a cash balance account based on future service.

Hybrid plans

These have been frequently discussed in recent years. Some states where the pension fund investment risk is substantially borne by the taxpayers have partially shifted workers to a defined contribution approach to lessen the risk of higher employer contributions. The hybrid concept can have many different features.

- Flexible member contributions, like Utah’s new hybrid approach – Utah’s newly hired employees are provided with a fixed employer contribution which can go to a DB or DC plan at each worker’s choice. If the amount is used to fund a DB plan and the contribution is insufficient, future member contribution rates would increase.
- Reduce DB with difference going to DC – A twist on the Utah approach has been used by Colorado Fire and Police Pension Association since 1980. The contribution exceeds amounts necessary to fund the DB plan, so the excess is used historically to fund DC. Since investment returns have been weak, excess contributions are now used to shore up the DB program and provide COLAs. This approach could work for Ohio, but with substantial transition costs and changes in benefit levels. Ohio already has much of the advantage of this approach due to its blending of health care and pensions underneath a fixed contribution rate.
- Stacked hybrid (DB on limited pay only) – The Center for Retirement Research at Boston College has emphasized the importance of DB plans for lower paid workers by proposing a “stacked hybrid.” Under this approach, DB benefits are limited to certain compensation levels, with benefits above that level being provided through a DC plan. This provides guaranteed minimum retirement security, but with individual investing and longevity responsibility beyond that level. This approach could work for Ohio, but would be a major shift. No overall employer cost savings would be expected, although the risk of future benefit cuts would be shifted from the systems’ responsibility to the individual members.

Flexible COLAs

Funding deficits can be at least partially addressed by an automatic reduction in the benefits based on funding triggers as described in Section 8.2. Because cost of living adjustments are a substantial component of pension costs and are provided for current and future retirees, reducing the amount of the COLA provides meaningful and immediate reduction in the future costs of the system when the funding objective is not met. This is a logical alternative to additional reductions in benefits for active employees. This change also helps share the sacrifice of benefit reductions among active, retired, and new employees, and lessens the inequity of only addressing one segment of the membership. COLA adjustments can be:

- Tied to funded position
- Tied to investment returns
- Limited to minimum benefit amounts
- At the discretion of the board

Indexing retirement age to improving life expectancy

As life expectancies of employees lengthen, it is appropriate that their work lifetimes also increase. A reasonable approach would be to develop a fixed relationship between life expectancy at retirement to average work lifetime. We encourage the systems to either adopt this approach formally or at least informally.

Board authority

The past few years have been difficult for the Ohio public employees, citizenry, and legislators. The legislative process has delayed action on benefit reductions and imparted real financial losses on the systems. We strongly encourage each board to have the authority and responsibility to regularly shore up the plans by reducing (and revoking prior reductions as appropriate) retirement benefits to maintain sound funding and reasonable levels of health care benefits.

Consolidation of systems

In some states, there has been an interest in consolidating public employee retirement systems within the state to potentially save administrative and investment costs and achieve other public goals—such as uniformity of benefits and ease of legislative oversight. Examples in Ohio might include consolidating the five existing major systems into a public safety plan and statewide non-emergency plan, or possibly into three plans—public safety, school, and state. In our experience, the interest in consolidation is greater in less populous states where the individual systems are relatively small and do not fully achieve the economies of scale of larger systems. This is clearly not the situation in Ohio. While some significant net savings may occur due to consolidation in Ohio, the implications of such actions are profound. On the cost side, there would be significant transition costs due to administrative and investment issues and benefit uniformity would at best only occur for new employees. The governance issues are even more significant, as systems which are currently effectively addressing their unique memberships would be restructured and consolidated. A rigorous analysis of this alternative was not in the scope of this assignment, but from our analysis and interviews we have not seen any overriding reasons to pursue consolidation at this time.

Raise employer contributions

Outside Ohio, funding shortfalls have frequently been ignored or have been only partially addressed to date. The most common approach to funding shortfalls has been to consider increased employer contributions to the retirement systems, but these increases are frequently delayed and less than the actuarial requirements. Of course, the ultimate source of these contribution increases is the taxpayer. Ohio has placed a limit on employer funding and as a result the Ohio systems are operating within a budget for both retirement and retiree health care programs. This very responsible approach is fairly unique today.

In summary, the systems have proposed a wide array of approaches to make progress towards 30-year funding and long-term health care solvency. We endorse their endeavors and encourage consideration of other ideas such as indexed retirement age, flexible COLAs, and expanded board authority.

We believe the approach followed by each of the systems in preserving the core of the defined benefit plans is a good one and can likely be expanded to meet future funding deficiencies in most instances. However, if there is a desire to reduce the level of guaranteed retirement benefits more directly and dramatically for philosophical reasons, an approach similar to the following could be considered.

- Future workers would earn essentially the same retirement benefits as now, but with no funded COLA and no access to optional health care benefits
- a portion of the employee contributions would go to DB retirement and a portion would go to a cash balance health care account and/or cash balance supplemental retirement account
- Employer contributions not needed to provide the new tier defined benefit and pay for the UAL would be used to "match" the employee contributions to the cash balance accounts. A 100% match would be ideal.
- Vesting for the cash balance account could be five years.
- Cash balance guaranteed investment return would be 5% or less
- At retirement, one cash balance account would be available to pay all medical expenses and the other could provide up to a 3% COLA as long as possible
- If structured properly, medical costs could be paid tax free

This approach preserves a meaningful defined benefit pension, a reasonable health care account, and shifts the risk of increased health care costs to retirees based on how long they live into retirement.

Findings

The changes proposed by the systems are a very major step in the right direction and represent significant and meaningful pension reform in Ohio. Assuming these or alternate changes of

equal magnitude are implemented, authority should be given to the boards to make reasonable additional changes and reverse those changes as conditions dictate to maintain the progress in responsibly meeting the funding standards.

If there is a desire by the ORSC and/or legislature to make more substantive changes, others such as those identified here may be considered in the future.

Exhibit A

Exhibit A – Summary of Meetings

Date	Meeting
November 22, 2011	Kick-off call with Aristotle Hutras, ORSC Director
December 13, 2011	Mark Atkeson – HPRS Interim Executive Director – HPRS Overview
December 13, 2011	Lisa Morris and Helen Ninos – SERS Executive Director and Deputy Executive Director – SERS Overview
December 14, 2011	Aristotle Hutras – Project Overview
December 14, 2011	ORSC Council Meeting – Project Overview
December 14, 2011	Mike Nehf – STRS Executive Director – STRS Overview
December 14, 2011	Aristotle Hutras – Detailed Discussion of Background
December 14, 2011	Karen Carraher – OPERS Executive Director – OPERS Overview
December 15, 2011	Aristotle Hutras, Anne Erkman, Chris Moses, Hollie Nelson – ORSC Staff – Project Overview
January 10, 2012	Lora Miller – ORSC Councilmember – Discuss goals and objectives
January 10, 2012	Senator Scott Oelslager – ORSC Councilmember – Goals and objectives
January 10, 2012	Anne Erkman – ORSC Interim Director – Discuss goals and objectives
January 10, 2012	Senator Keith Faber – ORSC Council Chair – Discuss goals and objectives
January 11, 2012	Seth Morgan – ORSC Councilmember – Discuss goals and objectives
January 11, 2012	Bill Estabrook – OP&F Executive Director – OP&F Overview
January 11, 2012	Senator. Charleta Tavares – ORSC Councilmember – Goals and objectives
January 11, 2012	Representative Lynn Wachtmann – ORSC Vice-Chair – Discuss goals and objectives
January 12, 2012	Representative Dan Ramos – ORSC Councilmember – Discuss goals and objectives
January 16, 2012	Representative Kirk Schuring – ORSC Councilmember – Call to discuss goals and objectives
January 20, 2012	Mike Nehf – STRS Executive Director - Call to discuss STRS 30-year plan
February 7, 2012	Mark Atkeson – HPRS Executive Director – HPRS 30-year plan
February 8, 2012	Anne Erkman – ORSC Staff - Project update
February 8, 2012	ORSC Council Meeting – Project update: Findings from council interviews, timetable, next steps
February 8, 2012	Karen Carraher – OPERS Executive Director - OPERS 30-year plan
February 8, 2012	Mike Nehf – STRS Executive Director - STRS 30-year plan and timetable
February 8, 2012	Lisa Morris – SERS Executive Director - and SERS staff – Detailed discussion of SERS 30-year plan
February 9, 2012	Bill Estabrook – OP&F Executive Director - and OP&F staff – Detailed discussion of

	OP&F 30-year plan
February 9, 2012	Bethany Rhodes – ORSC Director Designate – Discuss goals and objectives
February 22, 2012	Representative Lynn Wachtmann – ORSC Vice-Chair – Call to discuss goals and objectives
February 24, 2012	OP&F staff and Buck Consultants – Call to discuss actuarial analysis
March 1, 2012	SERS staff and Cavanaugh Macdonald – Call to discuss actuarial analysis
March 13, 2012	Karen Carraher – Detailed discussion of OPERS 30-year plan
March 14, 2012	ORSC Council Meeting – Interim presentation of general findings
March 14, 2012	Mark Atkeson – HPRS Executive Director - and HPRS staff – Detailed discussion of HPRS 30-year plan
March 14, 2012	Mike Nehf - STRS Executive Director - and STRS staff – Detailed discussion of STRS 30-year plan
March 22, 2012	Representative Kirk Schuring – ORSC Vice-Chair – Call to discuss goals and objectives
March 23, 2012	Seth Morgan – ORSC Councilmember - Call to discuss goals and objectives
April 3, 2012	Call to SERS actuary to discuss analysis
April 3, 2012	Lora Miller – ORSC Councilmember - Call to discuss goals and objectives
April 5, 2012	Representative Kirk Schuring ORSC Vice-Chair – Call to discuss goals and objectives
April 17, 2012	Lora Miller and S. Morgan – ORSC Councilmembers - Discuss goals and objectives
April 17, 2012	Representative Kirk Schuring – ORSC Vice-Chair – Discuss goals and objectives
April 18, 2012	Senator Keith Faber – ORSC Chair – Discuss goals and objectives
April 26, 2012	Senator Charleta Tavares – ORSC Councilmember – Call to discuss goals and objectives
May and June, 2012	Numerous calls and emails with five systems and actuaries to clarify calculations
June 26, 2012	Representative Kirk Schuring – ORSC Vice-Chair – Discuss goals and objectives
July 2, 2012	Distribution of draft report to ORSC staff and system directors
July 11, 2012	ORSC Council Meeting – Presentation of findings

Exhibit B

Pension Opinion Survey

- What are your greatest concerns with the Ohio public retirement systems?
- The ORSC has adopted a Public Policy (below). We are interested in your general thoughts on this policy and specifically:
 - The 30-year funding standard.
 - The general parameters on benefit objectives.
 - Financing and benefits are ultimately linked by the risk of the funding not being sufficient for the benefits expected. What are your thoughts about current allocation of risk between the employers and members?
- What do you hope to accomplish with this study?
- We're trying to solicit broad input – Who else should we be talking to, and at what point in our analysis?



Pension Opinions – Ohio Retirement Study Council



Because of its knowledge of and perspective on all five state retirement systems, the Council is in a unique position to recommend reform measures that reflect consistent, sound principles of pension policy rather than isolated responses to political pressures and crises. The Council has adopted the following set of principles, which are observed in its review and recommendation of bills affecting the pensions and other retirement benefits of public employees. These principles are reviewed periodically.

ORSC Public Policy

I. Normal Age and Service

“The normal retirement age should be set in a reasonable relationship to the employability limits of the average employee, which is generally age 65 for regular public employees and age 52 to 55 for protective and safety force employees.” The normal service for regular public employees should be 30 years and for protective and safety force employees 25 years, based upon the career expectations found in most other states. “Retirement benefits should be actuarially reduced for retirement prior to normal retirement age, except for long-service retirement at any age after normal service requirements are met (30 years for regular public employees and 25 years for protective and safety force employees).” Intersystem communications should be established and maintained to assure that identical statutory provisions, common to the affected systems, are uniformly construed.

II. Benefits

“The retirement benefit should provide an adequate standard of living at the time of retirement.” The benefit should be related to a member's final average salary, determined on the basis of the three highest years of salary. Any reduction in the number of years used to determine final average salary should be carefully weighed for the abuses that it will invite in making such determinations. “The measure of

adequacy should be based upon a minimum of 30 years of service for regular public employees and 25 years of service for protective and safety force employees.” Minimum benefits should not be set so high as to distort the benefit formula significantly. “Flat benefits (i.e., those not related to service, age and/or payroll-based contributions) should be examined very critically for their impact on contribution rates.” The retirement benefit should be adequately maintained during the period of retirement. There should be a plan of pre-funding post-retirement increases. When possible, post retirement adjustments should follow some validly recognized economic indicator. Post retirement increases based on factors that offset the effects of age, service, and salary should be avoided.

III. Financing of Benefits

“The cost of benefits should be shared between employees and employers, with the employers paying for the cost of unfunded accrued liabilities.” Unfunded accrued liabilities should be amortized over a reasonable period of time, related to the average working career of the members, but not to exceed 30 years. “There should be equal treatment in the burden of pension financing between generations of taxpayers. Ad hoc post-retirement increases should be financed separately and not merely added to the unfunded accrued liabilities of the pension funds.” Concepts of the financial limits that can be reasonably borne by members and employers will be continually reviewed by the Council and its staff.

IV. Membership Coverage and Treatment

“There should be equal pension treatment among the various groups of non-uniformed public employees and, as nearly as practicable, retirement benefits should be uniform.” The nature of the services public employees perform for the state or local governmental units should determine the retirement system under which they are covered. Protective and safety force employees are considered a special category of public employees deserving of a special set of benefits. “Maximum mobility of memberships and service credits among the five Ohio retirement systems should be fostered and encouraged.”

The Council recommends to the Ohio General Assembly that no proposed increase in pension benefits be seriously considered or granted until there is established adequate financing to cover its cost.

Various national associations, including NCSL, have established pension principles to assist state legislatures in effectively managing public pension plans and to influence Congress on matter relating to public pension policy. The Council staff served on the NCSL Pensions Committee when it revised its publication, *Public Pensions: A Legislator’s Guide*. This publication is intended primarily as an educational tool, setting forth a few broad principles of good public pension policy and making several specific recommendations concerning pension reform measures.

Exhibit C

Findings from Councilmember Interviews

General philosophies

- Consensus that current Defined Benefit delivery model be preserved, subject to risk management
- Concern about sustainability of Health Care benefits
- Need to look at fairness to both workers and taxpayers

Ultimate risk to employers of increased funding is major concern

- Shift to Defined Contribution plans is attractive alternative to eliminate risk to employer of higher funding
- If Defined Benefit plans can be structured to eliminate risk to employer, there is no immediate need to consider shift to DC
- Employer contribution rates to retirement and retiree health care should be viewed as fixed

System 30-year plans should be based on:

- Actuarial solvency and sustainability
- Public expectations as well as reasonable and fair solutions to members
- Preserve commitments to members

System 30-year plans should address:

- Retirement age increases because of longer life expectancies
- Gradual, rather than abrupt, reduction in benefits or eligibility
- Triggers for additional actions if initial plans are inadequate
- Ancillary practices that are causing unexpected costs and/or inequities among the members including:
 - Retire/rehire
 - Final average pay increases
 - Disability determinations and benefits
 - DROP
 - Definition of salary
 - Service credit
 - Credited service purchases
- Impact of 30-year plans on retiree health care benefits

Additional interviews with interested parties might include:

- Think tanks, such as Buckeye Institute and Progress Ohio
- Minority Leaders of House and Senate
- Public Employee Retiree Institute
- Some labor leaders
- Human Resource departments of select Ohio public employers
- Governor's Office