

ILLINOIS MUNICIPAL RETIREMENT FUND
ANNUAL ACTUARIAL VALUATION REPORT
DECEMBER 31, 2015

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April 1, 2016

Board of Trustees
Illinois Municipal Retirement Fund
Oak Brook, Illinois 60521

**Re: Illinois Municipal Retirement Fund Actuarial Valuation as of December 31, 2015
Actuarial Disclosures**

Ladies and Gentlemen:

The results of the **December 31, 2015 annual actuarial valuations** of members covered by the Illinois Municipal Retirement Fund (IMRF) are presented in this report.

The purpose of the valuations, as provided by Article 7 of the Illinois Pension Code, is to measure IMRF's funding progress and to establish contribution rates for the 2017 calendar year. This report should not be relied upon for any other purpose. This report may be distributed to parties other than the Fund only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report. Determinations of financial results, associated with the benefits described in this report, for purposes other than those identified above may be significantly different.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period, or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

This valuation assumes the continuing ability of the participating employers to make the contributions necessary to fund this plan. A determination regarding whether or not the participating employers are actually able to do so is outside our scope of expertise. Consequently, we did not perform such an analysis.

The valuation was based upon information, furnished by IMRF staff, concerning Retirement Fund benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. We checked for internal reasonability and year-to-year consistency, but did not otherwise audit the data. We are not responsible for the accuracy or completeness of the information provided by IMRF Staff.

The valuations are based upon current plan provisions related to Regular Members, Sheriff's Law Enforcement Personnel (SLEP), and Elected County Officials (ECO) employment.

In addition, this report was prepared using certain assumptions approved by the Board as described in the section of this report entitled Actuarial Cost Methods and Assumptions.

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge, the information contained in this report is accurate and fairly presents the actuarial position of IMRF as of the valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices and with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

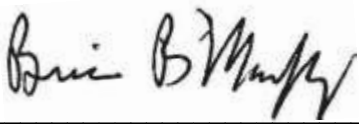
Brian Murphy and Mark Buis are Members of the American Academy of Actuaries (MAAA). These actuaries meet the Academy's Qualification Standards to render the actuarial opinions contained herein.

The signing actuaries are independent of the plan sponsor.

Gabriel, Roeder, Smith & Company will be pleased to review this valuation and report with the Board of Trustees and to answer any questions pertaining to the valuation.

Respectfully submitted,

GABRIEL, ROEDER, SMITH & COMPANY

By 

Brian Murphy, FSA EA, MAAA



Mark Buis, FSA, EA, MAAA

BBM/MB:bd

INTRODUCTION

IMRF is established under statutes adopted by the Illinois General Assembly. It is an agent multiple employer defined benefit pension plan that, as of December 31, 2015, encompasses 3,305 active plans and serves 432,096 active and inactive members and retired persons. Since IMRF reports information to us by plan, there are cases in which a person with employment in more than one plan is counted multiple times for census counts. This produces an overstatement in the census when compared with true counts of people. Liabilities are, however, correctly calculated and apportioned among employers. This issue may affect inactive members to a greater extent than it affects others. IMRF is funded by both member and employer contributions. Members contribute at fixed rates determined by statute. Regular members contribute 4.5% of pay; SLEP members contribute 7.5%; ECO members contribute 7.5%. Participating employers make all additional contributions needed to provide benefits. Each employer contributes to a separate account within IMRF which, when combined with member contributions and investment income, will be sufficient to provide future benefits for its own employees. Employer contributions for each plan are computed each year in the actuarial valuation and consist of:

- **Normal Cost Contributions** for normal and early retirement benefits, separation benefits, permanent disability benefits, and annuity type death benefits. These contributions are the same for most employers (larger employers have the option of being individually rated).
- **Contributions for lump sum death-in-service benefits**, which are separately determined for each employer.
- **Contributions for temporary disability benefits**, which are 0.12% of payroll for each employer.
- **Contributions for 13th Payments**, which are 0.62% of covered payroll for each employer.
- **Contributions for Early Retirement Incentive (ERI) unfunded liabilities** which are separately determined for each employer.
- **Contributions for other unfunded liabilities**, which are separately determined for each employer. For employers with taxing authority, unfunded liabilities are being funded over a 26-year closed period (with a rolling period at 15 years). For non-taxing employers the unfunded liabilities are being funded over a 10-year rolling period. Unfunded liabilities associated with benefit changes for SLEP members (Public Act 94-712) are amortized over 21 years for most employers. The amortization policy is described on page D-12.

Employer contributions computed in this valuation compared with those computed in the prior valuation are shown below.

	Average Employer Contribution Rates Expressed as %'s of Active Member Pays			
	Regular	SLEP	ECO	Average/Total
This Valuation	11.34%	22.39%	73.50%	11.94%
Prior Valuation	11.73%	22.71%	86.07%	12.34%

This year's valuation results were affected by:

- The asset valuation method that offset the results of unfavorable investment performance in 2015.
- Continued recognition of Tier 2 benefits for new hires.
- ERI liabilities.
- Three employers are individually rated (DuPage County; Union School District 46 and Peoria County). Although these employers will receive separate valuation reports, member counts, assets, and liabilities for these employers are also included in this valuation report.

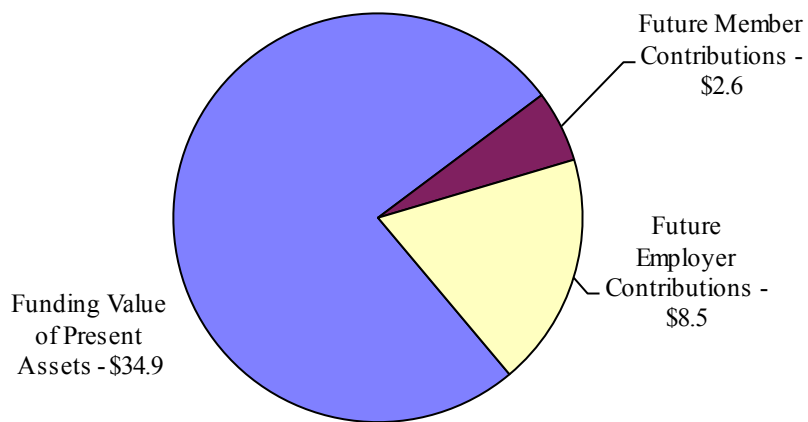
A full reconciliation of changes in contribution rates can be found in the Gain/Loss Analysis report. Based upon this year's valuation results, IMRF is 88.4% funded and the average/total employer rate is 11.94% of payroll.

Section A of this report describes this year's valuation results in depth.

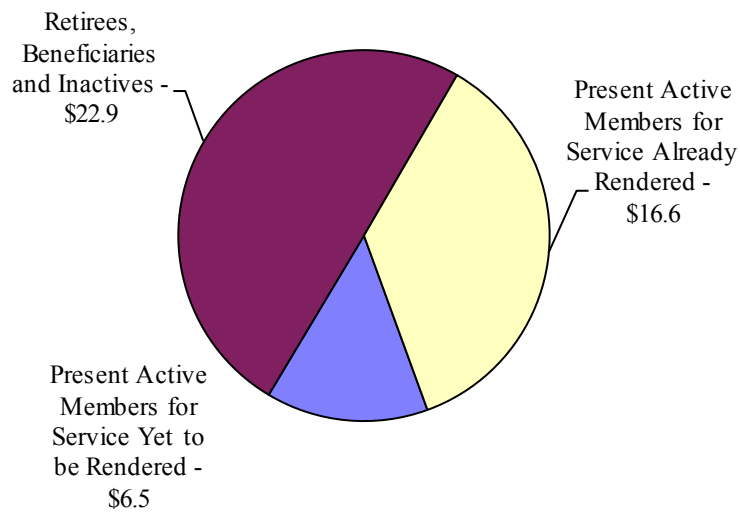
SECTION A
VALUATION RESULTS

**FINANCING \$46.0 BILLION WORTH OF BENEFIT PROMISES
TO PRESENT MEMBERS, RETIREES AND BENEFICIARIES
DECEMBER 31, 2015
(AMOUNTS IN \$BILLIONS)**

Sources of Funds



IMRF Obligations



ACTUARIAL BALANCE SHEET
DECEMBER 31, 2015

	Funding Sources			
	Regular	SLEP	ECO	Total
Present Valuation Assets				
Member Contributions	\$ 5,978,036,145	\$ 377,329,866	\$ 26,428,675	\$ 6,381,794,686
Employer Assets	8,243,727,880	378,699,901	(19,116,185)	8,603,311,596
Retired Life Assets	17,811,924,086	1,420,665,538	273,755,728	19,506,345,352
Market Value Adjustment	365,140,602	24,774,528	3,120,193	393,035,323
Death and Disability Reserves				28,640,512
Total Present Assets	\$32,398,828,713	\$2,201,469,833	\$284,188,411	\$34,913,127,469
Future Assets				
Member Contributions	\$ 2,399,157,147	\$ 202,169,925	\$ 6,045,896	\$ 2,607,372,968
Employer Contributions				
Normal Costs	3,534,430,666	310,381,558	13,569,660	3,858,381,884
Unfunded Liability	3,999,698,701	489,437,426	84,310,294	4,573,446,421
Total Employer	\$ 7,534,129,367	\$ 799,818,984	\$ 97,879,954	\$ 8,431,828,305
Total Future Assets	\$ 9,933,286,514	\$1,001,988,909	\$103,925,850	\$11,039,201,273
Total Funding Sources	\$42,332,115,227	\$3,203,458,742	\$388,114,261	\$45,952,328,742

	Funding Uses			
	Regular	SLEP	ECO	Total
Funds Needed for				
Active Members	\$21,268,327,075	\$1,697,516,976	\$ 82,064,534	\$23,047,908,585
Inactive Members	3,251,864,066	85,276,228	32,293,999	3,369,434,293
Retirees and Beneficiaries	17,811,924,086	1,420,665,538	273,755,728	19,506,345,352
Death and Disability Benefits				28,640,512
Total Actuarial Present Value	\$42,332,115,227	\$3,203,458,742	\$388,114,261	\$45,952,328,742

**DEVELOPMENT OF AVERAGE CONTRIBUTION RATES
APPLICABLE TO CALENDAR YEAR 2017
(RESULTS AS OF DECEMBER 31, 2015)**

	% of Active Member Pays		
	Regular	SLEP	ECO
Tier 1 Normal Cost	7.28 %	12.47 %	16.84 %
Tier 2 Normal Cost	4.41 %	8.24 %	13.58 %
Average Employer Contributions for Normal Cost*			
Retirement	6.64 %	11.59 %	16.48 %
\$3,000 Lump Sum Death Benefit	0.03 %	0.02 %	0.05 %
Total & Permanent Disability Benefit	0.04 %	0.16 %	0.30 %
Total Normal Cost	6.71 %	11.77 %	16.83 %
Lump Sum Death-in-Service Benefits	0.15 %	0.15 %	0.15 %
Temporary Disability	0.12 %	0.12 %	0.12 %
13th Payments	0.62 %	0.62 %	0.62 %
Unfunded (Overfunded) Liabilities (26/10 years)	3.53 %	7.80 %	55.78 %
Early Retirement Incentive Liabilities	0.21 %	0.10 %	0.00 %
SLEP Supplemental Liabilities	0.00 %	1.83 %	0.00 %
Total Average Employer Rate	11.34 %	22.39 %	73.50 %
Prior Year Averages	11.73 %	22.71 %	86.07 %

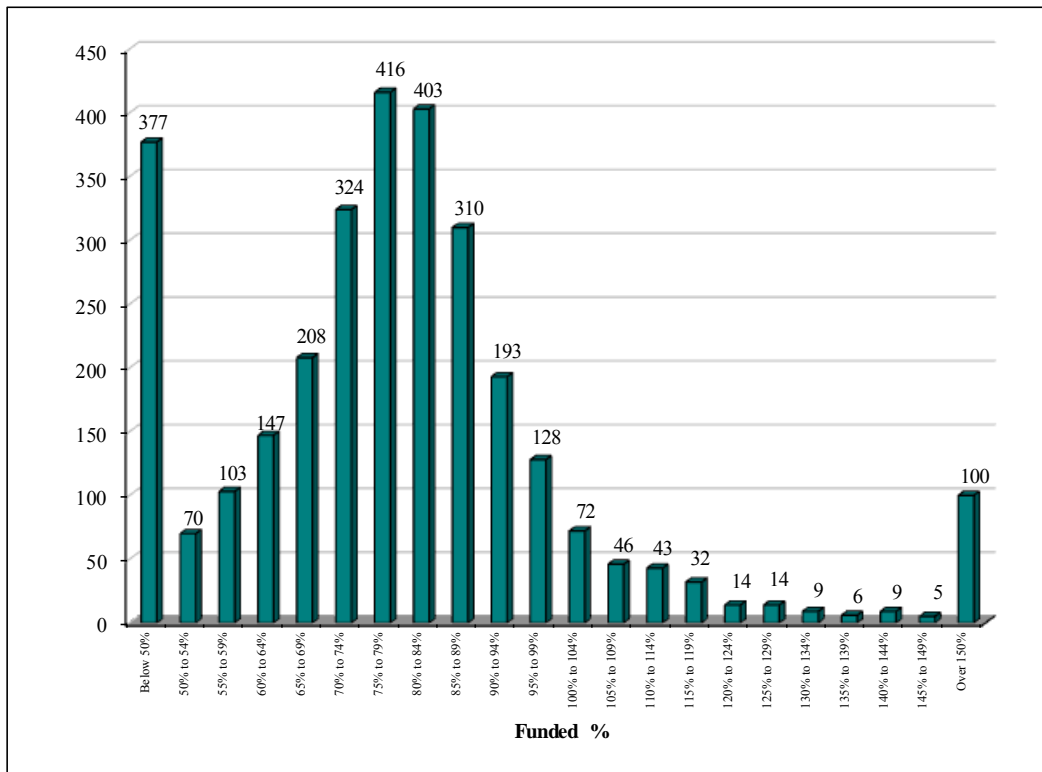
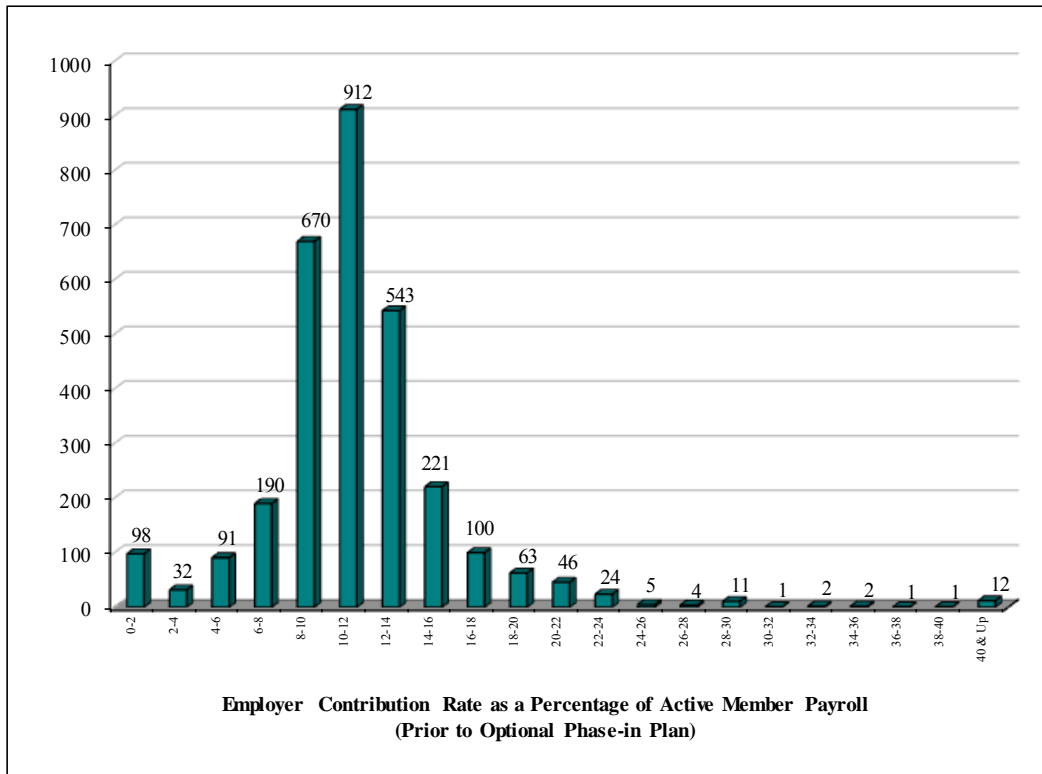
* Average of Tier 1 and Tier 2 Normal Cost weighted on expected payroll.

Each participating employer pays a normal cost rate based on the weighted average of its Tier 1 and Tier 2 projected wages (some larger employers have the option of paying an individual normal cost rate) and the same rate for temporary disability benefits and 13th Payments. Rates for lump sum death-in-service benefits, unfunded (overfunded) liabilities, and early retirement incentive liabilities are separately determined for each employer, and can vary widely. Because of this, the average contribution rates tell only part of the story. Pages A-4 through A-7 show the distribution of computed employer contribution rates, funding percents, and rate changes based on the annual required contribution from the prior year among the 3,029 Regular plans, 209 SLEP plans and 67 ECO plans. IMRF staff reviews all of the computed rates and, in some cases, may make adjustments to those rates that are not reflected in this report.

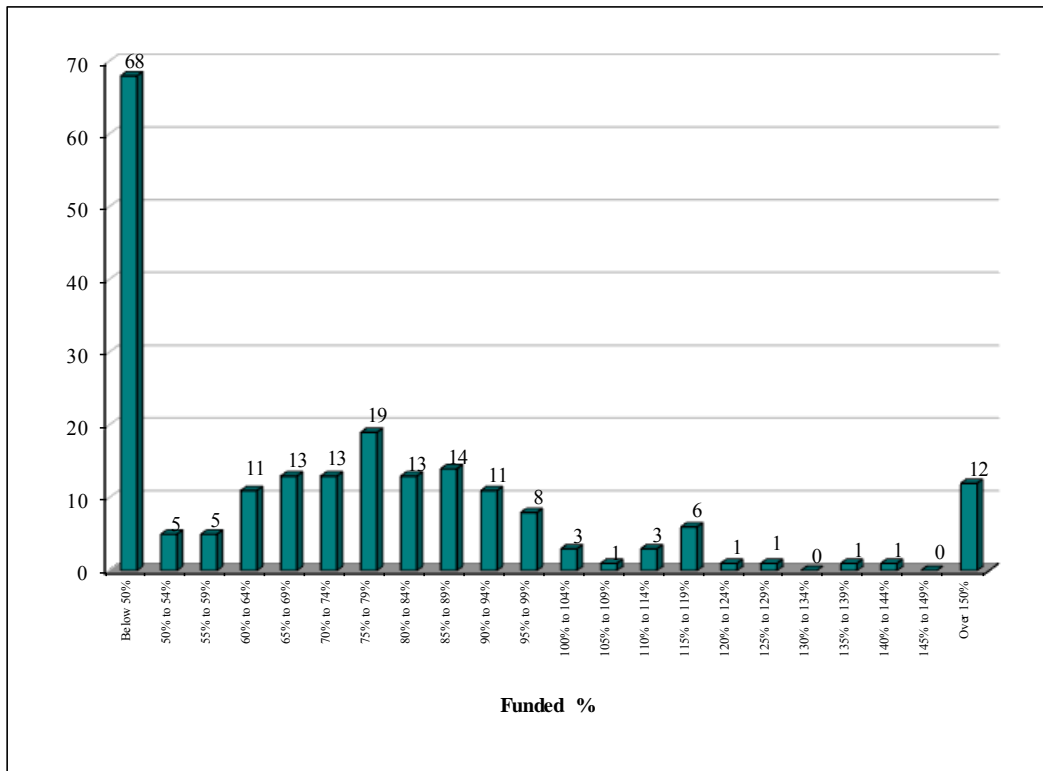
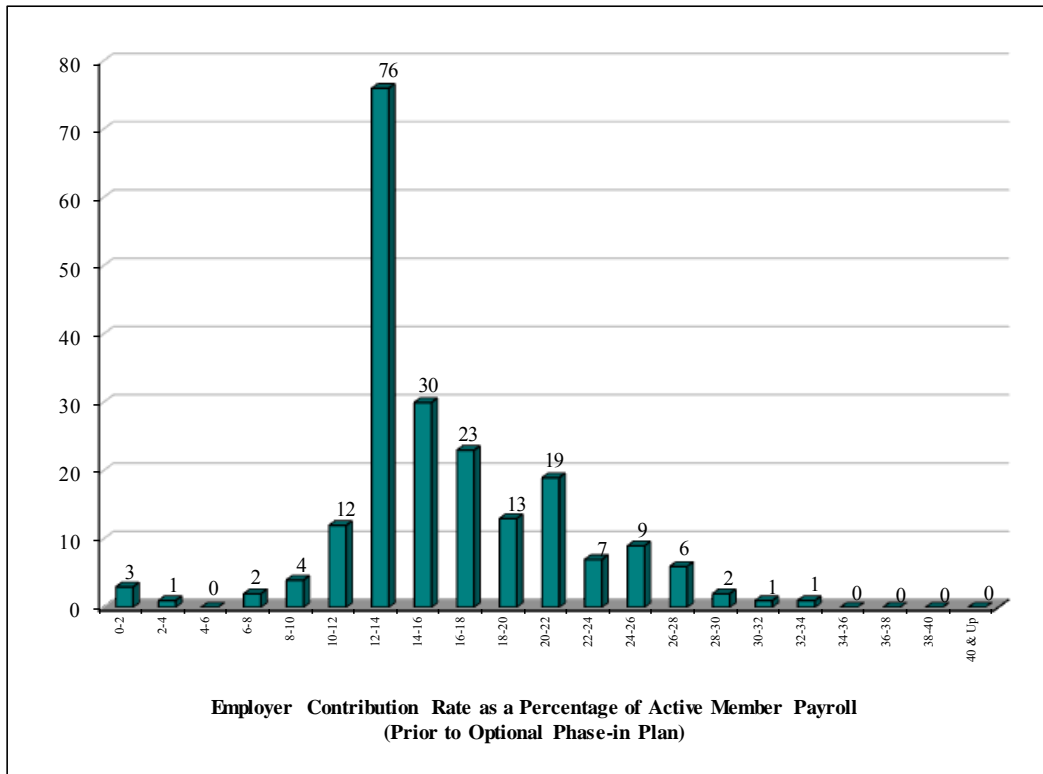
Employer contributions made during calendar year 2015 amounted to \$900 million. This compares with \$923 million in the previous year.

EMPLOYER CONTRIBUTION RATES AND FUNDED PERCENTS

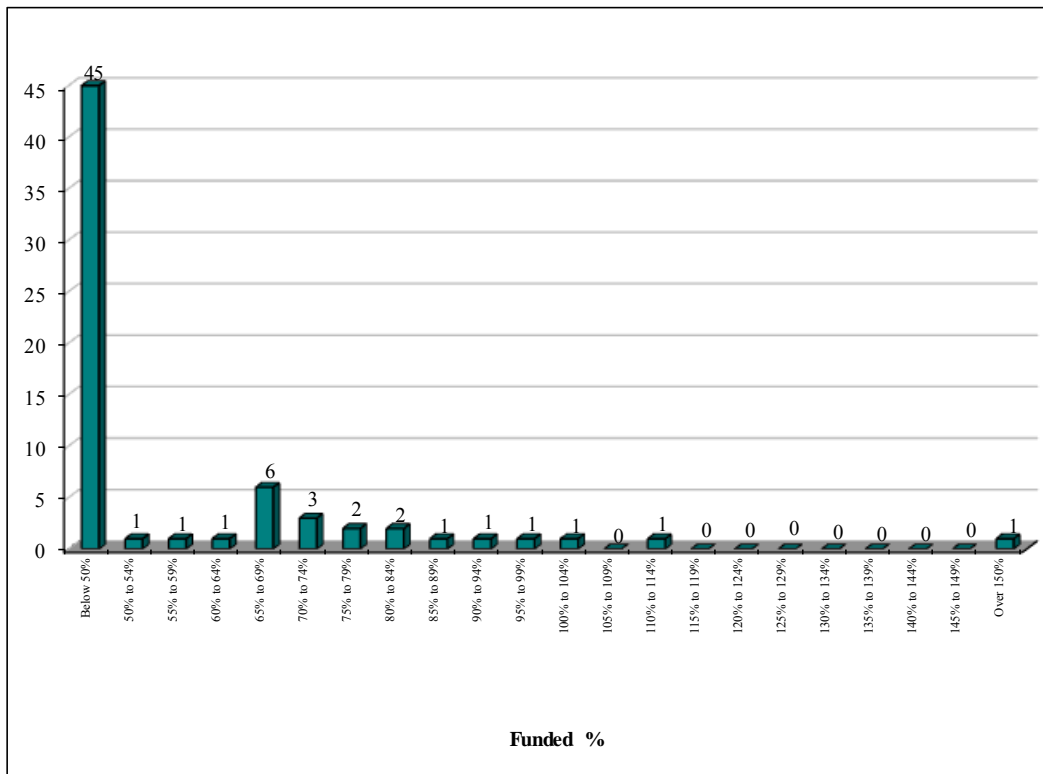
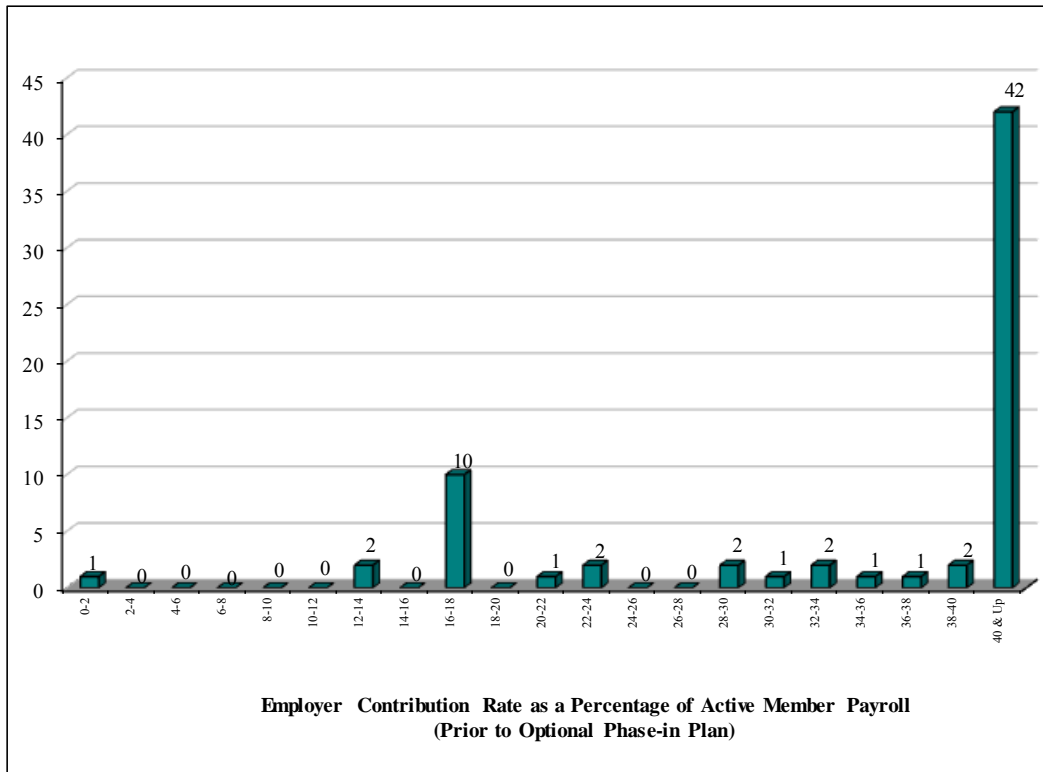
3,029 REGULAR EMPLOYERS AT DECEMBER 31, 2015



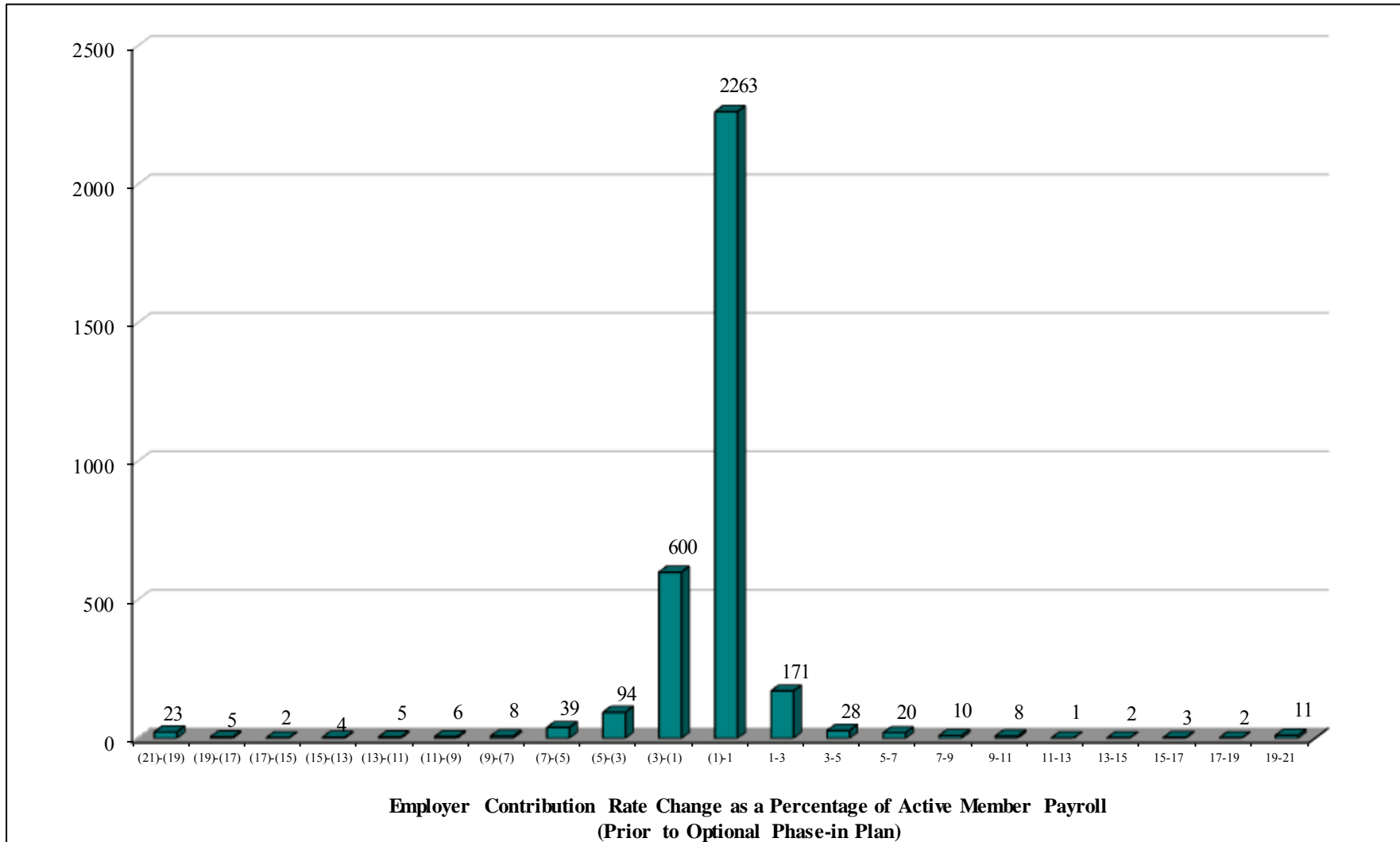
EMPLOYER CONTRIBUTION RATES AND FUNDED PERCENTS 209 SLEP EMPLOYERS AT DECEMBER 31, 2015



EMPLOYER CONTRIBUTION RATES AND FUNDED PERCENTS 67 ECO EMPLOYERS AT DECEMBER 31, 2015



EMPLOYER CONTRIBUTION RATE CHANGES - 2015 ACTUARIAL VALUATIONS 3,305 EMPLOYERS



HISTORICAL SUMMARY OF EMPLOYER RATES

Rate Applies to Calendar Year	Rate Computed as of December 31	Employer Contribution Rate Expressed as % of Active Payroll					
		Regular Members		SLEP Members		ECO Members	
		Normal Cost	Average Total Rate	Normal Cost	Average Total Rate	Normal Cost	Average Total Rate
1993	1991 ^{1, 2}	7.04%	10.58%	8.49%	12.01%		
1994	1992	7.33%	10.77%	8.87%	11.82%		
1995	1993 ¹	7.22%	10.19%	9.50%	12.00%		
1996	1994	7.22%	9.98%	9.51%	11.97%		
1997	1995	7.27%	9.61%	9.32%	11.43%		
1998	1996 ¹	7.21%	9.64%	10.22%	13.94%		
1999	1997 ³	7.23%	9.03%	10.62%	14.65%	21.48%	36.14%
2000	1998	7.17%	8.16%	10.42%	14.28%	23.39%	41.38%
2001	1999 ¹	7.41%	6.64%	12.02%	14.86%	23.85%	42.58%
2002	2000	7.62%	5.87%	11.94%	14.13%	18.05%	38.46%
2003	2001	7.66%	6.22%	11.96%	14.04%	17.95%	40.37%
2004	2002 ¹	7.60%	7.82%	12.47%	16.29%	18.18%	44.90%
2005	2003	7.61%	9.25%	12.48%	17.15%	18.07%	42.66%
2006	2004	7.64%	10.04%	12.56%	18.25%	18.01%	44.90%
2007	2005 ^{1, 2}	7.43%	9.72%	11.66%	18.42%	17.52%	41.30%
2008	2006	7.42%	9.47%	11.63%	19.33%	16.96%	41.80%
2009	2007	7.42%	9.27%	11.63%	18.65%	17.08%	42.77%
2010	2008 ^{1, 4}	7.58%	11.89%	11.97%	21.63%	17.24%	43.57%
2011	2009 ⁴	7.58%	12.14%	11.97%	21.76%	17.20%	42.72%
2012	2010 ⁴	7.58%	12.42%	12.01%	22.48%	17.22%	47.15%
2013	2011 ^{1, 2, 4}	7.77%	12.85%	12.74%	23.40%	17.63%	46.85%
2014	2012 ⁴	7.64%	12.58%	12.61%	23.20%	17.59%	74.52%
2015	2013 ⁴	7.51%	11.69%	12.42%	22.33%	17.73%	70.37%
2016	2014 ^{1, 4}	6.84%	11.73%	11.95%	22.71%	16.49%	86.07%
2017	2015⁴	6.71%	11.34%	11.77%	22.39%	16.83%	73.50%

1 Assumption change.

2 Benefit change.

3 Changed to payroll weighted average method.

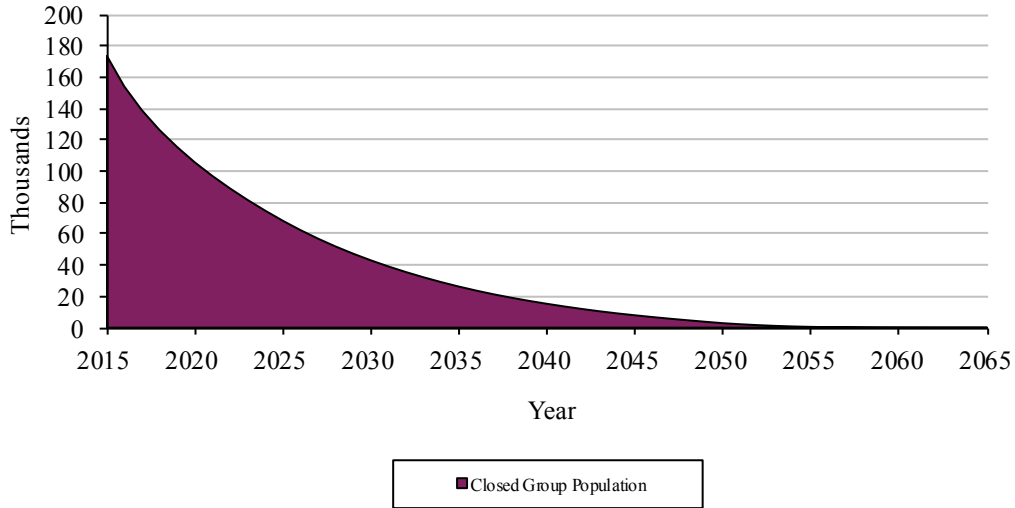
4 Before optional phase-in plan.

As shown above, the average employer contribution rates decreased this year for regular, SLEP and ECO employers. Generally, small fluctuations from year to year should be expected for the average rate and for any large employer's rate. Small and very small employers will experience larger variations.

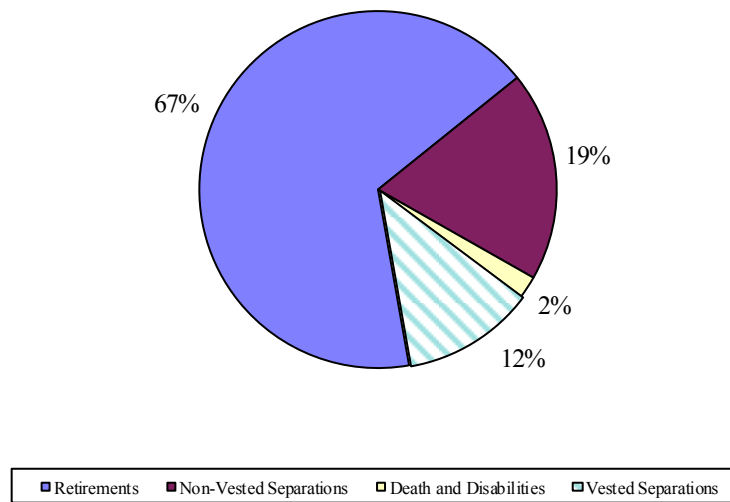
Most of the larger changes were for small employers (often employers covering only 1 or 2 employees), since the removal or addition of 1 employee can significantly impact the contribution rate. The actuary and IMRF staff review all of the large rate changes individually in order to determine the reasonableness of the change. In some cases, rates may be changed.

EXPECTED DEVELOPMENT OF PRESENT POPULATION DECEMBER 31, 2015

Closed Group Population Projection



Expected Terminations from Active Employment for Current Active Members



The charts above show the expected future development of the present population in simplified terms. The retirement system presently covers 173,832 active members. Eventually, 19% of the population is expected to terminate covered employment prior to retirement and forfeit eligibility for a monthly benefit. About 79% of the present population is expected to receive monthly retirement benefits either by retiring directly from active service, or by retiring from vested deferred status. Two percent of the present population is expected to become eligible for death-in-service or disability benefits. **Within 8 years, over half of the covered membership is expected to consist of new hires.**

UNFUNDED ACTUARIAL ACCRUED LIABILITIES

In a retirement system such as IMRF, where unfunded liabilities are being amortized as a level percent of active member payroll, unfunded liabilities are expected to rise in dollar amount for an extended period before finally beginning to decrease. This has to do with inflation and the related fact that the dollar is a yardstick whose length changes every year. The schedule below illustrates the development of the unfunded liability, based upon actuarial value of assets, during the year.

	Unfunded Liability Development During	
	2015	2014
Unfunded (Overfunded) Liability January 1	\$4,764,939,075	\$4,273,532,925
Assumed Net (Payments) Credits	(306,609,121)	(253,703,224)
Assumed Interest	346,011,165	311,115,763
Expected Unfunded Liability December 31	4,804,341,119	4,330,945,464
Increase/(Decrease) Due to Experience Study	0	1,309,736,106
Increase/(Decrease) Due to Benefit Changes	0	0
Increase/(Decrease) Due to Data Changes	0	0
Loss/(Gain) Due to Investment Experience	(313,208,972)	(767,567,271)
Loss/(Gain) Due to Other Sources	82,314,274	(108,175,224)
Actual Unfunded Liability December 31	\$4,573,446,421	\$4,764,939,075

**UNFUNDED ACTUARIAL ACCRUED LIABILITIES
COMPARATIVE STATEMENT
(AMOUNTS IN \$MILLIONS)**

Valuation Date	(1) Actuarial Accrued Liabilities (AAL)	(2) Valuation Assets	(3) Unfunded AAL	(4) Valuation Payroll	(5) Funded Ratio (2)/(1)	(6) Liability/ Payroll (1)/(4)	(7) Assets/ Payroll (2)/(4)	(8) Unfunded/ Payroll (3)/(4)
1991*#	\$ 6,407.0	\$ 5,034.6	\$1,372.4	\$2,491.9	78.6%	257.1%	202.0%	55.1%
1992	6,954.5	5,615.6	1,338.9	2,634.4	80.7%	264.0%	213.2%	50.8%
1993*	7,509.8	6,396.3	1,113.4	2,709.3	85.2%	277.2%	236.1%	41.1%
1994	8,126.6	7,078.9	1,047.8	2,946.5	87.1%	275.8%	240.2%	35.6%
1995	8,823.7	8,034.0	789.7	3,095.9	91.1%	285.0%	259.5%	25.5%
1996*	9,778.6	9,076.3	702.3	3,084.1	92.8%	317.1%	294.3%	22.8%
1997	10,808.0	10,273.1	534.9	3,454.6	95.1%	312.9%	297.4%	15.5%
1998	11,860.9	11,636.5	224.4	3,696.0	98.1%	320.9%	314.8%	6.1%
1999*	13,005.0	13,520.2	(515.2)	3,952.1	104.0%	329.1%	342.1%	-
2000	14,153.1	15,169.4	(1,016.3)	4,184.7	107.2%	338.2%	362.5%	-
2001	15,318.5	16,305.0	(986.5)	4,503.1	106.4%	340.2%	362.1%	-
2002*	16,559.9	16,800.2	(240.3)	4,755.1	101.5%	348.3%	353.3%	-
2003	17,966.1	17,529.9	436.2	4,944.8	97.6%	363.3%	354.5%	8.8%
2004	19,424.7	18,316.0	1,108.7	5,161.1	94.3%	376.4%	354.9%	21.5%
2005 *#	20,815.1	19,698.4	1,116.7	5,374.6	94.6%	387.3%	366.5%	20.8%
2006	22,488.2	21,427.1	1,061.0	5,630.7	95.3%	399.4%	380.5%	18.8%
2007	24,221.5	23,274.4	947.2	5,931.4	96.1%	408.4%	392.4%	16.0%
2008 *	25,611.2	21,601.1	4,010.1	6,259.3	84.3%	409.2%	345.1%	64.1%
2009	27,345.1	22,754.8	4,590.3	6,461.7	83.2%	423.2%	352.1%	71.0%
2010	29,129.2	24,251.1	4,878.1	6,391.2	83.3%	455.8%	379.4%	76.3%
2011 *#	30,962.8	25,711.3	5,251.5	6,431.3	83.0%	481.4%	399.8%	81.7%
2012	32,603.2	27,491.8	5,111.4	6,496.1	84.3%	501.9%	423.2%	78.7%
2013	34,356.6	30,083.0	4,273.6	6,602.5	87.6%	520.4%	455.6%	64.7%
2014 *	37,465.1	32,700.2	4,764.9	6,732.5	87.3%	556.5%	485.7%	70.8%
2015	39,486.6	34,913.1	4,573.5	6,919.3	88.4%	570.7%	504.6%	66.1%

* Assumption change.

Benefit change.

While no one or two numeric indices can fully describe the financial condition of a retirement system, trends in both the Funded Ratio (column 5) and the Unfunded/Payroll Ratio (column 8) provide useful information. Unfunded accrued liabilities represent plan debt, while active member payroll represents the plan's capacity to service the debt. In a retirement system that is following the discipline of level percent of payroll financing, the Funded Ratio should gradually move toward 100% and the Unfunded/Payroll ratio should gradually move toward 0%.

UNFUNDED ACTUARIAL ACCRUED LIABILITIES

Unless otherwise indicated, a funded ratio measurement presented in this report is based upon the actuarial accrued liability and the actuarial value of assets. Unless otherwise indicated, with regard to any funded status measurements presented in this report:

1. The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations, in other words, of transferring the obligations to a unrelated third party in an arm's length market value type transaction.
2. The measurement is dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. The amount of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon actuarial assumptions. A funded ratio measurement in this report of 100% is not synonymous with no required future contributions. If the funded ratio were 100%, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).
3. The measurement would produce a different result if the market value of assets were used instead of the actuarial value of assets, unless the market value of assets is used in the measurement.

RISK MEASURES

\$ Millions								
Valuation Date	(1) Accrued Liabilities (AAL)	(2) Market Value of Assets	(3) Unfunded AAL	(4) Valuation Payroll	(5) Funded Ratio (2)/(1)	(6) Annuitant Liabilities (AnnLiab)	(7) AnnLiab/AAL (6)/(1)	(8) Liability/Payroll (1)/(4)
2002*	\$16,559.9	\$13,496.2	\$3,063.7	\$4,755.1	81.5%	\$ 6,050.9	36.5%	348.3%
2003	17,966.1	16,349.0	1,617.1	4,944.8	91.0%	6,674.5	37.2%	363.3%
2004	19,424.7	18,316.0	1,108.7	5,161.1	94.3%	7,332.5	37.7%	376.4%
2005 *#	20,815.1	19,793.5	1,021.6	5,374.6	95.1%	7,966.1	38.3%	387.3%
2006	22,488.2	22,452.2	36.0	5,630.7	99.8%	8,652.3	38.5%	399.4%
2007	24,221.5	24,211.5	10.0	5,931.4	100.0%	9,400.8	38.8%	408.4%
2008 *	25,611.2	18,000.9	7,610.3	6,259.3	70.3%	10,025.6	39.1%	409.2%
2009	27,345.1	22,282.2	5,062.9	6,461.7	81.5%	10,903.3	39.9%	423.2%
2010	29,129.2	25,132.4	3,996.8	6,391.2	86.3%	12,122.0	41.6%	455.8%
2011 *#	30,962.8	24,833.7	6,129.1	6,431.3	80.2%	13,388.0	43.2%	481.4%
2012	32,603.2	27,995.3	4,607.9	6,496.1	85.9%	14,482.6	44.4%	501.9%
2013	34,356.6	33,203.0	1,153.6	6,602.5	96.6%	15,753.1	45.9%	520.4%
2014 *	37,465.1	34,833.1	2,632.0	6,732.5	93.0%	17,885.0	47.7%	556.5%
2015	39,486.6	34,461.1	5,025.5	6,919.3	87.3%	19,471.6	49.3%	570.7%

These Risk Measures were based on 7.5% future investment return and Market Value of Assets

Notes:

(*). IMRF had experience studies in these years leading to a change or "true up" in actuarial assumptions. A pattern of periodic studies is a sign of a well run system and suggests the extent to which the liability measures the actuary provides are likely to be realistic.

(#). IMRF had benefit changes in these years. Benefit increases cause liabilities to rise; benefit decreases cause liabilities to fall. In either case, benefit changes affect the year by year comparability of the measures on this page.

(5). The Funded ratio is the most widely known measure of a plan's financial strength, but the trend in the funded ratio is much more important than the absolute ratio. The funded ratio should trend to 100%. As it approaches 100%, it is important to re-evaluate the level of investment risk in the portfolio and potentially to re-evaluate the assumed rate of return.

(6) and (7). The ratio of Annuitant liabilities to total accrued liabilities gives an indication of the maturity of the system. As the ratio increases, cash flow needs increase, and the liquidity needs of the portfolio change. A ratio on the order of 50% indicates a maturing system. A ratio significantly higher than 100% may indicate a closed system or another special situation.

(8). The ratio of liabilities to payroll gives an indication of both maturity and volatility. Many systems have ratios between 5 and 7. Ratios significantly above that range may indicate difficulty in supporting the benefit level as a level % of payroll.

RISK MEASURES (CONTINUED)

\$ Millions								
Valuation Date	(9) Assets/ Payroll (2)/(4)	(10) Portfolio StdDev	(11) Std Dev % of Pay (9)x(10)	(12) Unfunded/ Payroll (3)/(4)	(13) Net External Cash Flow (NECF)	(14) NECF/ Assets (13)/(2)	(15) Portfolio Rate of Return	(16) 10-Year Trailing Average
2002*	283.8%			64.4%	\$(111.8)	-0.8%	-9.1%	
2003	330.6%			32.7%	(121.2)	-0.7%	22.1%	
2004	354.9%			21.5%	(48.3)	-0.3%	12.3%	
2005 *#	368.3%			19.0%	(14.5)	-0.1%	8.1%	
2006	398.7%			0.6%	(10.5)	0.0%	13.5%	
2007	408.2%			0.2%	(63.2)	-0.3%	8.1%	
2008 *	287.6%			121.6%	(84.2)	-0.5%	-25.3%	
2009	344.8%			78.4%	(118.7)	-0.5%	24.5%	
2010	393.2%			62.5%	(115.5)	-0.5%	13.3%	5.0%
2011 *#	386.1%			95.3%	(187.3)	-0.8%	-0.4%	5.7%
2012	431.0%			70.9%	(210.9)	-0.8%	13.6%	8.1%
2013	502.9%			17.5%	(271.9)	-0.8%	19.7%	7.8%
2014 *	517.4%	13.1%	67.8%	39.1%	(391.9)	-1.1%	6.1%	7.2%
2015	498.0%	13.9%	69.2%	72.6%	(532.8)	-1.5%	0.5%	6.4%

These Risk Measures were based on 7.5% future investment return and Market Value of Assets

Notes:

(9). The ratios of assets to payroll gives an indication of both maturity and volatility. Many systems have ratios between 5 and 7. Ratios significantly above that range may indicate difficulty in supporting the benefit level as a level % of payroll.

(10) and(11). The portfolio standard deviation measures the volatility of investment return. When multiplied by the ratio of assets to payroll it gives the effect of a one standard deviation asset move as a percent of payroll. This figure helps users understand the difficulty of dealing with investment volatility and the challenges volatility brings to sustainability.

(12). The ratio of unfunded liability to payroll gives an indication of the plan sponsor's ability to actually pay off the unfunded liability. A ratio above approximately 3 or 4 may indicate difficulty in discharging the unfunded liability within a reasonable time frame.

(13) and (14). The ratio of Net External Cash Flow to assets is an important measure of sustainability. Negative ratios are common and expected for a maturing system. In the longer term, this ratio should be on the order of approximately -4%. A ratio that is significantly more negative than that for an extended period could be a leading indicator of potential exhaustion of assets.

(15) and (16). Investment return is probably the largest single risk that most systems face. The year by year return and the 10-year geometric average give an indicator of the realism of the systems assumed return. The averages are of course distorted by the extraordinary events of 2008.

SHORT CONDITION TEST

If the contributions to IMRF are level in concept and soundly executed, the Fund will *pay all promised benefits when due -- the ultimate test of financial soundness*. Testing for level contribution rates is the *long-term test*.

A *short condition test* is one means of checking a system's progress under its funding program. In a short condition test, the plan's present assets (cash and investments) are compared with:

- 1) Member contributions on deposit;
- 2) The liabilities for future benefits to present retired lives;
- 3) The liabilities for service already rendered by active and inactive members.

In a system that has been following the discipline of level percent of payroll financing, the liabilities for member contributions on deposit (liability 1) and the liabilities for future benefits to present retired lives (liability 2) will be fully covered by present assets (except in rare circumstances). In addition, the liabilities for service already rendered by active and inactive members (liability 3) will be partially covered by the remainder of present assets. The larger the funded portion of liability 3, the stronger the condition of the system.

Short Condition Test

Calendar Year	Aggregate Actuarial Liabilities For			Actuarial Assets	Portion of Actuarial Liabilities Covered by Assets		
	(1)	(2)	(3)		(1)	(2)	(3)
	Non-Retired Contributions	Annuitants	Non-Retired Members (Employer Financed Portion)				
1999*	\$2,259,446,274	\$ 4,915,459,683	\$ 5,830,117,336	\$ 13,520,192,111	100%	100%	108.8%
2000	2,473,646,891	5,284,275,174	6,395,133,709	15,169,369,271	100%	100%	115.9%
2001	2,708,833,984	5,613,708,283	6,995,975,308	16,305,022,254	100%	100%	114.1%
2002*	2,950,041,671	6,050,882,416	7,558,983,215	16,800,195,504	100%	100%	103.2%
2003	3,186,234,066	6,674,490,186	8,105,379,199	17,529,890,818	100%	100%	94.6%
2004	3,423,785,725	7,332,542,340	8,668,338,951	18,315,987,910	100%	100%	87.2%
2005*#	3,688,148,208	7,966,135,229	9,160,777,405	19,698,401,285	100%	100%	87.8%
2006	3,960,880,175	8,652,328,762	9,874,976,094	21,427,139,356	100%	100%	89.3%
2007	4,248,399,825	9,400,832,984	10,572,310,907	23,274,361,198	100%	100%	91.0%
2008*	4,573,736,116	10,025,599,295	11,011,863,938	21,601,053,512	100%	100%	63.6%
2009	4,893,022,745	10,903,323,478	11,548,766,993	22,754,803,784	100%	100%	60.3%
2010	5,153,902,881	12,121,959,266	11,853,366,092	24,251,136,889	100%	100%	58.8%
2011 *#	5,417,822,062	13,388,018,799	12,156,974,567	25,711,287,584	100%	100%	56.8%
2012	5,705,336,025	14,482,560,758	12,415,347,316	27,491,809,785	100%	100%	58.8%
2013	5,957,217,332	15,753,071,341	12,646,286,800	30,083,042,548	100%	100%	66.2%
2014 *	6,262,110,058	17,885,026,667	13,318,010,887	32,700,208,537	100%	100%	64.2%
2015	6,488,892,894	19,506,345,352	13,491,335,644	34,913,127,469	100%	100%	66.1%

* Assumption change.

Benefit change.

SHORT CONDITION TEST

Regular Members

Calendar Year	Aggregate Actuarial Liabilities For			Actuarial Assets	Portion of Actuarial Liabilities Covered by Assets		
	(1)	(2)	(3)		(1)	(2)	(3)
	Non-Retired Contributions	Annuitants	Non-Retired Members (Employer Financed Portion)				
2006	\$3,722,403,708	\$ 7,943,908,035	\$ 9,079,788,372	\$20,063,069,197	100%	100%	92.5%
2007	3,992,763,009	8,599,825,860	9,769,922,388	21,779,613,412	100%	100%	94.0%
2008*	4,297,097,330	9,168,217,695	10,187,007,579	20,191,630,667	100%	100%	66.0%
2009	4,594,830,636	9,971,780,724	10,698,214,439	21,250,929,876	100%	100%	62.5%
2010	4,841,653,264	11,047,821,308	11,007,557,254	22,628,324,412	100%	100%	61.2%
2011 *#	5,087,758,544	12,189,531,092	11,298,603,677	23,948,247,636	100%	100%	59.0%
2012	5,350,457,218	13,212,926,495	11,531,067,293	25,599,029,673	100%	100%	61.0%
2013	5,578,881,769	14,369,082,490	11,726,152,647	27,972,103,567	100%	100%	68.4%
2014 *	5,864,657,124	16,328,679,943	12,393,664,527	30,402,948,477	100%	100%	66.2%
2015	6,078,358,544	17,811,924,086	12,534,397,434	32,424,981,363	100%	100%	68.1%

* Assumption change.

Benefit change.

SLEP Members

Calendar Year	Aggregate Actuarial Liabilities For			Actuarial Assets	Portion of Actuarial Liabilities Covered by Assets		
	(1)	(2)	(3)		(1)	(2)	(3)
	Non-Retired Contributions	Annuitants	Non-Retired Members (Employer Financed Portion)				
2006	\$215,431,613	\$ 601,939,738	\$673,264,887	\$1,216,287,901	100%	100%	59.3%
2007	230,360,204	682,656,029	671,880,227	1,330,462,724	100%	100%	62.1%
2008*	251,078,170	691,076,541	711,187,062	1,225,043,022	100%	100%	39.8%
2009	270,526,254	756,769,279	735,206,914	1,307,566,622	100%	100%	38.1%
2010	284,935,047	868,199,000	739,639,201	1,410,557,658	100%	100%	34.8%
2011 *#	301,264,894	976,023,299	754,994,446	1,533,422,771	100%	100%	33.9%
2012	326,676,260	1,025,411,748	792,652,347	1,644,518,055	100%	100%	36.9%
2013	350,386,522	1,151,948,743	836,915,042	1,870,636,530	100%	100%	44.0%
2014 *	370,537,841	1,294,788,995	850,193,605	2,035,365,794	100%	100%	43.5%
2015	383,662,153	1,420,665,538	888,665,484	2,203,555,749	100%	100%	44.9%

* Assumption change.

Benefit change.

SHORT CONDITION TEST

ECO Members

Calendar Year	Aggregate Actuarial Liabilities For			Actuarial Assets	Portion of Actuarial Liabilities Covered by Assets		
	(1)	(2)	(3)		(1)	(2)	(3)
	Non-Retired Contributions	Annuitants	Non-Retired Members (Employer Financed Portion)				
2006	\$23,044,854	\$ 106,480,989	\$121,922,835	\$147,782,258	100%	100%	15.0%
2007	25,276,522	118,351,095	130,508,292	164,285,062	100%	100%	15.8%
2008 *	25,560,616	166,305,059	113,669,297	184,379,823	100%	95%	0.0%
2009	27,665,855	174,773,475	115,345,640	196,307,286	100%	96%	0.0%
2010	27,314,570	205,938,958	106,169,637	212,254,819	100%	90%	0.0%
2011 *#	28,798,624	222,464,408	103,376,444	229,617,177	100%	90%	0.0%
2012	28,202,547	244,222,515	91,627,676	248,262,057	100%	90%	0.0%
2013	27,949,041	232,040,108	83,219,111	240,302,451	100%	92%	0.0%
2014 *	26,915,093	261,557,729	74,152,755	261,894,266	100%	90%	0.0%
2015	26,872,197	273,755,728	68,272,726	284,590,357	100%	94%	0.0%

* Assumption change.

Benefit change.

SECTION B

**SUMMARY OF BENEFIT PROVISIONS
AND VALUATION DATA**

SUMMARY OF BENEFITS AND CONDITIONS EVALUATED

DECEMBER 31, 2015

This is a brief plan description of IMRF benefits. Additional conditions and restrictions may apply. A complete description is found in Article 7 of the Illinois Pension Code.

Participating Employers

All counties and school districts, plus cities and villages and incorporated towns with a population of 5,000 or more (except certain governmental entities specifically excluded by the Pension Code) are required to participate. Other local government units may elect to participate.

Membership

All appointed employees of a participating employer who are employed in a position normally requiring 600 hours (1,000 hours for certain employees hired after 1981) or more of work in a year are required to participate. Elected officials and hospital employees who satisfy requirements may also participate.

Service Credit

Service credit is the total time under IMRF, stated in years and fractions. Service is credited monthly while the member is working, receiving IMRF disability benefits or on IMRF's Benefit Protection Leave. For revised ECO members, the ECO benefit formula is limited to service in an elected office.

Members may qualify for a maximum of one year of additional service credit for unused, unpaid sick leave accumulated with the last employer. Members who retire from a school district may utilize unused sick leave from all school district employers. This additional service credit applies only for members leaving employment for retirement. The service credit is earned at the rate of one month for every 20 days of unused, unpaid sick leave or fraction thereof.

IMRF is a participating plan under the Reciprocal Act, as are all other Illinois public pension systems, except local police and fire pension plans. Under the Reciprocal Act, service credit of at least one year may be considered together at the date of retirement or death for the purpose of determining eligibility for and amount of benefits. However, for teacher aides who meet certain criteria, service credit of less than one year may be considered in determining benefits under the Reciprocal Act.

Final Rate of Earnings (FRE)

Retirement and Survivor Annuities

Tier 1 Members: The final rate of earnings for Regular and SLEP members is the highest total earnings during any 48 consecutive months within the last 10 years of IMRF service divided by 48 or the total lifetime earnings divided by the total lifetime number of months of service. The final rate of earnings for ECO members is the annual salary of the ECO member on the day he or she retires. For revised ECO members who join the plan after January 25, 2000, the final rate of earnings is the highest total earnings during any 48 consecutive months within the last 10 years of IMRF service divided by 48 for each office held.

Tier 2 Members: The final rate of earnings for Regular and SLEP members is the highest total earnings during any 96 consecutive months within the last 10 years of IMRF service divided by 96 or the total lifetime earnings divided by the total lifetime number of months of service. For revised ECO members who join the plan after January 25, 2000, the final rate of earnings is the highest total earnings during any 96 consecutive months within the last 10 years of IMRF service divided by 96 for each office held. Pensionable earnings are initially capped at \$106,800 which will increase annually beginning in 2012 by three percent or one-half of the increase of the Consumer Price Index, whichever is less. For SLEP members, overtime compensation is excluded from pensionable earnings.

Death Benefits: The greater of the above amount or the average of earnings over the last 12 months of service.

Disability Benefits: The average of earnings over the last 12 months of service (for ECO members, annualized salary on last day of ECO participation).

SUMMARY OF BENEFITS AND CONDITIONS EVALUATED

DECEMBER 31, 2015

Normal Retirement Pension Eligibility

Tier 1 Members:

Normal retirement for an unreduced pension is:

- Age 60 with eight or more years of service or 35 or more years of service at age 55,
- Age 50 with 20 or more years of SLEP service for members with SLEP service,
- Age 55 with eight or more years of service for members with ECO service, or
- Age 55 with eight or more years of service in the same elected county office for members with Revised ECO service.

Tier 2 Members:

Normal retirement for an unreduced pension is:

- Age 67 with ten or more years of service or 35 or more years of service at age 62,
- Age 55 with ten or more years of SLEP service for members with SLEP service,
- Age 67 with eight or more years of service in the same elected county office for members with Revised ECO service.

Normal Retirement Pension Amount

A Regular IMRF pension is:

- 1-2/3 percent of the final rate of earnings for each of the first 15 years of service credit, plus
- 2 percent for each year of service credit in excess of 15 years.

The maximum pension at retirement cannot exceed 75 percent of the final rate of earnings.

A SLEP pension is:

- 2-1/2 percent of the final rate of earnings for each year of service.

The maximum pension at retirement cannot exceed 80 percent (75 percent for Tier 2) of the final rate of earnings.

An ECO pension is:

- 3 percent of the final rate of earnings for each of the first eight years of service, plus
- 4 percent for each year of service between eight and 12 years of service, plus
- 5 percent for years of service credit over 12.

The maximum pension at retirement cannot exceed 80 percent of the final rate of earnings.

A money purchase minimum pension is provided if it exceeds the normal formula amount. The money purchase minimum is the amount that may be purchased by 2.4 times the member's applicable accumulated contributions, including interest at 7.5%.

A reversionary pension option is provided to members at retirement. This option permits the member to revert a portion of their pension to one other person upon their death. This election is irrevocable.

An IMRF pension is paid for life.

SUMMARY OF BENEFITS AND CONDITIONS EVALUATED

DECEMBER 31, 2015

Early Retirement (not applicable to SLEP Tier 1 optional benefits or to ECO service)

Tier 1 Members: Regular members may retire as early as age 55 with a reduced pension. The reduction is the lesser of:

- one-fourth percent for each month the member is under age 60, or
- one-fourth percent for each month of service less than 35 years.

Tier 2 Members: Regular members may retire as early as age 62 with a reduced pension. The reduction is the lesser of:

- one-half percent for each month the member is under age 67, or
- one-half percent for each month of service less than 35 years.

SLEP members may retire as early as age 50 with a reduced pension. The reduction is one-half percent for each month the member is under age 55.

Early Retirement Incentive Program (ERI)

Eligibility and Amount: IMRF employers may offer an early retirement incentive (ERI) program to their employees who are over 50 (57 for Tier 2 regular and ECO members) years of age and who have at least 20 years of service credit. Eligible members may purchase up to five years of service credit and age. Employers must pay off the additional ERI liability within 10 years. Subsequent ERI programs may be offered once every five years by an employer after the liability for the previous ERI program is paid.

Member Cost: For each year of service credit purchased, members pay the current member contribution rate multiplied by the highest 12 consecutive months of salary (within ERI period).

Vesting

Tier 1 Members: Members are vested for pension benefits when they have at least eight years of qualifying service credit. SLEP members are vested for a SLEP pension when they have at least 20 years of SLEP service credit. SLEP members with more than eight years of service but less than 20 years of SLEP service will receive a Regular pension. Revised ECO members (those who joined the ECO plan after January 25, 2000) are vested with eight or more years of ECO service credit in the same elected county position. Revised ECO members with eight years of service but less than eight years in the same elected county office will receive a Regular pension.

Tier 2 Members: Members are vested for pension benefits when they have at least 10 years of qualifying service credit. SLEP members are vested for a SLEP pension when they have at least 10 years of SLEP service credit. Revised ECO members (those who join the ECO plan after January 25, 2000) are vested with ten or more years of ECO service credit in the same elected county position. Revised ECO members with at least 10 years of total service but less than 10 years of service in the same elected county office will receive a Regular pension.

Surviving Spouse Pension

For Regular and SLEP members: A surviving spouse's monthly pension is one-half (66-2/3 percent for Tier 2) of the member's pension.

For ECO members: A surviving spouse's monthly pension is 66-2/3 percent of the member's pension. This pension is payable once the surviving spouse becomes 50 years old. If the spouse is caring for the member's minor, unmarried children, the spouse will receive (age 50 requirement does not apply):

- A monthly pension equal to 30 percent of the ECO member's salary at time of death, plus
- 10 percent of the ECO member's salary at time of death for each minor, unmarried child. The maximum total monthly benefit payable to spouse and children cannot exceed 50 percent of the ECO member's salary at time of death, or
- A monthly pension equal to 66-2/3 percent of the pension the member had earned.

Surviving spouse pensions under all plans are increased each January 1. The increase is based on the original amount of the pension. The increase for the first year is prorated for the number of months the surviving spouse or the member received a pension. For Tier 1, the annual increase is three percent. For Tier 2, the annual increase is three percent or one-half the increase in the Consumer Price Index, whichever is less.

SUMMARY OF BENEFITS AND CONDITIONS EVALUATED

DECEMBER 31, 2015

Lump Sum Death-In-Service Benefit

Less than 1 year of service: Member contribution.

More than 1 year of service (or death in the line of duty): The sum of one times FRE (limited to pensionable earnings cap for Tier 2 members) and member contributions with interest.

These benefits are payable only if no surviving spouse pension is payable.

Lump Sum Death After Retirement Benefit

\$3,000. If there is no surviving spouse, any remainder of the deceased member's contributions and interest not paid out as a pension is also payable.

Children's Benefits

Regular and SLEP

Eligibility: Death of a member eligible to retire who has no surviving spouse, or death of a surviving spouse's beneficiary.

Amount: Equal to spouse's pension, divided equally among surviving children and payable to age 18.

ECO

Eligibility: Death of a member with minor children and no eligible spouse.

Amount: 20% of salary to each child, to a maximum of 50% of salary, payable to age 18.

If death occurs after termination of service, the total payment to the surviving spouse and children is limited to 75% of the member's pension.

Temporary Disability

Eligibility: Temporary disability for at least 30 days after one year of service and prior to age 70. Pre-existing conditions are excluded if service is under 5 years.

Amount: 50% of FRE less amounts payable from Social Security or Worker's Compensation.

Duration: Period equal to 1/2 credited service, not to exceed 30 months.

Total and Permanent Disability

Regular and SLEP

Eligibility: Payable after temporary disability period to members who are totally and permanently disabled and unable to engage in any gainful occupation.

Amount: 50% of FRE less amounts payable by Social Security.

Duration: To the later of (i) Social Security age, or (ii) age at disability plus 5 years.

ECO

Eligibility: Payable to members who are totally and permanently disabled from performing the duties of their office while in service as an elected county officer.

Amount: The greater of 50% of FRE or the alternate formula pension amount earned to date.

Duration: To the later of (i) Social Security age, or (ii) age at disability plus 5 years.

SUMMARY OF BENEFITS AND CONDITIONS EVALUATED

DECEMBER 31, 2015

IMRF service is credited during the disability period, except that under the revised ECO plan, the service that will be credited will be Regular or SLEP as appropriate, but not ECO.

Post-Retirement Increases

Tier 1 Members: Members in all plans receive an annual 3% increase based upon the original amount of the annuity. The increase for the first year is pro-rated for the number of months the member was retired.

Tier 2 Members: Members in all plans receive an annual increase based upon the original amount of the annuity of 3% or one-half of the increase in the Consumer Price Index whichever is less. For regular and ECO members the annual increases do not begin until the retiree reaches the age of 67 or after 12 months of retirement, whichever is later. For SLEP members the increases begin at age 60 or after 12 months of retirement, whichever is later.

13th Payment

A lump sum payment is made to eligible retirees and surviving spouses on July 1st. The amount depends on funds available from a designated employer contribution of 0.62% of payroll. No specific 13th payment amount is promised to any individual.

Member Contributions

Regular Members: 4 1/2% of earnings (3-3/4% base plus 3/4% for survivor benefits).

SLEP Members: 7 1/2% of earnings (6-3/4% base plus 3/4% for survivor benefits).

ECO Members: 7 1/2% of earnings (6-3/4% base plus 3/4% for survivor benefits).

Converting past service credit: ECO members can convert past regular service by contributing 3% of earnings plus interest for each month of Regular service credit converted. ECO members can convert past SLEP service by contributing 0% to 3% (depending on the original SLEP contribution) of earnings plus interest for each month of SLEP service credit converted. SLEP members can convert past regular service by contributing 3% of earnings plus interest for each month of Regular service credit converted.

Voluntary Additional: Up to 10% of earnings.

Refunds: Non-vested members who stop working for an IMRF employer can receive a lump sum refund of their IMRF member contributions without interest. Vested members can receive a lump sum refund of their IMRF member contributions if they stop working for an IMRF employer prior to age 55 (62 for Tier 2 regular members, 50 for Tier 2 SLEP members). Vested members age 55 or older (62 for Tier 2 regular members, 50 for Tier 2 SLEP members) may receive separation refunds if the member rolls over the refund into another defined benefit retirement plan for the purpose of purchasing service credit.

Members who retire without an eligible spouse (married to or in a civil union with the member at least one year before the member terminates IMRF participation) may receive a refund of their surviving spouse contributions with interest or an annuity.

If, upon a member's death, all of the member contributions with interest (7.5% per year) were not paid as a refund or pension to either the member or his or her spouse, the beneficiary will receive any balance in the member's account.

Caps on Reportable Wages

Under Tier 2, a member's wages are capped. No contributions are payable on wages above the cap. The wage cap is also applied when IMRF calculates your benefits. The cap increases each year by the lesser of 3% or one-half of the increase in the Consumer Price Index (urban) for the preceding September. If the CPI is zero, the wage cap is not increased. A wage cap of \$111,572 was used in the December 31, 2015 valuation.

SUMMARY OF COVERED POPULATION DATA DECEMBER 31, 2015

Data on persons covered by IMRF were reported to the Actuary as follows:

Member Status	No.	Valuation Payroll/Benefits	Average		
			Pay/ Benefits	Age	Service
Active Members					
Regular Tier 1	122,103	\$5,275,924,399	\$43,209	51.4	13.8
Regular Tier 2	47,328	1,330,645,790	28,115	39.2	1.9
SLEP Tier 1	3,228	251,114,542	77,793	44.1	15.6
SLEP Tier 2	939	48,318,977	51,458	33.1	2.9
ECO / ECO SLEP Tier 1	232	13,307,412	57,360	57.0	15.1
ECO / ECO SLEP Tier 2	2	26,687	13,344	59.3	5.0
Total Active	173,832	\$6,919,337,807	\$39,805	47.9	10.6
Inactive Members					
Regular Tier 1	152,131			47.9	5.6
Regular Tier 2	23,428			33.8	1.2
SLEP Tier 1	978			46.2	10.7
SLEP Tier 2	164			32.6	2.2
ECO / ECO SLEP Tier 1	169			56.4	13.3
ECO / ECO SLEP Tier 2	0			0.0	0.0
(Inactive and Active)	(35,634)				
Total Inactive	141,236			46.0	5.0
Retirees & Beneficiaries (Retired in multiple employers)	168,729 (51,701)				
Total Retired	117,028	\$1,740,986,220	\$14,877	72.0	
Total Population	432,096				
Prior Year Total	423,509				

There are a number of situations where members may be counted more than once. In particular, there are some members who are inactive with at least one employer and active with another employer. In order to avoid counting such individuals more than once, the inactive count is reduced by the number of such people as shown above. Other situations involving people who are inactive or retired with more than one employer can also lead to people being counted more than once in the totals above. Consequently, actual counts of people may be lower than the above counts would suggest.

Additional population statistics are presented on the following pages.

ACTIVE MEMBERS BY EMPLOYER TYPE
DECEMBER 31, 2015
REGULAR, SLEP, ECO COMBINED

Type of Employer	Rate Groups	Members			Payroll
		Number	% of Total	Cumulative Percent	
School Districts	851	84,132	48.5%	48.5%	\$ 2,460,903,582
Counties (Regular, SLEP,ECO)	269	30,064	17.3%	65.8%	1,466,044,757
Cities	305	18,204	10.5%	76.3%	1,017,339,046
Villages	472	14,268	8.2%	84.5%	855,945,929
Park Districts	201	7,836	4.5%	89.0%	321,597,210
Special Ed Districts	46	4,717	2.7%	91.7%	131,208,412
Townships	496	3,476	2.0%	93.7%	139,468,954
Library Districts	223	3,124	1.8%	95.5%	112,619,239
Sanitary Districts	38	920	0.5%	96.0%	60,504,183
Forest Preserve Districts	13	869	0.5%	96.5%	45,424,536
Towns	5	749	0.4%	96.9%	33,790,884
Intergovernmental Coop	51	648	0.4%	97.3%	45,576,517
Mass Transit District (Taxing Authority)	4	646	0.4%	97.7%	34,197,077
County Hospital Districts	3	637	0.4%	98.1%	29,230,751
Consolidated Education Service Region	24	461	0.3%	98.4%	14,582,785
Mass Transit Instrumentality	4	350	0.2%	98.6%	12,308,554
Airport Authorities	12	283	0.2%	98.8%	16,331,643
Joint Spec Rec Assns	18	278	0.2%	99.0%	12,794,119
Misc. Taxing Authority	8	267	0.2%	99.2%	18,125,194
Health Districts	4	210	0.1%	99.3%	9,570,198
Fire Protection Districts	60	195	0.1%	99.4%	12,453,835
Multi Co/Cons Health Dept.	3	184	0.1%	99.5%	6,344,344
Miscellaneous Instrumentality	17	166	0.1%	99.6%	9,713,473
Vocational System	40	152	0.1%	99.7%	5,425,959
Public Library System	2	139	0.1%	99.8%	6,258,826
Public Housing Authority	10	125	0.1%	99.9%	5,123,947
County Conservation Districts	4	122	0.1%	100.0%	6,154,195
Regional Planning Commission	1	86	0.0%	100.0%	5,856,515
Educ Serv Centers	4	75	0.0%	100.0%	3,553,282
Conservancy Districts	4	71	0.0%	100.0%	3,586,053
Water District	12	56	0.0%	100.0%	2,942,133
County Road District	33	55	0.0%	100.0%	1,697,993
Special Ed Coop/Districts	13	54	0.0%	100.0%	3,911,079
Joint Education Projects	5	43	0.0%	100.0%	1,197,024
Public Housing Commission	6	40	0.0%	100.0%	1,769,321
ROE Office	2	37	0.0%	100.0%	1,372,477
Water Supply/Sewr Comission	6	31	0.0%	100.0%	1,596,671
Mosquito Abatement District	7	30	0.0%	100.0%	1,969,630
Multi Twp Assessment Districts	14	16	0.0%	100.0%	331,619
Township Cemetary	12	10	0.0%	100.0%	242,667
Drainage District	2	6	0.0%	100.0%	273,194
Tuberculosis Sanitarium Districts	1	0	0.0%	100.0%	-
Employers with no Active Members or no Asset Information	655	0	0.0%	100.0%	-
Totals	3,960	173,832	100.0%	100.0%	\$6,919,337,807

**ACTIVE REGULAR MEMBERS
BY ATTAINED AGE AND YEARS OF SERVICE
DECEMBER 31, 2015**

Attained Ages	Years of Service to Valuation Date							Totals	
	0-7	8-9	10-14	15-19	20-24	25-29	30 & Up	No.	Valuation Payroll
15 - 19	262							262	\$ 3,468,849
20 - 24	5,073							5,073	113,578,651
25 - 29	11,103	313	51					11,467	348,159,694
30 - 34	9,841	1,622	1,410	57	2			12,932	488,970,342
35 - 39	8,513	1,690	3,133	1,298	29	2		14,665	598,768,187
40 - 44	8,897	1,640	2,834	2,609	742	62	7	16,791	677,352,384
45 - 49	9,813	2,166	3,848	3,095	1,903	1,011	64	21,900	893,316,834
50	1,835	471	942	718	361	377	77	4,781	192,024,621
51	1,851	531	1,051	791	420	401	138	5,183	214,191,968
52	1,857	544	1,129	875	409	457	193	5,464	223,365,699
53	1,821	569	1,130	979	545	465	292	5,801	243,365,354
54	1,756	526	1,149	1,105	503	443	421	5,903	246,613,778
55	1,718	543	1,189	1,116	590	449	423	6,028	253,668,053
56	1,561	520	1,074	1,113	601	420	419	5,708	239,715,928
57	1,568	478	1,115	1,069	594	381	437	5,642	229,176,808
58	1,401	450	1,072	1,124	641	409	453	5,550	231,059,988
59	1,423	422	1,009	1,101	686	431	447	5,519	225,338,847
60	1,262	342	891	981	634	410	401	4,921	201,420,945
61	1,186	353	749	849	609	408	347	4,501	183,963,442
62	1,004	270	734	788	548	349	282	3,975	159,718,727
63	906	269	580	627	485	285	246	3,398	137,305,997
64	736	230	530	555	365	290	225	2,931	117,891,136
65	652	197	430	418	284	231	196	2,408	94,905,082
66	477	142	330	299	207	138	149	1,742	67,831,552
67	443	112	248	207	151	118	96	1,375	49,526,229
68	341	116	200	149	115	74	73	1,068	37,524,970
69	358	94	166	146	104	76	58	1,002	34,153,570
70	229	68	127	89	50	45	52	660	21,656,733
Over 70	884	261	582	427	239	160	228	2,781	78,535,821
Totals	78,771	14,939	27,703	22,585	11,817	7,892	5,724	169,431	\$6,606,570,189

**ACTIVE SLEP MEMBERS
BY ATTAINED AGE AND YEARS OF SERVICE
DECEMBER 31, 2015**

Attained Ages	Years of Service to Valuation Date							Totals	
	0-7	8-9	10-14	15-19	20-24	25-29	30 & Up	No.	Valuation Payroll
20 - 24	82							82	\$ 3,501,975
25 - 29	346	6	1					353	17,996,436
30 - 34	397	164	105					666	42,014,639
35 - 39	212	98	293	83	1	1		688	47,728,535
40 - 44	102	55	183	294	99	1		734	55,471,381
45 - 49	80	35	127	205	247	104	1	799	64,332,259
50	8	4	14	18	22	40	5	111	9,914,043
51	10	3	23	15	19	28	4	102	7,961,082
52	5	9	11	16	21	21	2	85	6,666,718
53	9	2	9	18	16	15	6	75	6,499,848
54	3	1	12	15	14	19	2	66	5,383,987
55	8	3	11	18	8	9	8	65	5,302,014
56	6	3	11	10	9	10	3	52	4,048,544
57	6	4	4	12	11	10	5	52	4,102,053
58	8	2	6	4	5	8	1	34	2,869,986
59	6		8	4	3	9	4	34	2,878,389
60	8	2	10	10	5	8	1	44	3,090,580
61	6	1	6	4	2		3	22	1,563,945
62	6		4	7	2	3	3	25	1,838,673
63	5	3	6	7	1	4	2	28	2,151,457
64		1	4	1	4	1		11	946,374
65			2	3		1	1	7	556,950
66	2		1	3		1	1	8	605,185
67	1	1	1	1	2	2		8	654,833
68	2		2		1			5	429,041
69	1		2				1	4	456,759
70	1		1	1				3	206,190
Over 70		1	1				2	4	261,643
Totals	1,320	398	858	749	492	295	55	4,167	\$299,433,519

**ACTIVE ECO REGULAR MEMBERS
BY ATTAINED AGE AND YEARS OF SERVICE
DECEMBER 31, 2015**

Attained Ages	Years of Service to Valuation Date							Totals	
	0-7	8-9	10-14	15-19	20-24	25-29	30 & Up	No.	Valuation Payroll
25-29	1							1	\$ 12,720
30-34	1							1	66,322
35-39	6	1						7	635,050
40-44	4	2	1	3	2			12	865,663
45-49	8		3	5	4			20	1,219,985
50	2			3	1			6	515,937
51	1		3					4	217,500
52	2		1			3	1	7	380,538
53	7		3	2	1		1	14	920,871
54	5		3	1	2		2	13	523,524
55	3		1	1	1	1		7	464,856
56	1		2	1	1	1		6	392,125
57	4	1		2	1			8	455,268
58	1		1	6			3	11	577,612
59	3	1	3	7	1	1		16	746,416
60			2	5	1		1	9	600,888
61	3	3	2	1			4	13	845,265
62		1	2	3			1	7	279,582
63	5			2	2	3	1	13	928,486
64	3	1	2					6	169,461
65			4			1		5	302,713
66	3		3	3				9	390,143
67			1	2	1			4	192,980
68	1		2					3	117,006
69			1					1	19,419
70			1	1				2	23,389
Over 70	3		3	4		2	4	16	409,192
Totals	67	10	44	52	18	12	18	221	\$12,272,911

**ACTIVE ECO SLEP MEMBERS
BY ATTAINED AGE AND YEARS OF SERVICE
DECEMBER 31, 2015**

Attained Ages	Years of Service to Valuation Date							Totals	
	0-7	8-9	10-14	15-19	20-24	25-29	30 & Up	No.	Valuation Payroll
20-24									
25-29									
30-34									
35-39									
40-44									
45-49	2	1			1			4	\$ 351,935
50									
51					1			1	72,125
52									
53									
54			1					1	71,663
55									
56									
57									
58									
59	1		2					3	200,666
60									
61									
62									
63									
64									
65						1	2	3	253,545
66									
67					1			1	111,254
Totals	3	1	3		3	1	2	13	\$ 1,061,188

**ALL ACTIVE MEMBERS BY YEARS OF SERVICE AND GENDER
DECEMBER 31, 2015**

Service Years	Active Member Count			Active Member Pays	
	Males	Females	Total	Total	Average
0	6,140	11,466	17,606	\$ 417,703,031	\$ 23,725
1	5,413	9,341	14,754	403,210,758	27,329
2	4,229	6,939	11,168	337,290,373	30,202
3	3,382	5,552	8,934	285,422,681	31,948
4	2,886	4,501	7,387	249,303,522	33,749
5	2,333	3,819	6,152	211,806,556	34,429
6	2,337	3,926	6,263	215,600,755	34,425
7	2,926	4,976	7,902	295,036,526	37,337
8	2,778	5,312	8,090	305,386,850	37,749
Sub-Total	32,424	55,832	88,256	2,720,761,052	30,828
9	2,464	4,790	7,254	285,901,536	39,413
10	2,369	4,248	6,617	272,914,265	41,244
11	1,990	3,671	5,661	239,695,928	42,342
12	1,905	3,198	5,103	221,487,488	43,403
13	1,837	3,411	5,248	230,374,326	43,898
14	2,017	3,964	5,981	263,278,612	44,019
15 & Up	19,995	29,717	49,712	2,684,924,600	54,010
Totals	65,001	108,831	173,832	\$6,919,337,807	\$39,805

**INACTIVE REGULAR MEMBERS
BY ATTAINED AGE AND YEARS OF SERVICE
DECEMBER 31, 2015**

Attained Ages	Years of Service to Valuation Date							Totals No.
	0-4	5-9	10-14	15-19	20-24	25-29	30 & Up	
15-19	109							109
20-24	2,756	2						2,758
25-29	12,623	187						12,810
30-34	16,830	983	99	1			1	17,914
35-39	15,486	1,225	369	29			4	17,113
40-44	14,806	1,385	559	122	21	1	13	16,907
45-49	16,227	1,909	864	297	107	25	28	19,457
50	2,741	458	250	79	36	15	13	3,592
51	2,706	477	257	109	52	18	13	3,632
52	3,022	535	331	149	64	27	14	4,142
53	2,905	579	320	150	68	24	31	4,077
54	2,920	631	385	168	73	31	41	4,249
55	2,701	620	344	145	59	25	30	3,924
56	2,529	424	211	68	26	17	15	3,290
57	2,544	359	148	57	22	6	13	3,149
58	2,262	329	122	38	17	12	14	2,794
59	2,372	320	108	47	18	5	17	2,887
60	1,907	277	81	22	10	6	15	2,318
61	1,929	258	60	30	9	5	16	2,307
62	1,757	203	60	23	7	5	8	2,063
63	1,401	178	40	22	12	6	12	1,671
64	1,624	164	34	14	10	5	15	1,866
65	1,120	133	27	12	5	5	10	1,312
66	1,002	96	22	3	7	5	9	1,144
67	813	73	14	5	2		4	911
68	845	62	12	4	2		1	926
69	716	71	10	3	2	1	5	808
70	447	39	4	6		1	1	498
Over 70	1,633	98	24	5	1	1	11	1,773
Totals	120,733	12,075	4,755	1,608	630	246	354	140,401

**INACTIVE SLEP MEMBERS
BY ATTAINED AGE AND YEARS OF SERVICE
DECEMBER 31, 2015**

Attained Ages	Years of Service to Valuation Date							Totals No.
	0-4	5-9	10-14	15-19	20-24	25-29	30 & Up	
15-19								
20-24	8							8
25-29	70							70
30-34	80	22	1					103
35-39	58	30	13					101
40-44	55	29	12	3	2			101
45-49	62	18	20	10	9	3	5	127
50	7	5	3	2	4			21
51	9	5	6	5			1	26
52	5	1	5		1		1	13
53	8	4	5	2			1	20
54	3	4	4	1	1		2	15
55	5	3	4	1				13
56	12	1	6	1	1	1	2	24
57	10	2	1	2				15
58	6	2		1				9
59	4	2	1	1				8
60	4		1				1	6
61	3							3
62	8	2			1			11
63	6	1	1					8
64	5						1	6
65	4						2	6
66	4							4
67	2							2
68								
69								
70	1							1
Over 70	4							4
Totals	443	131	83	29	19	4	16	725

**INACTIVE ECO MEMBERS
BY ATTAINED AGE AND YEARS OF SERVICE
DECEMBER 31, 2015**

Attained Ages	Years of Service to Valuation Date							Totals No.
	0-4	5-9	10-14	15-19	20-24	25-29	30 & Up	
15-19								
20-24								
25-29								
30-34								
35-39								
40-44	2	2	1					5
45-49	5	13	4	2			2	26
50		1		1	1			3
51		1	1	1				3
52	2	2	2	1				7
53	1	3		1	1			6
54		3	2				1	6
55	1	4	1	1				7
56	1	3	4					8
57		2						2
58	2			1				3
59	3	2		1				6
60	1	3	1					5
61	2							2
62					1			1
63	2	1		1				4
64			1					1
65							1	1
66	2				1			3
67	1	3						4
68	1							1
69								
70		2						2
Over 70	2	1		1				4
Totals	28	46	17	11	4	3	1	110

RETIREES AND BENEFICIARIES
DECEMBER 31, 2015

Type of Retirement	Annual Amounts by Form of Payment					
	Regular		Level Payment Option		Total	
	No.*	Amount	No.*	Amount	No.*	Amount
Normal or Early						
Joint and 50% Survivor	87,463	\$ 929,284,716	21,983	\$ 279,984,420	109,446	\$ 1,209,269,136
Joint and 66% Survivor	651	14,904,096	170	4,611,660	821	19,515,756
Straight Life	29,029	312,860,628	6,661	93,929,820	35,690	406,790,448
Total	117,143	1,257,049,440	28,814	378,525,900	145,957	1,635,575,340
Disability	387	3,548,136	-	0	387	3,548,136
Surviving Beneficiaries	15,541	89,616,744	836	7,667,424	16,377	97,284,168
Annuitization of Surviving Spouse and SLEP benefits	5,517	3,760,200	-	0	5,517	3,760,200
Voluntary Contributions	491	818,376	-	0	491	818,376
Grand Total	139,079	\$1,354,792,896	29,650	\$386,193,324	168,729	\$1,740,986,220

* Number of records. There are 117,028 unique retirees.

Of the 5,517 records listed as receiving “Annuitization of Surviving Spouse and SLEP benefits”, 5,508 records are also in receipt of a separate retirement benefit.

Of the 491 records listed as receiving “Voluntary Contributions”, 483 records are also in receipt of a separate retirement benefit.

Thirteenth check payment amounts are not included in the above figures.

In the above chart, “Regular” refers to all forms of payment other than the level payment option. It does not connote “Regular” as opposed to SLEP and ECO.

**RETIRES AND BENEFICIARIES
BY ATTAINED AGE
DECEMBER 31, 2015**

Attained Ages	Number*			Annual Benefits
	Males	Females	Total	
Under 20	1	8	9	\$ 17,436
20 - 24	5	3	8	13,092
25 - 29	9	13	22	32,736
30 - 34	21	28	49	186,756
35 - 39	14	16	30	177,816
40 - 44	24	37	61	280,620
45 - 49	34	86	120	798,120
50 - 54	529	410	939	20,700,636
55 - 59	5,225	7,789	13,014	179,822,652
60 - 64	10,061	18,175	28,236	353,673,744
65 - 69	12,312	25,924	38,236	426,825,384
70 - 74	9,012	21,289	30,301	297,087,840
75 - 79	6,818	16,052	22,870	202,090,020
80 - 84	4,703	11,468	16,171	135,948,192
85 - 89	3,270	8,070	11,340	80,000,340
90 - 94	1,568	4,055	5,623	35,404,416
95 & Up	330	1,370	1,700	7,926,420
Totals	53,936	114,793	168,729	\$1,740,986,220

* Number of records. There are 117,028 unique retirees.

**RETIREES AND BENEFICIARIES BY YEAR OF RETIREMENT
DECEMBER 31, 2015**

Year of Retirement	Number*			Annual Benefits
	Males	Females	Total	
2015	4,438	8,322	12,760	\$ 150,653,928
2014	4,269	8,787	13,056	147,211,008
2013	4,061	7,985	12,046	134,550,924
2012	3,603	7,142	10,745	118,889,076
2011	3,493	6,585	10,078	123,225,840
2010	3,482	6,595	10,077	121,080,108
2009	2,970	5,170	8,140	96,323,268
2008	2,600	4,686	7,286	81,631,548
2007	2,541	5,251	7,792	80,966,796
2006	2,245	4,441	6,686	72,388,548
2005	2,210	4,472	6,682	67,526,712
2004	2,134	4,283	6,417	67,642,092
2003	2,180	4,047	6,227	62,908,020
2002	1,658	3,505	5,163	51,036,492
2001	1,373	3,484	4,857	40,206,516
2000	1,161	2,800	3,961	36,485,004
1995 - 1999	5,879	14,214	20,093	178,936,656
1990 - 1994	2,318	7,262	9,580	71,180,952
1985 - 1989	986	3,870	4,856	30,086,292
1980 - 1984	278	1,403	1,681	6,928,272
1975 - 1979	49	400	449	978,156
1970 - 1974	5	80	85	142,716
Before 1970	3	9	12	7,296
Total	53,936	114,793	168,729	\$1,740,986,220

* Number of records. There are 117,028 unique retirees.

**DATA REPORTED FOR ACTUARIAL VALUATIONS
COMPARATIVE SUMMARY**

Date December 31	Total Count	Active Members					Number		Ratio: Act/Ret.
		Number	Average			Inactive	Retired [#]		
			Age	Serv.	Annual Pay			Pay Increase	
1991	237,731	125,559	43.4	7.4	\$19,846	4.5 %	59,775	52,397	2.40
1992	242,730	126,557	43.7	7.7	20,816	4.9 %	61,964	54,209	2.30
1993	245,409	122,361	44.2	8.2	22,142	6.4 %	66,735	56,313	2.20
1994	265,456	133,803	43.8	7.8	22,021	(0.5)%	73,972	57,681	2.30
1995	262,232	136,617	43.8	8.2	22,661	2.9 %	65,914	59,701	2.29
1996	249,291	139,525	44.0	8.3	22,104	3.5 %*	48,274	61,492	2.27
1997	290,804	143,999	44.1	8.2	23,991	8.5 %	81,919	64,886	2.22
1998	303,869	148,610	44.3	8.2	24,871	3.7 %	88,173	67,086	2.22
1999	317,616	153,910	44.4	8.6	25,678	3.2 %	94,576	69,130	2.23
2000	330,313	157,836	44.6	8.2	26,514	3.4 %	102,082	70,395 ⁺	2.24
2001	343,842	163,886	44.9	8.3	27,477	3.9 %	108,338	71,618	2.29
2002	353,897	166,365	45.3	8.5	28,582	4.0 %	113,524	74,008	2.25
2003	361,010	166,439	45.7	8.8	29,709	3.9 %	118,093	76,478	2.18
2004	367,590	167,030	46.0	9.0	30,899	4.0 %	121,543	79,017	2.11
2005	377,251	169,867	46.3	9.1	31,640	2.4 %	125,761	81,623	2.08
2006	387,665	173,068	46.5	9.4	32,535	2.8 %	130,239	84,358	2.05
2007	398,659	176,495	46.7	9.5	33,607	3.3 %	134,687	87,477	2.02
2008	420,632	180,615	46.8	9.6	34,655	3.1 %	149,885	90,132	2.00
2009	412,435	180,643	47.1	9.8	35,771	3.2 %	138,530	93,262	1.94
2010	405,195	176,179	47.5	10.3	36,277	1.4 %	131,462	97,554	1.81
2011	409,415	175,233	47.7	10.4	36,701	1.2 %	132,282	101,900	1.72
2012	415,079	174,381	47.8	10.6	37,252	1.5 %	134,293	106,405	1.64
2013	417,227	173,481	47.9	10.7	38,059	2.2 %	136,749	106,997	1.62
2014	423,509	173,579	47.9	10.6	38,786	1.9 %	137,941	111,989	1.55
2015	432,096	173,832	47.9	10.6	39,805	2.6 %	141,236	117,028	1.49

* Changed method of recording earnings for 1996 valuation.

+ Restated subsequent to release of 2000 valuation.

Number of unique retirees. There are 168,729 retiree records.

SECTION C
FINANCIAL DATA

DEVELOPMENT OF FUNDING VALUE OF RETIREMENT SYSTEM ASSETS

Year Ended December 31	2014	2015	2016	2017	2018	2019
A. Funding Value Beginning of Year	\$30,083,042,548	\$32,700,208,537				
B. Market Value End of Year	34,833,147,358	34,461,065,824				
C. Market Value Beginning of Year	33,203,014,332	34,833,147,358				
D. Non-Investment/Administrative Net Cash Flow	(391,932,022)	(532,824,752)				
E. Investment Return						
E1. Market Total: B-C-D	2,022,065,048	160,743,218				
E2. Assumed Rate of Return	7.50%	7.50%				
E3. Assumed Amount of Return	2,241,530,740	2,432,534,712	-----Scheduled-----			
E4. Return Subject to Phase-In: E1-E3	(219,465,692)	(2,271,791,494)				
F. Phased-In Recognition of Investment Return						
F1. Current Year: 0.20 x E4	(43,893,138)	(454,358,299)	Unknown	Unknown	Unknown	Unknown
F2. First Prior Year	685,590,556	(43,893,138)	\$(113,015,411)	Unknown	Unknown	Unknown
F3. Second Prior Year	125,869,853	685,590,556	-	\$(113,015,411)	Unknown	Unknown
F4. Third Prior Year	-	125,869,853	-	-	\$(113,015,411)	Unknown
F5. Fourth Prior Year	-	-	-	-	-	\$(113,015,412)
F6. Funding Corridor Adjustment	-	-				
F7. Total Scheduled Phase-in of gain/(loss)	767,567,271	313,208,972	(113,015,411)	(113,015,411)	(113,015,411)	(113,015,412)
G. Acceptable Phase-in of Investment Return						
G1. Projected Funding Value without Phase-in: A+D+E3	31,932,641,266	34,599,918,497				
G2. Limit on Phase-in: B-G1	2,900,506,092	(138,852,673)				
G3. Acceptable Phase-in Amount	767,567,271	313,208,972				
H. Funding Value End of Year: A+D+E3+G3	\$32,700,208,537	\$34,913,127,469				
I. Difference Between Market and Funding Value	2,132,938,821	(452,061,645)	(339,046,234)	(226,030,823)	(113,015,412)	-
J. Recognized Rate of Return	10.1%	8.5%				
K. Market Rate of Return	6.1%	0.5%				
L. Ratio of Funding Value to Market Value	93.9%	101.3%				

The Funding Value of Assets recognizes assumed investment return (line E3) fully each year. Differences between actual and assumed investment return (line E4) are phased-in over a closed 5-year period subject to a 20% corridor. The acceptable phase-in amount (Item G3) is the minimum of Items F7 and G2, if G2 is positive. If G2 is negative, the acceptable phase-in amount is the greater of Items F7 and G2.

DEVELOPMENT OF MARKET VALUE ADJUSTMENT

In a single employer plan, the Market Value Adjustment would normally be the difference between the funding value of assets and the market value of assets. In IMRF, because of the need to allocate the Market Value Adjustment in an equitable manner among participating employers, certain extra steps are taken as shown below.

	Year Ended December 31	
	2015	2014
1. Funding Value of End of Year	\$ 34,913,127,469	\$ 32,700,208,537
2. Amounts not used in rate calculations		
a. Suspended Annuity Reserve	34,718,470	30,220,144
b. Disability Benefit Reserve	10,105,991	11,184,427
c. Death Benefit Reserve	18,534,521	15,681,355
d. Supplemental Benefit Reserve	1,504,262	1,166,781
e. Cases removed from rate calculations*	32,854,700	29,718,127
f. Estimated pending reserve transfers	-	-
g. Total	97,717,944	87,970,834
3. Remaining amount to allocate: (1)-(2g)	34,815,409,525	32,612,237,703
4. Total reported negative reserves	(148,411)	(768,714)
5. Amount available to positive reserves: (3)-(4)	34,815,557,936	32,613,006,417
6. Total Market Value of reported positive reserves	34,422,522,613	35,796,415,085
7. Market Value Adjustment: (5)-(6)	\$ 393,035,323	\$ (3,183,408,668)

* Employers that are not included on the asset file submitted to the actuary. In general, these employers have no active members and no employer assets, but may have retired lives and/or inactive members.

The Market Value Adjustment is allocated among all employers that have a positive reserve balance (member plus employer plus retired life reserves), in proportion to each employer's reserve balance.

Even in years when the Funding Value of Assets equals the Market Value of Assets, a market value adjustment can be made due to the following reasons:

- Differences between the earnings and experience reserve and the investment loss reserve from the financial statements.
- Differences between employee contribution amounts in the financial statements versus data tapes.
- Differences between employer contribution amounts in the financial statements versus data tapes.

REPORTED MARKET VALUES

	Market Value		Percentage of Total	
	2015	2014	2015	2014
Investment Portfolio				
Fixed income	\$ 9,514,200,955	\$ 9,057,785,228	27.8%	26.2%
Short term	16,651,979	33,946,485	0.0%	0.1%
Foreign exchange contracts	(8,947)	3,555,087	0.0%	0.0%
Stocks	20,727,503,604	21,905,520,371	60.5%	63.4%
Bond funds	-	-	0.0%	0.0%
Options	-	-	0.0%	0.0%
Real estate	1,761,354,457	1,452,261,862	5.1%	4.2%
Alternative investments	1,666,855,213	1,606,412,449	4.9%	4.6%
Master trust reserve fund	615,465,566	601,211,778	1.8%	1.7%
Cash	-	-	0.0%	0.0%
Due from brokers	-	-	0.0%	0.0%
Due (to) brokers	(98,950,803)	(99,471,035)	(0.3)%	(0.3)%
Accrued investment income	66,708,606	50,986,604	0.2%	0.1%
Total Invested Assets	\$34,269,780,630	\$34,612,208,829	100.0%	100.0%
Receivables	214,253,899	234,765,246		
Cash	(3,544,799)	15,028,102		
Fixed Assets	21,905,469	16,643,651		
Total Market Value	\$34,502,395,199	\$34,878,645,828		
Liabilities				
Benefits & vouchers payable	41,329,375	45,498,470		
Securities Lending Payable	-	-		
Total Liabilities	41,329,375	45,498,470		
Nets Assets Available for Benefits	\$34,461,065,824	\$34,833,147,358		

Amounts on this page are preliminary year-end numbers and may not agree with final audited numbers reported by IMRF, but are shown for completeness.

SECTION D

ACTUARIAL METHODS AND ASSUMPTIONS

**SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS
USED FOR IMRF ACTUARIAL VALUATIONS
ASSUMPTIONS ADOPTED BY RETIREMENT BOARD
AFTER CONSULTING WITH ACTUARY**

Economic Assumptions

The economic assumptions are based upon experience during the 2011-2013 period (please see report dated December 10, 2014), and were first used in the December 31, 2014 valuation.

The investment return rate assumed in the valuations was 7.5% per year, compounded annually (net after administrative expenses).

The **Wage Inflation Rate** assumed in this valuation was 3.5% per year. The Wage Inflation Rate is defined to be the portion of total pay increases for an individual that are due to macroeconomic forces including productivity, price inflation, and labor market conditions. The wage inflation rate does not include pay changes related to individual merit and seniority effects.

Price Inflation is assumed to be 2.75%.

The assumed **real rate of return** over wage inflation is defined to be the portion of total investment return that is more than the assumed total wage growth rate. Considering other economic assumptions, the 7.5% investment return rate translates to an assumed real rate of return over wage inflation of 4.0%. The assumed real rate of return over price inflation would be higher – on the order of 4.75%, considering both an inflation assumption and an average expense provision.

The **Active Member Population** is assumed to remain constant. For purposes of financing the unfunded liabilities, total payroll is assumed to grow at the wage inflation rate – 3.5% per year.

Pay increase assumptions for individual active members are shown for sample ages on pages D-8 and D-9. Part of the assumption for each age is for merit and/or seniority increase, and the other 3.5% recognizes wage inflation, including price inflation, productivity increases, and other macroeconomic forces.

The *number of active members* is assumed to continue at the present number.

Non-Economic Assumptions

Non-economic (decrement) assumptions include rates of mortality before and after retirement, rates of disability, rates of retirement, rates of other separation from employment and probabilities of an active member being married. The non-economic assumptions are based upon experience during the 2011-2013 period (please see report dated December 10, 2014), and were first used in the December 31, 2014 valuation. Decrement assumptions are shown for sample ages beginning on page D-3.

**SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS
USED FOR IMRF ACTUARIAL VALUATIONS
ASSUMPTIONS ADOPTED BY RETIREMENT BOARD AFTER CONSULTING
WITH ACTUARY**

Actuarial Valuation Method

An aggregate entry age actuarial cost method of valuation was used in determining most liabilities and normal cost. This means that an individual entry-age employer normal cost was determined for each benefit group (Regular Tier 1, Regular Tier 2, SLEP Tier 1, SLEP Tier 2, ECO Tier 1, ECO Tier 2) as a percent of payroll. The normal cost for each employer was calculated based on the aggregate Tier 1 and Tier 2 normal cost, weighted on the expected payroll of Tier 1 and Tier 2 members for the given employer. Larger employers have the option of an individual normal cost rate. The aggregate normal cost rate is then multiplied by the present value of future salary to determine the present value of future normal cost for each employer. The actuarial accrued liability is then calculated by subtracting the present value of future normal cost and present value of future employee contributions from the present value of future benefits.

Differences in the past between assumed experience and actual experience (“actuarial gains and losses”) become part of actuarial accrued liabilities. Unfunded actuarial accrued liabilities are amortized to produce payments (principal & interest) which are level percent of payroll contributions.

Liabilities for lump sum death benefits and temporary disability benefits were determined using a term cost approach. Under this approach, the funding objective is to receive contributions each year that approximately equal the benefits being paid.

Employer contributions were assumed to be *paid in equal installments* throughout the year.

Present assets (cash & investments) at funding value are shown on page C-1.

Actuarial Valuation Method

The Funding Value of Assets (developed on page C-1) recognizes assumed investment return fully each year. Differences between actual and assumed investment income are phased-in over a closed 5-year period subject to a 20% corridor. The method also limits the adjustment to the expected actuarial return to the maximum amount of unrecognized gains or losses not yet reflected in the actuarial value of assets. In any year in which the actuarial value minus the market value of assets switches from a positive value to a negative value, or vice-versa, any prior gain/loss bases are eliminated and the smoothing mechanism restarts.

The actuarial valuation computations were made by or under the supervision of a Member of the American Academy of Actuaries (MAAA).

**ACTUARIAL ASSUMPTIONS
DECEMBER 31, 2015
PROBABILITIES OF AGE & SERVICE RETIREMENT**

Tier 1

Age at Retirement	Regular		Regular		SLEP		ECO-Regular		ECO-SLEP
	Reduced Early		Normal		Normal		Normal		Normal
	Males	Females	Males	Females	Service less than 32 years	Service 32 years or more	Males	Females	Males & Females
50					23%	35%			23%
51					18%	35%			18%
52					13%	35%			13%
53					8%	35%			8%
54					23%	35%			23%
55	7.25%	5.75%	33%	27%	23%	35%	25%	25%	23%
56	7.25%	5.75%	25%	20%	18%	35%	25%	25%	18%
57	7.25%	5.75%	25%	20%	23%	35%	20%	20%	23%
58	7.25%	5.75%	25%	20%	33%	35%	20%	20%	33%
59	7.25%	5.75%	25%	20%	13%	35%	20%	20%	13%
60			12%	10%	8%	35%	5%	5%	8%
61			12%	10%	8%	35%	5%	5%	8%
62			22%	18%	23%	35%	10%	10%	23%
63			20%	18%	18%	35%	15%	15%	18%
64			20%	18%	18%	35%	15%	15%	18%
65			25%	25%	23%	35%	15%	15%	23%
66			30%	25%	23%	35%	13%	13%	23%
67			25%	25%	23%	35%	13%	13%	23%
68			20%	20%	23%	35%	13%	13%	23%
69			20%	20%	23%	35%	13%	13%	23%
70			20%	20%	100%	100%	13%	13%	100%
71-79			20%	20%	100%	100%	13%	13%	100%
80 & Over			100%	100%	100%	100%	100%	100%	100%

For terminated vested members, members were assumed to retire as follows:

- Regular Tier 1 members were assumed to retire at age 60 or attained age if later;
- Regular Tier 2 members were assumed to retire at age 67 or attained age if later;
- SLEP Tier 1 members with less than 20 years of service were assumed to retire at age 60;
- SLEP Tier 1 members with 20 or more years of service were assumed to retire at age 50;
- SLEP Tier 2 members with less than 20 years of service were assumed to retire at age 67;
- SLEP Tier 2 members with 20 or more years of service were assumed to retire at age 55;
- ECO Tier 1 members were assumed to retire at age 55 or attained age if later; and
- ECO Tier 2 members were assumed to retire at age 62 or attained age if later.

**ACTUARIAL ASSUMPTIONS
DECEMBER 31, 2015
PROBABILITIES OF AGE & SERVICE RETIREMENT**

Tier 2

Age	Regular								SLEP					
	Male				Female				Male			Female		
	Normal			Early	Normal			Early	Normal		Early	Normal		Early
	Service Less than 30 Years	Service Between 30 and 35 Years	Service 35 Years or More		Service Less than 30 Years	Service Between 30 and 35 Years	Service 35 Years or more		Service Less than 30 Years	Service 30 Years or More		Service Less than 30 Years	Service 30 Years or More	
50											12%			12%
51											9%			9%
52											7%			7%
53											4%			4%
54											12%			12%
55								60%	80%			60%	80%	
56								18%	55%			18%	55%	
57								23%	55%			23%	55%	
58								33%	55%			33%	55%	
59								13%	55%			13%	55%	
60								8%	55%			8%	55%	
61								8%	55%			8%	55%	
62			75%	15%			75%	13%	23%	55%		23%	55%	
63			75%	15%			75%	13%	18%	55%		18%	55%	
64			75%	15%			75%	13%	18%	55%		18%	55%	
65			75%	15%			75%	13%	23%	55%		23%	55%	
66			75%	15%			75%	13%	23%	55%		23%	55%	
67	30%	50%	75%		25%	50%	75%		23%	55%		23%	55%	
68	30%	50%	75%		25%	50%	75%		23%	55%		23%	55%	
69	25%	50%	75%		20%	50%	75%		23%	55%		23%	55%	
70	20%	50%	75%		18%	50%	75%		100%	100%		100%	100%	
71	20%	50%	75%		18%	50%	75%		100%	100%		100%	100%	
72	20%	50%	75%		18%	50%	75%		100%	100%		100%	100%	
73	18%	50%	75%		18%	50%	75%		100%	100%		100%	100%	
74	18%	50%	75%		18%	50%	75%		100%	100%		100%	100%	
75	18%	50%	75%		18%	50%	75%		100%	100%		100%	100%	
76	18%	50%	75%		18%	50%	75%		100%	100%		100%	100%	
77	18%	50%	75%		18%	50%	75%		100%	100%		100%	100%	
78	18%	50%	75%		18%	50%	75%		100%	100%		100%	100%	
79	18%	50%	75%		18%	50%	75%		100%	100%		100%	100%	
80+	100%	100%	100%		100%	100%	100%		100%	100%		100%	100%	

ACTUARIAL ASSUMPTIONS
DECEMBER 31, 2015
PROBABILITIES OF SEPARATION FROM ACTIVE MEMBER STATUS

Tier 1 and Tier 2

Service	% Separating Next Year					
	Regular		ECO		SLEP	ECO-SLEP
	Males	Females	Males	Females		
0	24.5%	29.0%	20.0%	15.0%	18.0%	18.0%
1	19.0%	22.0%	12.0%	10.0%	10.0%	10.0%
2	14.5%	17.0%	10.0%	8.0%	6.5%	6.5%
3	12.0%	13.0%	9.0%	7.0%	6.0%	6.0%
4	9.5%	11.0%	8.0%	6.0%	4.7%	4.7%
5	8.0%	9.0%	7.0%	5.0%	3.5%	3.5%
6	7.0%	7.5%	6.0%	4.0%	3.3%	3.3%
7	6.5%	7.0%	5.5%	3.5%	N/A	N/A
Age	8 or More Years of Service		8 or More Years of Service		7 or More Years of Service	7 or More Years of Service
30	4.1%	6.1%	6.0%	3.2%	2.2%	2.2%
35	3.2%	5.1%	6.0%	3.2%	1.7%	1.7%
40	2.6%	3.9%	6.0%	3.2%	1.5%	1.5%
45	2.2%	3.3%	6.0%	3.2%	1.5%	1.5%
50	1.9%	2.8%	6.0%	3.2%	1.5%	1.5%

ACTUARIAL ASSUMPTIONS
DECEMBER 31, 2015
ACTIVE MEMBER PROBABILITIES OF DEATH AND DISABILITY

Tier 1 and Tier 2

Sample Ages in 2015	% Dying			
	Regular & ECO		SLEP & ECO-SLEP	
	Male	Female	Male	Female
20	0.03%	0.01%	0.05%	0.01%
25	0.04%	0.01%	0.06%	0.01%
30	0.04%	0.02%	0.05%	0.02%
35	0.04%	0.02%	0.06%	0.02%
40	0.05%	0.03%	0.07%	0.03%
45	0.08%	0.05%	0.11%	0.05%
50	0.14%	0.09%	0.20%	0.09%
55	0.24%	0.14%	0.33%	0.14%
60	0.40%	0.19%	0.57%	0.19%
65	0.70%	0.28%	1.00%	0.28%
70	1.15%	0.48%	1.63%	0.48%
75	1.91%	0.83%	2.71%	0.83%
80	3.18%	1.41%	4.52%	1.41%

For active members, the mortality rates are based on the RP-2014 Employee Mortality Table for both males and females with 2-dimensional, fully generational improvements using the MP-2014 Mortality Improvement Scale. For Regular & ECO males, 88% of the rates were used; for SLEP & ECO-SLEP males, 125% of the rates were used; and for all females, 82% of the rates were used.

Sample Ages	% Disabled							
	Regular		ECO		SLEP		ECO-SLEP	
	Male	Female	Male	Female	Male	Female	Male	Female
20	0.00%	0.00%	0.01%	0.01%	0.01%	0.02%	0.01%	0.01%
25	0.00%	0.00%	0.01%	0.01%	0.01%	0.03%	0.01%	0.01%
30	0.01%	0.00%	0.01%	0.01%	0.02%	0.05%	0.01%	0.01%
35	0.01%	0.01%	0.03%	0.02%	0.03%	0.07%	0.03%	0.02%
40	0.02%	0.01%	0.04%	0.03%	0.04%	0.10%	0.04%	0.03%
45	0.03%	0.02%	0.06%	0.04%	0.06%	0.14%	0.06%	0.04%
50	0.05%	0.03%	0.09%	0.06%	0.08%	0.21%	0.09%	0.06%
55	0.08%	0.04%	0.15%	0.10%	0.12%	0.29%	0.15%	0.10%
60	0.10%	0.07%	0.19%	0.17%	0.11%	0.27%	0.19%	0.17%
65	0.11%	0.08%	0.20%	0.20%	0.07%	0.18%	0.20%	0.20%
70	0.09%	0.07%	0.17%	0.17%	0.04%	0.11%	0.17%	0.17%
75	0.07%	0.05%	0.12%	0.12%	0.01%	0.03%	0.12%	0.12%
80	0.06%	0.04%	0.10%	0.10%	0.00%	0.00%	0.10%	0.10%

**ACTUARIAL ASSUMPTIONS
DECEMBER 31, 2015
RETIREE, BENEFICIARY, TERMINATED VESTED
AND DISABLED LIFE MORTALITY**

Tier 1 and Tier 2

Sample Ages in 2015	% Dying Next Year			
	Non-Disabled Lives		Disabled Lives	
	Males	Females	Males	Females
40	0.2142%	0.1117%	1.4321%	0.6158%
45	0.3181%	0.1745%	1.9301%	0.8531%
50	0.4437%	0.2695%	2.2265%	1.1370%
55	0.6132%	0.3927%	2.3887%	1.4124%
60	0.8750%	0.5471%	2.7528%	1.6216%
65	1.3964%	0.8121%	3.5074%	1.9415%
70	2.2486%	1.2904%	4.6082%	2.6060%
75	3.6321%	2.1301%	6.2581%	3.8062%
80	5.9440%	3.5448%	8.7815%	5.6693%

Sample Ages in 2015	Life Expectancy Years for 2015			
	Non-Disabled Retired Lives		Disabled Lives	
	Males	Females	Males	Females
40	43.0	48.4	30.6	39.3
45	37.9	43.2	27.2	34.9
50	33.0	38.1	24.1	30.8
55	28.3	33.2	21.0	27.0
60	23.7	28.4	17.9	23.3
65	19.4	23.8	15.0	19.7
70	15.4	19.4	12.2	16.1
75	11.9	15.3	9.6	12.8
80	8.8	11.7	7.4	10.0

For non-disabled lives, the mortality rates are IMRF specific mortality rates with 2-dimensional, fully generational improvements using the MP-2014 Mortality Improvement Scale (projected from 2014). These rates were developed from the RP-2014 Blue Collar Mortality Table with adjustments to match current IMRF experience. For disabled lives, the mortality rates are IMRF specific mortality rates with 2-dimensional, fully generational improvements using the MP-2014 Mortality Improvement Scale. These rates were developed using the RP-2014 Disabled Mortality Table applying the same adjustments that were applied for non-disabled lives.

ACTUARIAL ASSUMPTIONS

DECEMBER 31, 2015

PAY INCREASES FOR REGULAR AND ECO ACTIVE MEMBERS

Tier 1 and Tier 2

% Increase in Pay Next Year							
5 or More Years Service				Increase For Those With Less Than 5 Years of Service			
Age	Merit & Longevity	Economic	Total	Service	Merit & Longevity	Economic	Total
25	2.0%	3.5%	5.5%	0	7.0%	3.5%	10.5%
30	1.7%	3.5%	5.2%	1	5.5%	3.5%	9.0%
35	1.2%	3.5%	4.7%	2	3.3%	3.5%	6.8%
40	0.9%	3.5%	4.4%	3	2.5%	3.5%	6.0%
45	0.7%	3.5%	4.2%	4	2.0%	3.5%	5.5%
50	0.5%	3.5%	4.0%				
55	0.4%	3.5%	3.9%				
60	0.3%	3.5%	3.8%				

For a person with 5 or more years of service, the assumed pay increase during the coming year is found in the 5 or more years of service total column. For a person with less than 5 years of service, the assumed pay increase during the coming year is found in the less than 5 years of service total column

ACTUARIAL ASSUMPTIONS
DECEMBER 31, 2015
PAY INCREASES FOR SLEP AND ECO-SLEP ACTIVE MEMBERS

Tier 1 and Tier 2

% Increase in Pay Next Year			
Years of Service			
Service	Economic	Merit & Longevity	% Total Increase
1	3.50%	11.00%	14.50%
2	3.50%	8.50%	12.00%
3	3.50%	4.00%	7.50%
4	3.50%	3.50%	7.00%
5	3.50%	3.00%	6.50%
6	3.50%	2.50%	6.00%
7	3.50%	2.00%	5.50%
8	3.50%	1.50%	5.00%
9	3.50%	1.25%	4.75%
10	3.50%	1.00%	4.50%
11	3.50%	0.75%	4.25%
12	3.50%	0.75%	4.25%
13	3.50%	0.50%	4.00%
14	3.50%	0.50%	4.00%
15	3.50%	0.50%	4.00%
16	3.50%	0.50%	4.00%
17	3.50%	0.50%	4.00%
18	3.50%	0.50%	4.00%
19	3.50%	0.50%	4.00%
20	3.50%	0.50%	4.00%
21	3.50%	0.50%	4.00%
22	3.50%	0.50%	4.00%
23	3.50%	0.50%	4.00%
24	3.50%	0.50%	4.00%
25	3.50%	0.50%	4.00%
26	3.50%	0.50%	4.00%
27	3.50%	0.50%	4.00%
28	3.50%	0.50%	4.00%
29	3.50%	0.50%	4.00%
30	3.50%	0.50%	4.00%

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

Expenses:	Assumed investment return is net of administrative and investment expenses.
Marriage Assumption:	80% of male and 70% of female participants are assumed to be married for purposes of death-in-service and death after retirement benefits. Male spouses are assumed to be three years older than female spouses for active member valuation purposes.
Pay Increase Timing:	Beginning of (Calendar) year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.
Decrement Timing:	Decrements of all types are assumed to occur mid-year.
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
Benefit Service:	Exact fractional service on the decrement date is used to determine the amount of benefit payable.
Decrement Relativity:	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
Incidence of Contributions:	Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.
Normal Form of Benefit:	The assumed normal form of benefit is a 50% joint and survivor benefit for Regular and SLEP Tier 1 members and 66 2/3% for Regular and SLEP Tier 2 members and ECO members. Factors for determining optional forms of payment are based on 120% of the current mortality rates (50% unisex) and 7.5% interest.
Surviving Spouse Refunds:	For those individuals who are not assumed to be married at retirement, the surviving spouse contributions are assumed to be refunded.
SLEP Refunds:	SLEP participants who are assumed to retire with insufficient service to qualify for SLEP benefits are assumed to receive a refund of their SLEP contributions.
SLEP Conversions:	It was assumed that all active participants in the SLEP program will convert all eligible service (up to 10 years). Additionally, it was assumed that these members would contribute the difference in both member and employer rates for each year converted.
ECO Conversions:	It is assumed that active participants in the ECO program will convert all eligible service up to the point the maximum ECO benefit would be achieved.
Final Rate of Earnings (FRE):	The FRE is determined by projecting the current salary to retirement and averaging the salary over the appropriate number of years. The current FRE is used if this produces a higher value. For Tier 2 members, FRE is capped at \$111,572 and increases by the lesser of 3% and one-half of CPI.

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

Refunds for Terminated Vested Members:	Members are assumed to elect annuities.
Other:	Disability decrements operate during retirement eligibility.
Contingency Reserve:	A contingency reserve of 0.25% of payroll is added to the normal cost to account for various factors (changes in FRE, data adjustments, rehires, service purchases, etc.)
Post-Retirement Increases:	For Tier 2, pensions increase by the lesser of 3% or one-half of the increase in the Consumer Price Index (urban) for the preceding September. If the CPI is zero, pension benefits are not increased. In the December 31, 2015 valuation annual pension increases were assumed to grow at an annual rate of 1.4%. Tier 1 increases are not related to CPI.
Wage Cap Growth:	Under Tier 2, a member's wages are capped. The wage cap increases each year by the lesser of 3% or one-half of the increase in the Consumer Price Index (urban) for the preceding September. If the CPI is zero, the wage cap is not increased. A wage cap of \$111,572 was used for Tier 2 members in the December 31, 2015 valuation. In the December 31, 2015 valuation, the wage cap was assumed to grow at an annual rate of 1.4%.

**FINANCING UNFUNDED ACCRUED LIABILITIES
AND FULL FUNDING CREDITS
DECEMBER 31, 2015 VALUATIONS**

The following procedures were applied to financing liabilities in the valuation.

Financing Periods if employer is less than 120% funded on a market basis.

1. Instrumentalities: 10-year rolling period.
2. Early Retirement Incentive Plan liabilities: a period up to 10 years selected by the Employer upon adoption of ERI.
3. For taxing bodies (Regular, SLEP, and ECO rate Groups): 26-year closed period until remaining period reaches 15 years (then 15-year rolling period).

Financing Period if employer is over 120% funded on a market basis.

4. Irrespective of the size of the employer or the funding level, grant the employer an option to amortize overfunding over 120% over a 5-year period.
5. For employers with 50 or more employees, grant the employer an option to adopt a minimum contribution rate until the overfunding is reduced to 120%.
6. Irrespective of the size of the employer, surplus in a plan can be used to satisfy early retirement incentive costs so long as the reserve balance does not drop below 120%.

SLEP supplemental liabilities attributable to Public Act 94-712 were financed over 21 years for most employers (two employers were financed over 31 years). The mass production valuation applies rules 1 through 3. For rules 4 through 6, the period provided on the IMRF rate tape is used for valuation purposes and IMRF staff reviews each case individually to see if changes are needed to comply with Board policy. Employers also have the option to phase into a rate change that is more than 10% higher than the prior year (provided they pay the full cost for current service).

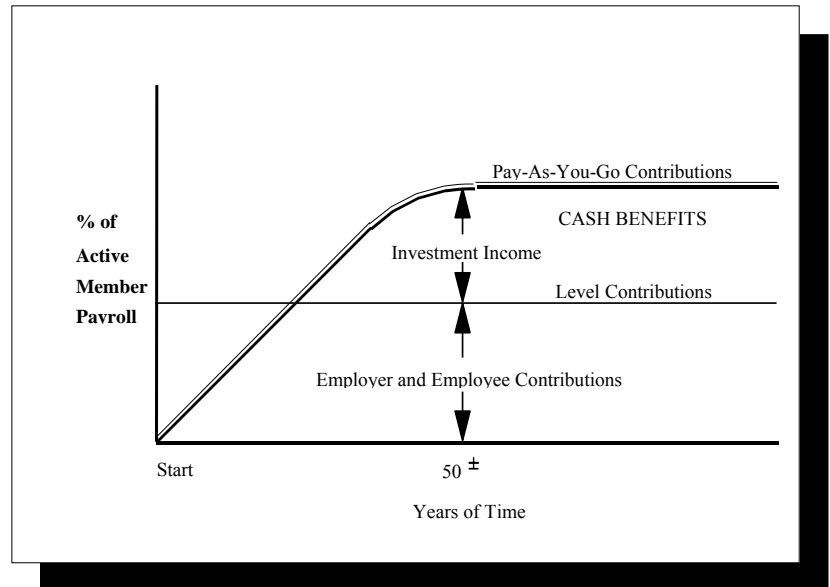
SELECTION OF ASSUMPTIONS USED IN ACTUARIAL VALUATIONS

Economic Assumptions

Investment return
Pay increases to individual employees:
the portion for economic changes
Active member group size and
total payroll growth

Demographic Assumptions

Actual ages at service retirement
Pay increases to individual members:
the portion for merit & seniority
Disability while actively employed
Separations before retirement
Mortality after retirement
Mortality before retirement



RELATIONSHIP BETWEEN THE BOARD AND THE ACTUARY

The actuary should have the primary responsibility for choosing the *demographic* assumptions used in the actuarial valuation, making use of specialized training and experience.

The actuary and other professionals can provide guidance concerning the choice of suitable economic assumptions, but the basis of the economic assumptions is expected market returns for various asset classes and the assumed rate of inflation (a quantity which defies accurate prediction). Given an assumed rate of future inflation, it is very important that this rate be applied in a consistent manner in deriving the assumed rate of investment return, the economic portion of the assumption on pay increases to individual employees, and the assumed rate of growth of active member payroll. Consistent application of assumptions is an area in which the actuary has specialized training.

A sound procedure is that the actuary suggests reasonable alternatives for economic assumptions, followed by discussion involving the actuary, the Board of Trustees, and other professionals, and the Board then makes a final choice from the various reasonable alternatives.

SECTION E
FINANCIAL PRINCIPLES

FINANCIAL PRINCIPLES AND OPERATIONAL TECHNIQUES OF IMRF

Promises Made, and To Be Paid For: As each year is completed, IMRF in effect hands an “IOU” to each member then acquiring a year of service credit. The “IOU” says: “The Illinois Municipal Retirement Fund owes you one year’s worth of retirement benefits, payments in cash commencing when you retire.”

The related *key financial questions* are:

Which generation of taxpayers contributes the money to cover the IOU?

The present taxpayers, who receive the benefit of the member’s present year of service? ***Or the future taxpayers***, who happen to be in Illinois at the time the IOU becomes a cash demand, years and often decades later?

The law governing IMRF financing intends that this year’s taxpayers contribute the money to cover the IOUs being handed out this year. With this financial objective, ***the employer contribution rate is expected to remain approximately level from generation to generation of taxpayers.***

There are systems which have a design for deferring contributions to future taxpayers. Lured by a lower contribution rate now, they put aside the consequence that the contribution rate must then relentlessly grow to a level much higher than would be required if a level contribution pattern were followed.

An inevitable by-product of the level-cost design is the accumulation of reserve assets, for decades, and the income produced when the assets are invested. ***Investment income*** ultimately becomes ***the 3rd and largest contributor*** for benefits to members, and is interlocked with the contribution amounts required from members and employers.

Translated to actuarial terminology, this level-cost objective means that the contribution rates must total at least the following:

Normal Cost (the cost of members’ service being rendered this year)

... plus ...

Interest at the assumed real rate of return on Unfunded Actuarial Accrued Liabilities (unfunded actuarial accrued liabilities are the difference between: accrued liabilities for service already rendered; and the accrued assets of IMRF).

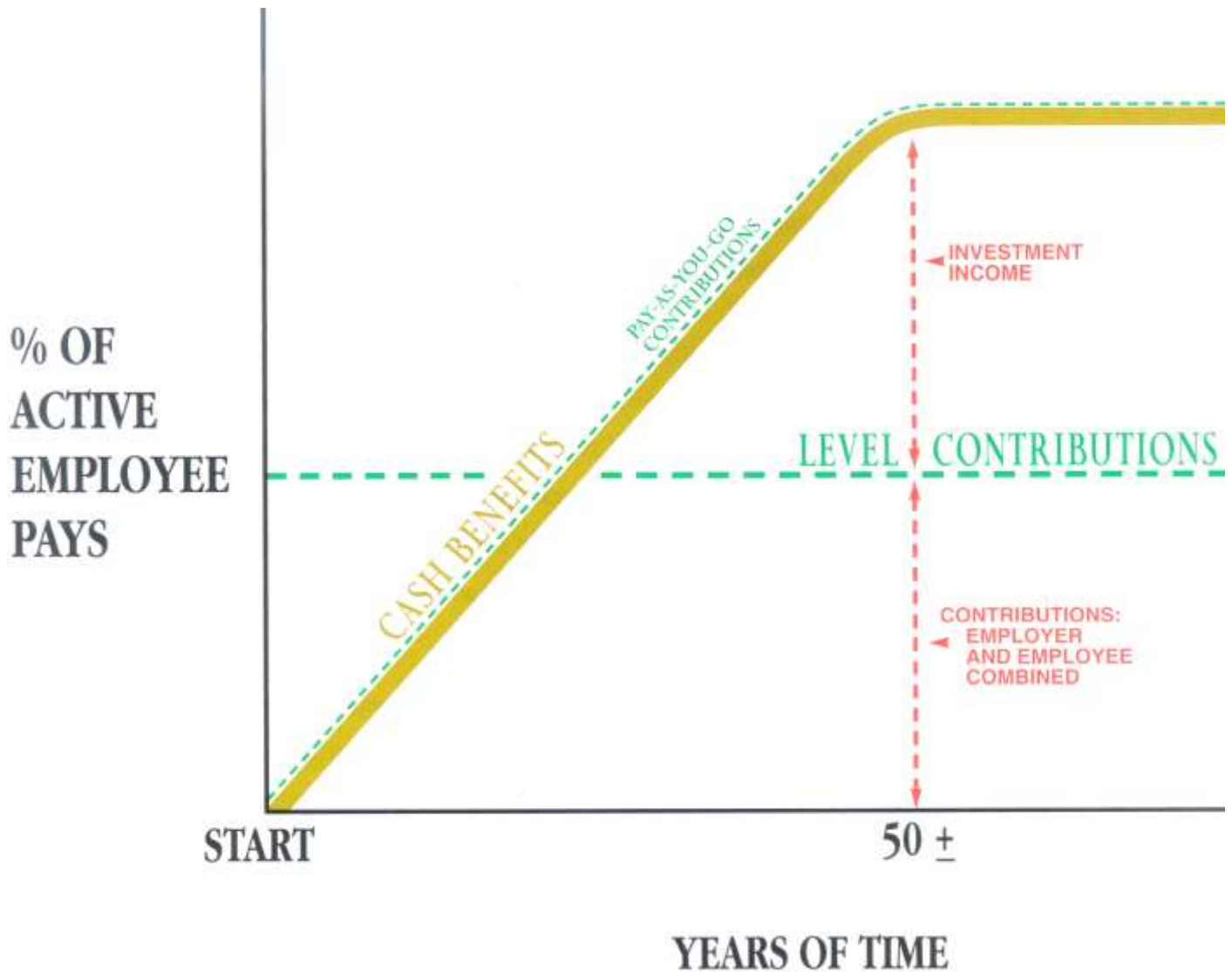
However, that statement is theoretically only. Contributions made at only that level would provide very little in the way of benefit security.

Computing Contributions to Support Fund Benefits: From a given schedule of benefits and from member and asset data, the actuary calculates the contribution rates to support the benefits by means of ***an actuarial valuation and a funding method.***

An actuarial valuation has a number of ingredients such as: the rate of investment return which plan assets will earn; the rates of withdrawal of active members who leave covered employment; the rates of mortality; the rates of disability; the rates of pay increases; and the assumed age or ages at actual retirement. These rates cannot be known today. Consequently, in an actuarial valuation, assumptions must be made as to what the above rates will be for the next year and for decades in the future. The assumptions are established by the Board of Trustees after receiving the advice of the actuary.

Reconciling Differences Between Assumed Experience and Actual Experience: Once actual experience has occurred and has been observed, it will not coincide exactly with assumed experience, regardless of the skill of the actuary and the many calculations made. The future cannot be predicted.

IMRF copes with these continually changing differences by having annual actuarial valuations. Each actuarial valuation is a complete recalculation of assumed future experience, taking into account all past differences between assumed and actual experience. The result is ***continuing adjustments in financial position.*** Once every three years, an Experience Study is conducted to fully review differences between actual and assumed experience and recommend changes to our assumed experience, where appropriate.



CASH BENEFITS LINE. This relentlessly increasing line is the fundamental reality of retirement plan financing. It happens each time a new benefit is added for future retirements (and happens regardless of the design for contributing for benefits).

LEVEL CONTRIBUTION LINE. Determining the level contribution line requires detailed assumptions concerning a variety of experiences in future decades, including:

Economic Risk Areas

- Rates of investment return
- Rates of pay increase
- Changes in active member group size

Non-Economic Risk Areas

- Ages at actual retirement
- Rates of mortality
- Rates of withdrawal of active members (turnover)
- Rates of disability

THE ACTUARIAL VALUATION PROCESS

The financing diagram on the previous page shows the relationship between *the two fundamentally different philosophies of paying* for retirement benefits: the method where contributions match cash benefit payments (or barely exceed cash benefit payments, as in the Federal Social Security program) which is thus an *increasing contribution method*; and, the *level contribution method* which attempts to equalize contributions between the generations.

The actuarial valuation is the mathematical process by which the level contribution rate is determined. The activity constituting the valuation may be summarized as follows:

A. **Census Data**, including:

- Retired lives now receiving benefits
- Former members with vested benefits not yet payable
- Active members

B. + **Asset data** (cash & investments)

C. + **Benefit provisions** that establish eligibility and amounts of payments to members

D. + **Assumptions concerning future experience** in various risk areas

E. + **The funding method** for employer contributions (the long-term, planned pattern for employer contributions)

F. + **Mathematically combining the assumptions, the funding method, and the data**

G. = Determination of:

- Plan Financial position and/or
- New Employer Contribution Rates

GLOSSARY

Actuarial Accrued Liability - The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost (employer and employee). Sometimes referred to as “accrued liability” or “past service liability.”

Accrued Service - The service credited under the plan which was rendered before the date of the actuarial valuation.

Accumulated Benefit Obligation - The actuarial present value of vested and non-vested benefits based on service to date and past and current salary levels.

Actuarial Assumptions - Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

Actuarial Cost Method - A mathematical budgeting procedure for allocating the dollar amount of the “actuarial present value of future plan benefits” between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the “actuarial funding method.”

Actuarial Equivalent - A single amount or series of amounts of equal value to another single amount or series of amounts, computed on the basis of the rate(s) of interest and mortality tables used by the plan.

Actuarial Present Value - The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Actuarial Present Value of Credited Projected Benefits or Pension Benefit Obligation - The present value of future benefits based on service to date and the effect of projected salary increases.

Actuary - A person who is trained in the applications of probability and compound interest to problems in business and finance that involve payment of money in the future, contingent upon the occurrence of future events. Most actuaries in the United States are Members of the American Academy of Actuaries. The Society of Actuaries is an international research, education and membership organization for actuaries in the life and health insurance, employee benefits, and pension fields. It administers a series of examinations leading initially to Associateship and the designation A.S.A. and ultimately to Fellowship with the designation F.S.A.

Amortization - Paying off an interest-bearing liability by means of periodic payments, as opposed to paying it off with a lump sum payment.

Experience Gain (Loss) - A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used.

ERI - Early Retirement Incentive Plan.

Funded Percent - A measure of the ratio of the funding value of assets to the actuarial accrued liability.

Normal Cost - The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as “current service cost.” Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

Plan Termination Liability - The actuarial present value of future plan benefits based on the assumption that there will be no further accruals for future service and salary. The termination liability will generally be less than the liabilities computed on a “going concern” basis and is not normally determined in a routine actuarial valuation.

Reserve Account - An account used to indicate that funds have been set aside for a specific purpose and are not generally available for other uses.

Unfunded Actuarial Accrued Liability - The difference between the actuarial accrued liability and valuation assets. Sometimes referred to as “unfunded accrued liability.”

Valuation Assets - The value of current plan assets recognized for valuation purposes.

April 1, 2016

Mr. Mark Nannini
Chief Financial Officer
Illinois Municipal Retirement Fund
2211 York Road - Suite 500
Oak Brook, Illinois 60523-2374

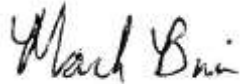
Re: December 31, 2015 Actuarial Valuation

Dear Mark:

Enclosed are 5 copies of the report. We have also included an unbound master copy in case you need to make additional copies.

We look forward to reviewing the results of this year's valuations at the Board meeting.

Sincerely,



Mark Buis, FSA, EA, MAAA

MB:bd
Enclosures