



**Retirement Plan for Members of
the Police and Fire Departments
of the City of Annapolis**

**Actuarial Valuation
as of July 1, 2012**

Produced by [Cheiron](#)

January 2013

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January 8, 2013

Board of Trustees
Retirement Plan for the Members of the
Police and Fire Departments of the City of Annapolis
Municipal Building
Annapolis, Maryland 21401

Dear Members of the Board:

At your request, we have conducted the annual actuarial valuation of the Retirement Plan for Members of the Police and Fire Department of the City of Annapolis as of July 1, 2012. The results of the valuation are contained in this report. The purpose of the valuation is discussed in the Foreword.

This report contains information on Plan assets, as well as analyses which combine asset and liability performance and projections. The report also discloses employer contribution levels, and required disclosures under the Governmental Accounting Standards Board Statement No. 25.

Your attention is called to the Foreword in which we refer to the general approach employed in the preparation of this report. We also comment on the sources and reliability of both the data and the actuarial assumptions on which our findings are based. Those comments are the basis for our certification that this report is complete and accurate to the best of our knowledge and belief. The results of this report are only applicable to the Fiscal Year 2013 and rely on future plan experience conforming to the underlying assumptions. To the extent that actual plan experience deviates from the underlying assumptions, the results would vary accordingly.

To the best of my knowledge, this report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board. Furthermore, as a credentialed actuary, I meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys and our firm does not provide any legal services or advice.

This report was prepared for the Retirement Plan for Members of the Police and Fire Department of the City of Annapolis for the purposes described herein and for the use by the Plan auditor in completing an audit related to the matters herein. This valuation report is not intended to benefit any third party, and Cheiron assumes no duty or liability to any such party.

Sincerely,
Cheiron



Fiona E. Liston, FSA, EA
Principal Consulting Actuary



**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
OF THE CITY OF ANNAPOLIS
ACTUARIAL VALUATION AS OF JULY 1, 2012**

FOREWORD

Cheiron has performed the actuarial valuation of the City of Annapolis Police and Fire Retirement Plan as of July 1, 2012. The purpose of this report is to:

- 1) **Measure and disclose**, as of the valuation date, the financial condition of the Plan;
- 2) **Indicate trends** in the financial progress of the Plan;
- 3) Advise on the applicability of **the 8.5% City contribution rate**; and
- 4) **Provide specific information** and documentation required by the Government Accounting Standards Board (GASB).

An actuarial valuation establishes and analyzes Plan assets and liabilities on a consistent basis and traces the progress of both from one year to the next. It includes measurement of the Plan's investment performance as well as an analysis of actuarial liability gains and losses.

Section I presents a summary containing our findings and disclosing important trends experienced by the Plan in recent years.

Section II contains details on various asset measures, together with pertinent performance measurements.

Section III shows similar information on Plan liabilities, measured for actuarial, accounting, and governmental reporting purposes.

Section IV develops the employer contribution rate determined using actuarial techniques and compares that to the 8.5% currently being contributed.

Section V includes the required disclosures under GASB statement number 25.

The appendices to this report contain a summary of the Plan's membership at the valuation date, a summary of the major provisions of the Plan, and the actuarial methods and assumptions used in the valuations.

In preparing our report, we relied without audit, on information (some oral and some written) supplied by the City of Annapolis. This information includes, but is not limited to, the Plan provisions, employee data, and financial information.

The actuarial assumptions reflect our understanding of the likely future experience of the Plan and the assumptions as a whole represent our best estimate for the future experience of the Plan. The results of this report are dependent upon future experience conforming to these assumptions. To the extent that future experience deviates from the actuarial assumptions, the true cost of the Plan could vary from our results.

**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
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**SECTION I
SUMMARY**

General Comments

From at least 1993 through 2008, this Plan was over 100% funded. Throughout this period, steps were taken to reduce the Plan's overfunding. These steps included making a combined City and member contribution that totaled less than the 25% of payroll, which represents the value of benefits accruing annually and making various benefit improvements. In the 2008-2009 plan year, two events occurred which drastically changed the Plan's funded ratio. On the asset side, the Plan lost a great deal of value in the market downturn which swept the country. Though returns improved in both of the next two years, the Fund has not yet recovered from the losses sustained in 08-09. On the liability side, there was a court finding that certain cost-of-living increases should have been granted to a group of Old and Old Revised retirees back to 1999. This increased the liabilities by \$6.2 million.

Steps have been taken to increase both member and City contributions and to adjust the Plan provisions for those hired after July 1, 2012. The impact of these changes will be seen in future valuations.

Over the last fiscal year, the assets returned 0.37% which is below the 7.5% assumption. The asset smoothing method in place will include only a portion of this loss and continues recognizing a portion of the 08-09 loss. The return, for valuation purposes, was only 4.21%, leading to an asset loss of \$4.78 million.

The actuarial assumptions used to value the Plan were changed this year to better reflect experience. The impact of these changes was to reduce the Plan's liability by \$10.87 million. The measurement of liabilities produced a gain this year in the amount of \$6.0 million.

The contribution rate that is calculated in this valuation is one which is based on a rolling thirty-year amortization of the \$14.3 million unfunded liability. The rate is now 25.61% of payroll, net of the member contributions currently being made.

The City is now contributing 8.5% of covered payroll. Our projections show that unless additional changes are made in contributions or benefit provisions the Plan's funded ratio will continue to decline.

The remainder of this section presents trend information showing the history of where the Plan's funding has been and projections of where it may be headed.

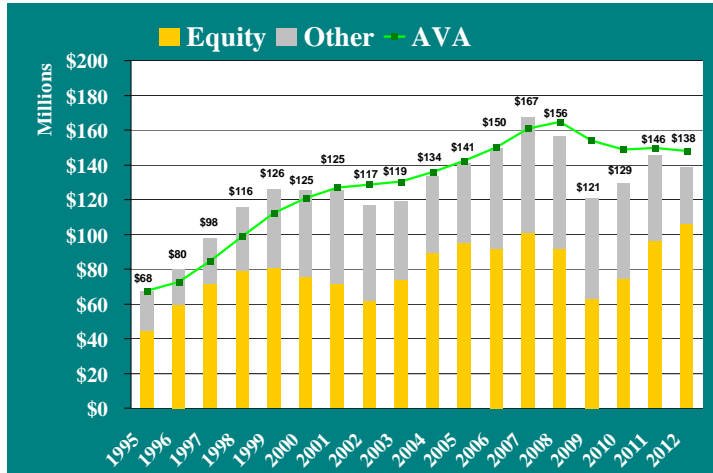
Trends

We think it is important to take a step back from the latest results and view them in the context of the Plan's recent history. On the next pages, we present a series of charts which display key factors in the valuations of the last 18 years. After the historical review, we then present a few projection graphs, showing the possible condition of the Plan over the next 15 years under various scenarios of market returns.

**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
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**SECTION I
SUMMARY**

Growth in Assets

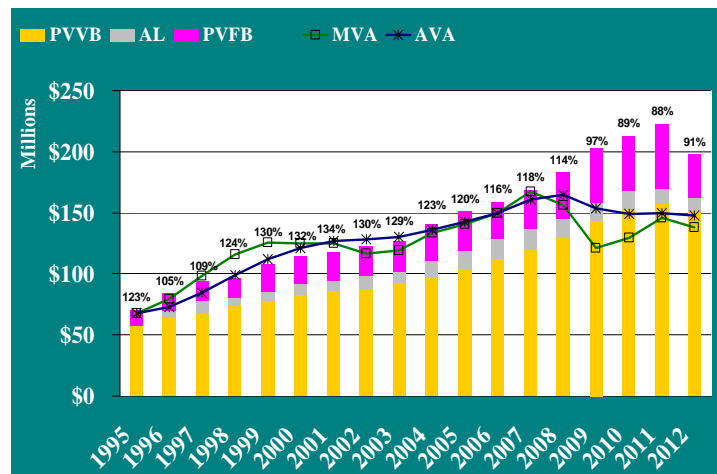


Over the period July 1, 1995 to June 30, 2012 the Plan's assets returned approximately 7.5% measured at both market value and on an actuarial value basis, compared to a valuation assumption of 7.5%.

Market value returns were near zero this fiscal year, but due to the smoothing equation, the actuarial value of assets did not reflect the full market loss.

Assets and Liabilities

The three colored bars represent the three different measures of liability mentioned in this report. For funding purposes, the target amount is represented by the top of the gray bar. We compare the actuarial value of assets to this measure of liability in developing the funded percent. These are the percentages shown in the graph labels.

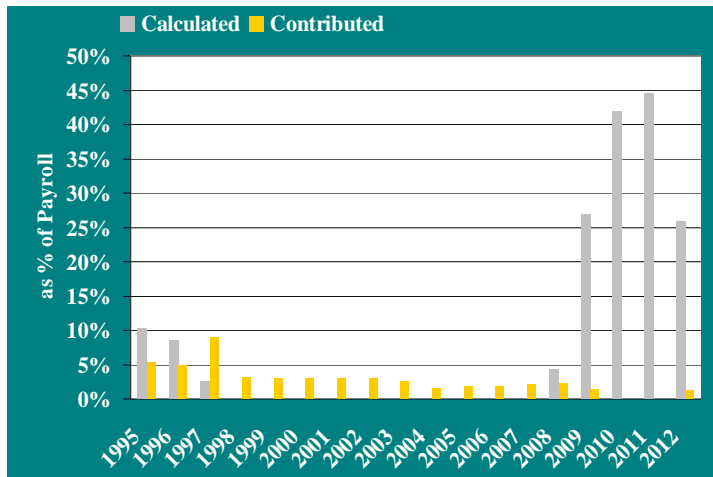


The amount represented by the top of the pink bars, the Present Value of Future Benefits (PVFB), is the amount needed to provide all benefits for the current participants and their beneficiaries. If the Plan had assets equal to the PVFB, no contributions would, in theory, be needed for the current members.

**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
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**SECTION I
SUMMARY**

Contribution Rates

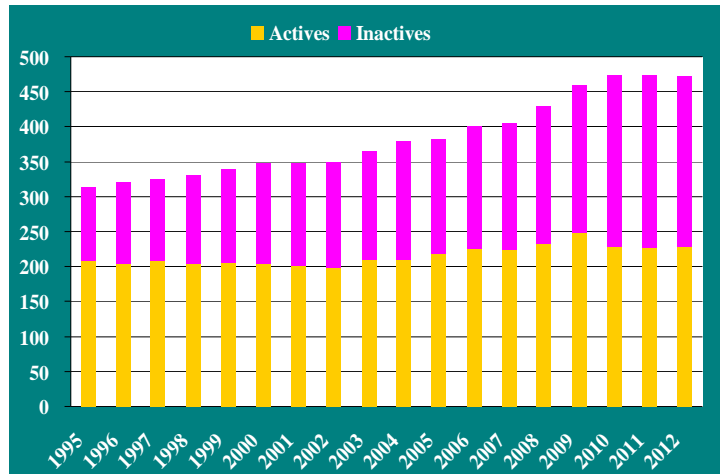


This graph shows the actuarially calculated City contribution rate, denominated as a percent of payroll, as well as the actual City contribution. From 1998 through 2007, the valuation developed a contribution rate of zero. The City continued to make contributions to this Plan in spite of the zero calculated amount. Now that the surplus has been exhausted, discussions need to take place surrounding the future funding policy.

Participant Trends

As with many funds in this country, there has been a steady growth in the number of retired members as the Fund has matured.

The chart also shows that the number of actives covered by the Plan has remained constant over the past three years.



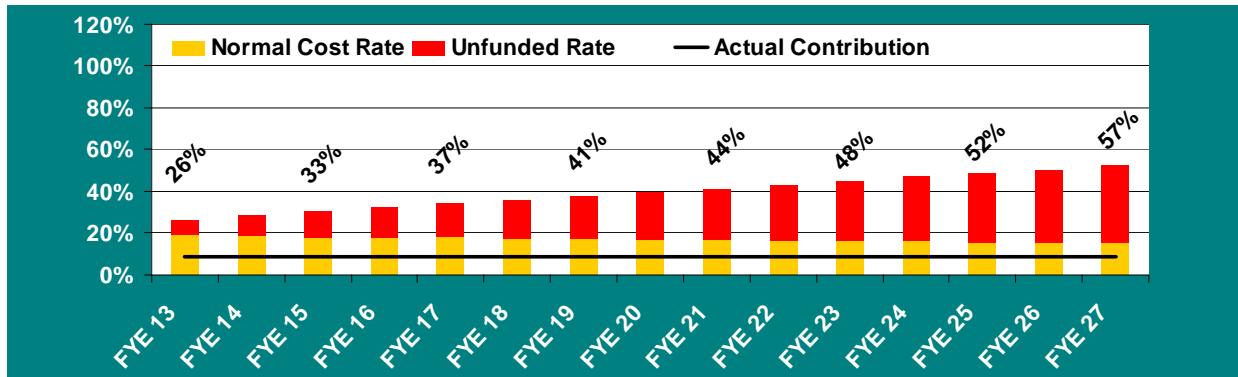
**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
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**SECTION I
SUMMARY**

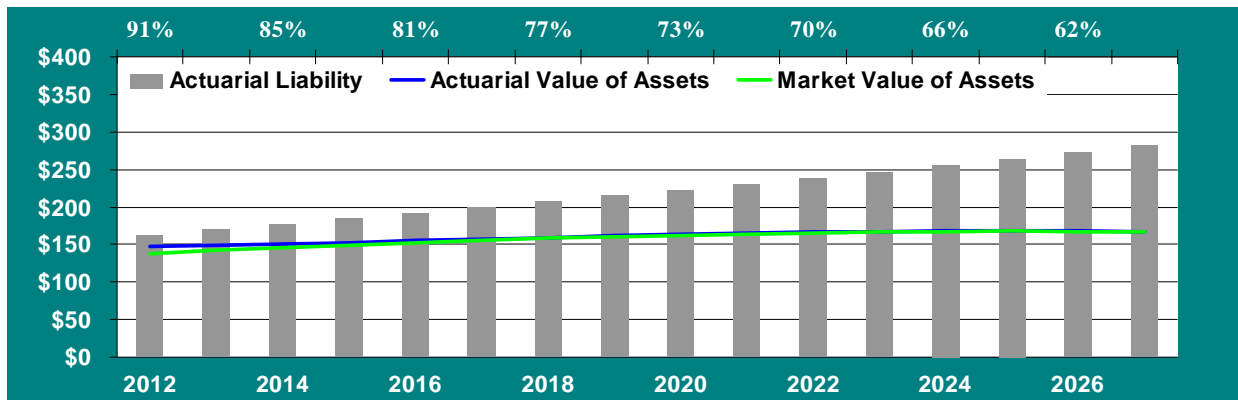
Future Outlook

Base-Line Projections

These two charts show the expected progress of the Plan’s funding over the next 15 years assuming the Plan’s assets earn exactly 7.5% per year. The charts further assume that the City contributes 8.5% of payroll and that member contributions increase in accordance with the current bargained rates, including a 6.5% rate for those hired after July 1, 2010, and a 5.5% rate for fiscal year 2013 for those previously hired (increases to 6.5% for fiscal year 2014). Those hired after July 1, 2012 are assumed to contribute 8% and to reach retirement eligibility after 25 years of service. The first chart shows that the calculated contribution amount, used for GASB disclosure purposes and calculated using a 30-year amortization of the unfunded liability, is expected to be well in excess of the 8.5% City rate.



The Assets and Liabilities chart shows the projected funding status over the next 15 years under the same scenario. The funding ratio is expected to drop steadily each year from its current level of 91% down to 59% by 2027.

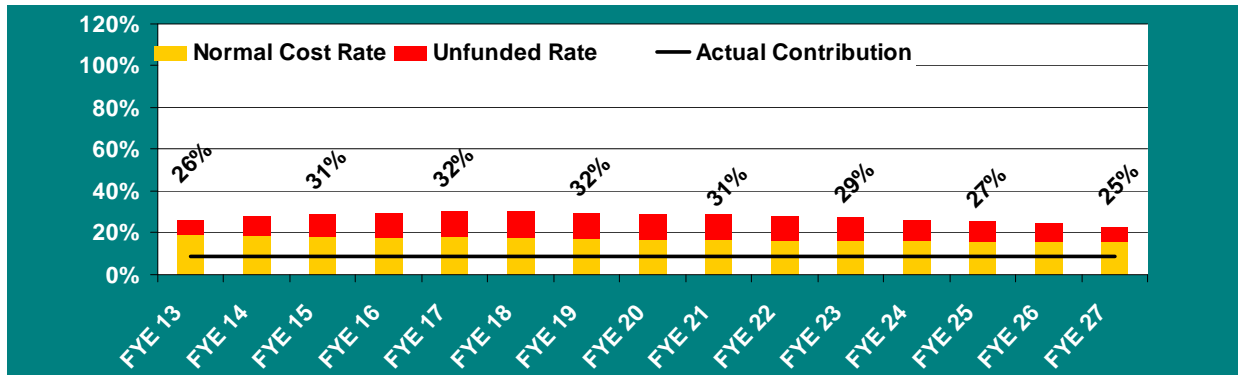


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**SECTION I
SUMMARY**

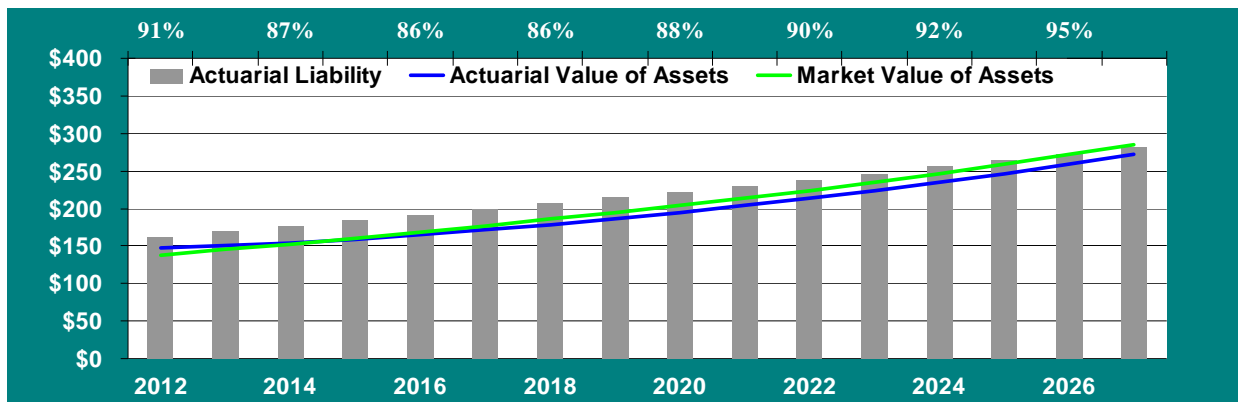
First Alternative Projection

In these graphs, we show the anticipated contribution amount and funding status over the next 15 years assuming better than expected returns of 10% per year.



The Plan Funding graph shows that the calculated contribution rate is still much higher than the assumed City contribution of 8.5% of payroll.

While the Assets and Liabilities graph shows that the funded ratio deteriorates in the short-term, as stored investment losses are recognized, but with a 10.0% return, the current 91% funded ratio increases to 97% over the period.

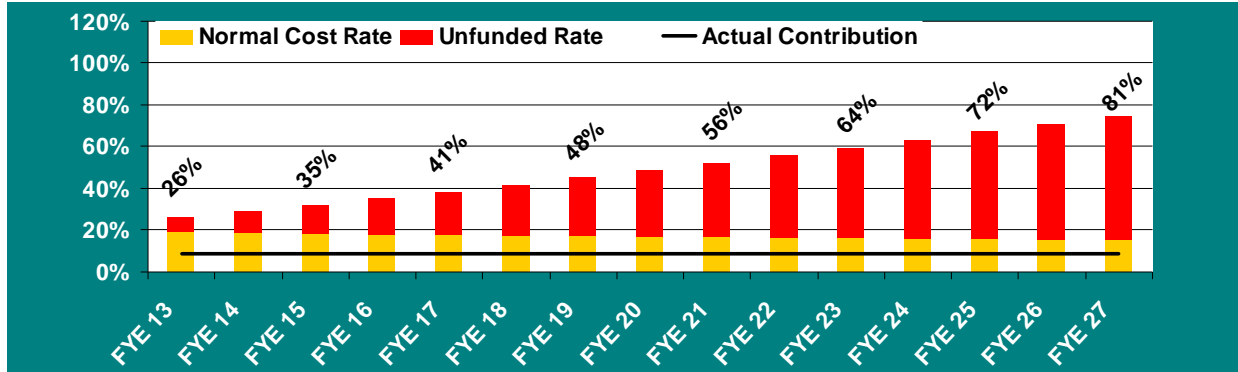


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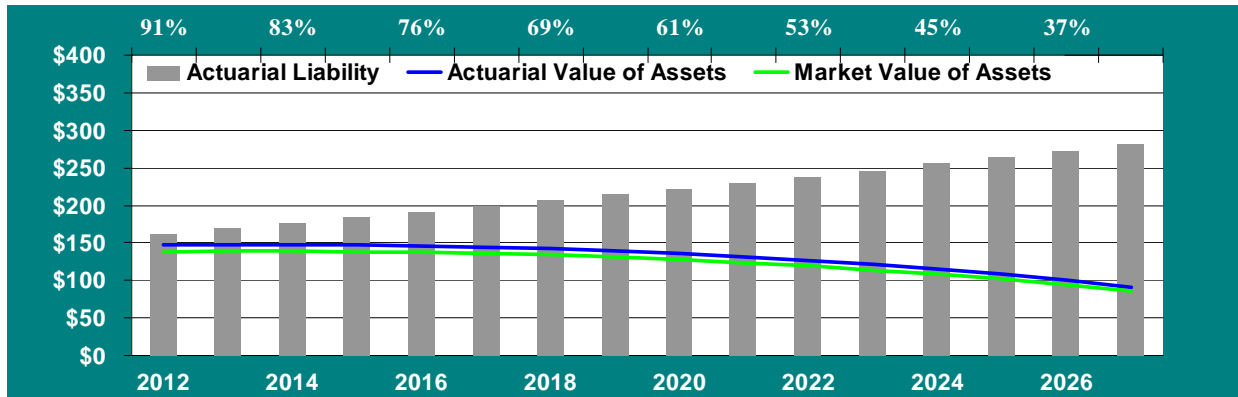
**SECTION I
SUMMARY**

Second Alternative Projection

While investment returns in excess of the assumed 7.5% can lead to funding improvement, here we show the impact of the Plan earning 2.5% less than the assumption. If the assets return only 5% per year, the 8.5% contributions become even more inadequate.



The Assets and Liabilities graph shows that the funded status of the Plan would deteriorate from its current level of 91% down to 32%.



**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
OF THE CITY OF ANNAPOLIS
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**SECTION I
SUMMARY**

Table I-1 City of Annapolis Fire and Police Retirement Plan Summary of Principal Results			
	July 1, 2011	July 1, 2012	Change
Participant Counts			
Active Members	227	228	0.4%
Inactive Members	32	29	(9.4%)
Terminated Vested Members	2	2	0.0%
Retired Members	139	138	(0.7%)
Disabled Members	48	49	2.1%
Beneficiaries	25	25	0.0%
TOTAL	473	471	(0.4%)
Annual Salary of Active Members	\$ 15,651,875	\$ 15,949,484	1.9%
Annual Benefits in Pay Status			
Total Benefits	\$ 8,604,766	\$ 8,609,318	0.1%
Less Annuitized Amts	591,351	582,617	(1.5%)
Net Payable from Plan Assets	\$ 8,013,415	\$ 8,026,701	0.2%
Assets & Liabilities			
Total Actuarial Liability	\$ 170,204,222	\$ 162,137,819	(4.7%)
Actuarial Value of Assets	149,511,505	147,876,672	(1.1%)
Unfunded Actuarial Liability (Surplus)	\$ 20,692,717	\$ 14,261,147	31.1%
Funded Ratio	88%	91%	
Contribution Results as % of Payroll			
Employer Normal Cost	26.56%	18.57%	
Amort of Unfunded Liability	17.92%	7.04%	
Total Cost	44.48%	25.61%	

**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
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ACTUARIAL VALUATION AS OF JULY 1, 2012**

**SECTION II
ASSETS**

Pension plan assets play a key role in the financial operation of the Plan and in the decisions the Trustees may make with respect to future deployment of those assets. The level of assets, the allocation of assets among asset classes, and the methodology used to measure assets will likely impact benefit levels, negotiated contributions, and the ultimate security of participants' benefits.

In this section, we present detailed information on Plan assets including:

- **Disclosure** of Plan assets at July 1, 2011 and July 1, 2012;
- Statement of the **changes** in market values during the year;
- Development of the **actuarial value of assets**;
- An assessment of **investment performance**; and
- A ten-year **projection** of contributions and benefit payments.

Disclosure

The market value of assets represents a “snap-shot” or “cash-out” value. This provides the principal basis for measuring financial performance from one year to the next. Market values, however, can fluctuate widely with corresponding swings in the marketplace. As a result, market values are usually not suitable for long range planning.

The actuarial value, or “carrying value”, is a smoothed market value. The actuarial value measures the Fund’s ongoing ability to meet its obligations.

The current method employed by this plan sets the actuarial value to the expected adjusted market value plus one-third of the difference between the expected adjusted market value and the actual market value. The expected adjusted market value is the previous year’s actuarial asset value adjusted with contributions, benefit payments, and interest at 7.5%.

Table II - 1		
Assets at Market Value		
	July 1, 2011	July 1, 2012
Stralem & Co	12,083,372	8,768,891
Edgar LoMax	17,311,984	12,631,397
Allegis Realty	5,698,419	6,274,683
Lazard Stock	38,073,271	23,816,667
Grantham Mayo van Otterloo & Co.	12,638,959	-
Administrative Account	4,606,392	2,006,463
Cooke & Bieler	17,253,531	12,726,810
Loomis Sayles	8,673,358	6,207,725
Alternatives Gresham	14,658,791	41,605,359
Mutual Funds	14,555,691	24,271,090
Total Assets	\$ 145,553,768	\$ 138,309,085

**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
OF THE CITY OF ANNAPOLIS
ACTUARIAL VALUATION AS OF JULY 1, 2012**

**SECTION II
ASSETS**

Changes in Market Value

The components of asset change are as follows:

- Contributions
- Benefit payments
- Expenses
- Dividends and interest income
- Investment income (realized and unrealized)

The specific changes during the plan year ending July 1, 2012 are presented below.

Table II-2 Changes in Market Values	
Value of Assets - July 1, 2011	\$ 145,553,768
<u>Receipts</u>	
Member Contributions	783,882
Employer Contributions	200,000
Dividends, Interest and Gains (net of investment expense)	727,893
Total Receipts	<u>1,711,775</u>
<u>Disbursements</u>	
Benefit Payments	(8,756,799)
Administrative Expenses	(199,659)
Total Disbursements	<u>(8,956,458)</u>
<u>Net Change</u>	(7,244,683)
Value of Assets at July 1, 2012	138,309,085
Return on Market Value of Assets	0.37%

**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
OF THE CITY OF ANNAPOLIS
ACTUARIAL VALUATION AS OF JULY 1, 2012**

**SECTION II
ASSETS**

Actuarial Value of Assets

The actuarial value of assets represents a “smoothed” value developed by the actuary to reduce, or eliminate, erratic results which could develop from short-term ups and downs in the market value of assets. For this Fund, the actuarial value has been calculated by adding one-third of the deviation from market value and expected adjusted market value to the expected adjusted market value. The following table illustrates the calculation of the actuarial value of assets for the July 1, 2012 valuation.

Table II -3 Development of Actuarial Value of Assets	
1. Value of Assets at Beginning of Year	\$ 149,511,505
2. Contributions	983,882
3. Benefit Payments	(8,756,799)
4. Expected Investment Return (at 7.5%)	10,921,878
5. Expected Value of Assets at End of Year: (1) + (2) + (3) + (4)	\$ 152,660,466
6. Market Value of Assets at End of Year	\$ 138,309,085
7. Recognized Gain (Loss) [33.3% of [(6) - (5)]]	(4,783,794)
8. Actuarial Value of Assets: (5) + (7)	\$ 147,876,672
Calculation of Asset Gain/(Loss) on Actuarial Value of Assets	
1. Expected Actuarial Value of Assets as of July 1, 2012 (assuming a 7.5% investment return)	\$ 152,660,466
2. Actual Actuarial Value of Assets	147,876,672
3. Asset Gain/(Loss) During Plan Year as of July 1, 2012 [(2) - (1)]	\$ (4,783,794)

Investment Performance

The market value of assets gained 0.37% during the fiscal year ending in 2012, which is less than the assumed 7.5%.

The return on the actuarial value of assets was only 4.21%. Under the smoothing method, only 33 ⅓% of investment returns that differ from the assumed 7.5% is recognized. The remaining 66 ⅔% is left to be recognized in future years.

If the Plan experiences many years of good investment performance, the actuarial asset value will be less than the actual market value. This is a result of “storing” the gains. Conversely, in years of poor investment performance, such as the years ended June 30, 2001, June 30, 2002, and June 30, 2009, the actuarial asset value may exceed the market value. Future years’ returns will need to exceed the assumed 7.5% to offset the deferred losses.

**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
OF THE CITY OF ANNAPOLIS
ACTUARIAL VALUATION AS OF JULY 1, 2012**

**SECTION II
ASSETS**

Projection of Contributions and Benefits

The following table shows a ten-year projection of the Plan's expected benefit payments and contributions. Benefits are projected in accordance with the actuarial assumptions used in the valuation. The projection of benefits does not include an allowance for members hired after July 1, 2012. We do not feel that this understates the projected benefits over the ten-year period because most of these new members would not be eligible for benefits.

Contributions are projected taking into account expected new entrants and include both employer and member contributions. Over the ten-year period shown, the benefit payments are expected to exceed contributions. This indicates that this is a very mature fund. The projected shortfall will have to be paid from current assets and future investment earnings. The Trustees should take these cash flow needs into account when planning future investments.

Table II-4		
Year Beginning July 1,	Projection of Plan's Benefit Payments	
	Expected Benefit Payments¹	Expected Contributions²
2012	\$ 8,488,000	\$ 2,240,000
2013	9,067,000	2,318,000
2014	9,657,000	2,399,000
2015	10,209,000	2,483,000
2016	10,787,000	2,570,000
2017	11,428,000	2,660,000
2018	12,055,000	2,753,000
2019	12,635,000	2,850,000
2020	13,191,000	2,949,000
2021	13,786,000	3,052,000

¹ The payment stream reflects only the Plan-paid portion of expected benefits and not the portion annuitized in 1992.

² Contributions include City contributions (8.5% of pay) plus member contributions at 6.5% after the first year. Total covered payroll is assumed to increase 3.5% per year.

RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
OF THE CITY OF ANNAPOLIS
ACTUARIAL VALUATION AS OF JULY 1, 2012

**SECTION III
LIABILITIES**

In this section, we present detailed information on Plan liabilities including:

- **Disclosure** of Plan liabilities at July 1, 2011 and July 1, 2012, and
- Statement of **changes** in these liabilities during the year.

Disclosure

This report discloses three types of liabilities. Each liability has a specific purpose depending on the nature of the liability and the people ultimately using the liability.

- **Total Future Obligation:** Used for analyzing the financial outlook of the Plan, this represents the amount of money needed today to fully pay off all future benefits and expenses of the Plan, assuming participants continue to accrue benefits.
- **Actuarial Liability:** Used for funding calculations and Governmental Accounting Standards Board (GASB) disclosures, this liability is calculated taking the Total Obligations above and subtracting the present value of future Member Contributions and future Employer Normal Costs under an acceptable actuarial funding method. This method is referred to as the **Entry Age Normal** funding method.
- **Accrued Benefit Liability:** Used for communicating the current level of liabilities, this liability represents the total amount of money needed today to fully pay off the current accrued obligations of the Fund, assuming no future accruals of benefits. These liabilities are also required by the Financial Accounting Standards Board (Topic No. 960) and used to assess whether the Plan can meet its current benefit commitments.

The table on the next page discloses each of these liabilities as well as the respective **net surplus** or **unfunded liability**. Both the total future obligation and the accrued liability use the market value of assets to calculate the net surplus or unfunded liability. The actuarial liability uses the actuarial value of assets to calculate the net surplus or unfunded liability.

**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
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**SECTION III
LIABILITIES**

Table III - 1		
Liabilities/Net (Surplus) Unfunded		
	July 1, 2011	July 1, 2012
Total Future Obligation		
Active Participant Benefits	\$ 106,105,906	\$ 88,212,876
Retiree and Inactive Benefit	116,426,643	109,982,627
Total Future Obligation	\$ 222,532,549	\$ 198,195,503
Market Value of Assets	145,553,768	138,309,085
Future Member Contributions	7,720,426	8,824,734
Future City Contributions (at 8.5%)	14,017,801	12,632,494
Total Resources	\$ 167,291,995	\$ 159,766,313
Net (Surplus) Unfunded	\$ 55,240,554	\$ 38,429,190
Actuarial Liability		
Total Future Obligation	\$ 222,532,549	\$ 198,195,503
Less: Present Value of Future Employer Normal Costs Under Entry Age Method	\$ 44,607,901	\$ 27,232,950
Less: Present Value of Future Member Contributions	7,720,426	8,824,734
Actuarial Liability	\$ 170,204,222	\$ 162,137,819
Less: Actuarial Value of Assets	149,511,505	147,876,672
Net (Surplus) Unfunded	\$ 20,692,717	\$ 14,261,147
Accrued Benefit Liability		
Total Future Obligation	\$ 222,532,549	\$ 198,195,503
Less: Present Value of Future Benefit Accruals	64,906,499	46,389,427
Accrued Benefit Liability	\$ 157,626,050	\$ 151,806,076
Less: Market Value of Assets	145,553,768	138,309,085
Net (Surplus) Unfunded	\$ 12,072,282	\$ 13,496,991

**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
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**SECTION III
LIABILITIES**

Changes in Liabilities

Each of the liabilities disclosed in the prior table are expected to change at each valuation. The components of that change, depending upon which liability is analyzed, can include:

- Benefits accrued since last valuation
- Passage of time which adds interest to the prior liability
- Benefits paid to retirees since the last valuation
- Participants retiring, terminating, or dying at rates different than expected
- New hires since the last valuation
- Plan amendments increasing benefits
- A change in actuarial or investment assumptions
- A change in the actuarial funding method
- Unfunded liabilities will change because of all the above, and also due to changes in Fund assets resulting from:
 - Employer contributions different than expected
 - Investment earnings different than expected
 - A change in the method used to measure Plan assets

In each valuation, we report on those elements of change which are of particular significance, potentially affecting the long-term financial outlook of the Fund. Below we present key changes in liabilities since the last valuation.

	Table III - 2		
	Total	Actuarial	Accrued
	Future Obligation	Liability	Benefit Liability
Liability at July 1, 2011	\$ 222,532,549	\$ 170,204,222	\$ 157,626,050
Liability at July 1, 2012	198,195,503	162,137,819	151,806,076
Liability Increase (Decrease)	(24,337,046)	(8,066,403)	(5,819,974)
Changes Due to:			
Actuarial (Gain)/Loss	NC	(6,028,353)	NC
Assumption Change	(26,432,155)	(10,870,834)	(12,117,700)
Benefits Accumulated and Other Sources	2,095,109	8,832,784	6,297,726

NC = Not Calculated

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**SECTION III
LIABILITIES**

Table III - 3 Plan Liabilities		
1.	Present Value of Benefits	
	a. Active Members	\$ 88,212,876
	b. Retired Members	109,645,871
	c. Terminated Vested Members	296,924
	d. Inactive Members	39,832
	Total	\$ 198,195,503
2.	Present Value of Future Employer Normal Costs	27,232,950
3.	Present Value of Future Member Contributions	8,824,734
4.	Actuarial Accrued Liability [(1) - (2) - (3)]	<u>\$ 162,137,819</u>
5.	Actuarial Value of Assets	<u>147,876,672</u>
6.	Unfunded Actuarial Liability [(4) - (5)]	<u>\$ 14,261,147</u>

**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
OF THE CITY OF ANNAPOLIS
ACTUARIAL VALUATION AS OF JULY 1, 2012**

**SECTION IV
CONTRIBUTIONS**

In the process of evaluating the financial condition of any pension plan, the actuary analyzes the assets and liabilities to determine what level of contribution is needed to properly maintain the funding status of the Plan. Typically, the actuarial process will use a funding mechanism that results in a pattern of contributions that are both stable and predictable.

For this Fund, the funding mechanism is the **Entry Age Actuarial Cost Method**. Under this method, there are two components to the total contribution: (i) a **normal cost**, and (ii) an **amortization payment**. A normal cost is determined for each active member and then this normal cost represents the cost to fund that portion of the total future obligations which has been allocated to the current year, based upon the actuarial cost method.

The amortization payment, on the other hand, is not calculated for individual participants but calculated on the Fund as a whole. It represents an annual installment to fund the **unfunded actuarial liability (UAL)** for the Fund. The UAL represents the amount of additional funds that would have been accumulated by the valuation date, had all prior normal costs been made, and all actuarial assumptions been realized. The 2011 valuation used a ten, level dollar, year amortization of the UAL amount. This has been changed in the 2012 valuation to a 30 year period.

In Appendix B, we describe this technical topic more fully.

The table below presents and compares the Plan's actuarially determined contribution for this valuation and the prior one. The City's funding policy is to contribute 8.5% of pay to the Fund.

Table IV - 1		
Actuarially Determined Contribution		
	July 1, 2011	July 1, 2012
Entry Age Normal Cost	26.56%	18.57%
Unfunded Liability	17.92%	7.04%
Actuarially Determined Contribution	44.48%	25.61%

On the following page, we show a detailed calculation of the City's Contribution Rate.

RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
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**SECTION IV
CONTRIBUTIONS**

Table IV - 2		
Calculation of City Contribution Rate		
	July 1, 2011	July 1, 2012
1. Present Value of Benefits	\$ 222,532,549	\$ 198,195,503
2. Future Contributions	52,328,327	36,057,684
3. Accrued Liability (1) - (2)	<u>\$ 170,204,222</u>	<u>\$ 162,137,819</u>
4. Actuarial Assets	<u>149,511,505</u>	<u>147,876,672</u>
5. Unfunded Liability	\$ 20,692,717	\$ 14,261,147
6. Employer Contributions in Dollars		
a. Normal Cost	\$ 4,157,506	\$ 2,962,365
b. Unfunded Liability	<u>2,804,314</u>	<u>1,123,264</u>
c. Total Contribution, Not Less Than Zero	\$ 6,961,820	\$ 4,085,629
7. Projected Payroll	\$ 15,651,875	\$ 15,949,484
8. Employer Contribution as Percentage of Payroll		
a. Normal Cost	26.56%	18.57%
b. Unfunded Liability	17.92%	7.04%
c. Total Contribution, Not Less Than Zero	44.48%	25.61%

**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
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**SECTION V
ACCOUNTING STATEMENT INFORMATION**

Two types of liabilities are disclosed for accounting purposes.

ASC Topic 960 of the Financial Accounting Standards Board (FASB) requires the Plan to disclose certain information regarding its funded status.

Statement No. 25 of the Governmental Standards Board (GASB) establishes standards for disclosure of pension information by public employee retirement systems (PERS) and governmental employers in notes to financial statements and supplementary information.

The Topic No. 960 disclosures provide a quasi “snap shot” view of how the Plan’s assets compare to its liability as of the valuation date. The liability is determined as if contributions stopped and the accrued benefit claims had to be satisfied. However, due to potential legal requirements and the possibility that alternative interest rates would have to be used to determine the liabilities, these values may not be a good indication of the amount of money it would take to buy the benefits for all members if the Plan were to terminate. The Topic No. 960 liability is compared to the market value of assets to determine the funding ratio.

The GASB-25 actuarial accrued liability is the same as the actuarial liability amount calculated for funding purposes. The GASB-25 liability is compared to the actuarial value of assets to determine the funding ratio.

Both the present value of accrued benefits (Topic No. 960) and the actuarial accrued liability (GASB-25) are determined assuming that the Plan is ongoing and participants continue to terminate employment, retire, etc., in accordance with the actuarial assumptions. Liabilities are discounted at the assumed valuation interest rate of 7.5% per annum.

**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
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**SECTION V
ACCOUNTING STATEMENT INFORMATION**

Table V - 1		
Accounting Statement Information - FASB Topic 960 Basis		
Accumulated Plan Benefits		
	July 1, 2011	July 1, 2012
1. Present Value of Benefits		
Accrued to Date		
a. Members Currently Receiving Payments	\$ 116,067,419	\$ 109,645,871
b. Terminated Vested Members	301,187	296,924
c. Inactive Members	58,037	39,832
d. Active Members	<u>41,199,407</u>	<u>41,823,449</u>
2. Total Present Value of Accrued Benefits [1(a) + 1(b) + 1(c) + 1(d)]	\$ 157,626,050	\$ 151,806,076
3. Assets at Market Value	<u>145,553,768</u>	<u>138,309,085</u>
4. Unfunded Value of Benefits	\$ 12,072,282	\$ 13,496,991
5. Ratio of Assets to Value of Benefits (3) / (2)	92.3%	91.1%

Table V - 2	
Statement of Changes in Accumulated Plan Benefits	
July 1, 2011 - July 1, 2012	
	Accumulated Benefit
Actuarial Present Value of Accumulated Plan Benefits at July 1, 2011	\$ 157,626,050
Increase (Decrease) Due to:	
Benefits Accumulated and Gains and Losses	3,560,951
Change in Assumptions	(12,117,700)
Interest Due to the Decrease in the Discount Period	11,493,574
Benefits Paid	<u>(8,756,799)</u>
Net Change	(5,819,974)
Actuarial Present Value of Accumulated Plan Benefits at July 1, 2012	\$ 151,806,076

**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
OF THE CITY OF ANNAPOLIS
ACTUARIAL VALUATION AS OF JULY 1, 2012**

**APPENDIX A
MEMBERSHIP DATA AND PROFILE**

The Personnel Office of the City of Annapolis provided the actuary with all necessary membership data. Information on all participants was gathered as of July 1, 2012.

In this Appendix, we present a review of the current membership statistics. The table on page 20 summarizes the active membership count and payroll by status. The table on page 21 summarizes the inactive membership by status. The table on page 22 shows the active membership distributions by age, salary, and service.

Table A - 1			
Active Member Statistics			
	7/1/2011	7/1/2012	
Old Plan			
Currently Eligible to Retire	-	-	
Not Currently Eligible to Retire	-	-	
Average Pay	\$ -	\$ -	
Average Age	-	-	
Average Service	-	-	
Old Plan Revised			
Currently Eligible to Retire	1	1	
Not Currently Eligible to Retire	-	-	
Average Pay	\$ 91,572	\$ 91,572	
Average Age	61	62	
Average Service	39	40	
New Plan Revised			
Currently Eligible to Retire*	2	2	
Not Currently Eligible to Retire	224	225	
Average Pay	\$ 68,851	\$ 69,859	
Average Age	37	38	
Average Service	9	10	
Total Plan			
Currently Eligible to Retire	3	3	
Not Currently Eligible to Retire	224	225	
Average Pay	\$ 68,951	\$ 69,954	
Average Age	37	38	
Average Service	9	10	

* Only shows those eligible for normal (unreduced) retirement.

**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
OF THE CITY OF ANNAPOLIS
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**APPENDIX A
MEMBERSHIP DATA AND PROFILE**

Table A - 2		
Inactive Member Statistics		
	7/1/2011	7/1/2012
Service Retirement		
Count	139	138
Total Annual Benefit	\$ 6,593,821	\$ 6,537,551
Annuitized Annual Benefit	309,512	309,512
Net Payable from Plan Assets	<u>\$ 6,284,309</u>	<u>\$ 6,228,039</u>
Average Age	61	62
Disabilities		
Count	48	49
Total Annual Benefit	\$ 1,587,214	\$ 1,631,765
Annuitized Annual Benefit	188,426	188,426
Net Payable from Plan Assets	<u>\$ 1,398,788</u>	<u>\$ 1,443,339</u>
Average Age	63	64
Beneficiaries		
Count	25	25
Total Annual Benefit	\$ 423,731	\$ 440,002
Annuitized Annual Benefit	93,413	84,679
Net Payable from Plan Assets	<u>\$ 330,318</u>	<u>\$ 355,323</u>
Average Age	68	68
Total Plan		
Count	212	212
Total Annual Benefit	\$ 8,604,766	\$ 8,609,318
Annuitized Annual Benefit	591,351	582,617
Net Payable from Plan Assets	<u>\$ 8,013,415</u>	<u>\$ 8,026,701</u>
Average Age	62	63
Terminated Vested		
Count	2	2
Average Age	50	51
Inactives		
Count	32	29
Return of Member Contributions	\$ 58,037	\$ 39,832

**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
OF THE CITY OF ANNAPOLIS
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**APPENDIX A
MEMBERSHIP DATA AND PROFILE**

COUNTS BY AGE/SERVICE

Age	Service											Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up		
Under 25	1	7	0	0	0	0	0	0	0	0	0	8
25 to 29	1	20	14	0	0	0	0	0	0	0	0	35
30 to 34	1	19	23	6	1	0	0	0	0	0	0	50
35 to 39	2	5	16	14	4	0	0	0	0	0	0	41
41 to 44	1	5	9	4	16	6	1	0	0	0	0	42
45 to 49	2	8	1	3	9	6	3	0	0	0	0	32
50 to 54	0	3	0	1	6	1	2	1	0	0	0	14
55 to 59	0	0	1	0	0	2	0	0	2	0	0	5
60 to 64	0	0	0	0	0	0	0	0	0	0	1	1
65 to 69	0	0	0	0	0	0	0	0	0	0	0	0
70 & up	0	0	0	0	0	0	0	0	0	0	0	0
Total	8	67	64	28	36	15	6	1	2	1	1	228

AVERAGE SALARY BY AGE/SERVICE

Age	Service											Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up		
Under 25	45,154	54,397	0	0	0	0	0	0	0	0	0	53,242
25 to 29	54,050	53,087	63,559	0	0	0	0	0	0	0	0	57,303
30 to 34	46,071	54,147	65,760	78,128	76,973	0	0	0	0	0	0	62,662
35 to 39	45,036	54,073	68,291	75,653	83,041	0	0	0	0	0	0	69,376
41 to 44	60,001	57,013	65,645	75,112	91,155	98,724	113,762	0	0	0	0	80,974
45 to 49	46,071	73,616	67,960	71,955	81,354	85,374	80,621	0	0	0	0	76,600
50 to 54	0	76,845	0	67,960	81,452	81,099	109,985	91,572	0	0	0	84,275
55 to 59	0	0	64,302	0	0	81,311	0	0	95,006	0	0	83,387
60 to 64	0	0	0	0	0	0	0	0	0	91,572	0	91,572
65 to 69	0	0	0	0	0	0	0	0	0	0	0	0
70 & up	0	0	0	0	0	0	0	0	0	0	0	0
Total	48,436	57,406	65,907	75,435	85,792	89,887	95,933	91,572	95,006	91,572	91,572	69,954

**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
OF THE CITY OF ANNAPOLIS
ACTUARIAL VALUATION AS OF JULY 1, 2012**

**APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS**

A. Long-Term Assumptions Used to Determine Plan Costs and Liabilities

1. Demographic Assumptions

a. Mortality:

RP-2000 Group Annuity Mortality Table projected to 2016 for healthy males and females.

Annual Deaths Per 10,000 Members		
Age	Male	Female
20	3	2
25	4	2
30	4	3
35	8	4
40	10	7
45	14	10
50	20	15
55	33	26
60	62	49
65	119	95
70	206	163
75	353	270
80	612	443
85	1,069	752
90	1,798	1,297
95	2,648	1,926
100	3,428	2,363
105	3,979	2,931

100% of active deaths are assumed to be service-connected.

**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
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**APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS**

RP-2000 Group Annuity Mortality Table projected to 2016 set forward five years for disabled males and females.

Annual Deaths Per 10,000 Members		
Age	Male	Female
20	4	2
25	4	3
30	8	4
35	10	7
40	14	10
45	20	15
50	33	26
55	62	49
60	119	95
65	206	163
70	353	270
75	612	443
80	1,069	752
85	1,798	1,297
90	2,648	1,926
95	3,428	2,363
100	3,979	2,931
105	4,000	3,646

b. Termination of Employment (Prior to Normal Retirement Eligibility):

Annual Terminations Per 1,000 Members	
Years of Service	Terminations
1	100
2	50
3	30
4	30
5	30
6	30
7	30
8 - 24	10
25 or more	0

It is assumed that members who terminate before normal or early retirement age elect to receive a refund of contributions instead of vested benefits.

**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
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**APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS**

c. Disability:

Annual Disabilities Per 10,000 Members	
Age	Male and Female
20	13
25	20
30	28
35	35
40	43
45	50
50	50
55	50
60	50

100% of disabilities are assumed to be service-connected.

d. Retirement:

Retirement Pattern for 100 Members with 20 Years of Service	
Police	
Years of Service	Number Retiring
20	35
21	30
22	15
23	15
24	15
25	50
26	15
27	75
28	15
29	15
30	15
31	15
32	15
33	15
34	15
35	100

**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
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**APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS**

Retirement Pattern for 100 Members with 20 Years of Service Fire	
Years of Service	Number Retiring
20	15
21	15
22	15
23	15
24	15
25	33
26	15
27	15
28	25
29	25
30	50
31	30
32	30
33	30
34	30
35	100

e. Family Composition:

For purposes of valuing the pre-retirement death benefit, an assumption concerning how many employees are married is needed. The assumption used in this valuation is that 100% of employees are married at death while active and that the female spouse is one year younger than the male spouse.

RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
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**APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS**

2. Economic Assumptions

Investment Return:

7.5% compounded per annum, after investment expenses.

Cost-of-Living Benefit Increases:

3.5% compounded per annum in Old Plan, 3.0% for Old Plan – Revised, and 2.5% for New Plan (based on assumed CPI increase of 3.5%).

Across-the-Board Increase in City Salaries:

3.5% compounded per annum.

Additional Salary Increases:

Salary Merit Scale Police	
Years of Service	Percent Increase
0	4.5%
1	4.5
2	3.5
3	3.5
4	2.5
5	2.5
6	1.5
7	1.5
8	1.5
9	1.5
10+	0.5

**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
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**APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS**

Salary Merit Scale Fire	
Years of Service	Percent Increase
0	6.5%
1	6.5
2	5.0
3	4.0
4	2.5
5	1.5
6+	0.5

Administrative Expenses:

None explicitly assumed.

3. Changes Since Last Valuation

The retirement, termination, and disability assumptions were updated to better reflect anticipated experience. The salary growth assumption was changed to reflect a low level of anticipated inflation and an additional component that varies by service. The COLA assumption for Old Plan and Old Plan Revised participants was reduced, since this is linked to pay increases.

**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
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ACTUARIAL VALUATION AS OF JULY 1, 2012**

**APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS**

B. Actuarial Methods

1. Funding Method

The funding method used for this valuation is the “entry age normal cost method.” Under this method, the employer contribution has two components: the normal cost and the payment toward the unfunded actuarial liability.

The normal cost rate is determined for each active participant at entry age as a level percent of pay cost which, along with the member contributions, will pay for projected benefits at retirement for that participant. This rate is determined by taking the value, as of age at entry to the Plan, of the member’s projected future benefits, reducing it by the value of future member contributions, and dividing it by the value, also as of the member’s entry age, of his expected future salary.

The actuarial liability is that portion of the present value of projected benefits that will not be paid by future employer normal costs or member contributions. The difference between this liability and funds accumulated as of the same date is referred to as the unfunded actuarial liability. The actuarial liability includes projections of future member pay increases and future service credits and should not be confused with the Accrued Benefits Liability.

The unfunded portion of the actuarial liability is being amortized over a closed 30-year period, as a level dollar amortization.

2. Actuarial Value of Assets

The Plan uses a method based on the principle that the difference between actual and expected investment returns should be subject to partial recognition to smooth out fluctuations in the total return achieved by the Fund from year-to-year.

Under this method, the actuarial value of the assets is one-third of the market value plus two-thirds of the expected value, where the expected value is last year’s actuarial value and subsequent cashflows into and out of the Fund, accumulated with interest at the valuation rate. This is equivalent to smoothing the difference between the experienced return and the assumed return.

3. Changes Since Last Valuation

Amortization period increased from ten to 30 years.

**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
OF THE CITY OF ANNAPOLIS
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**APPENDIX C
SUMMARY OF PLAN PROVISIONS**

1. Membership

The Plan covers employees of the Police and Fire Departments of the City of Annapolis. Employees are eligible from their date of hire.

There are three sub-plans. Membership in these is based in part on hire date and in part on voluntary election.

2. Member Contributions

Police hired before June 30, 2010:	5.5% of yearly earnings (6.5% effective July 1, 2013)
Fire hired before June 30, 2010:	5.5% of yearly earnings (6.5% effective July 1, 2013)
Police hired after June 30, 2010:	6.5% of yearly earnings
Fire hired after June 30, 2010:	6.5% of yearly earnings

Interest is credited at the rate of 5% per year to employee contributions.

3. Credited Service

All service as a member is credited. In addition, credit is allowed at the rate of one month for 22 days of accrued unused sick leave, to a maximum of 20 months.

4. Average Final Compensation

Compensation includes salary for regular scheduled hours only. Average final compensation is yearly earnings for the Old and Old Revised Plans, and the average over the high 36 consecutive months out of the prior 120 consecutive months (or shorter period of total service) for the New Revised Plan.

For EMT's compensation on or after July 1, 2004, pay differentials shall be phased-in over a three-year period as follows.

EMT-B: 0.66% July 1, 2004 to June 30, 2005; 1.33% July 1, 2005 to June 30, 2006; 2% July 1, 2006 to June 30, 2007.

EMT-I: 3.33% July 1, 2004 to June 30, 2005; 6.66% July 1, 2005 to June 30, 2006; 10% July 1, 2006 to June 30, 2007.

EMT-P: 5% July 1, 2004 to June 30, 2005; 10% July 1, 2005 to June 30, 2006; 15% July 1, 2006 to June 30, 2007.

RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
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APPENDIX C
SUMMARY OF PLAN PROVISIONS

5. Normal Retirement

Eligibility

All Three Plans: 20 years of service.

Benefit

Old Plan: 2% of yearly earnings for each year of service; maximum is 60% of yearly earnings.

Old Plan Revised: 2.25% of yearly earnings for each year of service; maximum is 70% of yearly earnings.

New Plan Revised: 2.25% of average final compensation for each year of service; maximum is 70% of average final compensation.

All Three Plans: The benefit payable at 20 years of service is 50% of average final compensation with additional service valued at 2.25% from 20 to 24 years, and 2.5% for service more than 25 years up to the maximum.

6. Service Connected Disability

Eligibility

No age or service requirement.

Benefit

66-2/3% of compensation as of the date of disability.

7. Ordinary Disability

Eligibility

Ten years of service.

Benefit

An amount determined under normal retirement benefit formula, based on average final compensation and credited service as of disability date.

RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
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APPENDIX C
SUMMARY OF PLAN PROVISIONS

8. Service-Connected Death

Eligibility

No age or service requirement.

Benefit

Old Plan and

Old Plan Revised: Spouse receives a benefit of 50% of member's current salary until death or remarriage.

New Plan Revised: Spouse receives 50% of member's accrued benefit determined using salary and service earned to the member's date of death. Minimum benefit is 30% of member's current salary (40% if two or more dependent children are left).

9. Ordinary Death

Eligibility

Ten years of service.

Benefit

Old Plan and

Old Plan Revised: Spouse receives 1% of compensation as of date of death for each year of service to a maximum of 30 years.

New Plan Revised: Spouse receives 50% of member's accrued benefit determined using salary and service earned to the member's date of death.

10. Vesting

Eligibility

Ten years of service, only applies to New Plan Revised.

Benefit

Normal retirement benefit based on average final compensation and service at date of termination. Benefit is payable in full at age 55.

**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
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**APPENDIX C
SUMMARY OF PLAN PROVISIONS**

A member may withdraw his contributions at termination, in which case no deferred vested benefit is payable.

11. Withdrawal

Eligibility

Not eligible for other benefits.

Benefit

Member contributions with interest.

12. Form of Payment

The normal form of payment is a life annuity with a guarantee that at least the amount of member contributions will be paid to the retiree or beneficiaries.

A member who is entitled to a normal or early retirement benefit may elect an actuarially equivalent Joint and Survivor benefit.

Members of the Old Plan and the Old Plan Revised receive a 50% Joint and Survivor benefit as their normal form of payment.

Members may also elect to have a Level Income Option which is designed to provide for a level payment over the member's lifetime from a combination of this Plan and Social Security.

13. Cost-of-Living Adjustment

Old Plan: Retired and disabled members receive annual increases equal to the same percentage as any increase in the pay scale for members of the same rank and years of service who are on active duty.

Spouses receiving benefits will receive the same increase, subject to a cap of 3% per year.

Old Plan Revised: Same provisions as Old Plan but retiree and disable's increase is capped at 4% per year.

New Plan Revised: Each October 1, benefits are increased by the lesser of 3% or the increase in the cost-of-living index. The increase is applied only to benefits in pay status the preceding July 1.

**RETIREMENT PLAN FOR MEMBERS OF THE POLICE AND FIRE DEPARTMENTS
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**APPENDIX C
SUMMARY OF PLAN PROVISIONS**

Cost-of-living adjustments do not apply to deferred vested benefits prior to benefit commencement.

14. Changes Since Last Valuation

None