



TO: Members of the Legislative Commission on Pensions and Retirement
 FROM: Lawrence A. Martin, Executive Director *LA Martin*
 RE: Review of Minnesota Defined Benefit Plan Interest Rate Actuarial Assumptions
 (First Consideration)
 DATE: August 21, 2013

Introduction

As one of the topics designated by Commission Chair Senator Sandra Pappas for consideration during the 2013-2014 Interim, the Commission has scheduled a review of the interest rate actuarial assumption to be used by the various Minnesota defined benefit public employee retirement plans.

The Commission staff has estimated that the topic will require Commission consideration over two Commission meetings. For the initial consideration of the topic, this Commission staff issue memorandum attempts to set the stage for Commission consideration of testimony and information requested to be provided by the Minnesota State Economist, the Minnesota State Board of Investment, the investment advisor of the Duluth Teachers Retirement Fund Association (DTRFA), and the investment advisor of the St. Paul Teachers Retirement Fund Association (SPTRFA) by summarizing:

1. The role and function of interest actuarial assumptions;
2. The interrelationship with other economic actuarial assumptions;
3. The identification of the current interest rate actuarial assumptions in Minnesota defined benefit public employee retirement plans;
4. The identification of current economic actuarial assumptions in Minnesota defined benefit public employee retirement plans; and
5. The presentation of the recent investment performance of the statewide Minnesota retirement plans by the Minnesota State Board of Investment and the recent investment performance of other large asset size Minnesota public employee defined benefit retirement plans.

Role and Function of Interest Rate Actuarial Assumptions

- a. Actuarial Funding for Defined Benefit Retirement Plans. Because defined benefit plans specify eventual retirement benefits through the use of a formula or some manner other than the magnitude of the dollar value of the trust fund amassed for the payment of retirement annuities and benefits, defined benefit plans require the preparation of actuarial valuations to set their financial needs and costs and to assess the extent that the pension plan is complying with that funding budget.

Those actuarial valuations depend on an actuarial valuation method, which implements a view of how to allocate the burden of amassing assets to equal those future retirement annuities and benefits over the working lifetime of the active pension plan membership, and actuarial assumptions, including the interest rate assumption, investment performance assumption, or the discount rate assumption.

- b. Interest Rate Actuarial Assumption. Actuarial cost or valuation methods begin with the present value of retirement annuities and benefits and allocate portions of that present value figure over time. The present value of benefits adjusts the total dollar amount of retirement annuities and benefits for the time value of money, since the outlays of annuities and benefits from a retirement plan extend over a prolonged period of time, reducing the dollar amount of each future outlay by the amount of investment earnings that could be earned on a pool of assets underlying those annuities and benefits. Thus, the \$100 of benefits that will be payable when a retiring active member reaches age 78 would not be valued as a full \$100 when the active member retires at age 65, because of the investment return earnable over the 13-year period. The following are the present values of \$100 that becomes payable 13 years after the valuation date at various interest rates:

Interest Rate	Amount	Interest Rate	Amount	Interest Rate	Amount
2.0%	\$77.30	4.5%	\$56.43	7.0%	\$41.50
2.5%	\$72.54	5.0%	\$53.03	7.5%	\$39.06
3.0%	\$68.10	5.5%	\$49.86	8.0%	\$36.77
3.5%	\$63.94	6.0%	\$46.88	8.5%	\$34.57
4.0%	\$60.05	6.5%	\$44.10	9.0%	\$32.62

Under the example, almost twice as much money would have to be deposited in a pension trust for \$100 retirement benefit payable 13 years later if the compounded investment earnings would be assumed to be 2.5% rather than 8.0%.

Two desirable characteristics of a rate of return actuarial assumption are accuracy and consistency. The actuarial assumption ought to be the best estimate of the long-term return expected to be earned by the pension fund. Frequent changes in the investment return actuarial assumption are not desirable. Frequent changes in the actuarial assumption could cause similar individuals to be treated quite differently, depending upon the assumption in place in the year the individual retires. Frequent actuarial assumption changes will also undermine the usefulness of the annual actuarial reports. These reports are intended as a budgeting tool, permitting the employers and the Legislature to determine whether contributions to the fund are adequate to keep the fund on track for full funding by the required full funding date. Frequent changes in the investment return actuarial assumption can produce radical differences in the actuarial report results from one year to the next, undermining their usefulness.

Unfortunately, estimating the long-term investment return is not an easy task. It is an attempt to perceive the future, but that future is always unknowable. In practice, estimates of future long-term returns generally are based on past results, with consideration given to how those results may change in the future.

- c. Setting the Interest Rate Assumption. Actuarial valuations are approximations or projections of future benefit accruals and payments with the goal of recognizing the annual funding requirements for the retirement plan in order to set contribution rates that would be adequate to ensure the financial solvency of the plan. As a projection dependent on various assumptions, the process depends on the accuracy of those assumptions as predictions of the future.

For a number of retirement plans, the actuary performing the actuarial valuation has the authority implicitly or explicitly to choose the actuarial valuation method, to select the asset valuation method, to select the economic assumptions, and to select the demographic and other non-economic assumptions. Where the actuary has this authority, guidance is provided to the actuary by the Actuarial Standards Board, a nine-member board serving three-year staggered terms. Members of the Actuarial Standards Board are appointed by the Council of U.S. Presidents, which is composed of the presidents and presidents-elect of the American Academy of Actuaries, the American Society of Pension Professionals and Actuaries, the Casualty Actuarial Society, the Conference of Consulting Actuaries, and the Society of Actuaries.

The Actuarial Standards Board has issued four Actuarial Standards of Practice to provide general guidance for pension plan actuarial valuations, which are:

1. ASOP No. 4, *Measuring Pension Obligations and Determining Pension Plan Costs or contributions* (adopted 2007, updated 2011; revision pending);
2. ASOP No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations* (adopted 2007, updated 2011; revision pending);
3. ASOP No. 35, *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations* (adopted 2010, updated 2011); and
4. ASOP No. 44, *Selection and Use of Asset Valuation Methods for Pension Valuations* (adopted 2007, clarified 2009, updated 2011).

For situations such as Minnesota, where statute or other binding regulation specifies economic actuarial assumptions, ASOP No. 27 indicates that it does not apply, but requires the actuary to use the standard principles to assess the reasonableness of the prescribed assumption.

Although ASOP No. 27 does not apply to the process of the Commission initially and the Legislature ultimately in determining the interest rate actuarial assumption, the Commission should have a sense of the assumption-setting process that an actuary is required to use and that would be the basis for any valuation statement by an actuary about the reasonableness of the statutory interest rate assumption. The second exposure draft of the proposed revision of ASOP No. 27, issued in January 2012 with a comment deadline of May 31, 2012, requires the actuary to identify the component parts of the assumption, if any, to evaluate the relevant data, to consider the factors specific to the measurement, to consider other general factors, and then to select a reasonable assumption. In considering the relevant data, the actuary is required to review recent and long-term historical economic data without giving undue weight to recent experience. The general factors for consideration includes allowance for adverse deviations, the balance between the refinement of an assumption and its materiality, the balance between a refined economic assumption and the cost of that refinement, the need for rounding using an unbiased rounding technique, the need to recognize a change in circumstances that occurred

after the valuation date, and input of views from relevant experts. Reasonableness is to be determined by both historical data and the actuary's estimate of future experience or estimates of future experience inherent in financial market data. In determining the interest rate actuarial assumption, the second exposure draft of ASOP No. 27 provides little specific guidance, but indicates that the actuary should consider a broad range of data and other informational inputs. The second exposure draft of ASOP No. 27 dropped the examples of acceptable methods to construct an investment return range, which were the building block method, where inflation and the real rate of return for each investment portfolio class were combined, or the cash flow matching method based on bond portfolio returns.

The second exposure draft of ASOP No. 27 does not specifically address the time horizon for the interest rate actuarial assumption. The interest rate actuarial assumption is a long-term assumption. For the three largest Minnesota defined benefit retirement plans, the General State Employees Retirement Plan of the Minnesota State Retirement System (MSRS-General), the General Employees Retirement Plan of the Public Employees Retirement Association (PERA-General), and the Teachers Retirement Association (TRA), the period between the average entry age and the expected average age at death during which pension plan assets can be amassed and invested is 50-55 years (2012 active member average age of 34.7 years for MSRS-General, 36.2 years for PERA-General, and 31.5 years for TRA, compared to the average life expectancy at birth for Minnesota of 81.1 years or to the average life expectancy at age 65 for Minnesota of 85.1 years).

Over the extended time period that public employee defined benefit retirement plans are financed, the goal is to ensure that the generation of public jurisdiction taxpayers that were served by the public employees appropriately fund the public employee retirement benefits accrued by those employees during that period without shifting costs to a future generation of taxpayers.

- d. Interplay of the Major Economic Actuarial Assumptions. Although the correlation is not absolute in frequency or extent, the economic forces that depress or enhance investment performance frequently have the opposite impact on individual salary increases, which is the other major economic actuarial assumption. **Attachment A** sets forth the actuarial gains and losses of the various Minnesota public employee defined benefit retirement plans either individually or in total for blocks of time for the period 1986 to 2012. For the entire period, even though the actuarial assumptions have been revised several times over the period, there have been persistent salary gains; meaning that individual member salary increases have been smaller than predicted by the salary actuarial assumption and that phenomenon has reduced the unfunded actuarial accrued liabilities of the various retirement plans. For the pre-2000 period, before the twin recessions of 2001 and 2008, there were significant interest rate actuarial gains and, when there were not investment gains, the extent of investment losses were reduced by the salary gains. The economic forces that generally depress investment performance broadly, such as a recession, also significantly depress salary growth and produce actuarial gains that partially offset actuarial losses related to the interest rate actuarial assumption.

Attachment B sets forth a summary of the actuarial gains and losses related to the interest rate actuarial assumption and to the salary scale actuarial assumption.

Comparison of Interest Rate Assumptions for Minnesota Defined Benefit Public Employee Retirement Plans

Minnesota Statutes, Section 356.215, Subdivision 8, specifies the interest assumptions for the various defined benefit public employee retirement plans in Minnesota, as follows:

Retirement Plan	Pre-Retirement		Post-Retirement	
	Select	Ultimate	Select	Ultimate
MSRS General State Employees Retirement Plan	8.00%	8.50%	5.50%	6.00%
PERA General Employees Retirement Plan	8.00	8.50	5.50	6.00
Teachers Retirement Association	8.00	8.50	5.50	6.00
MSRS Correctional State Employees Retirement Plan	8.00	8.50	5.50	6.00
State Patrol Retirement Plan	8.00	8.50	5.50	6.00
Public Employees Police and Fire Retirement Plan	8.00	8.50	5.50	6.00
Local Government Correctional Service Retirement Plan	8.00	8.50	5.50	6.00
Duluth Teachers Retirement Fund Association	8.00	8.50	8.00	8.50
St. Paul Teachers Retirement Fund Association	8.00	8.50	8.00	8.50
Legislators/Elected State Officers Retirement Plan	0.00	0.00	0.00	0.00
Judges Retirement Plan	8.00	8.50	5.50	6.00
Bloomington Fire Department Relief Association	6.00	6.00	6.00	6.00
Monthly benefit volunteer firefighter relief associations	5.00	5.00	5.00	5.00

Where the select assumption differs from the ultimate assumption, the select period is June 30, 2012, through June 30, 2017.

Interest Rate Assumptions for Other Jurisdiction Pension Plans

The Public Fund Survey, sponsored by the National Association of State Retirement Administrators and the National Council on Teacher Retirement, and staffed by the National Association of State Retirement Administrators, aggregates information for 126 public retirement plans. That information includes the interest rate assumption or assumptions used by the selected retirement plans.

Interest Rate	Number	% of Total	Interest Rate	Number	% of Total
6.75%	2	1.59%	7.90%	8	6.35%
7.00	5	3.97	7.95	3	2.38
7.20	1	0.79	8.00	44	34.92
7.25	7	5.56	8.10	1	0.79
7.50	25	19.84	8.25	9	7.14
7.75	19	15.08	8.50	2	1.59

Attachment C includes a graph of the survey results and a compilation of interest assumptions for the 126 retirement plans.

As time and Internet sources permitted, the Commission staff assembled information (see **Attachment D**) on the interest rate assumptions applicable to public pension plans in 49 other states and the District of Columbia. The number of public pension plans contained in that compilation was 1,897. The following summarizes the distribution of interest rate assumptions disclosed in that compilation:

Interest Rate	Number	% of Total	Interest Rate	Number	% of Total
10.00%	1	0.05%	7.25%	56	2.95
8.50	30	1.58	7.20	1	0.05
8.30	7	0.37	7.10	1	0.05
8.25	24	1.27	7.00	233	12.28
8.20	1	0.05	6.90	1	0.05
8.15	1	0.05	6.75	19	1.00
8.10	3	0.16	6.50	40	2.11
8.00	476	25.10	6.34	1	0.05
7.95	1	0.05	6.25	8	0.42
7.90	19	1.00	6.00	143	7.54
7.88	3	0.16	5.75	3	0.16
7.80	19	1.00	5.50	13	0.69
7.75	197	10.38	5.25	1	0.05
7.70	2	0.105	5.00	75	3.95
7.69	1	0.05	4.75	1	0.05
7.63	1	0.05	4.50	6	0.67
7.625	2	0.105	4.30	1	0.05
7.60	5	0.26	4.25	1	0.05
7.59	1	0.05	4.00	10	0.53
7.50	474	25.00	3.75	1	0.05
7.40	1	0.05	3.50	2	0.105
7.35	2	0.105	3.00	81	4.27
7.30	7	0.37	2.50	1	0.05

Of the retirement plans in the compilation, eight plans (0.42% of the total number of plans) utilized pre-retirement interest rate assumptions and post-retirement interest rate assumptions and nine plans (0.47% of the total number of plans) utilized select-and-ultimate interest rate assumptions or variable interest rate assumptions.

Comparison of Economic Actuarial Assumptions for Minnesota Defined Benefit Public Employee Retirement Plans

Assumption	General Employee Retirement Plans					
	MSRS-General		PERA-General		TRA	
Inflation	3.00%		3.00%		3.00%	
Investment Return/Interest	<u>Pre-Retirement:</u>		<u>Pre-Retirement:</u>		<u>Pre-Retirement:</u>	
	6/30/12-6/30/17	8.00%	6/30/12-6/30/17	8.00%	6/30/12-6/30/17	8.00%
	after 6/30/17	8.50%	after 6/30/17	8.50%	after 6/30/17	8.50%
	<u>Post-Retirement:</u>		<u>Post-Retirement:</u>		<u>Post-Retirement:</u>	
6/30/12-6/30/17	5.50%	6/30/12-6/30/17	5.50%	6/30/12-6/30/17	5.50%	
after 6/30/17	6.00%	after 6/30/17	6.00%	after 6/30/17	6.00%	
Post-Retirement Benefit Increases	Implicit assumption, with the post-retirement investment return assumption set at a lower rate than the pre-retirement investment return assumption and further adjusted under Minn. Stat. § 356.415, Subd. 8, by increasing the post-retirement investment return assumption from 5.5% or 6.0% for the expected duration of the 2010 post-retirement adjustment reduction legislation.					
Real Wage Growth	1.00%		1.00%		1.00%	

General Employee Retirement Plans

Assumption	MSRS-General		PERA-General		TRA	
Annual Salary Increases	The reported salary for the prior fiscal year, with the new hires annualized, increased to the current fiscal year and increased annually for each future year of service according to the following table based in service:					
	<u>Service Length</u>	<u>Increase Rate</u>	<u>Service Length</u>	<u>Increase Rate</u>	<u>Service Length</u>	<u>Increase Rate</u>
	1	10.50%	1	12.03%	1	12.00%
	2	8.10	2	8.90	2	9.00
	3	6.90	3	7.46	3	8.00
	4	6.20	4	6.58	4	7.5
	5	5.70	5	5.97	5	7.25
	6	5.30	6	5.52	6	7.00
	7	5.00	7	5.16	7	6.85
	8	4.70	8	5.87	8	6.70
	9	4.50	9	4.63	9	6.55
	10	4.40	10	4.42	10	6.40
	11	4.20	11	4.24	11	6.25
	12	4.10	12	4.08	12	6.00
	13	4.00	13	3.94	13	5.75
	14	3.80	14	3.82	14	5.50
	15	3.70	15	3.70	15	5.25
	16	3.60	16	3.60	16	5.00
	17	3.50	17	3.51	17	4.75
	18	3.50	18	3.50	18	4.50
	19	3.50	19	3.50	19	4.25
	20	3.50	20	3.50	20	4.00
	21	3.50	21	3.50	21	3.90
	22	3.50	22	3.50	22	3.80
	23	3.50	23	3.50	23	3.70
	24	3.50	24	3.50	24	3.60
	25	3.50	25	3.50	25	3.50
	26	3.50	26	3.50	26	3.50
	27	3.50	27	3.50	27	3.50
	28	3.50	28	3.50	28	3.50
	29	3.50	29	3.50	29	3.50
	30 or more	3.50	30 or more	3.50	30 or more	3.50
Payroll Growth	A level percentage of payroll to amortize the unfunded actuarial accrued liability each year from the valuation date to the statutory amortization date of July 1, 2040, assuming payroll increases of 3.75% per annum. If there is a negative unfunded actuarial accrued liability, the surplus amount must be amortized over 30 years as a level percentage of payroll as a credit.		A level percentage of payroll to amortize the unfunded actuarial accrued liability each year from the valuation date to the statutory amortization date of July 1, 2031, assuming payroll increases of 3.75% per annum. If there is a negative unfunded actuarial accrued liability, the surplus amount must be amortized over 30 years as a level percentage of payroll as a credit.		The unfunded liability is amortized as a level percent age of payroll to the statutory amortization date of July 1, 2037, assuming payroll increases of 3.75% per year. If the unfunded actuarial accrued liability is negative, the surplus amount is amortized over 30 years as a level percentage of payroll. If there is an increase in the unfunded accrued liability due to a change in the actuarial assumptions, plan provisions, or actuarial cost method, a new amortization period is determined. This new amortization period is determined by blending the period needed to amortize the prior unfunded actuarial accrued liability over the prior amortization period and the increase in unfunded actuarial accrued liability amortized over 30 years. If there is a decrease in the unfunded accrued liability, no change is made to the amortization period.	

Public Safety Employee Retirement Plans

Assumption	MSRS-Correctional		State Patrol Plan		PERA-P&F		PERA-Correctional	
Inflation	3.00%		3.00%		3.00%		3.00%	
Investment Return/Interest	<u>Pre-Retirement:</u> 6/30/12-6/30/17	8.00%	<u>Pre-Retirement:</u> 6/30/12-6/30/17	8.00%	<u>Pre-Retirement:</u> 6/30/12-6/30/17	8.00%	<u>Pre-Retirement:</u> 6/30/12-6/30/17	8.00%
	after 6/30/17	8.50%	after 6/30/17	8.50%	after 6/30/17	8.50%	after 6/30/17	8.50%
	<u>Post-Retirement:</u> 6/30/12-6/30/17	5.50%	<u>Post-Retirement:</u> 6/30/12-6/30/17	5.50%	<u>Post-Retirement:</u> 6/30/12-6/30/17	5.50%	<u>Post-Retirement:</u> 6/30/12-6/30/17	5.50%
	after 6/30/17	6.00%	after 6/30/17	6.00%	after 6/30/17	6.00%	after 6/30/17	6.00%
Post-Retirement Benefit Increases	Implicit assumption, with the post-retirement investment return assumption set at a lower rate than the pre-retirement investment return assumption and further adjusted under Minn. Stat. § 356.415, Subd. 8, by increasing the post-retirement investment return assumption from 5.5% or 6.0% for the expected duration of the 2010 post-retirement adjustment reduction legislation.							
Real Wage Growth	1.00%		1.00%		1.00%		1.00%	

Public Safety Employee Retirement Plans

Assumption	MSRS-Correctional	State Patrol Plan	PERA-P&F	PERA-Correctional																																																																																																																																																																																																						
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Rate	1	13.00%	2	11.00	3	9.00	4	8.00	5	6.50	6	6.10	7	5.80	8	5.60	9	5.40	10	5.30	11	5.20	12	5.10	13	5.00	14	4.90	15	4.80	16	4.80	17	4.80	18	4.80	19	4.80	20	4.80	21	4.70	22	4.60	23-29	4.50	30+	4.50	The reported salary at the valuation date is increased according to the following table based on age to the current year and annually for each future year, with the salary annualized for members with one year of service during the year: <table border="1"> <thead> <tr> <th>Age</th> <th>Increase Rate</th> </tr> </thead> <tbody> <tr><td>16-20</td><td>9.00%</td></tr> <tr><td>21</td><td>8.75</td></tr> <tr><td>22</td><td>8.50</td></tr> <tr><td>23</td><td>8.25</td></tr> <tr><td>24</td><td>8.00</td></tr> <tr><td>25</td><td>7.75</td></tr> <tr><td>26</td><td>7.50</td></tr> <tr><td>27</td><td>7.25</td></tr> <tr><td>28</td><td>7.00</td></tr> <tr><td>29</td><td>6.75</td></tr> <tr><td>30</td><td>6.75</td></tr> <tr><td>31</td><td>6.50</td></tr> <tr><td>32</td><td>6.50</td></tr> 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Payroll Growth	A level percentage of payroll to amortize the unfunded actuarial accrued liability each year from the valuation date to the statutory amortization date of July 1, 2038, assuming payroll increases of 3.75% per annum. If there is a negative unfunded actuarial accrued liability, the surplus amount must be amortized over 30 years as a level percentage of payroll as a credit.	A level percentage of payroll to amortize the unfunded actuarial accrued liability each year from the valuation date to the statutory amortization date of July 1, 2020 (incorrectly identified in the 2007-2011 actuarial valuations as 2036 and incorrectly identified in the 2012 valuation as 2037), assuming payroll increases of 3.75% per annum. If there is a negative unfunded actuarial accrued liability, the surplus amount must be amortized over 30 years as a level percentage of payroll as a credit.	A level percentage of payroll to amortize the unfunded actuarial accrued liability each year from the valuation date to the statutory amortization date of July 1, 2038, assuming payroll increases of 3.75% per annum. If there is a negative unfunded actuarial accrued liability, the surplus amount must be amortized over 30 years as a level percentage of payroll as a credit.	A level percentage of payroll to amortize the unfunded actuarial accrued liability each year from the valuation date to the statutory amortization date of July 1, 2020 (incorrectly identified in recent actuarial valuations as 2031), assuming payroll increases of 3.75% per annum. If there is a negative unfunded actuarial accrued liability, the surplus amount must be amortized over 30 years as a level percentage of payroll as a credit.																																																																																																																																																																																																						

First Class City Teacher and Specialty Retirement Plans

Assumption	DTRFA	SPTRFA	Legislators/ Elected State Officers	Judges
Inflation	3.00%	3.00%	Unspecified/Undisclosed	3.00%
Investment Return/Interest	<u>Pre-Retirement:</u> 6/30/12-6/30/17 8.00% after 6/30/17 8.50% <u>Post-Retirement:</u> 6/30/12-6/30/17 5.50% after 6/30/17 6.00%	<u>Pre-Retirement:</u> 6/30/12-6/30/17 8.00% after 6/30/17 8.50% <u>Post-Retirement:</u> 6/30/12-6/30/17 5.50% after 6/30/17 6.00%	<u>Pre- and Post-Retirement</u> 0.00%	<u>Pre-Retirement:</u> 6/30/12-6/30/17 8.00% after 6/30/17 8.50% <u>Post-Retirement:</u> 6/30/12-6/30/17 5.50% after 6/30/17 6.00%
Post-Retirement Benefit Increases	Explicit non-statutory assumption of no post-retirement adjustments since plan is not expected to reach 80% funded or 90% funded triggers for resumption of post-retire-	Explicit non-statutory assumption of 1.00% increase annually for retirees and beneficiaries in force.	Implicit assumption, with the post-retirement investment return assumption set at a lower rate than the pre-retirement investment return assumption and further ad-	Implicit assumption, with the post-retirement investment return assumption set at a lower rate than the pre-retirement investment return assumption and further ad-

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	ment adjustments (trigger modified by 2013 Omnibus Retirement Bill)		justed under Minn. Stat. § 356.415, Subd. 8, by increasing the post-retirement investment return assumption from 5.5% or 6.0% for the expected duration of the 2010 post-retirement adjustment reduction legislation.	justed under Minn. Stat. § 356.415, Subd. 8, by increasing the post-retirement investment return assumption from 5.5% or 6.0% for the expected duration of the 2010 post-retirement adjustment reduction legislation.																																																																																																																																																																
Real Wage Growth	No assumption disclosed.	1.00%	No assumption disclosed.	1.00%																																																																																																																																																																
Annual Salary Increases	The reported salary for the prior fiscal year, with the new hires annualized, increased to the current fiscal year and increased annually for each future year of service according to the following table based in service:	The reported salary for the prior fiscal year, with the new hires annualized, increased to the current fiscal year and increased annually for each future year of service according to the following table based in service:	5.0% per year	3.0% per year																																																																																																																																																																
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Bloomington Fire and Volunteer Firefighter Relief Associations

Assumption	Bloomington Fire	Monthly Benefit Volunteer Firefighter Relief Associations
Inflation	Not specified	Not specified
Investment Return/Interest	<u>Pre-Retirement and Post-Retirement</u> 6.00%	<u>Pre-Retirement and Post-Retirement</u> 5.00%
Post-Retirement Benefit Increases	2.00% in 2013 and 4% per annum thereafter	Unspecified
Real Wage Growth	Unspecified	Unspecified
Annual Salary Increases	The salary of a Bloomington top-grade patrol officer for the prior fiscal year increased to the current fiscal year and increased annually for each future year of service by 4.00% per annum.	Benefits are not salary-related.
Payroll Growth	Not applicable	Not applicable

Recent Minnesota Public Pension Investment Performance

- a. Role of Investment Portfolio Composition in Determining Rate of Return. In considering current investment return assumptions and whether to change those assumptions, it is useful to begin with the role that portfolio composition has on the rate of return. The portfolio is composed of various asset classes or asset groups. Once it is decided what asset classes to include, the long-term return earned by a given portfolio is a function of the return earned by the asset classes and the ability of the investment managers to capture that return. This can be illustrated using some information found on Internet, with returns for the 1925-2004 period. For this entire period small domestic stock provided a 12.7% annualized return. The return on large domestic stock was 10.4% annualized. The return to bonds was 5.4%, and the T-bill return was 3.7%. These results reflect the risk inherent in these various asset classes. T-bills are very short-term (90-day) and secure. On the other extreme is small stock, with a high return on average but with volatile returns. Large cap stocks provide somewhat less volatile results but with a lesser return.

Given these asset class or asset group returns, the long-term total portfolio pension fund return depends on the portion of the total portfolio devoted to each asset type, as indicated below, assuming the pension fund succeeds in capturing the market return. Devoting more of the portfolio to equities provides a higher return. Moving away from equities lowers the return. If the pension fund invested in nothing but small stocks, the return would be very high, 12.7%. This is labeled as "Scenario 1" in the table below. In practice, however, the volatility of the returns from year to year and resulting fluctuations in annual contribution requirements would be too great. Given consideration of risk tolerance, the plan administrators are far more likely to use a blend of assets classes, providing a lower but more stable annual return. If the pension fund devotes a quarter of its total portfolio to each of these assets classes (Scenario 2), it would earn an 8.1% return. Scenario 3 is closer to standard policy for a modern pension fund. Seventy percent of assets are devoted to equities (10% of the total portfolio is in small stock and 60% in large cap stocks). The pension fund holds little cash (T-bills), only 5% of the total portfolio, while the remainder is in bonds. This result provides a 9.1% total portfolio return. The final situation depicted is an ultra-conservative portfolio, where all assets are kept in cash securities. That would result in a 3.7% return.

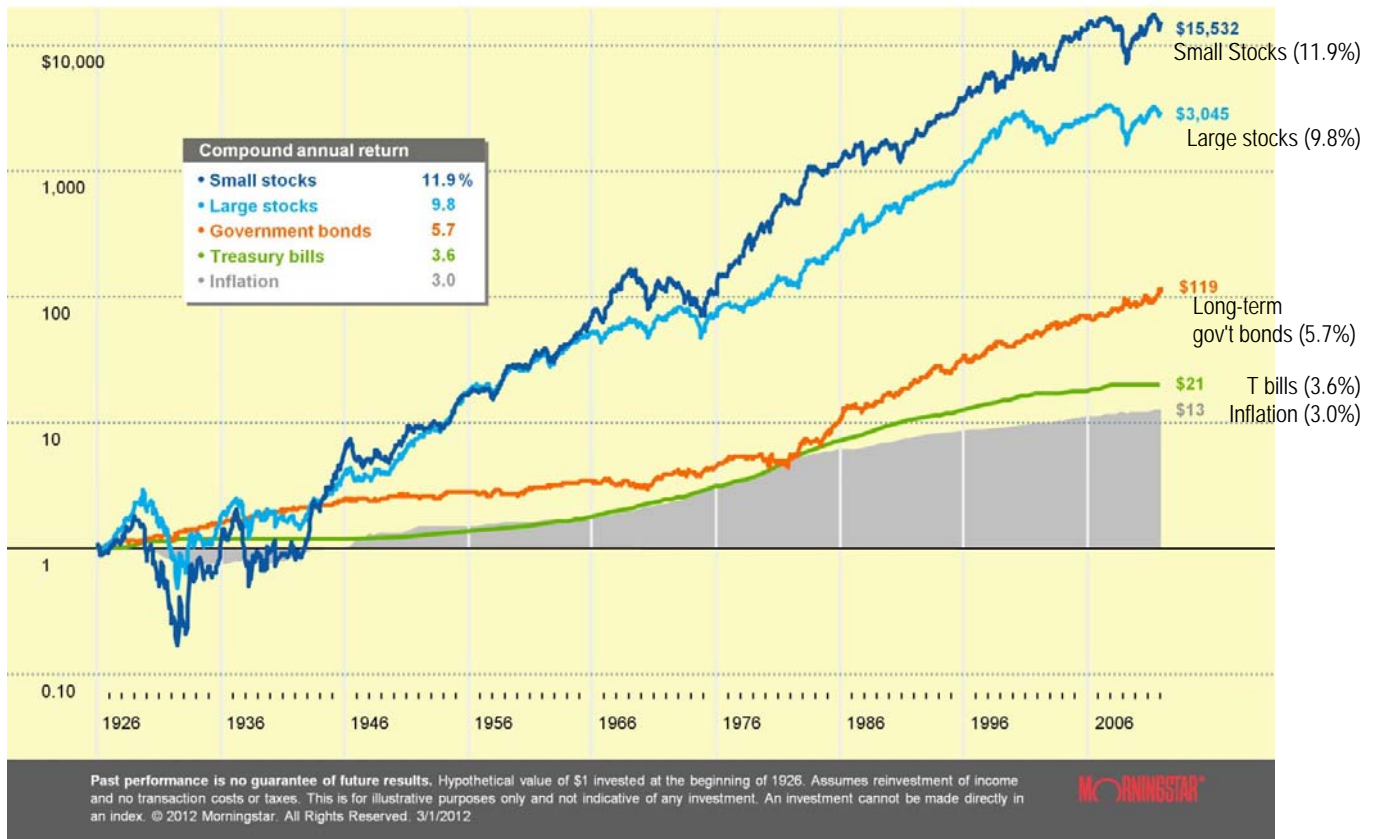
Range of Total Portfolio Returns Given Asset Class Returns
1925-2004 Period

Asset class or group	Asset Class or Group Return	Percentage of Portfolio			
		Scenario 1	Scenario 2	Scenario 3	Scenario 4
Small stock	12.7%	100%	25%	10%	0%
Large stock	10.4%	0%	25%	60%	0%
Bonds	5.4%	0%	25%	25%	0%
T-Bills	3.7%	0%	25%	5%	100%
Total Portfolio Return		12.7%	8.1%	9.1%	3.7%

The table above assumes that the pension fund administration succeeds in capturing the returns offered by these markets. The most straight-forward way to achieve this is to invest through highly efficient index funds (investment vehicles designed to produce a return matching the market being tracked). However, this may not be practical for all assets of large pension funds, and none of our larger pension funds index all their assets. The Minnesota State Board of Investment uses a combination of indexing (passive management) and active management for most larger asset classes. Index funds exist for the domestic stock market as a whole, and for virtually every subgroup of that market, for bonds, and for foreign stock markets. Pension funds have had some success in exceeding bond indices and foreign stock market indices.

The rate of return information is updated by Ibbotson for the period 1926-2011 in the following graph:

Ibbotson® SBBI®
Stocks, Bonds, Bills, and Inflation 1926–2011



http://www.oureoa.com/sites/default/files/users/DanMcConlogue/images/blog/SBBI%201926-2011_high%20res.jpg

b. Actual Minnesota Large Plan Asset Mix and Short- and Long-Term Investment Performance. To determine whether rate of return assumptions ought to be changed, information regarding the rates of return our larger pension fund systems have earned is a useful starting point. This portion of the memo reviews the actual total portfolio investment performance of our larger Minnesota public pension plans, along with their recent asset mix. The included pension funds included here are the SBI Combined Fund (the combined MSRS, PERA, and TRA assets), Bloomington Firefighters Relief Association (a quasi-volunteer fire plan and the state’s largest volunteer fire plan fund based on assets), the Duluth Teachers Retirement Fund Association (DTRFA), the St. Paul Teachers Retirement fund Association (SPTRFA), the Minneapolis Firefighters Relief Association (MFRA), and the Minneapolis Police Relief Association (MPRA).

The asset mix of the larger Minnesota public pension funds as of the end of calendar 2009 and for the State Board of Investment as of March 31, 2013, is shown in the table below. The information on the SBI Combined Fund is from an SBI quarterly report. Information on the remaining funds is from Office of the State Auditor large plan investment performance reports. The breakdown between domestic equities, international equities, and the miscellaneous “other” category unfortunately is not fully consistent across funds. Some plans, the MPRA is an example, has an allocation to “global equities” that is included in the international equity percentage. Global equity managers generally try to pick what they feel are the best stocks, regardless of where the company is located. Thus, global equity managers have a portion of their portfolio in domestic U.S. companies. That may account for the low percentage of the MPRA portfolio included under the domestic stock category. Some domestic equity holdings instead are showing up under international equities. The MPRA “other” category includes some venture capital. For some other plans, venture capital might be lumped under the domestic equity category.

Total Assets and Asset Mix - Calendar Year End 2009

Fund	Total Assets	Percent of the Total Portfolio in:				
		Cash	Bonds	Domestic Stocks	International Stocks	Other
SBI Combined Fund	\$41,079,070,000	2.5%	21.4%	46.7%	15.2%	14.2%
Bloomington Fire	99,017,000	7.1	33.8	44.9	14.2	--
DTRFA	201,624,000	2.1	35.6	41	15.2	0.7
SPTRFA	869,991,000	0.7	18.0	44.2	28.5	8.6
Minneapolis Fire	212,357,000	4.3	25.1	50.4	20.1	0.1
Minneapolis Police	281,931,000	1.3	27.4	36.3	35	4.1
	<u>\$42,743,990,000</u>					

Total Assets and Asset Mix - March 31, 2013

Fund	Total Assets	Cash	Bonds	Domestic Stocks	International Stocks	Other
SBI Combined Fund	\$51,911,000,000	2.4%	21.1%	47.3%	14.7%	14.5%

All of the plans have a significant allocation to international equity. In the last two decades foreign stock has become a standard component of pension fund portfolios, as plan administrators seek to tap additional returns and add more stability to the portfolio by diversifying asset holdings.

Most assets are in equities of various forms. The cash and bond categories are the only significant sources of debt investments in these portfolios. Of the six pension funds included in the table, only Bloomington Fire and DTRFA had less than 70% of their assets in equities.

Regarding total assets, the total assets in all these systems added together was \$42.7 billion. SBI predominates with over \$41 billion in assets, which is over 96% of the total. The other pension systems combined invested less than 4% of combined total pension fund assets.

The Total Portfolio Returns table below provides information on total portfolio rates of return for these pension funds, both short-run and long-term. The rate of return data covers calendar year 1994 through the end of 2010, a 17-year period. The annual returns come from several sources. The returns from 1994 through 2004 are taken from our last investment performance review, which was provided in 2005, and those returns are as reported to us by the pension fund administrators. The 2005 through 2009 returns for funds other than the State Board of Investment are as reported by the Office of the State Auditor in that office's large public pension fund investment performance reports. The 2010 returns for the funds other than the State Board of Investment come from several sources. The Bloomington Fire, MFRA, and MPRA 2010 returns were provided to us by e-mail from the applicable pension plan administrators. The DTRFA and SPTRFA returns were available on their websites. The 2005 through 2010 SBI returns are as reported in the State Board of Investment quarterly reports.

Total Portfolio Returns
Calendar Years 1994-2010 and Multiple-Year Annualized Returns

	SBI Combined Fund	DTRFA	SPTRFA	Bloomington Fire	Minneapolis Fire	Minneapolis Police	Index Portfolio 40% Bond/ 60% Stock
<u>Individual Annual Returns</u>							
1994	-0.4%	0.2%	0.3%	-9.1%	-1.8%	-1.3%	-1.3%
1995	25.5	25.5	26.2	26.1	26.6	20.6	29.3
1996	15.3	13.4	12.6	12.5	14.0	12.5	14.1
1997	21.5	15.5	19.6	19.7	23.8	12.7	22.7
1998	16.1	11.1	12.0	13.8	21.9	11.4	17.5
1999	16.5	29.4	13.6	13.2	17.8	11.1	13.9
2000	-2.8	-1.6	-0.2	-3.9	-2.7	-2.0	-1.9
2001	-6.0	-4.7	-1.4	-7.8	-3.3	-4.1	-3.2
2002	-11.6	-12.8	-9.6	-14.3	-10.5	-10.1	-8.4
2003	23.1	28.1	27.0	19.9	19.6	22.3	20.6
2004	12.4	10.6	14.1	9.5	10.1	10.1	9.3
2005	9.9	7.6	9.9	4.7	6.6	6.0	4.8
2006	14.6	14.7	15.6	13.0	12.5	13.8	11.2
2007	9.5	6.6	8.1	6.9	11.5	6.9	6.2
2008	-26.2	-35.1	-28.2	-25.2	-28.7	-29.5	-20.2
2009	20.3	19.2	22.4	15.6	27.2	26.7	19.5
2010	14.4	16.0	13.7	12.8	11.9	13.7	13.1
<u>Annualized Returns</u>							
3-year	0.5%	-3.5%	-0.02%	-0.8%	0.5%	0.5%	2.6%
5-year	5.0	1.9	4.5	3.3	4.9	4.3	5.0
10-year	4.9	3.3	5.9	3.4	4.5	4.3	4.5
17-year	8.0	7.2	8.2	5.4	8.2	6.2	7.9
<u>SBI Combined Fund</u>							
<u>Individual Annual Returns</u>							
2011	1.5%						
2012	11.0						
2013, 1 st Quarter	6.1						
<u>Annualized Returns</u>							
3-year	10.4%						
5-year	5.7						
10-year	9.2						

Also included in the table are returns to a benchmark portfolio with the same portfolio composition as the benchmark portfolio we used in our 2005 investment performance report. This portfolio has a somewhat more conservative asset mix than most of the larger pension funds now carry. This benchmark portfolio is composed of domestic investment-grade bonds and domestic stocks, with 40% of the portfolio invested in bonds and 60% in stock. The bonds earn the return offered by the investment-grade bond market, and similarly, the stocks earn the return offered by the domestic stock market. The returns earned on the portfolio's stocks and bonds could be obtained by investing in well managed index funds which track these markets, with rebalancing as necessary to maintain the 40%/60% asset mix. By having a lower portion of the portfolio in equities than many of the pension funds, this portfolio will not gain as much in years when equity returns are strong, but it also does not lose as much in particularly bad years.

The 1994-2010 period included some very difficult investment years. The returns to all pension funds were volatile. There were some good years, but also years with strong negative returns. Most of the funds had negative returns in 1994, but the two first class city teacher retirement funds had positive returns in that year, although those returns were less than 1%. Bloomington Fire reported a very low return 1994 return of -9.1%, far worse than the other plans, putting that plan far behind the others. In 2000, 2001, and 2002 all the plans had negative returns, with 2002 being the worst in that three-year period. Again, Bloomington Fire's return was the lowest, with a -14.3% 2002 return. In 2008 the funds were hit by the effect of the Great Recession. All the funds lost at least a quarter of their value. The worst performing fund that year, by a sizable margin, was the DTRFA with a -35.1% return.

The table also includes multi-year returns to provide some long-term prospective. The three-year return covers the 2008 through 2010 period. Although there was a strong market recovery in 2009 and 2010, with the pension funds posting 2009 returns ranging from 15.6% to 27.2%, and 2010 returns from 11.9% to 16.0%, the extreme negative returns for all the funds in 2008 pulled the three-year returns down considerably. Among the pension funds, the State Board of Investment, MFRA, and MPRA three-year returns were barely positive (each of these funds had a 0.5% return), while the other three pension funds had negative returns. The lowest was the DTRFA, with a -3.5% return, pulled down by that fund's -35.1% return in 2008. The best performer by far was the index portfolio, with a 2.6% positive return. The reason primarily lies in the asset mix. Because of the sizable bond component, that portfolio was not harmed as much as the pension funds were in 2008.

The five-year returns, covering 2006 through the end of 2010, were also strongly impacted by the 2008 market. For the pension funds, the best results for that five-year period were provided by SBI and the MFRA. Each had a five-year return of about 5%. The index portfolio did equally well, also providing a 5.0% return, again largely due to outperforming the pension funds in 2008. The DTRFA was worst, with a 1.9% five-year annualized return. Looking at the State Board of Investment and DTRFA returns for the individual years in that five-year period is instructive. The DTRFA noticeable lagged SBI in 2007, with a 6.6% return compared to SBI's 9.5% return. The DTRFA 2008 return, -35.1%, was nearly nine full percentage points below SBI and well below the other funds also. The DTRFA again underperformed SBI in 2009. The 2010 DTRFA return, 16.0%, was well above SBI or any other fund in the group, but that one year was not nearly enough to compensate for earlier underperformance.

For the ten-year period (2001 through 2010), there were a few years of negative returns at the start of that period in addition to the pounding that the funds took later in 2008, but some other years provided healthy returns. For that period as a whole, the fund with the highest ten-year annualized return was SPTRFA, with a 5.9% annualized return. The State Board of Investment was next with 4.9%. The reason for this result is that the SPTRFA did very well in the early years of this ten-year period. In 2001 and 2002 all the funds had negative returns, but the SPTRFA managed to lose less than the other plans. The SPTRFA also did well when better investment markets returned. Its 2003 return, 27%, was strong, although the DTRFA did have a higher return that year. In 2004, 2005, and 2006, the SPTRFA return in each year was higher than any other fund. For ten-year period the index portfolio did fairly well, helped again by its bond component. The index portfolio's ten-year annualized return was 4.5%. That was a better result than that posted by DTRFA, Bloomington Fire, and MPRA.

For the full 17-year period, the SPTRFA and the MFRA are tied for the highest 17-year annualized return, with 8.2%. The State Board of Investment is next with an 8.0% return, and the index portfolio did nearly as well with a 7.9% return. The other pension funds (DTRFA, Bloomington Fire, and MPRA) trail by noticeable amounts. The DTRFA's 17-year annualized return, 7.2%, noticeably lags the State Board of Investment's 8.0% return, and further lags the SPTRFA and MFRA 8.2% annualized returns. The Bloomington Fire 5.4% return and the MPRA 6.2% return are substantially below the long-term results provided by the better performing pension funds, or the simple index fund. These weak performance results noticeably impact the cost of operating the Bloomington Fire and Minneapolis Police plans. More contributions are needed to finance any given level of pension

benefits. Consider a dollar invested at the beginning of the period. The annualized return is the return which provides the same growth of that dollar as the variable stream of returns generated by the fund's investment activities. For example, the Bloomington Fire 5.4% 17-year annualized return provides the same growth as the variable stream of annual returns indicated for that fund in the following table. A dollar earning a 5.4% return for 17 years will grow to \$2.44 at the end of the period. If that dollar had instead been invested at the State Board of Investment 8.0% return, after 17 years that dollar would have grown to \$3.77. At the 8.2% annualized rate computed for the SPTRFA and MFRA, that dollar would have grown to \$3.81.

Some additional rate of return information is available for the State Board of Investment, although it is not shown in the table. The March 2011 State Board of Investment quarterly report, which provided the SBI returns through the end of calendar year 2010, also includes SBI's 20-year return ending on that date. That 20-year average (annualized) return was 9.0%. The March 2013 State Board of Investment quarterly report provided the State Board of Investment returns through March 31, 2013, and for a 20-year return through March 31, 2013, which was 8.2% on an annualized average basis.

- c. Volatility of Markets: Implication for Rate of Return Assumption. Much of the State Board of Investment's pension assets and those of any typical pension fund are invested in equities, primarily the domestic stock market or other domestic equity holdings, but also foreign markets. Since stock returns are a key driver in producing the pension fund's total portfolio return, it is useful to review long-term stock market returns to be aware of the volatility of those returns. The review may provide some insight and guidance if the Commission and Legislature considers revising the current rate of return assumption.

The first graph below displays the domestic stock market returns from 1950 through 2010. The stock market returns are very variable. The return from year to year is never the same, and rarely close. The current year's return is a very poor predictor of next year's return. Because of that variability, the returns to any pension fund heavily invested in equities will also be very variable, although diversification into other assets classes will help to dampen that variability. Also, in every decade, even those that provided excellent returns for the decade as a whole, there was at least one year and generally more where the stock return was negative.

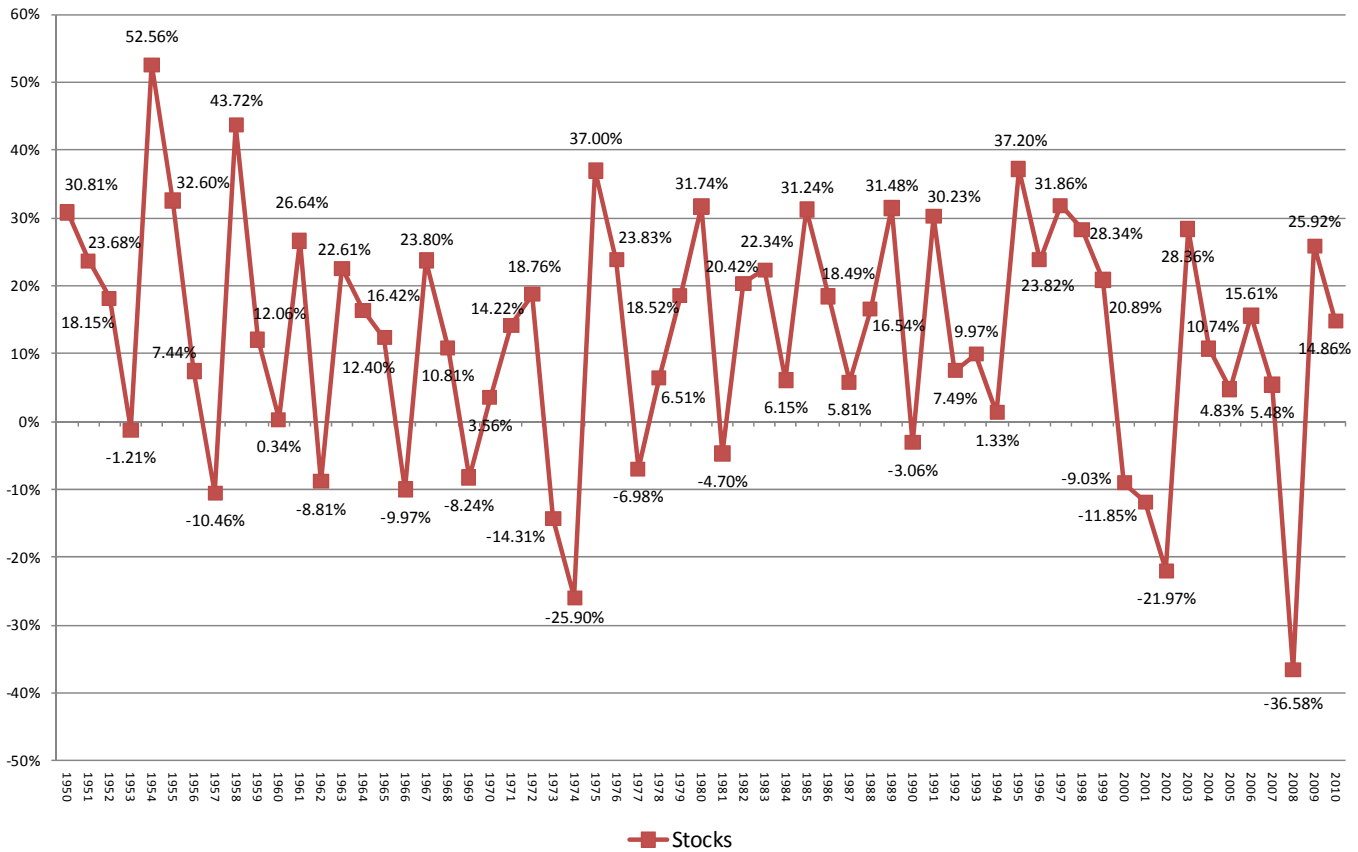
Below the initial graph are ten-year average (annualized) returns, summarizing returns in each decade. Of the last 60 years, the 1950s provided the highest stock returns, equivalent to 19.5% per year. However, even in that exceptional decade, there were two years (1953 and 1957) where the return was negative. In the 1960s the annualized return is 7.7%, much lower than the 1950s, and in the 1960s there were three years with negative returns. In the 1970s the annualized return was 8.8%, and there were again three years with negative returns. The 1980s were an exceptional decade, with a 17.3% annualized return and only one year with a negative return, 1981. The 1990s was another excellent decade for investing, with an 18.1% annualized return and only one year with a negative return. The last decade is highly unusual, with the worst investment results since the Great Depression. The annualized return for the first decade of this century was -1.0%, and there were four years with negative returns.

Since each of these annualized returns is summarizing a fairly long period, a full decade, it is surprising that there is so much difference between the decade average (annualized) returns. Just as the return for one year is a bad predictor of the next, the annualized return for any given decade doesn't seem to be a good predictor of performance over the next decade.

The 1980s and 1990s were exceptionally good investment periods, with annualized returns slightly above 17% and 18% respectively, but that is not unprecedented given the returns generated in the 1950s, with its over 19% annualized return. The real outlier is the first decade of this century. It provided results far below any decade in this review.

A decision about whether to revise the rate of return assumption amounts to drawing a conclusion about what to expect from the stock market over the next decade and beyond. Given the annualized returns provided in each decade since 1950, the Legislature will need to decide how much weight, or how much predictive value, it wishes to give to the most recent results. The most recent decade was not typical. If the Commission were to conclude that the markets will move toward a more normal result, then the recent past should not be used to predict future patterns.

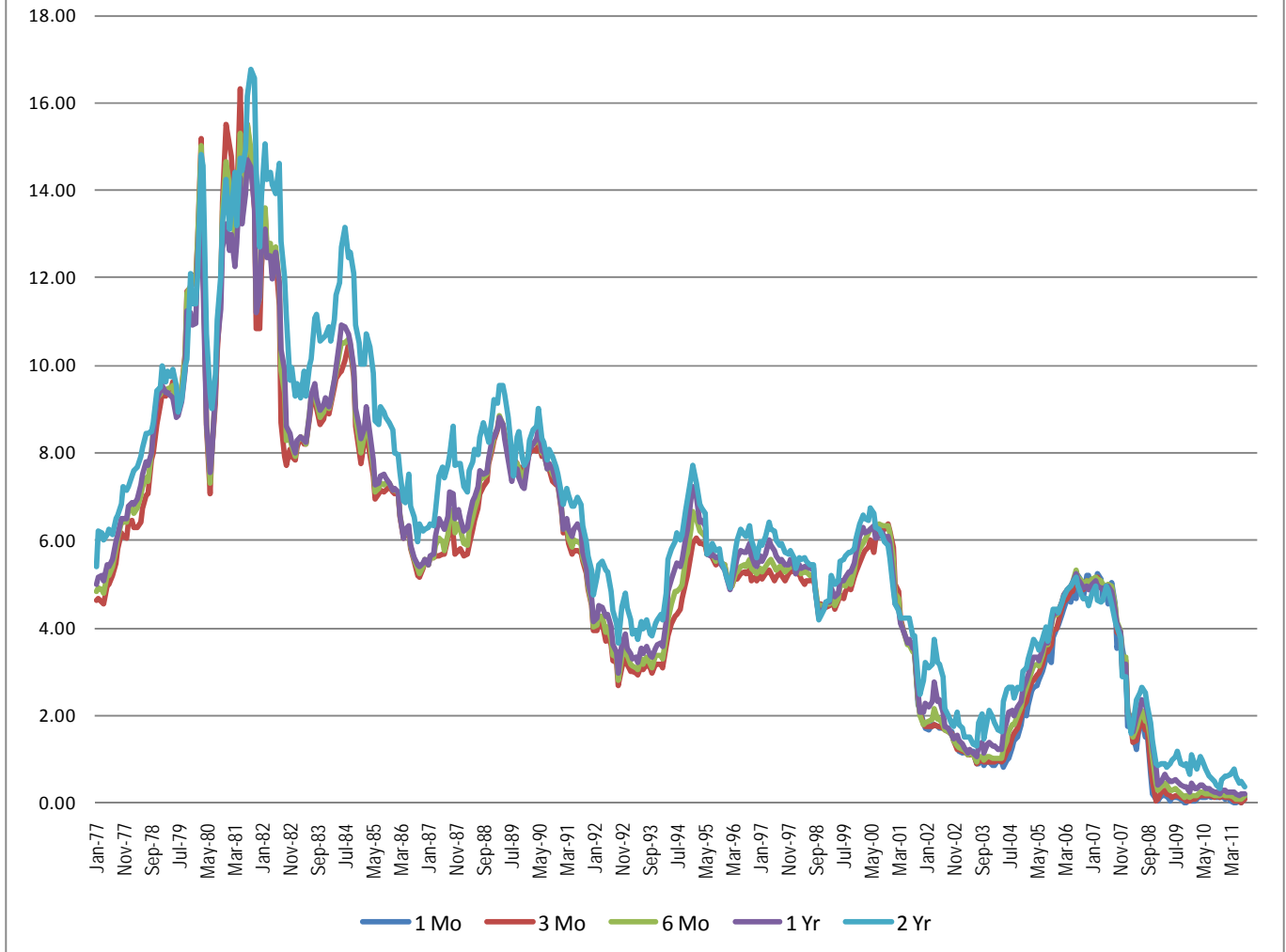
Stock Market Returns 1950-2010



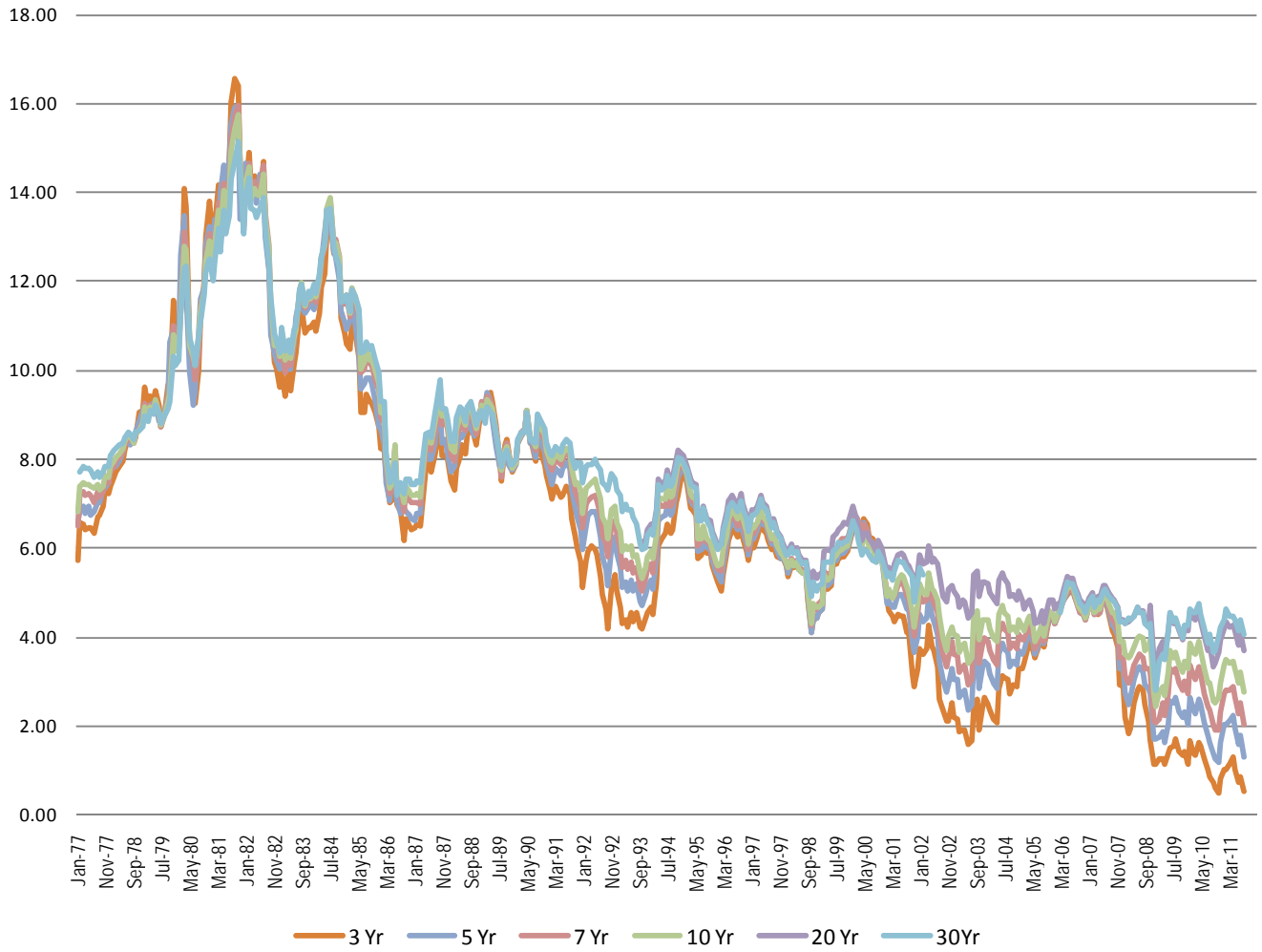
Data source: http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/histret.html

10-Year Annualized Returns					
1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2009
19.5%	7.7%	8.8%	17.3%	18.1%	-1.0%

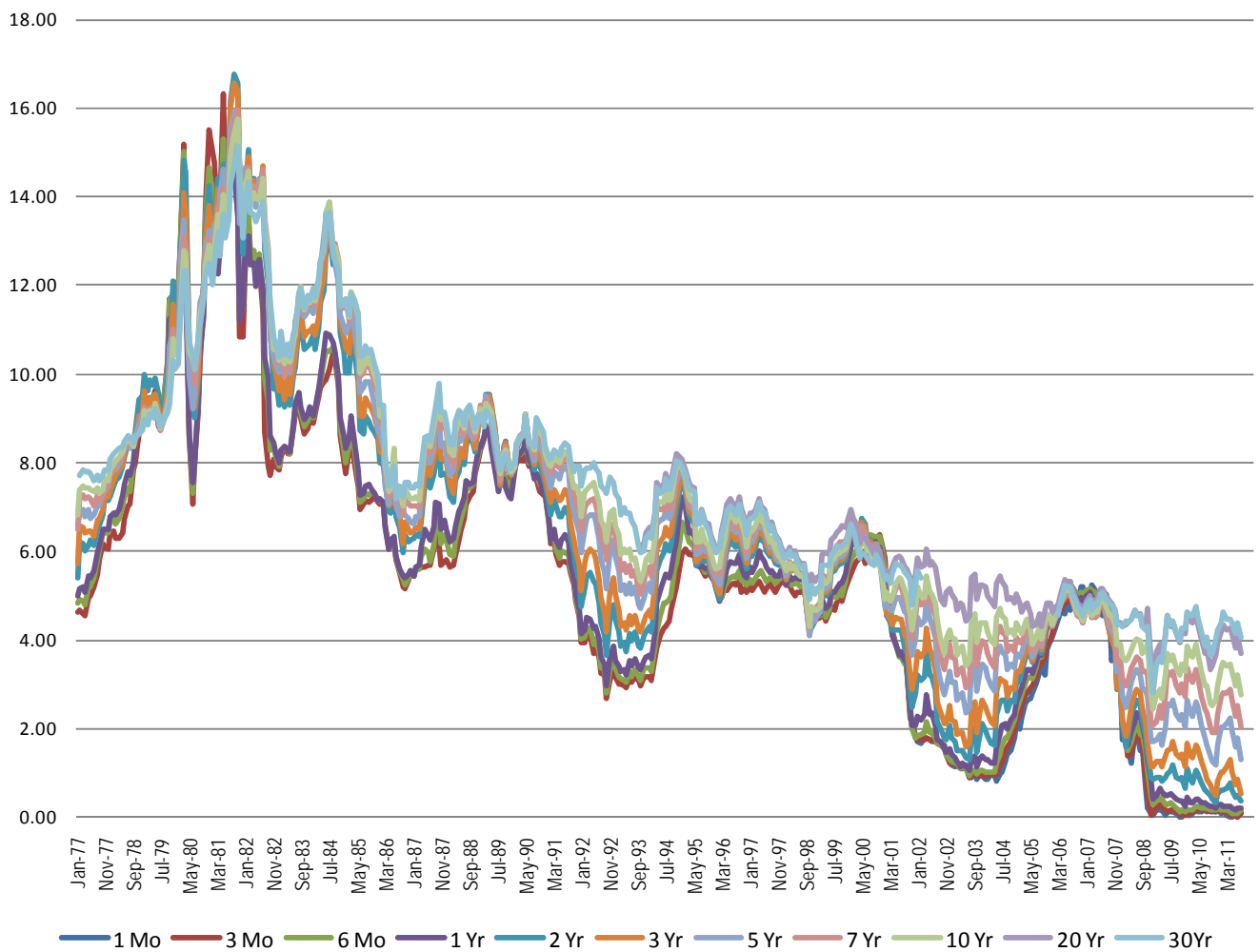
U.S. Treasury Bill/Treasury Bond Rates



U.S. Treasury Bill/Treasury Bond Rates



U.S. Treasury Bill/Treasury Bond Rates



Historical Summary of Actuarial Gains and Losses

The following tables show Minnesota public pension plans actuarial experience gains (-), which are reductions in the amount of the plan unfunded actuarial accrued liabilities, and losses (+), which are increases in the amount of the plan unfunded actuarial accrued liabilities, from 1986 to 2000, for the period from 1991 to 2000, for the period 1996 to 2000, for the period 2000 to 2005, and annually after 2005:

Salary Increase Assumption

Plan	2011-2012	2010-2011	2009-2010	2008-2009	2007-2008	2006-2007	2005-2006	2000-2005	1996-2000	1991-2000	1986-2000
MSRS-General	-82,891,000	-108,331,000	-158,877,000	-22,704,000	-48,586,000	-83,746,773	-79,496,460	-110,958,775	-125,831,000	-344,439,000	-417,563,000
PERA-General	-2,844,924,000	-95,370,000	-169,777,000	-12,262,000	-26,366,000	-101,197,698	-146,764,055	-258,712,679	-366,202,000	-725,461,000	-817,982,000
TRA	<u>-223,645,000</u>	<u>-173,337,000</u>	<u>-297,584,000</u>	<u>-16,554,000</u>	<u>51,254,000</u>			<u>-171,284,000</u>	<u>-442,219,000</u>	<u>-1,188,570,000</u>	<u>-1,326,930,000</u>
Subtotal	-3,151,460,000	-377,038,000	-626,238,000	-51,520,000	-23,698,000	-184,944,471	-226,260,515	-540,955,454	-934,252,000	-2,258,470,000	-2,562,475,000
MSRS-Corr.	3,055,000	-12,936,000	-15,123,000	-3,631,000	-1,540,000	-170,390	-6,102,666	-30,012,270	1,576,000	-5,753,000	-7,241,000
State Patrol	-2,531,000	-9,766,000	-10,626,000	-4,023,000	-4,294,000	215,396	-2,920,024	-15,555,781	701,000	-1,138,000	-6,369,000
PERA-P&F	-63,598,000	-67,490,000	-96,316,000	-1,499,000	-28,253,000	-45,220,100	-29,275,893	-83,690,240	-72,046,000	-141,994,000	-158,834,000
P&F Consol. Accts.	--	--	--	--	--	--	--	--	--	--	--
Loc. Govt. Corr.	<u>-6,202,000</u>	<u>-4,585,000</u>	<u>-5,638,000</u>	<u>-1,372,000</u>	<u>-341,000</u>	<u>-1,070,392</u>	<u>-1,214,136</u>	<u>3,161,896</u>	<u>-926,000</u>	<u>-926,000</u>	<u>-926,000</u>
Subtotal	-69,276,000	-94,777,000	-127,703,000	-10,525,000	-34,428,000	-46,245,486	-39,512,719	-126,096,395	-70,695,000	-149,811,000	-173,370,000
Legislators	-623,000	17,000	-413,000	60,000	-1,225,000			-1,026,000	-5,343,000	-8,495,000	-9,191,000
Elected St. Officers	0	0	0	0	0			0	-236,000	-480,000	-588,000
Judges	<u>-2,837,000</u>	<u>-3,256,000</u>	<u>-3,495,000</u>	<u>-40,000</u>	<u>-2,359,000</u>	<u>-1,551,189</u>	<u>-2,387,694</u>	<u>-414,186</u>	<u>-7,034,000</u>	<u>-17,215,000</u>	<u>-19,710,000</u>
Subtotal	-3,460,000	-3,239,000	-3,908,000	20,000	-3,584,000	-1,551,189	-2,387,694	-1,440,186	-12,613,000	-26,190,000	-29,489,000
MERF	-1,028,000	-645,000	-2,000	-442,861	-1,860,940			2,312,308	-6,148,000	-14,885,000	7,377,000
DTRFA								-4,513,000	-12,305,000	-56,155,000	-62,594,000
MTRFA	--	--	--	--	--	--	--	-45,521,000	22,101,000	3,902,000	-20,052,000
SPTRFA	<u>-12,247,000</u>	<u>-10,866,000</u>	<u>-13,954,000</u>	<u>-5,264,000</u>	<u>-4,868,000</u>			<u>-19,139,000</u>	<u>-20,063,000</u>	<u>-25,499,000</u>	<u>-32,734,000</u>
Subtotal	-12,247,000	-10,866,000	-13,954,000	-5,264,000	-4,868,000	0	0	-69,173,000	-10,267,000	-77,752,000	-115,380,000
Total	-3,237,471,000	-486,565,000	-771,805,000	-67,731,861	-68,438,940	-232,741,146	-268,160,928	-758,418,727	-1,033,975,000	-2,527,108,000	-2,873,337,000

Investment Return Assumption

Plan	2011-2012	2010-2011	2009-2010	2008-2009	2007-2008	2006-2007	2005-2006	2000-2005	1996-2000	1991-2000	1986-2000
MSRS-General	391,769,000	300,962,000	572,503,000	723,093,000	403,575,000	-187,380,854	55,910,692	1,068,276,456	-1,170,958,000	-1,339,497,000	-1,554,413,000
PERA-General	572,622,000	453,210,000	848,873,000	1,927,455,000	758,806,000	-205,886,745	84,873,894	1,320,656,519	-1,230,517,000	-1,425,328,000	-1,722,945,000
TRA	<u>752,332,000</u>	<u>600,957,000</u>	<u>1,061,858,000</u>	<u>3,078,494,000</u>	<u>1,228,867,000</u>	<u>-378,871,708</u>	<u>146,446,633</u>	<u>1,939,501,853</u>	<u>-437,398,000</u>	<u>-885,311,000</u>	<u>-1,371,667,000</u>
Subtotal	1,716,723,000	1,355,129,000	2,483,234,000	5,729,042,000	2,391,248,000	-772,139,307	287,231,219	4,328,434,828	-2,838,873,000	-3,650,136,000	-4,649,025,000
MSRS-Corr.	24,921,000	18,445,000	36,603,000	48,978,000	34,378,000	-10,188,061	5,282,955	48,773,562	-62,760,000	-70,850,000	-80,384,000
State Patrol	24,438,000	19,651,000	36,437,000	54,220,000	45,173,000	-5,126,728	10,430,339	72,654,915	-82,780,000	-94,355,000	-110,094,000
PERA-P&F	234,741,000	186,982,000	341,851,000	777,619,000	249,139,000	-93,809,595	46,176,197	487,417,212	-656,932,000	-728,195,000	-813,031,000
P&F Consol. Accts.	--	--	--	--	--	--	--	--	--	--	--
Loc. Govt. Corr.	<u>9,938,000</u>	<u>7,224,000</u>	<u>14,428,000</u>	<u>14,741,000</u>	<u>311,000</u>	<u>-5,018,484</u>	<u>-727,013</u>	<u>6,795,194</u>	<u>258,000</u>	<u>258,000</u>	<u>258,000</u>
Subtotal	294,038,000	232,302,000	429,319,000	895,558,000	329,001,000	-114,142,868	61,162,478	615,640,883	-802,214,000	-893,142,000	-1,003,251,000
Legislators	1,247,000	4,639,000	-948,000	8,146,000	4,897,000			1,185,000	2,759,000	4,914,000	6,587,000
Elected St. Officers	0	0	19,115	18,957	22,610			31,000	158,000	301,000	408,000
Judges	<u>5,495,000</u>	<u>4,458,000</u>	<u>8,864,000</u>	<u>7,685,000</u>	<u>14,568,000</u>	<u>-1,600,642</u>	<u>2,737,363</u>	<u>21,756,913</u>	<u>-6,283,000</u>	<u>-7,195,000</u>	<u>-8,761,000</u>
Subtotal	6,742,000	9,097,000	7,935,115	15,849,957	19,487,610	-1,600,642	2,737,363	22,972,913	-3,366,000	-1,980,000	-1,766,000

Historical Summary of Actuarial Gains and Losses

Investment Return Assumption

Plan	2011-2012	2010-2011	2009-2010	2008-2009	2007-2008	2006-2007	2005-2006	2000-2005	1996-2000	1991-2000	1986-2000
MERF	53,414,000	-115,637,000	47,306,000	270,171,052	115,377,024	4,908,970	11,892,784	55,206,040	-197,268,000	-161,922,000	-210,927,000
DTRFA	28,191,456	22,610,790	29,239,045	26,140,717	-2,165,878	-9,743,992	5,940,799	45,909,548	-48,167,000	-56,883,000	-75,172,000
MTRFA	--	--	--	--	--	--	--	373,335,762	-51,313,000	-115,300,000	-193,272,000
SPTRFA	<u>76,504,000</u>	<u>51,177,000</u>	<u>77,284,000</u>	<u>60,198,000</u>	<u>-28,702,000</u>	<u>-46,420,607</u>	<u>-1,180,976</u>	<u>137,224,270</u>	<u>2,469,000</u>	<u>-24,317,000</u>	<u>-72,740,000</u>
Subtotal	104,695,456	73,787,790	106,523,045	86,338,717	-30,867,878	-56,164,599	4,759,823	556,469,580	-97,011,000	-196,500,000	-341,184,000
Total	2,175,612,456	1,554,678,790	3,074,317,160	6,996,959,726	2,824,245,756	-939,138,446	367,783,667	5,720,176,244	-3,938,732,000	-4,903,680,000	-6,206,153,000

Mortality Assumption

Plan	2011-2012	2010-2011	2009-2010	2008-2009	2007-2008	2006-2007	2005-2006	2000-2005	1996-2000	1991-2000	1986-2000
MSRS-General	41,442,000	9,174,000	523,000	4,163,000	9,563,000	190,567,865	-1,688,293	-24,927,515	20,780,000	28,867,000	33,554,000
PERA-General	5,446,000	62,521,000	33,391,000	58,995,000	-41,173,000	25,060,644	21,781,524	-24,140,585	-88,292,000	-44,209,000	16,751,000
TRA	<u>8,685,000</u>	<u>-74,936,000</u>	<u>44,520,000</u>	<u>7,566,000</u>	<u>49,721,000</u>			<u>-54,706,000</u>	<u>50,487,000</u>	<u>57,010,000</u>	<u>54,848,000</u>
Subtotal	55,573,000	-3,241,000	78,434,000	70,724,000	18,111,000	215,628,509	20,093,231	-103,774,100	-17,025,000	41,668,000	105,153,000
MSRS-Corr.	-1,058,000	159,000	918,000	-196,000	-3,775,000	2,947,950	24,771,591	-6,746,318	214,000	1,219,000	847,000
State Patrol	3,084,000	3,072,000	-3,672,000	2,575,000	-4,236,000	4,080,438	5,423,933	11,715,516	11,417,000	12,204,000	13,038,000
PERA-P&F	12,792,000	16,038,000	24,019,000	10,528,000	41,222,000	8,126,208	-4,090,833	-23,441,536	10,828,000	15,345,000	23,126,000
P&F Consol. Accts.	--	--	--	--	--	--	--	--	19,772,778	24,391,165	25,019,484
Loc. Govt. Corr.	<u>88,000</u>	<u>496,000</u>	<u>45,000</u>	<u>-176,000</u>	<u>-381,000</u>	<u>-289,659</u>	<u>173,338</u>	<u>69,966</u>	<u>-2,000</u>	<u>-2,000</u>	<u>-2,000</u>
Subtotal	14,906,000	19,765,000	21,310,000	12,731,000	32,830,000	14,864,937	26,278,029	-18,402,372	42,229,778	53,157,165	62,028,484
Legislators	714,000	989,000	416,000	722,000	1,065,000			100,000	-1,587,000	1,598,000	2,281,000
Elected St. Officers	122,827	90,980	130,927	114,224	104,248			138,000	-314,000	-375,000	-445,000
Judges	<u>2,222,000</u>	<u>1,630,000</u>	<u>1,016,000</u>	<u>3,659,000</u>	<u>2,810,000</u>	<u>4,758,864</u>	<u>2,152,334</u>	<u>1,490,134</u>	<u>1,445,000</u>	<u>6,680,000</u>	<u>6,844,000</u>
Subtotal	3,058,827	2,709,980	1,562,927	4,495,224	3,979,248	4,758,864	2,152,334	1,728,134	-456,000	7,903,000	8,680,000
MERF	-2,928,000	3,140,000	7,297,000	-280,213	2,390,845			12,689,000	10,105,000	9,227,000	7,755,000
DTRFA								-4,691,000	-1,796,000	-595,000	-24,670,000
MTRFA	--	--	--	--	--	--	--	-23,125,000	13,761,000	-19,411,000	-16,618,000
SPTRFA	<u>3,087,000</u>	<u>-2,913,000</u>	<u>1,666,000</u>	<u>482,000</u>	<u>700,000</u>			<u>-6,323,000</u>	<u>-29,103,000</u>	<u>-35,268,000</u>	<u>-38,898,000</u>
Subtotal	3,087,000	-2,913,000	1,666,000	482,000	700,000	0	0	-34,139,000	-17,138,000	-55,274,000	-80,186,000
Total	73,696,827	19,460,980	110,269,927	88,152,011	58,011,093	235,252,310	48,523,594	-141,898,338	17,715,778	56,681,165	103,430,484

Other Actuarial Assumptions

Plan	2011-2012	2010-2011	2009-2010	2008-2009	2007-2008	2006-2007	2005-2006	2000-2005	1996-2000	1991-2000	1986-2000
MSRS-General	-1,420,000	-3,912,000	-16,607,000	-35,288,000	-19,225,000	178,345,541	-71,210,243	-29,253,329	210,148,000	161,489,000	365,317,000
PERA-General	12,851,000	-110,459,000	-5,827,000	34,954,000	-580,869,000	54,745,501	19,258,463	528,864,239	407,022,000	730,865,000	1,134,284,000
TRA	<u>240,968,000</u>	<u>197,024,000</u>	<u>119,882,000</u>	<u>98,169,000</u>	<u>-45,753,000</u>	<u>-6,572,078</u>	<u>-41,724,091</u>	<u>283,842,942</u>	<u>616,885,000</u>	<u>1,170,772,000</u>	<u>1,445,631,000</u>
Subtotal	252,399,000	82,653,000	97,448,000	97,835,000	-645,847,000	226,518,964	-93,675,871	783,453,852	1,234,055,000	2,063,126,000	2,945,232,000

Historical Summary of Actuarial Gains and Losses

Other Actuarial Assumptions

Plan	2011-2012	2010-2011	2009-2010	2008-2009	2007-2008	2006-2007	2005-2006	2000-2005	1996-2000	1991-2000	1986-2000
MSRS-Corr.	1,612,000	-428,000	18,486,000	-2,619,000	2,318,000	4,474,443	2,483,954	51,760,096	35,948,000	29,639,000	37,672,000
State Patrol	222,000	-165,000	3,266,000	3,673,000	181,000	-2,580,973	-7,438,387	-13,181,670	12,921,000	-8,901,000	-3,126,000
PERA-P&F	61,172,000	-8,804,000	-11,201,000	10,343,000	-79,796,000	148,110,726	37,038,388	270,058,708	194,138,000	196,059,000	218,207,000
P&F Consol. Accts.	--	--	--	--	--	--	--	--	-134,063,938	-272,790,818	-290,462,162
Loc. Govt. Corr.	-741,000	1,177,000	321,000	2,712,000	1,489,000	3,139,126	895,198	5,653,936	463,000	463,000	463,000
Subtotal	62,265,000	-8,220,000	10,872,000	14,109,000	-75,808,000	153,143,322	32,979,153	314,291,070	109,406,062	-55,530,818	-37,246,162
Legislators	3,252,000	-1,455,000	-439,000	-1,405,000	928,000	-3,456,020	4,316,743	3,452,000	189,000	2,822,000	2,822,000
Elected St. Officers	-36,348	-4,593	-25,695	-10,166	-59,537	-98,344	275,011	65,000	-187,000	158,000	158,000
Judges	11,412,000	184,000	-678,000	3,377,000	4,742,000	89,335	737,645	-293,490	7,912,000	3,185,000	7,555,000
Subtotal	14,627,652	-1,275,593	-1,142,695	1,961,834	5,610,463	89,335	-2,816,719	4,298,264	11,429,000	3,187,000	10,535,000
MERF	9,044,000	-3,508,000	22,940,000	54,409,944	20,073,971	2,776,635	14,932,144	59,176,649	62,682,000	70,618,000	114,951,000
DTRFA	4,361,273	3,804,394	1,283,443	-10,572,081	3,615,145	-2,023,843	-525,771	4,459,101	10,542,000	17,842,000	25,548,000
MTRFA	--	--	--	--	--	--	--	24,618,264	22,223,000	59,140,000	115,434,000
SPTRFA	5,122,000	3,731,000	-4,047,000	-3,569,000	-2,647,000	-29,685,327	8,402,689	21,553,200	-17,033,000	-15,000,000	6,235,000
Subtotal	9,483,273	7,535,394	-2,763,557	-14,141,081	968,145	-31,709,170	7,876,918	50,630,565	15,732,000	61,982,000	147,217,000
Total	347,818,925	77,184,801	127,353,748	154,174,697	-695,002,421	350,819,086	-40,704,375	1,211,850,400	1,433,304,062	2,143,382,182	3,180,688,838

Total Experience Gains and Losses

Plan	2011-2012	2010-2011	2009-2010	2008-2009	2007-2008	2006-2007	2005-2006	2000-2005	1996-2000	1991-2000	1986-2000
MSRS-General	348,900,000	197,893,000	397,542,000	669,264,000	345,327,000	97,785,779	-96,484,304	677,622,837	-1,065,861,000	-1,493,580,000	-1,573,105,000
PERA-General	-2,254,005,000	309,902,000	706,660,000	2,009,142,000	110,398,000	-227,278,298	-20,850,174	1,566,667,494	-1,277,989,000	-1,464,133,000	-1,389,892,000
TRA	778,340,000	549,708,000	928,676,000	3,167,675,000	1,284,089,000	-385,443,786	104,722,542	1,997,354,795	-212,245,000	-846,099,000	-1,198,118,000
Subtotal	-1,126,765,000	1,057,503,000	2,032,878,000	5,846,081,000	1,739,814,000	-514,936,305	-12,611,936	4,241,645,126	-2,556,095,000	-3,803,812,000	-4,161,115,000
MSRS-Corr.	28,530,000	5,240,000	40,884,000	42,532,000	31,381,000	-2,936,058	26,435,834	52,448,070	-25,022,000	-45,745,000	-49,106,000
State Patrol	25,213,000	12,792,000	25,405,000	56,445,000	36,824,000	-3,411,867	5,495,861	55,632,980	-57,741,000	-92,190,000	-106,551,000
PERA-P&F	245,107,000	126,726,000	258,353,000	796,991,000	182,312,000	17,207,239	49,847,859	650,344,144	-524,012,000	-658,785,000	-730,532,000
P&F Consol. Accts.	--	--	--	--	--	--	--	--	-114,291,160	-248,399,653	-265,442,678
Loc. Govt. Corr.	3,083,000	4,312,000	9,156,000	15,905,000	1,078,000	-3,239,409	-872,613	15,680,992	-207,000	-207,000	-207,000
Subtotal	301,933,000	149,070,000	333,798,000	911,873,000	251,595,000	7,619,905	80,906,941	774,106,186	-721,273,160	-1,045,326,653	-1,151,838,678
Legislators	4,590,000	4,190,000	-1,384,000	7,523,000	5,665,000	0	-3,456,020	4,575,743	-719,000	-1,794,000	2,499,000
Elected St. Officers	86,479	86,387	124,347	123,015	67,321	0	-98,344	444,011	-327,000	-741,000	-467,000
Judges	16,292,000	3,016,000	5,707,000	14,681,000	19,761,000	1,696,368	3,239,648	9,012,371	-3,960,000	-14,545,000	-14,072,000
Subtotal	20,968,479	7,292,387	4,447,347	22,327,015	25,493,321	1,696,368	-314,716	14,032,125	-5,006,000	-17,080,000	-12,040,000
MERF	58,502,000	-116,650,000	77,541,000	323,857,922	135,980,900	7,685,605	26,824,928	113,840,997	-130,629,000	-96,962,000	-80,844,000
DTRFA	32,552,729	26,415,184	30,522,488	15,568,636	1,449,267	-11,767,835	5,415,028	41,164,649	-51,726,000	-95,791,000	-136,888,000
MTRFA	--	--	--	--	--	--	--	317,308,026	6,772,000	-71,669,000	-114,508,000
SPTRFA	72,466,000	41,129,000	60,949,000	51,847,000	-35,517,000	-76,105,934	7,221,713	133,316,470	-63,730,000	-100,084,000	-138,137,000
Subtotal	105,018,729	67,544,184	91,471,488	67,415,636	-34,067,733	-87,873,769	12,636,741	491,789,145	-108,684,000	-267,544,000	-389,533,000
Total	-640,342,792	1,164,759,571	2,540,135,835	7,171,554,573	2,118,815,488	-585,808,196	107,441,958	5,635,413,579	-3,521,687,160	-5,230,724,653	-5,795,370,678

Historical Summary of Investment Return and Salary Increase Actuarial Gains and Losses

The following table shows Minnesota public pension plans actuarial experience gains (-), which are reductions in the amount of the plan unfunded actuarial accrued liabilities, and losses (+), which are increases in the amount of the plan unfunded actuarial accrued liabilities attributable to deviations in experience from the salary increase assumptions or the interest rate assumptions, aggregated for the periods 1986-2000, 1991-2000, 1996-2000, and 2000-2005, and expressed annually after 2005:

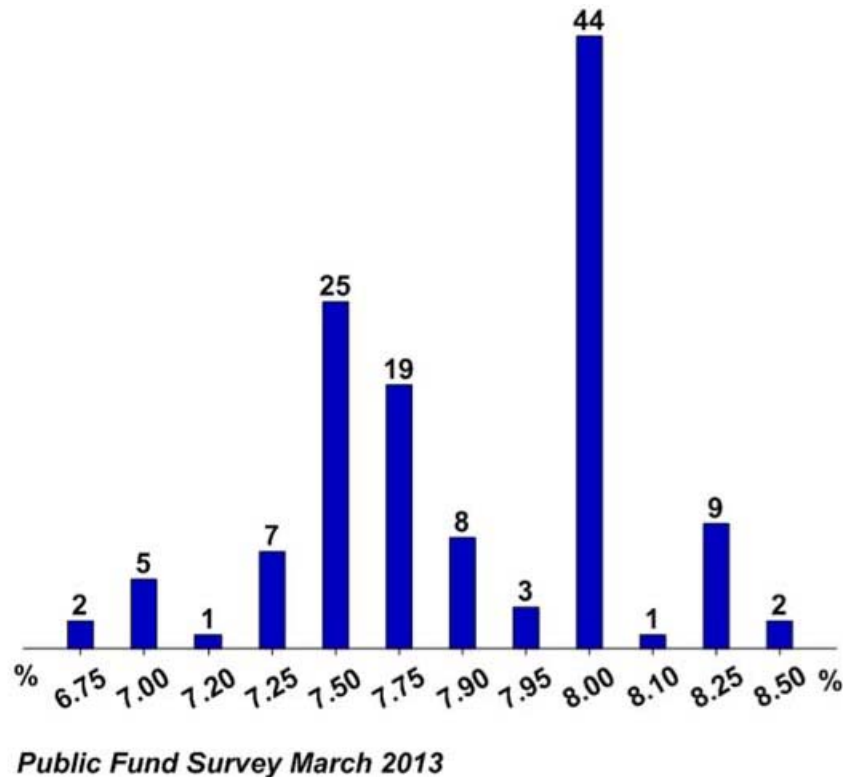
Salary Increase Assumption	2011-2012	2010-2011	2009-2010	2008-2009	2007-2008	2006-2007	2005-2006	2000-2005	1996-2000	1991-2000	1986-2000
MSRS-General	-82,891,000	-108,331,000	-158,877,000	-22,704,000	-48,586,000	-83,746,773	-79,496,460	-110,958,775	-125,831,000	-344,439,000	-417,563,000
PERA-General	-2,844,924,000	-95,370,000	-169,777,000	-12,262,000	-26,366,000	-101,197,698	-146,764,055	-258,712,679	-366,202,000	-725,461,000	-817,982,000
TRA	-223,645,000	-173,337,000	-297,584,000	-16,554,000	51,254,000			-171,284,000	-442,219,000	-1,188,570,000	-1,326,930,000
Subtotal	-3,151,460,000	-377,038,000	-626,238,000	-51,520,000	-23,698,000	-184,944,471	-226,260,515	-540,955,454	-934,252,000	-2,258,470,000	-2,562,475,000
MSRS-Corr.	3,055,000	-12,936,000	-15,123,000	-3,631,000	-1,540,000	-170,390	-6,102,666	-30,012,270	1,576,000	-5,753,000	-7,241,000
State Patrol	-2,531,000	-9,766,000	-10,626,000	-4,023,000	-4,294,000	215,396	-2,920,024	-15,555,781	701,000	-1,138,000	-6,369,000
PERA-P&F	-63,598,000	-67,490,000	-96,316,000	-1,499,000	-28,253,000	-45,220,100	-29,275,893	-83,690,240	-72,046,000	-141,994,000	-158,834,000
Loc. Govt. Corr.	-6,202,000	-4,585,000	-5,638,000	-1,372,000	-341,000	-1,070,392	-1,214,136	3,161,896	-926,000	-926,000	-926,000
Subtotal	-69,276,000	-94,777,000	-127,703,000	-10,525,000	-34,428,000	-46,245,486	-39,512,719	-126,096,395	-70,695,000	-149,811,000	-173,370,000
Legislators	-623,000	17,000	-413,000	60,000	-1,225,000			-1,026,000	-5,343,000	-8,495,000	-9,191,000
Elected St. Officers	0	0	0	0	0			0	-236,000	-480,000	-588,000
Judges	-2,837,000	-3,256,000	-3,495,000	-40,000	-2,359,000	-1,551,189	-2,387,694	-414,186	-7,034,000	-17,215,000	-19,710,000
Subtotal	-3,460,000	-3,239,000	-3,908,000	20,000	-3,584,000	-1,551,189	-2,387,694	-1,440,186	-12,613,000	-26,190,000	-29,489,000
MERF	-1,028,000	-645,000	-2,000	-442,861	-1,860,940			2,312,308	-6,148,000	-14,885,000	7,377,000
DTRFA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-4,513,000	-12,305,000	-56,155,000	-62,594,000
MTRFA	--	--	--	--	--	--	--	-45,521,000	22,101,000	3,902,000	-20,052,000
SPTRFA	-12,247,000	-10,866,000	-13,954,000	-5,264,000	-4,868,000			-19,139,000	-20,063,000	-25,499,000	-32,734,000
Subtotal	-12,247,000	-10,866,000	-13,954,000	-5,264,000	-4,868,000	0	0	-69,173,000	-10,267,000	-77,752,000	-115,380,000
Total	-3,237,471,000	-486,565,000	-771,805,000	-67,731,861	-68,438,940	-232,741,146	-268,160,928	-758,418,727	-1,033,975,000	-2,527,108,000	-2,873,337,000
Investment Return Assumption	2011-2012	2010-2011	2009-2010	2008-2009	2007-2008	2006-2007	2005-2006	2000-2005	1996-2000	1991-2000	1986-2000
MSRS-General	391,769,000	300,962,000	572,503,000	723,093,000	403,575,000	-187,380,854	55,910,692	1,068,276,456	-1,170,958,000	-1,339,497,000	-1,554,413,000
PERA-General	572,622,000	453,210,000	848,873,000	1,927,455,000	758,806,000	-205,886,745	84,873,894	1,320,656,519	-1,230,517,000	-1,425,328,000	-1,722,945,000
TRA	752,332,000	600,957,000	1,061,858,000	3,078,494,000	1,228,867,000	-378,871,708	146,446,633	1,939,501,853	-437,398,000	-885,311,000	-1,371,667,000
Subtotal	1,716,723,000	1,355,129,000	2,483,234,000	5,729,042,000	2,391,248,000	-772,139,307	287,231,219	4,328,434,828	-2,838,873,000	-3,650,136,000	-4,649,025,000
MSRS-Corr.	24,921,000	18,445,000	36,603,000	48,978,000	34,378,000	-10,188,061	5,282,955	48,773,562	-62,760,000	-70,850,000	-80,384,000
State Patrol	24,438,000	19,651,000	36,437,000	54,220,000	45,173,000	-5,126,728	10,430,339	72,654,915	-82,780,000	-94,355,000	-110,094,000
PERA-P&F	234,741,000	186,982,000	341,851,000	777,619,000	249,139,000	-93,809,595	46,176,197	487,417,212	-656,932,000	-728,195,000	-813,031,000
Loc. Govt. Corr.	9,938,000	7,224,000	14,428,000	14,741,000	311,000	-5,018,484	-727,013	6,795,194	258,000	258,000	258,000
Subtotal	294,038,000	232,302,000	429,319,000	895,558,000	329,001,000	-114,142,868	61,162,478	615,640,883	-802,214,000	-893,142,000	-1,003,251,000
Legislators	1,247,000	4,639,000	-948,000	8,146,000	4,897,000			1,185,000	2,759,000	4,914,000	6,587,000
Elected St. Officers	0	0	19,115	18,957	22,610			31,000	158,000	301,000	408,000
Judges	5,495,000	4,458,000	8,864,000	7,685,000	14,568,000	-1,600,642	2,737,363	21,756,913	-6,283,000	-7,195,000	-8,761,000
Subtotal	6,742,000	9,097,000	7,935,115	15,849,957	19,487,610	-1,600,642	2,737,363	22,972,913	-3,366,000	-1,980,000	-1,766,000
MERF	53,414,000	-115,637,000	47,306,000	270,171,052	115,377,024	4,908,970	11,892,784	55,206,040	-197,268,000	-161,922,000	-210,927,000
DTRFA	28,191,456	22,610,790	29,239,045	26,140,717	-2,165,878	-9,743,992	5,940,799	45,909,548	-48,167,000	-56,883,000	-75,172,000
MTRFA	--	--	--	--	--	--	--	373,335,762	-51,313,000	-115,300,000	-193,272,000
SPTRFA	76,504,000	51,177,000	77,284,000	60,198,000	-28,702,000	-46,420,607	-1,180,976	137,224,270	2,469,000	-24,317,000	-72,740,000
Subtotal	104,695,456	73,787,790	106,523,045	86,338,717	-30,867,878	-56,164,599	4,759,823	556,469,580	-97,011,000	-196,500,000	-341,184,000
Total	2,175,612,456	1,554,678,790	3,074,317,160	6,996,959,726	2,824,245,756	-939,138,446	367,783,667	5,720,176,244	-3,938,732,000	-4,903,680,000	-6,206,153,000
Combined Investment/Salary Assumption	1,061,858,544	1,068,113,790	2,302,512,160	6,929,227,865	2,755,806,816	-1,171,879,592	99,622,739	4,691,757,483	-4,972,707,000	-7,430,788,000	-9,079,490,000



NASRA Issue Brief: Public Pension Plan Investment Return Assumptions

Updated March 2013

Figure 4: Distribution of investment return assumptions



Appendix A: Investment Return Assumption by Plan

(Figures reflect the nominal assumption in use or announced for use as of March 2013)

Alabama ERS	8.00%
Alabama Teachers	8.00%
Alaska PERS	8.25%
Alaska Teachers	8.25%
Arizona Public Safety Personnel	8.00%
Arizona SRS	8.00%
Arkansas PERS	8.00%
Arkansas Teachers	8.00%
California PERS	7.50%
California Teachers	7.50%
Chicago Teachers	8.00%
City of Austin ERS	7.75%
Colorado Affiliated Local	7.75%
Colorado Fire & Police Statewide	7.75%
Colorado Municipal	8.00%
Colorado School	8.00%
Colorado State	8.00%
Connecticut SERS	8.25%
Connecticut Teachers	8.50%
Contra Costa County	7.25%
DC Police & Fire	7.00%
DC Teachers	7.00%
Delaware State Employees	7.50%
Denver Employees	8.00%
Denver Public Schools	8.00%
Duluth Teachers ¹	8.00%
Fairfax County Schools	7.50%
Florida RS	7.75%
Georgia ERS	7.50%
Georgia Teachers	7.50%
Hawaii ERS	7.75%
Houston Firefighters	8.50%
Idaho PERS	7.00%
Illinois Municipal	7.50%
Illinois SERS	7.75%
Illinois Teachers	8.50%
Illinois Universities	7.75%
Indiana PERF	6.75%
Indiana Teachers	6.75%
Iowa PERS	7.50%
Kansas PERS	8.00%
Kentucky County	7.75%
Kentucky ERS	7.75%
Kentucky Teachers	7.50%

LA County ERS	7.75%
Louisiana SERS	8.00%
Louisiana Teachers	8.25%
Maine Local	7.25%
Maine State and Teacher	7.25%
Maryland PERS	7.75%
Maryland Teachers	7.75%
Massachusetts SERS	8.25%
Massachusetts Teachers	8.25%
Michigan Municipal	8.00%
Michigan Public Schools	8.00%
Michigan SERS	8.00%
Minnesota PERF ¹	8.00%
Minnesota State Employees ¹	8.00%
Minnesota Teachers ¹	8.00%
Mississippi PERS	8.00%
Missouri DOT and Highway Patrol	8.25%
Missouri Local	7.25%
Missouri PEERS	8.00%
Missouri State Employees	8.00%
Missouri Teachers	8.00%
Montana PERS	7.75%
Montana Teachers	7.75%
Nebraska Schools	8.00%
Nevada Police Officer and Firefighter	8.00%
Nevada Regular Employees	8.00%
New Hampshire Retirement System	7.75%
New Jersey PERS	7.95%
New Jersey Police & Fire	7.95%
New Jersey Teachers	7.95%
New Mexico PERF	7.75%
New Mexico Teachers	7.75%
New York City ERS	8.00%
New York City Teachers	8.00%
New York State Teachers	8.00%
North Carolina Local Government	7.25%
North Carolina Teachers and State Employees	7.25%
North Dakota PERS	8.00%
North Dakota Teachers	8.00%
NY State & Local ERS	7.50%
NY State & Local Police & Fire	7.50%

Ohio PERS	8.00%
Ohio Police & Fire	8.25%
Ohio School Employees	7.75%
Ohio Teachers	7.75%
Oklahoma PERS	7.50%
Oklahoma Teachers	8.00%
Oregon PERS	8.00%
Pennsylvania School Employees	7.50%
Pennsylvania State ERS	7.50%
Phoenix ERS	8.00%
Rhode Island ERS	7.50%
Rhode Island Municipal	7.50%
San Diego County	8.00%
San Francisco City & County	7.50%
South Carolina Police	7.50%
South Carolina RS	7.50%
South Dakota PERS ³	7.25%
St. Louis School Employees	8.00%
St. Paul Teachers ¹	8.00%
Texas County & District	8.00%
Texas ERS	8.00%
Texas LECOS	8.00%
Texas Municipal	7.00%
Texas Teachers	8.00%
TN Political Subdivisions	7.50%
TN State and Teachers	7.50%
Utah Noncontributory	7.75%
Vermont State Employees ²	8.10%
Vermont Teachers ²	7.90%
Virginia Retirement System	7.00%
Washington LEOFF Plan 1	7.90%
Washington LEOFF Plan 2	7.90%
Washington PERS 1	7.90%
Washington PERS 2/3	7.90%
Washington School Employees 2/3	7.90%
Washington Teachers Plan 1	7.90%
Washington Teachers Plan 2/3	7.90%
West Virginia PERS	7.50%
West Virginia Teachers	7.50%
Wisconsin Retirement System	7.20%
Wyoming Public Employees	8.00%

1. The Minnesota Legislature, which sets in statute investment return assumptions used by public plans in the state, established the use of “select-and-ultimate” rates for investment return assumptions. These plans will use an assumed rate of 8.0 percent for five years, through FY 16, then return to 8.5 percent. For more information on select-and-ultimate rates, please see Actuarial Standards of Practice No. 27: http://www.actuarialstandardsboard.org/pdf/asops/asop027_145.pdf.
2. The Vermont retirement systems adopted “select-and-ultimate” rates in 2011; the rates shown reflect the single rates most closely associated with the funding results for the respective plans, based on their projected cash flows.
3. The SDRS set the rate at 7.25% through FY 2018, after which it will rise to 7.50%.

Background Information on Public Retirement Plan Interest Rate Actuarial Assumptions: Other States

Alabama	Interest Assumption	California	Interest Assumption
Anniston City Policemen's and Firemen's Retirement Fund ¹	8.00%	Judges Retirement Plan II ²	7.00%
Birmingham City Firemen's and Policemen's Supplemental Pension System ²	7.00%	Kern Co. Employees' Retirement Assoc. ⁷	7.75%
Birmingham City Health Dept. Employees Retirement and Relief System ²	7.00%	Legislators Retirement Plan ²	5.75%
Birmingham City Limited Firemen's Retirement and Relief Plan ²	7.00%	Long Beach City Public Agency Retirement System Defined Benefit Plans for Special Status Contractors & Seasonal & Temporary Employees ²	5.00%
Birmingham City Limited Policemen's Retirement and Relief Plan ²	7.00%	Los Angeles City Employees' Retirement Plan ²	7.75%
Birmingham City Policemen's Pension and Relief System ²	7.00%	Los Angeles City Fire and Police Pension Plan ²	7.75%
Birmingham City Retirement and Relief System ²	7.00%	Los Angeles City Water & Power Employees' Retirement, Disability & Death Benefit Insurance Plan ²	7.75%
Birmingham City Unclassified Employees Pension and Relief System ²	7.00%	Los Angeles Co. Employees Retirement Assoc. ¹²	7.60%
Employees' Retirement System ³	8.00%	Marin Co. Employees' Retirement Assoc. ⁷	7.50%
Florence City Employees' Retirement System ³	7.50%	Mendocino Co. Employees' Retirement Assoc. ⁷	7.75%
Jefferson Co. Genl. Retirement System ⁴	7.00%	Merced Co. Employees' Retirement Assoc. ⁷	7.75%
Judicial Retirement System ³	8.00%	Oakland Municipal Employees' Retirement System ²	6.50%
Mobile City Police and Firefighters Retirement Plan ¹	8.00%	Oakland Police and Fire Retirement System ²	6.75%
Teachers Retirement System ³	8.0%	Orange Co. Employees Retirement System ¹¹	7.75%
Tuscaloosa City Employees Retirement Plan ³	6.00%	Pasadena Fire and Police Retirement System ²	6.00%
Tuscaloosa City Fire and Police Retirement System ³	8.00%	Public Employees Retirement Plan ²	7.50%
Tuscaloosa Police Officers and Firefighters Supplemental Retirement Plan ³	6.00%	Sacramento City Employees' Retirement System ²	6.50%
	Interest Assumption	Sacramento Co. Employees' Retirement System ⁷	7.50%
Alaska		San Bernardino Co. Employees' Retirement Assoc. ⁷	7.75%
Anchorage Municipality Police & Fire Retirement System ²	8.00%	San Clemente City Employees' Retirement Plan ²	7.25%
Elected Public Officers Retirement System ⁵	4.75%	San Diego City Employees' Retirement System ²	7.50%
Judicial Retirement System ⁵	8.00%	San Diego Co. Employees Retirement Assoc. ¹³	8.00%
National Guard & Naval Militia Retirement System ⁵	7.00%	San Francisco City Employees' Retirement System ²	7.75%
Public Employees' Retirement System ⁶	8.00%	San Joaquin Co. Employees' Retirement Assoc. ⁷	7.75%
Teachers' Retirement System ⁶	8.00%	San Jose City Federated City Employees' Retirement System ²	7.50%
	Interest Assumption	San Jose City Police and Fire Dept. Retirement Plan ²	7.50%
Arizona		San Luis Obispo Co. Pension Trust ¹¹	7.75%
Corrections Officer Retirement Plan ⁷	8.00%	San Mateo Co. Employees' Retirement Assoc. ⁷	7.50%
Elected Officials' Retirement Plan ⁷	8.00%	Santa Barbara Co. Employees' Retirement System ⁷	7.75%
Phoenix City Employees' Retirement Plan ²	8.00%	Sonoma Co. Employees' Retirement Assoc. ¹⁴	7.50%
Public Safety Personnel Retirement System ⁷	8.00%	Stanislaus Co. Employees' Retirement Assoc. ⁷	7.75%
State Retirement System ^{8/7}	8.0%	State Teachers Retirement System ⁷	7.50%
Tucson City Supplemental Retirement System ⁴	7.75%	Tulare Co. Employees' Retirement Assoc. ⁷	7.75%
	Interest Assumption	University of California Retirement Plan ⁹	7.50%
Arkansas		Ventura Co. Employees' Retirement Assoc. ⁷	7.75%
Judicial Retirement System ⁷	7.25%		Interest Assumption
Little Rock City Firemen's Pension & Relief Fund ⁹	5.00%	Colorado	
Little Rock City Policemen's Pension & Relief Fund ⁹	5.00%	Adams Co. Retirement Plan ¹⁵	7.50%
Little Rock City Nonuniformed Employees' Defined Benefit Pension Plan ⁹	5.00%	Arapahoe Co. Retirement Plan ⁹	7.50%
144 Municipal Police and Fire Pension & Relief Funds ⁹	3% (81) 5% (51) 7% (12)	City of Aurora Genl. Employees' Retirement Plan ¹⁶	8.00%
Public Employees Retirement System ⁷	8.00%	City of Boulder Old Hire Fire Defined Benefit Plan ¹¹	7.50%
State Highway Employees Retirement System ¹⁰	8.00%	City of Boulder Old Hire Police Defined Benefit Plan ¹¹	7.50%
State Police Retirement System ⁷	8.00%	City of Denver Employees Retirement Plan ⁹	8.00%
Teacher Retirement System ⁴	8.0%	City and Co. of Denver Water Utility Pension Plan ¹¹	7.50%
	Interest Assumption	El Paso Co. Retirement Plan ¹⁵	8.00%
California		Fire & Police Pension Assoc. ⁹	7.50%
Alameda Co. Employees' Retirement Assoc. ¹¹	7.80%	Public Employees Retirement Assoc. ²	7.75%
Contra Costa Co. Employees' Retirement Assoc. ¹¹	7.80%	City of Bridgeport Public Safety Plan A ²	8.00%
Fresno City Employees Retirement System ²	8.00%	City of Bridgeport Police Retirement Plan B ²	8.00%
Fresno City Fire and Police Retirement System ²	8.00%	City of Bridgeport Firefighters' Retirement Plan B ²	8.00%
Fresno Co. Employees' Retirement Assoc. ⁷	7.75%	City of Bridgeport Janitors' and Engineers' Retirement Plan ²	8.00%
Imperial Co. Employees' Retirement System ²	7.75%	City of Bristol Firefighters' Benefit Plan ⁴	7.75%
Irvine City Defined Benefit Pension Plan ²	5.50%	City of Bristol Retirement System ⁴	7.75%
Judges Retirement Plan ²	4.25%	City of Bristol Police Benefit Plan ⁴	7.75%
		City of Danbury Genl. Employees Plan ²	7.25%
		City of Danbury Pre-1967 Policemen Pension Plan ²	7.25%
		City of Danbury Pre-1967 Firemen Pension Plan ²	7.25%
		City of Danbury Post-1967 Policemen Pension Plan ²	8.00%
		City of Danbury Post-1967 Firemen Pension Plan ²	8.00%
		City of Danbury Post-1983 Policemen Pension Plan ²	8.00%
		City of Groton Employees' Retirement Plan ²	7.50%
		City of Hartford Municipal Employees' Retirement Fund ²	8.00%
		City of Hartford RAF/PBF/FRF Plan ²	8.00%
		City of Hartford 415 (m) Fund ²	8.00%

	Interest Assumption		Interest Assumption
Delaware		Florida	
State Judiciary Pension Plan ⁷	7.50%	City of Cocoa Beach Fire Ret. System ¹⁹	8.00%
State Police Pension Plan ⁷	7.50%	City of Cocoa Beach Genl. Empl. Ret. System ¹⁹	8.00%
State Port Corporation Pension Plan ⁷	7.50%	City of Cocoa Beach Police Ret. System ¹⁹	8.00%
State Volunteer Firemen Pension Plan ⁷	7.50%	City of Copper City Fire Ret. System ¹⁹	7.50%
Wilmington Park Trust Pension Plan ²	8.00%	City of Copper City Genl. Empl. Ret. System ²⁰	7.50%
		City of Copper City Management Empl. Ret. System ¹⁹	7.50%
		City of Copper City Police Ret. System ¹⁹	7.50%
District of Columbia		City of Coral Gables Genl. Empl., Police & Fire Ret. System ¹⁹	7.75%
Police Officers' & Firefighters' Retirement Plan ¹⁸	6.50%	City of Coral Springs Fire Ret. System ¹⁹	8.00%
Teachers' Retirement Plan ¹⁸	6.50%	City of Coral Springs Genl. Empl. Ret. System ¹⁹	7.50%
		City of Coral Springs Police Ret. System ¹⁹	8.00%
Florida		City of Crescent City Fire Ret. System ²⁰	6.50%
Alachua Co. Library Genl. Empl. Ret. Plan ¹⁹	7.75%	City of Crescent City Police Ret. System ²⁰	8.00%
Bal Harbour Village Genl. Empl. Ret. System ²⁰	7.50%	City of Crestview Genl. Empl. Ret. System ¹⁹	8.00%
Bal Harbour Village Police Ret. System ¹⁹	8.00%	City of Crestview Police and Fire Ret. System ¹⁹	8.00%
Bay Medical Center Genl. Empl. Ret. System ¹⁹	8.00%	City of Dade City Fire Ret. System ¹⁹	7.80%
Belle Glade Housing Auth. Genl. Empl. Ret. System ¹⁹	5.50%	City of Dade City Police Ret. System ¹⁹	7.80%
Boca Grande Fire Control District Fire Ret. System ¹⁹	7.75%	City of Dania Beach Fire Ret. System ¹⁹	8.00%
Boca Raton Housing Auth. Genl. Empl. Ret. System ¹⁹	7.50%	City of Dania Beach Genl. Empl. Ret. System ²⁰	7.50%
Bonita Springs Fire Control District Fire Ret. System ¹⁹	8.00%	City of Davie Fire Ret. System ¹⁹	7.90%
Bonita Springs Fire Control District Genl. Empl. Ret. System ¹⁹	8.00%	City of Davie Genl. & Management Empl. Ret. System ²⁰	7.75%
City of Altamonte Springs Genl. Empl. Ret. Plan ¹⁹	7.50%	City of Davie Police Ret. System ¹⁹	7.90%
City of Altamonte Springs Police Ret. System ¹⁹	7.50%	City of Dania Beach Police Ret. System ¹⁹	8.00%
City of Apopka Fire Ret. System ²⁰	8.00%	City of Daytona Police & Fire Ret. System ¹⁹	7.50%
City of Apopka Genl. Empl. Ret. System ²⁰	8.00%	City of Deerfield Beach Fire Ret. System ²⁰	7.63%
City of Apopka Police Ret. System ²⁰	8.00%	City of Deerfield Beach Genl. Empl. Ret. System ²³	7.50%
City of Arcadia Genl. Empl. Ret. System ²¹	6.50%	City of Deerfield Beach Police Ret. System ¹⁹	6.75%
City of Arcadia Police and Fire Ret. System ¹⁹	8.00%	City of Deland Firefighters' Ret. Trust Fund ³	8.00%
City of Atlantic Beach Genl. Empl. Ret. System ²²	8.00%	City of Deland Genl. Empl. Ret. Trust Fund ³	7.50%
City of Atlantic Beach Police Ret. System ²²	8.00%	City of Deland Police Officers' Ret. Trust Fund ³	7.50%
City of Atlantis Police Ret. System ¹⁹	7.69%	City of Deltona Firefighters' Pension Plan ³	8.00%
City of Auburndale Fire Ret. System ¹⁹	7.75%	City of Dunedin Fire Ret. System ¹⁹	7.75%
City of Auburndale Genl. Empl. Ret. System ¹⁹	7.50%	City of Dunnellon Firefighters & Police Officers Defined Benefit Ret. Plan ¹	7.50%
City of Auburndale Police Ret. System ¹⁹	7.75%	City of Eatonville Police Ret. System ²⁰	8.00%
City of Aventura Police Officers' Ret. Plan ¹	7.50%	City of Edgewater Fire Ret. System ¹⁹	7.50%
City of Avon Park Fire Ret. System ¹⁹	7.75%	City of Edgewater Genl. Empl. Ret. System ¹⁹	7.50%
City of Avon Park Police Ret. System ¹⁹	8.00%	City of Edgewater Police Ret. System ²⁰	7.50%
City of Bartow Fire Ret. System ¹⁹	8.00%	City of Eustis Fire Ret. System ¹⁹	8.00%
City of Bartow Genl. Empl. Ret. System ¹⁹	7.75%	City of Eustis Police Ret. System ²⁰	8.00%
City of Bartow Police Ret. System ¹⁹	8.00%	City of Fernandina Beach Genl. Empl. Ret. System ¹⁹	8.00%
City of Belle Glade Genl. Empl. Ret. System ¹⁹	7.75%	City of Fernandina Beach Police & Fire Ret. System ¹⁹	8.00%
City of Belle Glade Police & Fire Ret. System ¹⁹	6.50%	City of Flagler Beach Fire Ret. System ²⁰	8.00%
City of Belleair Police Ret. System ¹⁹	7.75%	City of Flagler Beach Police Ret. System ²⁰	8.00%
City of Belleair Bluffs Fire Ret. System ¹⁹	8.00%	City of Florida City Police Ret. System ²⁰	7.00%
City of Belleview Police Ret. System ¹⁹	7.75%	City of Fort Lauderdale Genl. Empl. Ret. System ²⁴	7.75%
City of Boca Raton Executive Empl. Ret. System ¹⁹	7.75%	City of Fort Lauderdale Police and Fire Ret. System ¹⁵	7.50%
City of Boca Raton Genl. Empl. Ret. System ¹⁹	8.00%	City of Fort Meade Fire Ret. System ²⁰	7.50%
City of Boca Raton Police & Fire Ret. System ¹⁹	8.00%	City of Fort Meade Genl. Empl. Ret. System ²⁰	7.50%
City of Boynton Beach Fire Ret. System ¹⁹	7.95%	City of Fort Meade Police Ret. System ²⁰	7.50%
City of Boynton Beach Genl. Empl. Ret. System ¹⁹	8.00%	City of Fort Myers Fire Ret. System ¹⁹	8.50%
City of Boynton Beach Police Ret. System ¹⁹	7.75%	City of Fort Myers Genl. Empl. Ret. System ¹⁹	8.50%
City of Bradenton Fire Ret. System ¹⁹	8.00%	City of Fort Myers Police Ret. System ¹⁹	8.00%
City of Bradenton Police Ret. System ¹⁹	8.00%	City of Fort Pierce Genl. Empl. Ret. System ¹⁹	8.00%
City of Brooksville Fire Ret. System ¹⁹	7.75%	City of Fort Pierce Police Ret. System ¹⁹	8.00%
City of Brooksville Police Ret. System ¹⁹	7.50%	City of Fort Pierce Police Supplemental Ret. System ¹⁹	7.50%
City of Bunnell Fire Ret. System ²⁰	8.00%	City of Fort Pierce Utilities Genl. Empl. Ret. System ²²	8.00%
City of Bushnell Genl. Empl. Ret. System ¹⁹	8.00%	City of Fort Walton Beach Fire Ret. System ¹⁹	8.00%
City of Bushnell Police Ret. System ¹⁹	8.00%	City of Fort Walton Beach Genl. Empl. Ret. System ¹⁹	7.90%
City of Cape Coral Fire Ret. System ¹⁹	8.00%	City of Fort Walton Beach Police Ret. System ¹⁹	8.00%
City of Cape Coral Genl. Empl. Ret. System ¹⁹	7.75%	City of Frostproof Genl. Empl. Ret. System ²⁰	7.25%
City of Cape Coral Police Ret. System ¹⁹	8.00%	City of Frostproof Police Ret. System ¹⁹	8.00%
City of Casselberry Police & Fire Ret. System ¹⁹	8.00%	City of Fruitland Park Fire Ret. System ²⁰	4.00%
City of Chattahoochee Fire Ret. System ²⁰	6.00%	City of Gainesville Consolidated Police Officers' & Firefighters' Ret. Plan ³	8.50%
City of Clearwater Fire Ret. System ²¹	3.50%	City of Gainesville Empl. Disability Plan ³	8.50%
City of Clearwater Genl. Empl., Police & Fire Ret. System ²¹	7.50%	City of Gainesville Empl. Pension Plan ³	8.50%
City of Clermont Fire Ret. System ¹⁹	7.50%	City of Golden Beach Genl. Empl. Ret. System ²⁰	7.50%
City of Clermont Genl. Empl. Ret. System ¹⁹	7.50%	City of Golden Beach Police Ret. System ²⁰	7.50%
City of Clermont Police Ret. System ¹⁹	7.50%	City of Green Cove Springs Police Ret. System ¹⁹	7.50%
City of Clewiston Genl. Empl. Ret. System ²⁰	8.00%	City of Greenacres Police & Fire Ret. System ¹⁹	7.25%
City of Cocoa Fire Ret. System ¹⁹	8.00%	City of Gulf Breeze Police Ret. System ²⁰	7.50%
City of Cocoa Genl. Empl. Ret. System ¹⁹	8.00%	City of Gulfport Fire Ret. System ¹⁹	8.00%
City of Cocoa Police Ret. System ¹⁹	8.00%	City of Gulfport Genl. Empl. Ret. System ¹⁹	7.50%

Florida	Interest Assumption	Florida	Interest Assumption
City of Gulfport Police Ret. System ¹⁹	8.00%	City of Lauderdale Confidential & Managerial Empl. Ret. Plan ³	7.75%
City of Haines City Fire Ret. System ¹⁹	7.50%	City of Lauderdale Firefighter Ret. System ³	8.00%
City of Haines City Genl. Empl. Ret. System ¹⁹	8.00%	City of Lauderdale Genl. Employee Ret. System ³	8.00%
City of Haines City Police Ret. System ¹⁹	7.50%	City of Lauderdale Police Ret. System ³	7.75%
City of Hallandale Beach Genl. Empl. Ret. System ¹⁹	7.50%	City of Leesburg Fire Ret. System ¹⁹	7.75%
City of Hallandale Beach Police and Fire Ret. System ¹⁹	7.75%	City of Leesburg Genl. Empl. Ret. System ¹⁹	7.50%
City of Hallandale Beach Professional & Management Empl. Ret. System ¹⁹	7.75%	City of Leesburg Police Ret. System ¹⁹	7.90%
City of Hallandale Beach Professional & Management Employees Excess Benefits Ret. System ¹⁹	7.75%	City of Lighthouse Point Police and Fire Ret. System ¹⁹	7.75%
City of Havana Fire Ret. System ²⁰	8.00%	City of Live Oak Fire Ret. System ²⁰	7.50%
City of Hialeah Genl. Empl., Police & Fire Ret. System ²⁰	8.00%	City of Longboat Key Fire Ret. System ¹⁹	8.00%
City of Hialeah Elected Officials Ret. Plan ²³	6.00%	City of Longboat Key Genl. Empl. Ret. System ¹⁹	8.00%
City of Hialeah Gardens Police Ret. System ¹⁹	7.75%	City of Longboat Key Police Ret. System ¹⁹	8.00%
City of Holly Hill Fire Ret. System ¹⁹	7.50%	City of Longwood Police and Fire Ret. System ¹⁹	7.50%
City of Holly Hill Police Ret. System ¹⁹	7.50%	City of Lynn Haven Fire Ret. System ¹⁹	8.00%
City of Hollywood Police Officers' Ret. System ¹⁸	7.75/8.00%	City of Lynn Haven Genl. Empl. Ret. System ¹⁹	8.00%
City of Holmes Beach Police Ret. System ¹⁹	7.50%	City of Lynn Haven Police Ret. System ¹⁹	8.00%
City of Homestead Fire Ret. System ²¹	6.50%	City of Macclenny Fire Ret. System ²⁰	7.50%
City of Homestead Genl. & Hospital Empl. Ret. System ¹⁹	7.00%	City of Madison Fire Ret. System ¹⁹	8.00%
City of Homestead New Elected Officials & Senior Management Empl. Ret. System ²⁵	7.00%	City of Madison Police Ret. System ¹⁹	8.00%
City of Homestead Old Elected Officials Ret. System ²⁰	7.00%	City of Maitland Police and Fire Ret. System ¹⁹	7.90%
City of Homestead Police Ret. System ¹⁹	8.00%	City of Marathon Fire Ret. System ²⁰	7.50%
City of Howey-In-The-Hills Police Ret. System ²⁰	8.00%	City of Marco Island Fire Ret. System ¹⁹	7.50%
City of Indialantic Genl. Empl. Ret. System ¹⁹	7.00%	City of Marco Island Police Ret. System ²⁰	8.00%
City of Indialantic Police and Fire Ret. System ¹⁹	8.00%	City of Marianna Fire Ret. System ¹⁹	7.50%
City of Indian Harbour Beach Police Ret. System ¹⁹	8.00%	City of Marianna Police Ret. System ¹⁹	7.50%
City of Indian River Shores Police Ret. System ¹⁹	6.90%	City of Medley Police Ret. System ¹⁹	7.50%
City of Indian Shores Police Ret. System ¹⁹	7.50%	City of Medley Elected and Genl. Empl. Ret. System ²⁰	7.00%
City of Jacksonville Corrections Officers Ret. Plan ¹⁸	7.75%	City of Melbourne Fire Ret. System ²⁰	8.00%
City of Jacksonville Genl. Empl. Ret. Plan ¹⁸	7.75%	City of Melbourne Genl. Empl. Ret. System ¹⁹	8.00%
City of Jacksonville Police and Fire Pension Plan ²⁶	7.75/7.50/7.25%	City of Melbourne Police Ret. System ¹⁹	7.50%
City of Jacksonville Beach Fire Ret. System ¹⁹	8.00%	City of Melbourne Special Risk Empl. Ret. System ¹⁹	8.00%
City of Jacksonville Beach Genl. Empl. Ret. System ¹⁹	8.00%	City of Melbourne Beach Police Ret. System ¹⁹	8.00%
City of Jacksonville Beach Police Ret. System ¹⁹	8.00%	City of Miami Elected Officers Ret. Plan ²⁷	3.75%
City of Jupiter Police Ret. System ¹⁹	7.50%	City of Miami Firefighters' & Police Officers' Ret. Plan ¹	7.75%
City of Jupiter Island Genl. Empl., Police & Fire Ret. System ¹⁹	7.00%	City of Miami Genl. Empl. & Sanitation Empl. Ret. Plan ²⁷	8.10%
City of Key Biscayne Police & Fire Ret. System ¹⁹	8.00%	City of Miami Off-Street Parking Genl. Empl. Ret. Plan ¹⁹	7.50%
City of Key West Genl. Empl. Ret. Plan ³	8.00%	City of Miami Beach Empl. Ret. System ³	8.15%
City of Key West Housing Empl. Ret. System ¹⁹	8.00%	City of Miami Beach Firefighters & Police Officers Ret. System ³	8.10%
City of Key West Police Officers & Firefighters Ret. Plan ³	7.90%	City of Miami Springs Genl. Empl. Ret. System ¹⁹	7.70%
City of Key West Utility Empl. Ret. System ²¹	8.00%	City of Miami Springs Police and Fire Ret. System ¹⁹	7.70%
City of Kissimmee Fire Ret. System ¹⁹	8.00%	City of Milton Fire Ret. System ¹⁹	8.00%
City of Kissimmee Genl. Empl. Ret. System ¹⁹	8.00%	City of Milton Genl. Empl. Ret. System ¹⁹	8.00%
City of Kissimmee Police Ret. System ¹⁹	8.00%	City of Milton Police Ret. System ¹⁹	8.00%
City of Labelle Fire Ret. System ¹⁹	6.75%	City of Miramar Firefighters' Ret. Plan ³	8.50%
City of Lady Lake Police Ret. System ¹⁹	7.75%	City of Miramar Genl. Empl. Ret. Plan ³	7.50%
City of Lake Alfred Genl. Empl. Ret. System ¹⁹	7.75%	City of Miramar Management Ret. Plan ³	7.50%
City of Lake Alfred Police & Fire Ret. System ¹⁹	8.00%	City of Miramar Police Officers' Ret. Plan ³	7.75%
City of Lake City Fire Ret. System ²⁰	7.75%	City of Monticello Fire Ret. System ²⁰	8.00%
City of Lake City Genl. Empl. Ret. System ²⁰	7.75%	City of Monticello Police Ret. System ¹⁹	7.50%
City of Lake City Police Ret. System ¹⁹	7.75%	City of Mount Dora Fire Ret. System ²⁰	8.00%
City of Lake Helen Police Ret. System ²⁰	7.50%	City of Mount Dora Genl. Empl. Ret. System ¹⁹	7.60%
City of Lake Mary Fire Ret. System ¹⁹	7.90%	City of Mount Dora Police Ret. System ¹⁹	7.50%
City of Lake Mary Police Ret. System ¹⁹	7.50%	City of Naples Fire Ret. System ²⁰	7.50%
City of Lake Park Police Ret. System ¹⁹	8.00%	City of Naples Genl. Empl. Ret. System ¹⁹	7.50%
City of Lake Wales Fire Ret. System ¹⁹	7.75%	City of Naples Police Ret. System ¹⁹	7.50%
City of Lake Wales Genl. Empl. Ret. System ¹⁹	7.75%	City of Neptune Beach Police Ret. System ¹⁹	8.00%
City of Lake Worth Fire Ret. System ¹⁹	8.20%	City of New Port Richey Fire Ret. System ¹⁹	8.00%
City of Lake Worth Genl. Empl. Ret. System ¹⁹	8.05%	City of New Port Richey Police Ret. System ¹⁹	8.00%
City of Lake Worth Police Ret. System ¹⁹	8.05%	City of New Smyrna Beach Municipal Firefighters' Ret. Plan ¹	7.90%
City of Lakeland Empl. Pension & Ret. Plan ¹	7.25%	City of New Smyrna Beach Municipal Police Officers' Ret. Plan ¹	8.00%
City of Lakeland Police Ret. System ²⁰	7.75%	City of North Miami Fire Ret. System ²⁰	7.50%
City of Lakeland Fire Supplemental Ret. System ²³	7.50%	City of North Miami Genl. Empl. Ret. Plan ²⁰	7.50%
City of Lantana Fire Ret. System ²²	8.00%	City of North Miami Police Ret. System Ord. 691 ²⁰	7.50%
City of Lantana Police Ret. System ¹⁹	7.50%	City of North Miami Police Ret. System Ord. 748 ²⁰	8.50%
City of Largo Police and Fire Ret. System ¹⁹	7.50%	City of North Miami Beach Genl. Empl. Ret. System ¹⁹	7.75%
City of Lauderdale-By-The-Sea Vol. Fire Ret. System ²³	7.00%	City of North Miami Beach Management Empl. Ret. System ²⁰	7.75%
		City of North Miami Beach Police & Fire Ret. System ²⁰	8.00%
		City of North Port Fire Ret. System ¹⁹	8.00%

Florida	Interest Assumption	Florida	Interest Assumption
City of North Port Police Ret. System ¹⁹	8.00%	City of Rockledge Police Ret. System ²⁰	8.00%
City of Oakland Park Genl. Empl. Ret. System ²⁰	7.50%	City of Safety Harbor Fire Ret. System ¹⁹	7.50%
City of Oakland Park Police and Fire Ret. System ¹⁹	7.75%	City of Saint Augustine Fire Ret. System ¹⁹	7.50%
City of Ocala Firefighters' Ret. Plan ³	7.75%	City of Saint Augustine Genl. Empl. Ret. System ¹⁹	7.75%
City of Ocala Genl. Empl. Ret. System ³	8.00%	City of Saint Augustine Police Ret. System ¹⁹	7.75%
City of Ocala Police Officers' Ret. System ³	8.30%	City of St. Cloud Genl. Empl. Ret. Plan ¹	8.00%
City of Ocoee Genl. Empl. Ret. Plan ³	8.00%	City of St. Cloud Police Officers' & Firefighters' Ret. Plan ¹	8.50%
City of Ocoee Police Officers & Firefighters Ret. Plan ³	8.00%	City of Saint Pete Beach Fire Ret. System ²⁰	8.50%
City of Okeechobee Firefighters' Ret. Plan ¹⁹	7.00%	City of Saint Pete Beach Genl. Empl. Ret. System ²⁰	8.00%
City of Okeechobee Genl. Empl. Ret. Plan ¹⁹	7.00%	City of Saint Pete Beach Police Ret. System ¹⁹	7.75%
City of Okeechobee Police Ret. System ¹⁹	7.00%	City of St. Petersburg Fire Ret. System ³	8.00%
City of Oldsmar Fire Ret. System ¹⁹	7.50%	City of St. Petersburg Genl. Empl. Ret. System ³	7.75%
City of Orange Park Fire Ret. System ¹⁹	8.00%	City of St. Petersburg Police Ret. System ³	8.00%
City of Orange Park Genl. Empl. Ret. Plan ¹⁹	8.00%	City of Sanford Fire Ret. System ¹⁹	8.00%
City of Orange Park Police Ret. System ¹⁹	8.00%	City of Sanford Police Ret. System ¹⁹	8.00%
City of Orlando Firefighters' Pension Plan ³	8.00%	City of Sanibel Genl. Empl. Pension Plan ³	7.50%
City of Orlando Genl. Empl. Pension Plan ³	8.00%	City of Sanibel Municipal Police Officers' Pension Plan ³	8.00%
City of Orlando Police Pension Plan ³	8.00%	City of Sarasota Fire Ret. System ¹⁹	7.75%
City of Ormond Beach Fire Ret. System ¹⁹	7.50%	City of Sarasota Genl. Empl. Ret. System ²²	8.00%
City of Ormond Beach Genl. Empl. Ret. System ²⁰	7.50%	City of Sarasota Police Ret. System ²²	7.75%
City of Ormond Beach Police Ret. System ¹⁹	7.50%	City of Satellite Beach Genl. Empl. Ret. System ¹⁹	7.75%
City of Oviedo Fire Ret. System ¹⁹	8.00%	City of Satellite Beach Police and Fire Ret. System ¹⁹	7.75%
City of Oviedo Police Ret. System ¹⁹	8.00%	City of Sebastian Police Ret. System ²⁰	8.00%
City of Palatka Fire Ret. System ¹⁹	8.00%	City of Sebring Fire Ret. System ¹⁹	8.00%
City of Palatka Genl. Empl. Ret. System ¹⁹	8.00%	City of Sebring Police Ret. System ¹⁹	8.00%
City of Palatka Police Ret. System ¹⁹	8.00%	City of Seminole Fire Ret. System ¹⁹	8.00%
City of Palm Bay Fire Ret. System ¹⁹	8.00%	City of Shalimar Police Ret. System ¹⁹	7.50%
City of Palm Bay Genl. Empl. Ret. System ¹⁹	8.00%	City of South Miami Genl. Empl. Ret. System ¹⁹	7.00%
City of Palm Bay Police Ret. System ¹⁹	8.00%	City of South Miami Police Ret. System ¹⁹	7.00%
City of Palm Beach Fire Ret. System ²²	8.00%	City of South Pasadena Fire Ret. System ¹⁹	8.00%
City of Palm Beach Genl. Empl. Ret. System ²²	8.00%	City of Starke Fire Ret. System ²⁰	8.00%
City of Palm Beach Lifeguards Ret. System ²²	8.00%	City of Starke Genl. Empl. Ret. System ²⁰	8.00%
City of Palm Beach Police Ret. System ²²	8.00%	City of Starke Police Ret. System ²⁰	8.00%
City of Palm Beach Gardens Fire Ret. System ²²	8.25%	City of Sunrise Fire Ret. System ¹⁹	8.00%
City of Palm Beach Gardens Genl. Empl. Ret. System ¹⁹	7.25%	City of Sunrise Genl. Empl. Ret. System ¹⁹	8.00%
City of Palm Beach Gardens Police Ret. System ¹⁹	7.40%	City of Sunrise Police Officers' Ret. Plan ¹	8.20%
City of Palm Coast Volunteer Fire Ret. System ¹⁹	8.00%	City of Surfside Genl. Empl. Ret. System ¹⁹	7.50%
City of Palmetto Genl. Empl. Ret. System ¹⁹	7.50%	City of Surfside Police Ret. System ¹⁹	7.50%
City of Palmetto Police Ret. System ¹⁹	7.90%	City of Sweetwater Police Ret. System ¹⁹	7.50%
City of Panama City Fire Ret. System ¹⁹	8.00%	City of Tallahassee Fire Ret. System ²³	7.75%
City of Panama City Genl. Empl. Suppl. Ret. System ¹⁹	7.50%	City of Tallahassee Genl. Empl. Ret. System ²³	7.75%
City of Panama City Police Ret. System ¹⁹	8.00%	City of Tallahassee Police Ret. System ²³	7.75%
City of Parkland Police Ret. System ²⁰	7.00%	City of Tamarac Executive Empl. Ret. System ¹⁹	7.00%
City of Pembroke Pines Genl. Empl. Ret. System ¹⁹	7.75%	City of Tamarac Fire Ret. System ²⁰	7.00%
City of Pembroke Pines Police and Fire Ret. System ¹⁹	8.00%	City of Tamarac Genl. Empl. Ret. System ²⁰	7.00%
City of Pensacola Fire Ret. System ²⁰	8.00%	City of Tamarac Police Ret. System ¹⁹	7.00%
City of Pensacola Genl. Empl. Ret. System ²⁰	8.00%	City of Tampa Firefighters & Police Officers Pension Trust Fund ³	10.00%
City of Pensacola Police Ret. System ²³	8.00%	City of Tampa Genl. Empl. Ret. Trust Fund ³	8.00%
City of Perry Fire Ret. System ¹⁹	8.00%	City of Tarpon Springs Fire Ret. System ¹⁹	7.90%
City of Perry Police Ret. System ¹⁹	8.00%	City of Tarpon Springs Police Ret. System ¹⁹	7.90%
City of Pinellas Park Fire Ret. System ¹⁹	8.00%	City of Tavares Fire Ret. System ¹⁹	8.00%
City of Pinellas Park Genl. Empl. Ret. System ²⁰	7.50%	City of Tavares Police Ret. System ¹⁹	8.00%
City of Pinellas Park Police Ret. System ¹⁹	7.50%	City of Temple Terrace Fire Ret. System ¹⁹	8.00%
City of Plant City Safety Empl. Ret. Plan ¹	8.00%	City of Temple Terrace Police Ret. System ¹⁹	8.00%
City of Plantation Genl. Empl. Ret. Plan ³	7.70/7.50%	City of Tequesta Fire Ret. System ¹⁹	7.50%
City of Plantation Police Officers' Ret. Plan ³	7.10/6.50%	City of Tequesta Genl. Empl. Ret. System ¹⁹	7.50%
City of Plantation Volunteer Firefighters' Ret. Plan ³	7.00%	City of Tequesta Police Ret. System ¹⁹	7.50%
City of Pompano Beach Fire Ret. System ¹⁹	7.90%	City of Titusville Genl. Empl. Ret. System ¹⁹	8.00%
City of Pompano Beach Genl. Empl. Ret. System ¹⁹	8.00%	City of Titusville Police and Fire Ret. System ¹⁹	8.00%
City of Pompano Beach Police Ret. System ¹⁹	8.10%	City of Umatilla Police Ret. System ¹⁹	7.50%
City of Ponce Inlet Volunteer Fire Ret. System ²⁰	8.00%	City of Valparaiso Police and Fire Ret. System ¹⁹	7.50%
City of Port Orange Fire Ret. System ¹⁹	8.00%	City of Venice Fire Ret. System ¹⁹	7.75%
City of Port Orange Genl. Empl. Ret. Plan ¹⁹	7.50%	City of Venice Police Ret. System ¹⁹	7.90%
City of Port Orange Police Ret. System ²³	8.00%	City of Vero Beach Fire Ret. System ¹⁹	7.00%
City of Port St. Lucie Police Ret. System ²⁰	8.50%	City of Vero Beach Genl. Empl. Ret. System ¹⁹	7.75%
City of Punta Gorda Fire Ret. System ¹⁹	8.00%	City of Vero Beach Police Ret. System ¹⁹	8.00%
City of Punta Gorda Genl. Empl. Ret. System ¹⁹	8.00%	City of Wauchula Genl. Empl. & Police Ret. System ¹⁹	7.50%
City of Punta Gorda Police Ret. System ¹⁹	8.00%	City of West Melbourne Police Ret. System ¹⁹	7.75%
City of Quincy Police and Fire Ret. System ²⁰	8.00%	City of West Palm Beach Fire Ret. System ¹⁹	8.25%
City of Riviera Beach Fire Ret. System ¹⁹	7.60%	City of West Palm Beach Genl. Empl. Ret. System ²²	8.00%
City of Riviera Beach Genl. Empl. Ret. System ¹⁹	7.70%	City of West Palm Beach Police Ret. System ²²	8.00%
City of Riviera Beach Police Ret. System ²²	7.50%	City of Williston Genl. Empl. Ret. System ¹⁹	7.50%
City of Rockledge Fire Ret. System ²⁰	8.00%	City of Williston Police Ret. System ¹⁹	7.25%
City of Rockledge Genl. Empl. Ret. System ²⁰	8.00%		

Illinois	Interest Assumption	Illinois	Interest Assumption
Galesburg City Police Pension Plan ⁴	7.00%	Sugar Grove Village Police Pension Plan ³³	7.00%
Genl. Assembly Ret. System ¹²	7.00%	Teachers' Ret. System ²	8.00%
Geneseo City Police Pension Plan ²	7.50%	Tinley Park Village Police Pension Plan ³³	7.00%
Glenview Village Firefighters' Pension Plan ²	7.25%	Urbana City Firemen's Pension Plan ²	7.00%
Glenview Village Police Pension Plan ²	7.25%	Urbana City Police Pension Plan ²	7.00%
Glen Ellyn Village Police Pension Plan ³³	7.50%	Waukegan City Firefighters' Pension Plan ²	7.00%
Hazel Crest Village Firefighters' Pension Plan ³³	7.50%	Waukegan City Police Pension Plan ²	7.00%
Hazel Crest Village Police Pension Plan ³³	7.00%	Wheaton City Firefighters' Pension Plan ³³	7.25%
Highland City Police Pension Plan ³³	7.00%	Wheaton City Police Pension Plan ³³	7.25%
Hillside Village Firefighters' Pension Plan ³³	7.00%	Wilmette Village Firefighters' Pension Plan ⁴	7.35%
Hillside Village Police Pension Plan ³³	7.00%	Wilmette Village Police Pension Plan ⁴	7.35%
Homewood Village Firefighters' Pension Plan ³³	4.00%	Willowbrook Village Police Pension Plan ³³	7.50%
Homewood Village Police Pension Plan ³³	4.00%	Yorkville City Police Pension Plan ³³	7.50%
Illinois Municipal Ret. Fund ⁸	7.5%		
Joliet City Firefighters' Pension Plan ¹⁶	7.00%		Interest Assumption
Joliet City Police Pension Plan ¹⁶	7.00%	Indiana	
Judges' Ret. System ¹²	7.00%	1977 Police Officers' & Firefighters' Pension & Disability Plan ⁷	6.75%
Kankakee City Firefighter's Pension Plan ³³	7.00%	Allen Co. Police Benefit Plan ³⁸	7.25%
Kankakee City Police Pension Plan ³³	7.00%	Allen Co. Police Ret. Plan ³⁸	7.25%
La Grange Village Firefighters' Pension Plan ³³	7.00%	Hamilton Co. Sheriff's Ret. Plan ⁹	7.00%
La Grange Village Police Pension Plan ³³	7.00%	Hamilton Co. Sheriff's Benefit Plan ⁹	7.00%
Laborers' & Ret. Board Empl. Pension Plan of Chicago ²	7.50%	Indianapolis Police and Fire Ret. Plans ¹¹	6.00%
Lake Forest City Firefighters' Pension Plan ³⁵	7.50%	Judges' Ret. System ⁷	6.75%
Lake Forest City Police Pension Plan ³⁵	7.50%	Legislators' Ret. System Defined Benefit Plan ⁷	6.75%
Moline City Firemen's Pension Plan ²	7.50%	Marion Co. Law Enforcement Personnel Ret. Plan ¹⁰	7.50%
Moline City Police Pension Plan ²	7.50%	Marion Co. Law Enforcement Personnel Dependents & Disability Benefits Plan ¹⁰	7.50%
Municipal Employees' Annuity & Benefit Fund of Chicago ¹⁴	7.50%	Prosecuting Attorneys' Ret. Fund ⁷	6.75%
Naperville City Firemen's Pension Plan ³³	7.00%	Public Ret. System ⁷	6.75%
Naperville City Police Pension Plan ³³	7.00%	State Excise Police, Gaming Agent, Gaming Control Officer & Conservation Enforcement Officers' Ret. Plan ⁷	6.75%
Normal City Firemen's Pension Plan ³⁶	7.00%	State Teachers' Ret. Fund ⁷	6.75%
Normal City Police Pension Plan ³⁶	7.00%		Interest Assumption
Northbrook Village Firefighters' Pension Plan ³³	8.00%	Iowa	
Northbrook Village Police Pension Plan ³³	8.00%	Judicial Ret. Fund ³¹	7.50%
Oak Brook Village Firefighters' Pension Plan ⁹	6.75%	Municipal Fire and Police Ret. System ⁴	7.50%
Oak Brook Village Police Pension Plan ⁹	6.75%	Peace Officers' Ret., Accident & Disability System ³¹	8.00%
Oak Park Village Firefighters' Pension Plan ²	7.00%	Public Empl. Ret. System ³⁷	7.5%
Oak Park Village Police Pension Plan ²	7.00%		Interest Assumption
Orland Park Village Police Pension Plan ²	7.25%	Kansas	
Ottawa City Firefighter's Pension Plan ³³	7.00%	Kansas City Ret. Pension Plan of the Board of Public Utilities ¹¹	8.00%
Ottawa City Police Pension Plan ³³	7.00%	Water Dist. #1 of Johnson Co. Fifth Revised Ret. Plan ⁹	8.5%
Palatine City Firefighter's Pension Plan ⁹	7.50%	Police and Firemen's Ret. System ³⁷	8.00%
Palatine City Police Pension Plan ⁹	7.50%	Public Empl. Ret. System ^{8/37}	8.0%
Park Ridge City Firefighters' Pension Plan ³³	6.50%	Wichita City Empl. Ret. System ²	7.75%
Park Ridge City Police Pension Plan ³³	6.50%	Wichita City Police and Fire Ret. System ²	7.75%
Plainfield Village Police Pension Plan ³³	7.50%		Interest Assumption
Policemen's Annuity and Benefit Fund of Chicago ³⁷	8.00%	Kentucky	
Prospect Heights City Police Pension Plan ³³	7.00%	Bowling Green City Policemen & Firemen's Ret. Fund ²	6.00%
Quincy City Firefighter's Pension Plan ³³	7.50%	City of Louisville Firefighters' Pension Fund ²	7.50%
Quincy City Police Pension Plan ³³	7.50%	City of Louisville Policemen's Ret. Fund ²	7.50%
Ret. Plan for Chicago Transit Authority Employees ¹⁶	8.50%	Co. Empl. Ret. System ⁷	7.75%
Rochelle City Firefighters' Pension Plan ³³	7.50%	Covington City Employees' Pension Plan ⁴	7.50%
Rochelle City Police Pension Plan ³³	7.25%	Covington City Police and Firemen's Pension Plan ⁴	7.50%
Rock Island City Firefighters' Pension Plan ³⁶	7.50%	Empl. Ret. System ⁷	7.75%
Rock Island City Police Pension Plan ³⁶	7.50%	Florence City Volunteer Firemen Ret. Fund ⁴	5.00%
Rockford City Firefighter's Pension Plan ⁴	7.50%	Henderson City Civil Service Plan ²	5.00%
Rockford City Police Pension Plan ⁴	7.50%	Henderson City Police and Fire Pension Fund Plan ²	4.00%
Rolling Meadows City Firefighters' Pension Plan ⁹	7.00%	Lexington City Employees' Pension Fund ²	7.00%
Rolling Meadows City Police Pension Plan ⁹	7.00%	Lexington City Policemen's & Firefighters' Pension Fund ²	8.00%
Romeoville Village Firefighters' Pension Plan ³³	7.00%	Louisville City Firefighters' Pension Fund ²	7.50%
Romeoville Village Police Pension Plan ³³	7.00%	Louisville City Police Pension Fund ²	7.50%
St. Charles City Firemen's Pension Plan ³³	7.00%	Newport City Policemen's & Firefighters' Ret. Fund ⁴	7.50%
St. Charles City Police Pension Plan ³³	7.00%	Newport City Employees' Ret. Fund ⁴	7.50%
Schaumburg Firefighter's Pension Plan ³³	7.50%	Owensboro City Employees Pension Fund ⁴	7.00%
Schaumburg Police Pension Plan ³³	7.50%	Owensboro City Police and Fire Pension Fund ⁴	6.00%
Skokie Village Firefighters' Pension Plan ³³	8.00%	Paducah City Appointive Employees Pension Fund ²	6.00%
Skokie Village Police Pension Plan ³³	8.00%	Paducah City Police and Firefighters' Pension Fund ²	8.00%
South Chicago Heights Village Firefighters' Pension Plan ²	7.00%		
South Chicago Heights Village Police Pension Plan ²	7.00%		
Springfield City Firefighters' Pension Plan ²	7.50%		
Springfield City Police Pension Plan ²	7.50%		
State Employees' Ret. System ¹²	7.75%		
State Universities Ret. System ²	7.75%		

Kentucky		Interest Assumption	Massachusetts		Interest Assumption
State Police Ret. System ⁷		7.75%	Franklin Regional Ret. System ¹⁶		7.875%
Teachers' Ret. System ⁷		7.50%	Leominster Ret. System ³⁸		8.00%
			Melrose Ret. System ⁴⁵		8.00%
Louisiana		Interest Assumption	Newton City Contributory Ret. System ¹⁶		7.75%
Assessors' Ret. Fund ³⁹		7.50%	Plymouth Co. Contributory Ret. System ³⁸		8.25%
Baton Rouge City-Parish Empl. Ret. System ⁴⁰		7.50%	Port Authority Employees' Ret. System ⁹		7.625%
Capitol Area Transit System Pension Plan ⁴¹		7.00%	State-Boston Ret. System: NonTeachers ¹⁶		7.75%
City of Alexandria Employees' Ret. System ⁴²		7.75%	State-Boston Ret. System: Teachers ¹⁶		8.25%
City of New Orleans Employees' Ret. System ¹⁰		7.50%	Taunton City Contributory Ret. System ¹⁶		8.00%
Clerks' of Court Ret. and Relief Plan ⁷		7.50%	Teachers Ret. System ⁴⁶		8.25%
District Attorneys' Ret. System ⁷		7.50%	Water Resources Board Empl. Ret. System ⁴⁷		8.00%
East Jefferson Genl. Hospital Ret. and Savings Plan ⁹		7.50%	Weymouth Contributory Ret. System ⁴⁵		8.00%
Employees' Ret. System of Jefferson Parish ¹¹		7.00%	Worcester City Ret. System ¹⁶		8.00%
Empl. Ret. System of the City of Shreveport ⁴¹		8.50%			
Firefighters' Ret. System ⁷		7.50%	Michigan		Interest Assumption
Harbor Police Ret. System ⁵		7.00%	Bay Co. Employees' Ret. System ³⁷		7.50%
Jefferson Parish Empl. Ret. System ⁹		7.00%	Berrien Co. Employees Amended Ret. Plan ¹¹		8.50%
Municipal Employees' Ret. System ⁷		7.75%	City of Alpena Employees' Ret. System ¹¹		7.00%
Municipal Police Employees' Ret. System ⁷		7.50%	City of Ann Arbor Employees' Ret. Plan ⁴		7.00%
New Orleans Firefighters' Pension and Relief Fund ¹⁰		7.50%	City of Birmingham Employees' Ret. System ⁴		7.00%
Parochial Employees' Ret. System ³⁷		7.50%	City of Detroit Genl. Ret. System ²		7.90%
Registrars of Voters Employees' Ret. System ⁷		7.50%	City of Detroit Police and Fire Ret. System ²		8.00%
School Employees' Ret. System ⁷		7.50%	City of Farmington Hills Employees' Ret. System ²		7.50%
Sheriffs Pension and Relief Fund ⁷		7.90%	City of Flint Employees' Ret. System ²		8.00%
Shreveport City Employees' Ret. System ¹¹		7.75%	City of Grosse Pointe Farms Public Safety Ret. System ⁴		7.50%
Shreveport City Firemen's Pension and Relief Fund ¹¹		7.00%	City of Grosse Pointe Woods Empl. Ret. System ⁷		8.00%
Shreveport City Policemen's Pension & Relief Fund ¹¹		7.00%	City of Harper Woods Employees' Ret. System ¹¹		7.75%
State Empl. Ret. System ³⁷		8.25%	City of Kalamazoo Empl. Ret. System ¹¹		7.50%
State Police Ret. System ⁶		7.50%	City of Lansing Employees' Ret. System ⁷		7.80%
Teachers Ret. System ³⁷		8.25%	City of Lansing Police and Fire Ret. System ⁷		7.80%
West Jefferson Parish Empl. Ret. Plan ⁹		8.00%	City of Marquette Fire and Police Ret. System ⁴		7.00%
			City of Marysville Genl. City Employee Ret. System ⁴		8.00%
Maine		Interest Assumption	City of Marysville Police and Firefighters Ret. System ⁴		8.00%
Consolidated Plan for Participating Local Districts ²		7.25%	City of Pontiac Police and Fire Ret. System ²		7.50%
Judicial Ret. Plan ²		7.25%	City of Pontiac Genl. Employees' Ret. System ²		7.50%
Legislative Ret. Plan ²		7.25%	City of Portage Employees' Ret. System ⁴		7.00%
State Employee Ret. Plan ²		7.25%	City of Roseville Empl. Pension Trust Fund System ¹⁷		7.50%
Teacher Ret. Plan ²		7.25%	City of Royal Oak Ret. System ²		7.75%
			City of St. Clair Shores Genl. Employees' Ret. System ⁴		8.00%
Maryland		Interest Assumption	City of St. Clair Shores Police and Fire Ret. System ⁴		7.50%
Annapolis City Police and Fire Ret. Plan ²		7.50%	City of Sterling Heights Genl. Empl. Ret. System ⁴		8.00%
Anne Arundel Co. Employees' Ret. Plan ¹⁶		8.00%	City of Sterling Heights Police and Fire Ret. System ⁴		8.00%
Baltimore City Elected Officials' Ret. System ²		7.25%	City of Sturgis Employees' Ret. System ³		7.00%
Baltimore City Employees' Ret. System ²		7.75% pre 6.55% post	City of Warren Employees' Ret. System ²		8.00%
Baltimore City Fire & Police Employees' Ret. System ²		7.75%	City of Wyandotte Employees' Ret. System ³		7.50%
Baltimore Co. Employees' Ret. System ⁴		7.875%	City of Wyoming Employees' Ret. Plan ²		7.75%
Correctional Officers' Ret. System ²		7.75%	Genesee Co. Employees' Ret. System ¹¹		8.00%
Employees' and Teachers' Ret. System ²⁷		7.75%	Gogebic Co. Empl. Ret. System ³⁷		7.50%
Frederick City Thirty Year Ret. Plan ²		7.50%	Judges Ret. System ³		8.00%
Frederick City Twenty Five Year Pension System ²		7.50%	Kalamazoo Co. Employees' Ret. System ⁴¹		7.75%
Frederick Co. Employees' Ret. System ⁴³		7.50%	Lenawee Co. Board of Commissioners Employees' Ret. Income Plan ¹¹		8.00%
Hagerstown City Police & Fire Employees' Ret. Plan ²		7.75%	Macomb Co. Empl. Ret. System ³⁷		7.50%
Howard Co. Police & Fire Employees' Ret. Plan ⁴⁴		8.00%	Marquette Board of Light and Power Ret. System ⁴		8.00%
Judges' Ret. System ²		7.75%	Midland Co. Act 345 Ret. System for Sheriff's Dept. Personnel ⁴¹		7.00%
Law Enforcement Officers' Pension System ²		7.75%	Midland Co. Employees' Ret. System ⁴¹		7.50%
Legislative Ret. Plan ²		7.75%	Military Ret. System ¹		8.00%
Maryland-National Capital Park & Planning Comm. Employees' Ret. System ⁴		7.50%	Monroe Co. Empl. Ret. System ³⁷		7.00%
Montgomery Co. Employees' Ret. System ⁷		7.50%	Municipal Empl. Ret. System ^{8/14}		8.00%
Ocean City Genl. Employees Pension Plan and Trust ²		7.50%	Oakland Co. Empl. Ret. System ³		7.25%
Ocean City Public Safety Empl. Pension Plan & Trust ²		7.50%	Public School Empl. Ret. System ³		8.00%
State Police Ret. System ²		7.75%	St. Clair Co. Empl. Ret. System ³⁷		7.50%
Takoma Park City Police Employees' Ret. Plan ²		8.00%	State Employees Defined Benefit Ret. System ³		8.00%
			State Police Ret. System ³		8.00%
Massachusetts		Interest Assumption	Washtenaw Co. Empl. Ret. System ¹¹		7.75%
Braintree Ret. System ¹⁶		7.875%	Wayne Co. Employees' Ret. System ⁴⁸		7.75%
Cambridge City Contributory Ret. System ¹⁶		8.00%			
Concord Ret. System ¹⁶		7.50%	Mississippi		Interest Assumption
Essex Regional Ret. System ³⁸		8.25%	Public Empl. Ret. System ³⁷		8.0%
			Mississippi Highway Safety Patrol Ret. System ⁷		8.00%
			Mississippi Municipal Ret. Systems ⁷		8.00/6.00%

Mississippi	Interest Assumption	Nebraska	Interest Assumption
Mississippi Supplemental Legislative Ret. Plan ⁷	8.00%	State Empl. Ret. System Cash Balance Benefit Plan ¹⁵	7.75%
		State Patrol Ret. System ¹²	8.00%
Missouri	Interest Assumption	Nevada	Interest Assumption
Arnold City Police Pension Plan ⁴⁹	6.50%	Judicial Ret. Plan ¹⁷	8.00%
Bridgeton City Employee Ret. Plan ⁹	7.50%	Legislators Ret. Plan ¹⁷	8.00%
Civilian Empl. Ret. System of the Police Dept. of Kansas City ³⁹	7.75%	Public Empl. Ret. System ^{8/17}	8.0%
Columbia City Firefighter Ret. Plan ³	7.50%		
Columbia City Police Ret. Plan ³	7.50%	New Hampshire	Interest Assumption
Creve Coeur City Empl. Ret. Plan ²	7.50%	Manchester City Empl. Contributory Ret. System ²	7.50%
Employees' Ret. System of the City of Kansas City ⁶⁰	7.75%	Manchester City Old System Empl. Contributory Ret. System ²	7.25%
Employees' Ret. System of the City of St. Louis ²	8.00%	Ret. System ²	7.75%
Ferguson City Pension Plan ²	7.50%		
Firefighters' Pension System of the City of Kansas City ⁵⁰	7.50%	New Jersey	Interest Assumption
Firemen's Ret. System of St. Louis ²	7.625%	Consolidated Police and Fire Ret. System ¹²	2.00%
Highway Patrol Ret. Plan ⁸	8.25%	Judicial Ret. System ¹²	7.90%
Jefferson City Firemen's Pension Fund ⁶¹	6.00%	Police and Firemen's Ret. System ¹²	7.90%
Joplin City Policemen's and Firemen's Pension Plan ⁵²	7.00%	Prison Officers Pension Fund ¹²	5.00%
Kirkwood City Civilian Plan for Retirees of Previous Plan ³⁶	6.50%	Public Employees' Ret. System ¹²	7.90%
Kirkwood City Police Officers' & Firefighters' Pension Plan For Retirees of Previous Plan ³⁶	6.50%	State Police Ret. System ¹²	7.90%
Missouri-Illinois Metropolitan District Amalgamated Transit Union 788 Clerical Plan ²	7.25%	Teachers' Pension and Annuity Fund ¹²	7.90%
Missouri-Illinois Metropolitan District Amalgamated Transit Union 788 O&M Plan ²	7.25%		
Missouri-Illinois Metropolitan District Intl. Brotherhood of Electrical Workers Empl. Pension Plan ²	7.25%	New Mexico	Interest Assumption
Missouri-Illinois Metropolitan District Pension Plan for Salaried Employees ²	7.50%	Public Empl. Ret. Assoc. ⁷	7.75%
North Kansas City Hospital Pension Plan ³	7.50%	New Mexico Judicial Ret. Fund ⁷	7.75%
North Kansas City Police and Fire Ret. Fund ³	6.50%	New Mexico Magistrates Ret. Fund ⁷	7.75%
Police Ret. System of Kansas City ³⁹	7.75%	New Mexico Legislative Division ⁷	7.75%
Policemen's Ret. System of St. Louis ²	7.75%	Volunteer Firefighter Ret. Plan ⁷	7.75%
Public School & Education Employee Ret. System ⁸	8.0%		
Richmond City Police and Fire Pension Trust Fund ²	7.50%	New York	Interest Assumption
St. Joseph Police Pension Plan ²	7.50%	New York City Board of Education Ret. System- Qualified Pension Plan ⁴	8.00%
St. Louis Co. Employee Ret. Plan ⁹	8.00%	New York City Employees' Ret. System ⁴	8.00%
Springfield City Policemen & Firemen's Ret. System ²	7.50%	New York City Fire Dept. Pension Fund ⁴	8.00%
State Empl. Ret. System ⁸	8.5%	New York City Police Pension Plan ²	7.00%
University City Non-Uniformed Employees' Ret. Fund ²	6.50%	New York City Teachers' Ret. System-Qualified Pension Plan ⁴	8.00%
University City Police and Firemen's Ret. Fund ²	6.50%	New York State & Local Ret. System Empl. Ret. Plan ⁵⁴	7.50%
Wyoming City Empl. Ret. System ⁷	7.75%	New York State & Local Ret. System Police & Fire Ret. Plan ⁵⁴	7.50%
		New York State Teachers' Ret. System ²	8.00%
Montana	Interest Assumption	North Carolina	Interest Assumption
Firefighters' Unified Ret. System ⁷	7.75%	Asheboro City Law Enforcement Officers' Special Separation Allowance Plan ²	5.00%
Game Wardens' and Peace Officers' Ret. System ⁷	7.75%	Charlotte Firefighters' Ret. System ²	7.75%
Highway Patrol Officers' Ret. System ⁷	7.75%	Charlotte City Law Enforcement Officer Separation Plan ²	5.00%
Judges' Ret. System ⁷	7.75%	Consolidated Judicial Ret. System ³⁷	7.25%
Municipal Police Officers' Ret. System ⁷	7.75%	Disability Income Plan ³⁷	5.75%
Public Employees' Ret. System ⁷	7.75%	Durham City Law Enforcement Officers' Special Separation Allowance Plan ²	5.00%
Sheriffs' Ret. System ⁷	7.75%	Firemen's and Rescue Squad Workers' Pension Fund ²	7.25%
Volunteer Firefighters' Compensation Act ⁷	7.75%	Gastonia City Law Enforcement Officers' Special Separation Allowance Plan ²	5.00%
		High Point City Law Enforcement Officers' Special Separation Allowance Plan ²	5.00%
Nebraska	Interest Assumption	Legislative Ret. System ³⁷	7.25%
Beatrice City Pre-1984 Firefighter Ret. Plan ¹	8.00% pre/ 5.00% post	Lincolnton City Law Enforcement Officers' Special Separation Allowance Plan ²	5.00%
Co. Empl. Ret. System Cash Balance Benefit Plan ¹⁵	7.75%	Local Governmental Employees' Ret. System ³⁷	7.25%
Grand Island City Pre-1984 Police & Firefighters Plan Defined Benefit Plan ³	7.00% pre/ 5.00% post	National Guard Pension Plan ³⁷	7.25%
Judges' Ret. System ¹²	8.00%	Raleigh City Law Enforcement Officers' Special Separation Allowance Plan ²	7.00%
Keamey City Police Officers Pension Plan ³	7.00% pre/ 5.00% post	Registers of Deeds' Supplemental Pension Fund ³⁷	5.75%
Lincoln City Police and Fire Dept. Pension Plan ⁴⁹	7.50%	Teachers' and State Employees' Ret. System ³⁷	7.25%
Norfolk City Firefighter Ret. System ³	7.00%		
Norfolk City Police Ret. System ³	6.00%		
Omaha City Employees' Ret. System ⁴	8.00%		
Omaha City Police and Firefighters Ret. System ⁴	8.00%		
Omaha School Employees' Ret. System ⁵³	7.00%		
School Ret. System ¹²	8.00%		

Pennsylvania	Interest Assumption	Pennsylvania	Interest Assumption
Chippewa Township Police Pension Plan ⁵⁵	6.50%	Etna Borough Police Pension Plan ⁵⁵	7.50%
Churchill Borough Nonuniformed Pension Plan ⁵⁵	7.00%	Evans City Borough Nonuniformed Pension Plan ⁵⁵	8.00%
Churchill Borough Police Pension Plan ⁵⁵	7.50%	Falls Township Police Pension Plan ⁵⁵	8.00%
Clairton City Firemen's Pension Plan ⁵⁵	6.00%	Farrell City Firemen's Pension Plan ⁵⁵	6.00%
Clairton City Nonuniformed Pension Plan ⁵⁵	6.00%	Farrell City Nonuniformed Pension Plan ⁵⁵	6.00%
Clairton City Police Pension Plan ⁵⁵	6.00%	Farrell City Police Pension Plan ⁵⁵	6.00%
Coatesville City Firefighters' Pension Plan ⁵⁵	7.00%	Fawn Township Nonuniformed Pension Plan ⁵⁵	5.50%
Coatesville City Nonuniformed Pension Plan ⁵⁵	7.00%	Fawn Township Police Pension Plan ⁵⁵	6.00%
Coatesville City Police Pension Plan ⁵⁵	7.00%	Findlay Township Nonuniformed Management Pension Plan ⁵⁵	6.00%
Coatesville City Ret. Income Pension Plan ⁵⁵	7.00%	Findlay Township Police Pension Plan ⁵⁵	7.00%
Collier Township Nonuniformed Pension Plan ⁵⁵	6.00%	Ford City Borough Nonuniformed Pension Plan ⁵⁵	7.50%
Collier Township Police Pension Plan ⁵⁵	7.50%	Ford City Borough Police Pension Plan ⁵⁵	7.00%
Conewago Township Police Pension Plan ⁵⁵	8.00%	Forest City Borough Nonuniformed Pension Plan ⁵⁵	6.00%
Connellsville City Firemen's Pension Plan ⁵⁵	7.50%	Forest City Borough Police Pension Plan ⁵⁵	6.00%
Connellsville City Nonuniformed Pension Plan ⁵⁵	6.00%	Forest Hills Borough Nonuniformed Pension Plan ⁵⁵	7.50%
Connellsville City Police Pension Plan ⁵⁵	7.50%	Forest Hills Borough Police Pension Plan ⁵⁵	7.50%
Conway Borough Nonuniformed Pension Plan ⁵⁵	6.00%	Forward Township Nonuniformed Pension Plan ⁵⁵	6.00%
Conway Borough Police Pension Plan ⁵⁵	7.50%	Forward Township Police Pension Plan ⁵⁵	6.00%
Coraopolis Borough Nonuniformed Pension Plan ⁵⁵	7.50%	Fox Chapel Borough Nonuniformed Pension Plan ⁵⁵	7.50%
Coraopolis Borough Police Pension Plan ⁵⁵	7.50%	Fox Chapel Borough Police Pension Plan ⁵⁵	7.00%
Corry City Firemen's Pension Plan ⁵⁵	7.50%	Franklin City Firemen's Pension Plan ⁵⁵	7.00%
Corry City Nonuniformed Employees Pension Plan ⁵⁵	7.50%	Franklin City Nonuniformed Pension Plan ⁵⁵	7.50%
Corry City Nonuniformed Pension Plan ⁵⁵	7.50%	Franklin City Police Pension Plan ⁵⁵	7.50%
Corry City Police Pension Plan ⁵⁵	7.50%	Franklin Park Borough Nonuniformed Pension Plan ⁵⁵	7.00%
Cowanshannock Twp. Nonuniformed Pension Plan ⁵⁵	6.00%	Franklin Park Borough Police Pension Plan ⁵⁵	7.50%
Crafton Borough Nonuniformed Pension Plan ⁵⁵	7.50%	Franklin Township Nonuniformed Pension Plan ⁵⁵	6.00%
Crafton Borough Police Pension Plan ⁵⁵	7.50%	Franklin Township Police Pension Plan ⁵⁵	6.00%
Crescent Township Nonuniformed Pension Plan ⁵⁵	6.00%	Frazer Township Nonuniformed Pension Plan ⁵⁵	7.50%
Crescent Township Police Pension Plan ⁵⁵	6.00%	Freeport Borough Police Pension Plan ⁵⁵	6.50%
Cumberland Township Nonuniformed Pension Plan ⁵⁵	7.00%	Gettysburg Borough Nonuniformed Pension Plan ⁵⁵	7.50%
Cumberland Township Police Pension Plan ⁵⁵	7.00%	Gettysburg Borough Police Pension Plan ⁵⁵	7.50%
Cumberland Co. Empl. Ret. Plan ⁹	7.50%	Gilpin Township Police Union Pension Plan ⁵⁵	6.00%
Daugherty Township Nonuniformed Pension Plan ⁵⁵	7.50%	Glassport Borough Police Pension Plan ⁵⁵	5.50%
Daugherty Township Police Pension Plan ⁵⁵	6.50%	Green Tree Borough Police Pension Plan ⁵⁵	7.00%
Dauphin Co. Empl. Ret. Plan ¹¹	7.50%	Greene Co. Employee Pension Plan ¹¹	7.50%
Dickson City Borough Nonuniformed Pension Plan ⁵⁵	6.50%	Greensburg City Nonuniformed Pension Plan ⁵⁵	6.00%
Dickson City Borough Police Pension Plan ⁵⁵	7.00%	Greensburg City Police Pension Plan ⁵⁵	8.00%
Dormont Borough Nonuniformed Pension Plan ⁵⁵	7.50%	Grove City Borough Nonuniformed Pension Plan ⁵⁵	7.50%
Dormont Borough Police Pension Plan ⁵⁵	7.50%	Grove City Borough Police Pension Plan ⁵⁵	8.00%
Doylestown Borough Nonuniformed Pension Plan ⁵⁵	6.00%	Hamilton Township Nonuniformed Pension Plan ⁵⁵	6.00%
Doylestown Borough Police Pension Plan ⁵⁵	8.00%	Hamiltonban Township Nonuniformed Pension Plan ⁵⁵	6.00%
Dubois City Nonuniformed Pension Plan ⁵⁵	6.00%	Hamiltonban Township Police Pension Plan ⁵⁵	6.00%
Dubois City Police Pension Plan ⁵⁵	6.75%	Hampton Township Nonuniformed Pension Plan ⁵⁵	7.50%
Duquesne City Police Pension Plan ⁵⁵	8.00%	Hampton Township Police Pension Plan ⁵⁵	7.50%
East Berlin Borough Nonuniformed Pension Plan ⁵⁵	6.00%	Harrisburg City Firefighters' Pension Plan ⁵⁵	6.00%
East Berlin Borough Police Pension Plan ⁵⁵	6.00%	Harrisburg City Nonuniformed Pension Plan ⁵⁵	6.00%
East Deer Township Nonuniformed Pension Plan ⁵⁵	6.00%	Harrisburg City Police Pension Plan ⁵⁵	8.00%
East Deer Township Police Pension Plan ⁵⁵	6.00%	Harmar Township Nonuniformed Pension Plan ⁵⁵	7.50%
East McKeesport Borough Police Pension Plan ⁵⁵	6.50%	Harmar Township Police Pension Plan ⁵⁵	7.50%
East Pittsburgh Borough Nonuniformed Pension Plan ⁵⁵	8.00%	Harmony Township Police Pension Plan ⁵⁵	7.50%
East Pittsburgh Borough Police Pension Plan ⁵⁵	6.50%	Harrison Township Nonuniformed Pension Plan ⁵⁵	6.00%
East Rochester Borough Nonuniformed Pension Plan ⁵⁵	6.00%	Harrison Township Police Pension Plan ⁵⁵	7.50%
East Rockhill Township Nonuniformed Pension Plan ⁵⁵	6.00%	Haycock Township Nonuniformed Pension Plan ⁵⁵	6.00%
Eastern Adams Region Police Pension Plan ⁵⁵	7.00%	Hazleton City Nonuniformed Pension Plan ⁵⁵	7.50%
Eastern Regional Communications Center Nonuniformed Pension Plan ⁵⁵	6.00%	Hazleton City Police Pension Plan ⁵⁵	8.00%
Easton City Aggregate Pension Plan ⁵⁵	8.00%	Heidelberg Borough Police Pension Plan ⁵⁵	6.75%
Easton City Pension Trust Fund ⁵⁵	6.00%	Hermitage City Nonuniformed Pension Plan ⁵⁵	6.00%
Economy Borough Nonuniformed Pension Plan ⁵⁵	7.00%	Hermitage City Police Pension Plan ⁵⁵	7.50%
Economy Borough Police Pension Plan ⁵⁵	7.00%	Hilltown Township Nonuniformed Pension Plan ⁵⁵	6.00%
Edgewood Borough Nonuniformed Pension Plan ⁵⁵	6.00%	Hilltown Township Police Pension Plan ⁵⁵	6.00%
Edgewood Borough Police Pension Plan ⁵⁵	7.00%	Homer City Borough Nonuniformed Pension Plan ⁵⁵	6.00%
Edgeworth Borough Nonuniformed Pension Plan ⁵⁵	7.00%	Homer City Borough Police Pension Plan ⁵⁵	5.75%
Edgeworth Borough Police Pension Plan ⁵⁵	7.00%	Homestead Borough Nonuniformed Pension Plan ⁵⁵	7.50%
Elizabeth Borough Police Pension Plan ⁵⁵	7.00%	Homestead Borough Police Pension Plan ⁵⁵	7.50%
Elizabeth Township Nonuniformed Pension Plan ⁵⁵	6.00%	Hopewell Township Nonuniformed Pension Plan ⁵⁵	6.00%
Elizabeth Township Police Pension Plan ⁵⁵	6.00%	Hopewell Township Police Pension Plan ⁵⁵	7.50%
Elwood City Borough Firemen's Pension Plan ⁵⁵	8.00%	Independence Township Police Union Pension Plan ⁵⁵	6.00%
Elwood City Borough Nonuniformed Pension Plan ⁵⁵	8.00%	Indiana Township Nonuniformed Pension Plan ⁵⁵	7.50%
Elwood City Borough Police Pension Plan ⁵⁵	8.00%	Indiana Township Police Pension Plan ⁵⁵	7.50%
Erie City Aggregate Pension Plan ⁵⁵	8.00%	Indiana Co. Empl. Ret. Plan ¹¹	7.50%
Erie Co. Employees' Ret. System ⁹	7.50%	Ingram Borough Police Pension Plan ⁵⁵	7.50%
Erie Co. Pleasant Ridge Manor Ret. Plan ⁹	6.34%	Jeannette City Firemen's Pension Plan ⁵⁵	7.00%
Etna Borough Nonuniformed Pension Plan ⁵⁵	6.00%	Jeannette City Nonuniformed Pension Plan ⁵⁵	6.00%
		Jeannette City Police Pension Plan ⁵⁵	7.00%

Pennsylvania	Interest Assumption	Pennsylvania	Interest Assumption
Jefferson Hills Borough Nonuniformed Management Pension Plan ⁵⁵	7.50%	Monroeville Municipality Nonuniformed Pension Plan ⁵⁵	6.00%
Jefferson Hills Borough Police Pension Plan ⁵⁵	7.25%	Monroeville Municipality Police Pension Plan ⁵⁵	6.00%
Johnstown City Police Pension Plan ⁵⁵	8.00%	Montgomery Co. Employees' Ret. System ⁹	7.50%
Kennedy Township Police Pension Plan ⁵⁵	6.75%	Moon Township Police Pension Plan ⁵⁵	7.50%
Kennett Square Borough Nonuniformed Pension Plan ⁵⁵	6.00%	Morrisville Borough Nonuniformed Pension Plan ⁵⁵	6.00%
Kennett Square Borough Police Pension Plan ⁵⁵	7.50%	Morrisville Borough Police Pension Plan ⁵⁵	6.00%
Kilbuck Township Police Pension Plan ⁵⁵	7.50%	Mount Oliver Borough Police Pension Plan ⁵⁵	7.00%
Kittanning Borough Nonuniformed Pension Plan ⁵⁵	6.00%	Munhall Borough Nonuniformed Pension Plan ⁵⁵	7.50%
Kittanning Borough Police Pension Plan ⁵⁵	7.50%	Munhall Borough Police Pension Plan ⁵⁵	7.50%
Lake City Borough Police Pension Plan ⁵⁵	7.50%	Nanticoke City Firemen's Pension Plan ⁵⁵	8.00%
Lancaster City Firemen's Pension Plan ⁵⁵	8.00%	Nanticoke City Nonuniformed Pension Plan ⁵⁵	6.00%
Lancaster City Nonuniformed Pension Plan ⁵⁵	7.50%	Nanticoke City Police Pension Plan ⁵⁵	7.00%
Lancaster City Police Pension Plan ⁵⁵	8.00%	Neville Township Nonuniformed Pension Plan ⁵⁵	7.00%
Lancaster Co. Ret. Plan ¹¹	7.50%	Neville Township Police Pension Plan ⁵⁵	7.00%
Latimore Township Police Pension Plan ⁵⁵	6.25%	New Brighton Borough Nonuniformed Pension Plan ⁵⁵	7.50%
Latimore Township-York Springs Borough Regional Police Pension Plan ⁵⁵	6.25%	New Brighton Borough Police Pension Plan ⁵⁵	7.50%
Latrobe City Nonuniformed Pension Plan ⁵⁵	6.00%	New Castle City Comprehensive Municipal Pension Trust Fund ⁵⁵	8.00%
Latrobe City Pension Plan ⁵⁵	7.00%	New Castle City Police Pension Plan ⁵⁵	8.25%
Lebanon City Firemen's Pension Plan ⁵⁵	8.00%	New Kensington City Nonuniformed Pension Plan ⁵⁵	6.00%
Lebanon City Nonuniformed Pension Plan ⁵⁵	6.00%	New Kensington City Police Pension Plan ⁵⁵	6.50%
Lebanon City Police Pension Plan ⁵⁵	8.00%	Newtown Borough Police Pension Plan ⁵⁵	6.00%
Leechburg Borough Police Pension Plan ⁵⁵	8.00%	Newtown Township Firemen's Pension Plan ⁵⁵	7.50%
Leet Township Nonuniformed Pension Plan ⁵⁵	8.00%	Newtown Township Nonuniformed Pension Plan ⁵⁵	7.50%
Leetsdale Borough Nonuniformed Pension Plan ⁵⁵	7.00%	Newtown Township Police Pension Plan ⁵⁵	7.50%
Leetsdale Borough Police Pension Plan ⁵⁵	7.00%	Nockamixon Township Nonuniformed Pension Plan ⁵⁵	6.00%
Lehigh Co. Authority Ret. Plan ¹¹	6.00%	Nockamixon Township Police Pension Plan ⁵⁵	6.00%
Liberty Township Police Pension Plan ⁵⁵	6.50%	North Apollo Borough Nonuniformed Pension Plan ⁵⁵	5.00%
Littlestown Borough Nonuniformed Pension Plan ⁵⁵	7.25%	North Apollo Borough Police Pension Plan ⁵⁵	8.00%
Littlestown Borough Police Pension Plan ⁵⁵	7.50%	North Braddock Borough Nonuniformed Pension Plan ⁵⁵	7.00%
Lock Haven City Empl. Ret. Fund ⁵⁵	7.00%	North Braddock Borough Police Pension Plan ⁵⁵	6.75%
Lock Haven City Nonuniformed Pension Plan ⁵⁵	7.00%	North Fayette Township Police Pension Plan ⁵⁵	7.00%
Lock Haven City Police Pension Plan ⁵⁵	7.00%	North Sewickley Township Police Pension Plan ⁵⁵	6.00%
Lower Burrell City Nonuniformed Pension Plan ⁵⁵	6.00%	North Versailles Twp. Nonuniformed Pension Plan ⁵⁵	6.00%
Lower Burrell City Police Pension Plan ⁵⁵	8.00%	North Versailles Township Police Pension Plan ⁵⁵	7.00%
Lower Makefield Twp. Nonuniformed Pension Plan ⁵⁵	8.00%	Northern Regional Police Pension Plan ⁵⁵	7.50%
Lower Makefield Township Police Pension Plan ⁵⁵	8.00%	Northampton Co. Empl. Ret. Plan ⁹	7.50%
Lower Southampton Township Police Pension Plan ⁵⁵	7.50%	Northampton Township Nonuniformed Pension Plan ⁵⁵	7.50%
Luzerne Co. Empl. Ret. Plan ⁴¹	7.50%	Northampton Township Police Pension Plan ⁵⁵	7.50%
Lycoming Co. Employees' Ret. System ⁹	7.00%	Oakdale Borough Nonuniformed Pension Plan ⁵⁵	7.75%
Madison Township Nonuniformed Pension Plan ⁵⁵	4.50%	Oakdale Borough Police Pension Plan ⁵⁵	7.25%
Mahanoy City Borough Police Pension Plan ⁵⁵	7.50%	Oakmont Borough Nonuniformed Pension Plan ⁵⁵	7.00%
Malvern Borough Nonuniformed Pension Plan ⁵⁵	6.00%	Oakmont Borough Police Pension Plan ⁵⁵	7.00%
Malvern Borough Police Pension Plan ⁵⁵	7.00%	O'Hara Township Nonuniformed Pension Plan ⁵⁵	7.50%
Marshall Township Nonuniformed Pension Plan ⁵⁵	7.50%	O'Hara Township Police Pension Plan ⁵⁵	7.50%
McCandless Town Police Pension Plan ⁵⁵	7.50%	Ohio Township Nonuniformed Pension Plan ⁵⁵	8.00%
McCandless Town Retired Nonuniformed Pension Plan ⁵⁵	7.50%	Ohio Township Police Pension Plan ⁵⁵	6.00%
McKees Rocks Borough Police Pension Plan ⁵⁵	7.50%	Oil City Empl. Ret. Fund ⁵⁵	7.50%
McKeesport City Combined Pension Plan ⁵⁵	8.00%	Oil City Firemen's Pension Plan ⁵⁵	7.50%
McKeesport City Firemen's Pension Plan ⁵⁵	8.00%	Oil City Nonuniformed Pension Plan ⁵⁵	7.50%
McKeesport City Officers & Employees Pension Trust Fund ⁵⁵	8.00%	Oil City Police Pension Plan ⁵⁵	7.50%
McKeesport City Police Pension Plan ⁵⁵	8.00%	Parks Township Police Pension Plan ⁵⁵	5.50%
McSherrystown Borough Nonuniformed Employees' Pension Plan ⁵⁵	6.75%	Patterson Township Nonuniformed Pension Plan ⁵⁵	7.00%
McSherrystown Borough Police Pension Plan ⁵⁵	7.75%	Patterson Township Police Pension Plan ⁵⁵	7.00%
Meadville City Firemen's Pension Plan ⁵⁵	7.75%	Penn Hills Municipality Nonuniformed Pension Plan ⁵⁵	8.00%
Meadville City Nonuniformed Pension Plan ⁵⁵	7.75%	Penn Hills Municipality Police Pension Plan ⁵⁵	8.00%
Meadville City Police Pension Plan ⁵⁵	7.75%	Pennndel Borough Nonuniformed Pension Plan ⁵⁵	7.00%
Menallen Township Nonuniformed Pension Plan ⁵⁵	6.00%	Pennndel Borough Police Pension Plan ⁵⁵	8.00%
Midland Borough Nonuniformed Pension Plan ⁵⁵	5.50%	Pennridge Regional Police Dept. Nonuniformed Pension Plan ⁵⁵	6.00%
Midland Borough Police Pension Plan ⁵⁵	7.00%	Pennridge Regional Police Dept. Police Pension Plan ⁵⁵	6.00%
Middletown Township Nonuniformed Pension Plan ⁵⁵	7.50%	Perkasie Borough Nonuniformed Pension Plan ⁵⁵	6.00%
Middletown Township Police Pension Plan ⁵⁵	8.00%	Perkasie Borough Police Pension Plan ⁵⁵	6.00%
Milford Township Nonuniformed Pension Plan ⁵⁵	6.00%	Philadelphia City Pension Trust Fund ⁵⁵	8.25%
Millvale Borough Nonuniformed Pension Plan ⁵⁵	8.00%	Pitcairn Borough Nonuniformed Pension Plan ⁵⁵	7.50%
Millvale Borough Police Pension Plan ⁵⁵	8.00%	Pitcairn Borough Police Pension Plan ⁵⁵	7.50%
Monaca Borough Nonuniformed Pension Plan ⁵⁵	6.00%	Pittsburgh City Comprehensive Municipal Pension Trust Fund ⁵⁵	8.00%
Monaca Borough Police Pension Plan ⁵⁵	7.00%	Pittston City Firemen's Pension Plan ⁵⁵	7.00%
Monessen City Firemen's Pension Plan ⁵⁵	7.50%	Pittston City Nonuniformed Pension Plan ⁵⁵	7.00%
Monessen City Police Pension Plan ⁵⁵	7.50%	Pittston City Police Pension Plan ⁵⁵	7.00%
Monongahela City Police Pension Plan ⁵⁵	7.00%	Pleasant Hills Borough Nonuniformed Pension Plan ⁵⁵	7.25%
		Pleasant Hills Borough Police Pension Plan ⁵⁵	7.25%
		Plum Borough Police Pension Plan ⁵⁵	7.75%

	Interest Assumption		Interest Assumption
<u>Rhode Island</u>		<u>Texas</u>	
City of Providence Empl. Ret. System ⁴	8.25%	Cleburne Firemen's Relief & Ret. Fund ⁵⁶	7.50%
City of Warwick Employees' Pension Plan ²	8.00%	Colorado River Municipal Water District Defined Benefit Ret. Plan & Trust ⁵⁶	7.50%
City of Warwick Fire Pension II Plan ²	7.50%	Conroe Fire Fighters' Ret. Fund ⁵⁶	7.80%
City of Warwick Police Pension II Plan ²	7.50%	Corpus Christi Fire Fighters' Ret. System ⁵⁶	8.00%
City of Warwick Police Pension I & Fire Pension Plan ²	7.50%	Corpus Christi Regional Transportation Authority ⁵⁶	7.50%
City of Warwick Public Schools Empl. Pension Plan ²	7.00%	Corsicana Firemen's Relief & Ret. Fund ⁵⁶	7.50%
City of Woonsocket Police & Fire Empl. Pension Plan ²	7.25%	Co. and District Ret. System ³	8.00%
Judicial Ret. Benefits Trust ⁵	7.50%	Cypress-Fairbanks ISD Pension Plan for Non-TRS Employees ⁵⁶	4.30%
Municipal Employees' Ret. System ⁵	7.50%	Dallas/Fort Worth International Airport Dept. of Public Safety Ret. Plan ³	7.25%
Narragansett Bay Commission Non-union Empl. Defined Benefit Pension Plan ²	6.00%	Dallas Co. Hospital District Ret. Income Plan ⁵⁶	8.30%
State Employees' Ret. System ⁵	7.50%	Dallas Employees' Ret. Fund ⁵⁶	8.30%
State Police Ret. Benefits Trust ⁵	7.50%	Dallas/Fort Worth Intl. Airport Employees' Ret. Plan ³	7.25%
Town of Burrillville Municipal Police Pension Plan ²	7.50%	Dallas/Fort Worth Airport Board DPS Ret. Plan ⁵⁶	7.30%
Town of Coventry Municipal Empl. Ret. Plan ²	8.00%	Dallas Police and Fire Pension System ¹⁶	8.50%
Town of Coventry Police Pension Plan ²	8.00%	DART Employees' Defined Benefit Ret. Plan & Trust ⁵⁶	8.00%
	Interest Assumption	Denison Firemen's Relief & Ret. Fund ⁵⁶	7.80%
<u>South Carolina</u>		Denton Firemen's Relief & Ret. Fund ⁵⁶	7.00%
Judges and Solicitors Ret. System ²	7.50%	El Paso City Employees' Pension Fund ⁵⁶	7.50%
Genl. Assembly Ret. System ²	7.50%	El Paso City Firemen's Pension Fund ¹⁶	7.75%
National Guard Ret. System ²	7.50%	El Paso City Policemen's Pension Fund ¹⁶	7.75%
Police Officers Ret. System ²	7.50%	Emergency Services Ret. System ⁵⁶	7.80%
South Carolina Ret. System ²	7.50%	Empl. Ret. System ⁵⁷	8.00%
	Interest Assumption	Fort Worth Employees' Ret. Fund ⁵⁶	8.30%
<u>South Dakota</u>		Galveston Employees' Ret. Fund ⁵⁶	8.00%
Cement Plant Ret. Fund ²	6.75%	Galveston Employees' Ret. Plan for Police ⁵⁶	7.50%
Dept. of Labor Employment Security Ret. Plan ²	7.50%	Galveston Firefighter's Relief & Ret. Fund ⁵⁶	8.00%
State Ret. System ²	7.25/7.75%	Galveston Wharves Pension Plan ⁵⁶	7.50%
Sioux Falls City Employee's Ret. System ⁹	7.75%	Greenville Firemen's Relief & Ret. Fund ⁵⁶	8.30%
Sioux Falls City Firefighters' Pension Fund ⁹	7.75%	Guadalupe-Blanco River Authority ⁵⁶	7.80%
	Interest Assumption	Harlingen Firemen's Relief & Ret. Fund ⁵⁶	8.00%
<u>Tennessee</u>		Harris Co. Hospital District Pension Plan ⁵⁶	8.00%
Chattanooga City Genl. Pension Plan ²	7.75%	Houston Firefighter's Relief & Ret. Fund ⁵⁶	8.50%
Chattanooga City Fire and Police Pension Fund ²	7.75%	Houston MTA Non-Union Pension Plan ⁵⁶	8.00%
Consolidated Ret. System ^{8/31}	7.5%	Houston MTA Workers Union Pension Plan ⁵⁶	8.00%
Davidson Co. Employees' Ret. Plan ²	8.00%	Houston Municipal Employees Pension System ⁵⁶	8.50%
Franklin City Employees' Pension Plan and Trust ²	7.50%	Houston Police Officers Pension System ⁵⁶	8.50%
Knoxville City Pension System ¹¹	8.00%	Irving Firemen's Relief & Ret. Fund ⁵⁶	8.30%
Knoxville Utilities Board Pension Plan ¹¹	8.00%	Irving Supplemental Benefit Plan ⁵⁶	7.00%
Memphis City Ret. System ²	7.50%	Judicial Ret. System Plan 1 ⁵⁷	8.00%
Memphis City-Shelby Co. Public Library & Information System Ret. System ²	7.50%	Judicial Ret. System Plan 2 ⁵⁷	8.00%
Murfreesboro City Electric Dept. Empl. Pension Plan ²	7.00%	Killeen Firemen's Relief & Ret. Fund ⁵⁶	7.80%
Murfreesboro City Employees' Pension Plan ²	7.30%	Laredo Firefighters Ret. System ⁵⁶	8.00%
Nashville City-Davidson Co. Metropolitan Empl. Benefit Trust ²	8.00%	Law Enforcement & Custodial Officer Suppl. Ret. Plan ⁵⁷	8.00%
Nashville City-Davidson Co. Employees' Pension & Insurance Plan ²	8.00%	Longview Firemen's Relief & Ret. Fund ⁵⁶	8.00%
Nashville City Ret. Plan ²	8.00%	Lower Colorado River Authority Ret. Plan ⁵⁶	7.50%
Nashville Teachers' Civil Service and Pension Plan ²	8.00%	Lubbock Fire Pension Fund ⁵⁶	8.00%
Nashville Teachers' Ret. Plan ²	8.00%	Lufkin Firemen's Relief & Ret. Fund ⁵⁶	7.50%
Political Subdivision Pension Plan ²	7.50%	Marshall Firemen's Relief & Ret. Fund ⁵⁶	8.00%
Shelby Co. Ret. System ²	8.00%	McAllen Firemen's Relief & Ret. Fund ⁵⁶	8.00%
State Employees, Teachers and Higher Education Employees Pension Plan ³¹	7.50%	Midland Firemen's Relief & Ret. Fund ⁵⁶	8.00%
	Interest Assumption	Municipal Ret. System ³⁷	7.00%
<u>Texas</u>		Nacogdoches Co. Hospital District Ret. Plan ⁵⁶	8.00%
Abilene Firemen's Relief & Ret. Fund ⁵⁶	8.00%	Odessa Firemen's Relief & Ret. Fund ⁵⁶	8.50%
Amarillo Firemen's Relief & Ret. Fund ⁵⁶	8.30%	Orange Firemen's Relief & Ret. Fund ⁵⁶	8.00%
Atlanta Firemen's Relief & Ret. Fund ⁵⁶	7.30%	Paris Firefighters' Relief & Ret. Fund ⁵⁶	8.00%
Austin Employees' Ret. System ⁹	7.75%	Physicians Referral Service Ret. Benefit Plan ⁵⁶	8.00%
Austin Fire Fighters Relief & Ret. Fund ⁵⁶	7.80%	Plainview Firemen's Relief & Ret. Fund ⁵⁶	7.80%
Austin Police Ret. System ⁵⁶	7.80%	Plano Ret. Security Plan ⁵⁶	7.80%
Beaumont Firemen's Relief & Ret. Fund ⁵⁶	8.00%	Port Arthur Firemen's Relief & Ret. Fund ⁵⁶	8.00%
Big Spring Firemen's Relief & Ret. Fund ⁵⁶	8.00%	Port of Houston Authority Ret. Plan ⁵⁶	7.30%
Brazos River Authority Ret. Plan ⁵⁶	6.50%	Refugio Co. Memorial Hospital District Ret. Plan ⁵⁶	6.50%
Brownwood Firemen's Relief & Ret. Fund ⁵⁶	7.30%	San Angelo Firemen's Relief & Ret. Fund ⁵⁶	7.90%
Capital MTA Ret. Plan for Administrative Employees ⁵⁶	7.50%	San Antonio Fire and Police Pension Plan ⁵⁸	7.50%
Capital MTA Ret. Plan for Bargaining Unit Empl. ⁵⁶	7.50%	San Antonio Metropolitan Transit Ret. Plan ⁵⁶	8.00%
City Public Service of San Antonio Pension Plan ⁵⁶	7.80%	San Benito Firemen's Pension Fund ⁵⁶	7.00%
	Interest Assumption	Sweetwater Firemen's Relief & Ret. Fund ⁵⁶	8.00%
	Assumption	Teachers Ret. System ⁵⁷	8.00%
	Assumption	Temple Firemen's Relief & Ret. Fund ⁵⁶	8.00%
	Assumption	Texarkana Firemen's Relief & Ret. Fund ⁵⁶	7.80%
	Assumption	Texas City Firemen's Relief & Ret. Fund ⁵⁶	7.80%
	Assumption	Travis Co. ESD # 6 Firefighter's Relief & Ret. Fund ⁵⁶	7.00%
	Assumption	Tyler Firemen's Relief & Ret. Fund ⁵⁶	7.80%

Texas	Interest Assumption	Washington	Interest Assumption
University Health System Pension Plan ⁵⁶	7.50%	Tacoma City Fire Relief and Pension Fund ¹¹	4.00%
University Park Firemen's Relief & Ret. Fund ⁵⁶	8.00%	Tacoma City Police Relief and Pension Fund ¹¹	4.00%
Waxahachie Firemen's Relief & Ret. Fund ⁵⁶	7.00%	Teachers' Ret. System ²	7.90%
Weslaco Firemen's Relief & Ret. Fund ⁵⁶	7.30%		
Wichita Falls Firemen's Relief & Ret. Fund ⁵⁶	8.00%		
			Interest Assumption
Utah	Interest Assumption	West Virginia	Interest Assumption
Firefighters Ret. System ¹⁶	7.50%	Charleston City Firemen's Pension & Relief Fund ²	5.00%
Judges Ret. System ¹⁶	7.50%	Charleston City Policemen's Pension & Relief Fund ²	5.00%
Legislative Pension Plan ¹⁶	7.50%	Deputy Sheriffs' Ret. System ²	7.50%
Public Empl. Ret. System ¹⁶	7.50%	Emergency Medical Services Ret. System ²	7.50%
Public Safety Empl. Ret. System ¹⁶	7.50%	Judges' Ret. System ²	7.50%
		Morgantown City Empl. Pension & Relief Fund ²	7.50%
Vermont	Interest Assumption	Morgantown City Firemen's Pension & Relief Fund ²	5.00%
Burlington Employees' Ret. System ⁷	8.00%	Morgantown City Policemen's Pension & Relief Fund ²	5.00%
Municipal Employees' Ret. System ⁷	6.25-9.00%	Municipal Police and Firefighters Ret. System ²	7.50%
Rutland City-Rutland School Board Ret. Plan ²	8.00%	Public Empl. Ret. System ²	7.50%
St. Albans City Pension Plan ²	7.5%	State Police Death, Disability and Ret. Fund ²	7.50%
Saint Johnsbury Town Pension Plan ¹⁰	7.00%	State Police Ret. System ²	7.50%
State Employees' Ret. System ⁷	6.25-9.00%	Teachers' Ret. System ²	7.50%
State Teachers' Ret. System ⁷	6.25%-9.00%	Wheeling City Employee's Ret. and Benefit Fund ⁵⁹	8.00%
		Wheeling City Firemen's Pension and Relief Fund ⁵⁹	8.00%
		Wheeling City Policemen's Pension & Relief Fund ⁵⁹	8.00%
			Interest Assumption
Virginia	Interest Assumption	Wisconsin	Interest Assumption
Alexandria City Firefighters & Police Officers Pension Plan-Disability ²	7.50%	Employees' Ret. System of the Co. of Milwaukee ¹¹	8.00%
Alexandria City Firefighters & Police Officers Pension Plan-Ret. ²	7.50%	Employees' Ret. System of the City of Milwaukee ¹⁵	8.25/8.50%
Alexandria City Pension for Fire & Police Plan ²	5.50%	OBRA 1990 Ret. System of the Co. of Milwaukee ¹¹	8.00%
Alexandria City Supplemental Ret. Plan ²	7.50%	Policemen's Annuity and Benefit Fund of Milwaukee ¹⁵	8.25/8.50%
Charlottesville City's Pension Plan ²	7.50%	Wisconsin Ret. System ¹⁴	7.20/5.00%
Chesterfield Co. School Board Suppl. Ret. Plan ²	7.50%		
Chesterfield Co. Supplemental Ret. Plan ²	6.50%	Wyoming	Interest Assumption
Danville City Employees' Ret. System ²	7.00%	State of Wyoming Ret. System ¹⁵	8.00%
Fairfax Co. Employees' Ret. Plan ²	7.50%	Wyoming Law Enforcement Ret. Fund ¹⁵	8.00%
Fairfax Co. Police Officers' Ret. Plan ²	7.50%	Wyoming Paid Firemen's Ret. Fund Plan A ¹⁵	8.00%
Fairfax Co. Uniformed Ret. Plan ²	7.50%	Wyoming Paid Firemen's Ret. Fund Plan B ¹⁵	8.00%
Falls Church City Basic Pension Plan ²	7.50%	Wyoming State Highway Patrol, Game & Fish Warden and Criminal Investigator Ret. Plan ¹⁵	8.00%
Falls Church City Police Pension Plan ²	7.50%	Wyoming Volunteer Firemen's Pension Plan ¹⁵	8.00%
Loudon Co. Volunteer Firefighter Length of Service Ret. Plan ²	5.50%	Wyoming Judicial Ret. System ¹⁵	8.00%
Newport News Employees' Ret. Fund ²	7.75%	Wyoming Volunteer Emergency Medical Technician Pension Plan ¹⁵	8.00%
Portsmouth Supplemental Ret. System ²	8.00%		
Portsmouth Fire and Police Ret. System ²	8.00%		
Prince William Co. Supplemental Ret. Plan ²	7.00%		
Richmond City Ret. System ²	7.50%		
Roanoke City Pension Plan ²	7.750%		
Virginia Judicial Ret. System ²	7.00%		
Virginia Law Officers' Ret. System ²	7.00%		
Virginia Political Subdivisions Ret. System ²	7.00%		
Virginia State Employees' Ret. System ²	7.00%		
Virginia State Police Ret. System ²	7.00%		
Virginia Teachers' Ret. System ²	7.00%		
Washington	Interest Assumption		
Bellingham City Firefighters' Pension Plan ⁹	4.50%		
Bellingham City Police Pension Plan ⁹	4.50%		
Judges' Ret. Fund ²	4.00%		
Judicial Ret. System ²	7.90%		
Law Enforcement Officers' & Fire Fighters' Ret. System ²	7.50%		
Public Employees' Ret. System ²	7.90%		
Public Safety Employees' Ret. System ²	7.90%		
School Employees' Ret. System ²	7.90%		
Seattle City Employees' Ret. System ¹¹	7.75%		
Seattle City Firemen's Pension Fund ¹¹	4.00%		
Seattle City Police Relief and Pension Fund ¹¹	4.00%		
Spokane City Employees' Ret. System ¹¹	7.50%		
Spokane City Firefighters' Pension Fund ¹¹	5.00%		
Spokane City Police Relief and Pension Fund ¹¹	4.00%		
State Patrol Ret. System ²	7.90%		
Tacoma City Employees' Ret. System ¹¹	7.75%		

1 09/30/2011 Annual Financial Report
 2 06/30/2012 Annual Financial Report
 3 09/30/2012 Annual Financial Report
 4 06/30/2011 Annual Financial Report
 5 06/30/2010 Actuarial Valuation
 6 06/30/2011 Actuarial Valuation
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 8 12/2010-1/2011 NASRA Survey on prior service credit purchase interest rates
 9 12/31/2012 Annual Financial Report
 10 12/31/2011 Audit Report
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 12 07/1/2012 Actuarial Valuation
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 15 01/1/2013 Actuarial Valuation
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 17 06/30/2010 Annual Financial Report
 18 10/1/2012 Actuarial Valuation
 19 10/1/2011 Florida Dept. of Management Services Division of Retirement Actuarial Summary Fact Sheet
 20 10/1/2010 Florida Dept. of Management Services Division of Retirement Actuarial Summary Fact Sheet
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 23 10/1/2009 Florida Dept. of Management Services Division of Retirement Actuarial Summary Fact Sheet
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 25 12/1/2008 Florida Dept. of Management Services Division of Retirement Actuarial Summary Fact Sheet
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 31 07/1/2011 Actuarial Valuation
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 55 2009-2013 Pennsylvania Auditor Genl. Municipal Pension Plan Compliance Audit Report
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