

**CITY OF FREEPORT
POLICE PENSION FUND**

**ACTUARIAL VALUATION
AS OF MAY 1, 2017 FOR THE
FISCAL YEAR ENDING APRIL 30, 2018**

October 16, 2017



**Tepfer
Consulting
Group, Ltd.**

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Actuaries and Administrators

October 16, 2017

Ms. Linda L. Buss, Treasurer
Freeport Police Pension Fund
524 West Stephenson Street, Suite 200
Freeport, Illinois 61032

RE: Freeport Police Pension Fund

Dear Linda:

Enclosed is our **FUNDING ACTUARIAL VALUATION REPORT** for the **Freeport Police Pension Fund** for the fiscal year May 1, 2017 through April 30, 2018.

→ The results of our valuation indicate that the recommended minimum contribution from the City ("Sponsor") for the next tax year is **\$2,294,337 or 77.06%** of current payroll. This contribution coupled with the anticipated \$ 283,724 or 9.91% of current payroll to be collected from participating police officers will be sufficient to meet the State statutory requirements described in 40 ILCS 5/3. Further information is provided within our report.

Please note that, as a result of the implementation of GASB 67, the recommended contribution is calculated to provide a 100% funding target rather than the statutorily required 90%. This contribution is also the Actuarially Determined Employer Contribution (ADEC) in accordance with the adopted funding policy.

The change in recommended contribution resulting from actual plan experience is \$ 44,894 as shown in Exhibit 3-B.

→ Alternatively, under the current statute, our valuation results indicate the statutory minimum contribution from the City for the next tax year to be \$1,417,855 or 47.62% of current payroll. This remains at a 90% target.

GASB 67 and 68 information, if requested, is provided in a separate report.

Factors Influencing the Choice of Actuarial Assumptions

As part of the consulting process, it is our policy to talk with selected members of the Board of Trustees and the Sponsor's representatives for the **City of Freeport Police Pension Fund** in order to obtain information which will enable the Actuary to properly choose the actuarial assumptions which are most appropriate for the current cost determination for the pension fund.

As part of this process, statistics are compiled concerning historical investment returns, salary increases, retirement incidence and other factors which are influential in the actuarial assumption setting process. Based upon an analysis of the specifics as they relate to the **City of Freeport Police Pension Fund** and a general understanding of the inter-relationships of the actuarial assumptions, the Board, the Sponsor and the Actuary hopefully reach an agreement as to the assumptions which will be used in the current actuarial valuation. The ultimate decision, nonetheless, remains with the actuary who must abide by his professional standards and judgment.

Published statistics regarding experience for police and firefighters are available from the State of Illinois Department of Insurance. These statistics form the basis of the actuarial assumptions selected by the State Actuary in the valuation of pension funds covered under the Downstate Pension System. We have found in our consulting, that whenever appropriate, the actuarial assumptions used by the State Actuary are relied upon as a **starting point**. However, to make the calculations more "**Freeport-sensitive**", the analysis of the actual historical performance is carefully examined.

Experience Analysis

Actuarial assumptions are not sacrosanct. In fact, it is not uncommon for actuarial assumptions to be changed to better reflect a plan's experience and prognosis. Each year the actuarial process examines the experience of the fund. General parameters indicate that a variance of less than 3% of the actuarial accrued liability is acceptable to assure that the assumptions used remain suitable. The measurement compares the actual unfunded liability to the expected unfunded liability. The total gain and loss developed is then analyzed by individual assumption, where available, to assure appropriateness. Based upon the results of this year's analysis, both in aggregate and individually, we have determined that many of the chosen assumptions remain suitable for continued use. A single year deviation is not an automatic trigger for a change in assumptions. Instead, multiple years are monitored and changes in assumptions generally occur only after trends are discovered.

Approach to Setting Actuarial Assumptions including valuation date and source of actuarial data (please see the section in the report beginning on Page 3)

The complete actuarial assumptions used in this valuation are contained in Appendix 1. Although specific assumptions must be used in the mathematical exercise, actuarial assumptions are better viewed as a range. Actuarial Professional Standards indicate that in the selection of economic assumptions, a "best-estimate" range should be developed. Based upon our analysis of Downstate Police and Fire Pension funds we have developed the following best estimate ranges for economic assumptions:

Investment Return	6.50% - 7.50%
Inflation:	1.50% - 2.50%
Compensation Scale	Rates ranging from 4.86% to 1.12% varying by age, plus an inflation factor
Payroll Growth	3.50% - 4.50%

Actuarial Professional Standards indicate that in the selection of non-economic assumptions, a reliance upon published tables and/or individual experience studies pertinent to the group are acceptable procedures. Based upon our analysis of experience for approximately 70 Downstate Police and Fire Pension funds we have developed the following general rates for non-economic assumptions:

- Mortality Rates (active and disabled) - Published tables projected to 2015 loaded for public safety employee experience
- Termination rates - aged based rates ranging from 7% to 1%
- Disability rates - aged based rates ranging from 0.13% to 0.16%
- Retirement rates - aged based rates ranging from 36% to 100%

At this point in time, these rates are applied to all participants without regard to tier. It is anticipated that once experience is developed, the retirement rates for tier 2 employees may be modified

Demographic considerations

For this valuation, it was noted that the force continues to remain stable as to its size and demographic composition. In the current valuation, it was observed that the ratio of the number of inactive participants (59, exclusive of terminated employees who are due a refund of their contributions) to the active participants (45) in the Fund is **131.11 which continues to be above many other funds in the State.** The average age and service of the active participating group is not unreasonable for a fund of this size.

There are currently 2 police officers who are eligible to retire and 4 police officers who will become eligible in the next 5 years. Additionally, pension payments have been modestly escalating. Absent a large growth in the active force, with proper funding, the fund's position should become more favorable for the foreseeable future and the fund remains in a moderately strong financial condition.



As a percentage of the total pension liabilities, the liabilities for inactive participants represent over 75% of the total liabilities. **This is a moderately disturbing statistic.**

Financial considerations

As would be expected in this situation, a very large portion of the assets available for investment has been committed to provide benefits for existing pensioners and beneficiaries. Essentially then, all of the assets in the plan are already dedicated to cover the liabilities for the currently retired participants. Additionally, pension disbursements on an annual basis total over \$2.4 million, yet this year, unlike many prior years, investment earnings were insufficient to provide for these payments on an ongoing basis. ✕

In these uncertain times, the fund continues to experience very limited short-term investment growth. Furthermore, the fund continues to maintain less than adequate funded ratios. The fund has earned strong rates of return over the short term. As shown in Exhibit 5-C of our report, the composite rate of return for the fund since 2010 is 7.30%. The investment smoothing method adopted initially by the fund and now mandated by statute serves to level the contribution and shield against annual investment volatility. However, it is not unnoticed that annual pension payments far exceeded the investment income during fiscal year ending 2017 and an annual investment return of **10.66%** would be needed to cover the outgoing benefit expenses. The Trustees should be advised that this is a dangerous situation regarding the fund. Clearly municipal contributions will remain at high levels until the fund can annually increase its investment return. ↙

As indicated last year, municipal contributions and contributions by active police officers are being used to pay current pension payments. These funds are generally the major source of new funds for investment purposes to accumulate reserves. Even with improved investment returns, the maturing of the employee group requires that the fund be carefully monitored during the next few years to assure that an orderly funding progress is maintained. If investment income remains insufficient to pay the existing pensioners, then municipal and participant contributions will continue to be used. ✕

The ongoing commitment of the City toward making recommended contributions has served the fund well and the positive investment return by the Plan's fiduciaries have provided a strong platform for continued stability and growth,

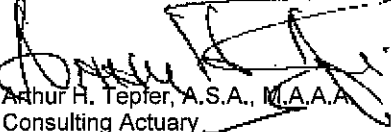
We ask that you review the section entitled "Actuarial Experience since the last actuarial valuation" beginning on page 3 for a further explanation of what has occurred since the last actuarial valuation.

At this point, we suggest that the City consider making a cash infusion into the Pension Program. Although not required, this infusion would serve to "shore up" the fund and provide for another layer of stability.

Please do not hesitate to contact us if you have any questions concerning our report.

Sincerely,

TCG PUBLIC CONSULTING, LTD.


Arthur H. Tepfer, A.S.A., M.A.A.A.
Consulting Actuary

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Encl.

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ACTUARIAL STATEMENT

TCG Public Consulting, Ltd. was retained by the **City of Freeport and the City of Freeport Police Pension Fund** to perform an independent actuarial valuation for the Police Pension Fund. This valuation is permitted under 40 ILCS 5/22, Section 503.2.

The actuarial valuation was performed for the year ended April 30, 2018 and indicates a **statutorily required contribution in accordance with 40 ILCS 5/3, Section 125 of \$1,417,855 or 47.62% of member payroll, a recommended minimum contribution of \$2,294,337 or 77.06% of payroll.** These contributions are net of contributions made by active member police officers during the fiscal year. The recommended minimum contribution also serves as the Actuarially Determined Employer Contribution (ADEC) for purposes of GASB 67 and 68.


The results shown in this report have been calculated under the supervision of a qualified Actuary as defined in appropriate State statutes. All results are based upon demographic data submitted by the Police Pension Fund, financial data submitted by the Police Pension Fund, applications of actuarial assumptions, and generally accepted actuarial methods.

In our opinion, all calculations and procedures are in conformity with generally accepted actuarial principles and practices; and the results presented comply with the requirements of the applicable State statute, Actuarial Standards Board, or Statements of Governmental Accounting Standards, as applicable.

In our opinion, the actuarial assumptions used are reasonable, taking into account the experience of the plan and future expectations, and represent a reasonable and adequate approach to the financing of the retirement program. The costs, actuarial liabilities and other information presented in this report, in our opinion, fully and fairly disclose the actuarial position of the plan.

I, Arthur H. Tepfer, am an Enrolled Actuary in good standing under the Employee Retirement Income Security Act of 1974. I am a member of the American Academy of Actuaries and I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. I certify that the results presented in this report are accurate and correct to the best of my knowledge.

~~TCG PUBLIC CONSULTING, LTD.~~


Arthur H. Tepfer, A.S.A., M.A.A.A.
Enrolled Actuary #17-02352

October 16, 2017

***Statement No. 25* of the Governmental Accounting Standards Board has been replaced by Statement No. 67. Information pertaining to Statement 67 is not included in this valuation report.**

VALUATION OBJECTIVES

The **City of Freeport Police Pension Fund** provides benefits to members when they retire, die, become disabled or terminate employment. For plans providing these types of benefits, an appropriate budgeting pattern must be established to enable appropriate funds to be accumulated to meet all payments when due. The actual cost of the plan can best be expressed in the following simplistic manner:

ACTUAL COST EQUALS

Benefits Paid
Plus
Expenses Paid
Less
Investment Income Earned

If the actual cost is incurred on a "pay as you go" basis, then the future generations of members will be paying for the benefits of current plan participants. Proper financial planning calls for budgeting the actual cost of the plan over the working lifetime of current plan membership to establish an equitable allocation. An actuarial valuation is the procedure used to determine an appropriate amount to be contributed to the pension plan each year to attain this equity.

An actuarial valuation is an estimate at a point in time of the assumed incidence of the future benefit costs. Since the total actual cost of the plan is essentially unknown, pre-funding (budgeting for future benefit costs) requires certain assumptions about future events. Assumptions are made for such things as salary increases, terminations of participants, disablement of participants, death of participants and anticipated investment earnings. These assumptions, although not affecting the actual costs of the plan, will affect the incidence of calculated future costs. For proper funding, it is required that the Actuary select assumptions which are appropriate considering the economic, demographic, and legislative environment as they relate to the pension program. Additionally, the actuary is bound by Actuarial Standards of Practice ("ASOP's") as published by the Actuarial Standards Board. The assumptions we have made concerning these future events are described more fully in Appendix 2 of this report. Based on these assumptions, a projection of future benefits was made and a current contribution level sufficient to provide the anticipated benefit payments was determined using an actuarial cost method.

Selection of the Actuarial Cost Method

An actuarial cost method, sometimes called a "funding method", therefore, is essentially an approach to budgeting for the calculated future costs. There are many actuarial cost methods which are available to the actuary and each method operates differently. However, all funding methods accomplish the same objective—to assign to each fiscal year of the Sponsor the portion of the expected actuarial value of benefits assumed to have accrued in that year. The portion of the actuarial value of benefits assigned to a particular year in respect of an individual participant or the fund as a whole is called the **normal cost**. All funding methods are described by how the normal cost is calculated.

The actuarial cost method prescribed by the State statutes to determine the **statutorily minimum required contribution** for periods on or after January 1, 2011 is the Projected Unit Credit Cost Method. Under this actuarial cost method, the ongoing cost expressed as a percentage of total payroll will increase. In this method, the normal cost is determined by first calculating the projected dollar amount of each participant's accumulated benefit under the plan as of both the first day of the fiscal year and as of the last day of the fiscal year and then determining the difference between these two amounts. The second step in deriving the normal cost for a given participant is to multiply the dollar amount of this difference by the actuarial present value of \$1 of benefit.

The actuarial cost method selected by our firm to determine the **recommended plan contribution** is the Entry Age Normal Cost Method. Under this actuarial cost method, ideally, the ongoing cost expressed as a percentage of total payroll should remain stable. In this method, the normal cost is determined by assuming each participant covered by the plan entered the plan under the same conditions that will apply to future entrants. The annual normal cost assigned to each year of an employee's career is calculated as a level percentage of the employees assumed earnings each year. These normal costs accumulate to the present value of the employee's benefit at retirement age.

**VALUATION OBJECTIVES
(Continued)**

Under both the Entry Age Normal Cost Method and the Projected Unit Credit Cost Method, the total funding of projected benefit costs is allocated between an **unfunded liability**, representing past benefit history, and future normal costs. This allocation assumes that the Sponsor will pay the normal cost for each plan year on a regular basis. It should be noted that although the term "unfunded liability" is applied to both funding methods, the resulting amount is different because of the method of calculation. Another feature of these methods is that only the unfunded liability (not the Normal Cost) is affected by the experience of the plan, and, therefore, any adjustments are made only in the future amortization payments.

In addition to the methodology changes described above, P.A. 96-1495 also addressed the valuation of pension fund assets—the second component in the determination of the unfunded liability. The statute now provides that the actuarial value of a pension fund's assets be set equal to the market value of the assets on March 30, 2011 and that, in determining the actuarial value of assets after that date, any actuarial gains or losses from investment returns incurred in a fiscal year be recognized in equal amounts over the 5-year period following that fiscal year.

The actuarial valuation process is usually repeated each year and is to a certain extent self-correcting. As part of these actuarial cost methods, any deviation of actual experience from the chosen actuarial assumptions will be reflected in future contributions. A complete description of these actuarial cost methods is explained in Appendix 4 of this report.

Despite the statutory language which requires an application of the Projected Unit Credit method, we feel that funding under this method as a *level percentage of payroll* severely undermines the benefit security of the retirement system and transfers the payment for currently earned pensions to future generations of taxpayers. For these reasons, our valuation report also presents a **recommended minimum contribution** that will operate to maintain the fundamental fiscal soundness of the retirement program, although a statutorily required contribution has also been calculated. The calculation of the **recommended minimum contribution** is based upon an **amortization payment of 100% of any unfunded accrued liabilities as a level dollar amount** over 30 years from January 1, 2011, the effective date of P.A. 96-1495. The calculation of the statutorily required contribution is based upon an **amortization payment of 90% of any unfunded accrued liabilities as a "level percentage of payroll"** over 30 years from January 1, 2011, the effective date of P.A. 96-1495.

Although, we do not agree with the statutorily required level percentage of payroll methodology of determining the amortization of the unfunded accrued liability, we would be remiss if we did not advise our clients as to a "statutorily" acceptable calculation under the State law.

Approach to Setting Actuarial Assumptions

In February 2014, the Society of Actuaries released a "Report of the Blue-Ribbon Panel on Public Pension Plan Funding" which focuses on the development of recommendation for strengthening public plan funding. Some of the recommendations are as follows:

Adequacy: Funding entities and plan trustees should strive to fund 100% of the obligation for benefits using assumptions that are estimated to be realizable 50% of the time.

Intergenerational Equity: Fully funding pension benefits over the average future service period of employee reasonably aligns the cost of the benefits of the public services with the taxpayers who benefit from those services.

Cost Stability and Predictability: Level costs over an intermediate period is often at odds with the goals of adequacy and intergenerational equity. Funding by allocating a significant portion to higher- risk, more volatile assets will tend to undermine the goal of cost stability. Adequacy and intergenerational equity should take precedence over the goal of cost stability and predictability.

**VALUATION OBJECTIVES
(Continued)**

The Interest Rate Assumption

Regarding the choice of interest rate, the following is helpful:

According to the report, public retirement systems should use a forward-looking rate to discount pension liabilities rather than actual plan returns.

The new rate would replace the actual long-term rate of return on plan assets generally used now to discount liabilities and set contribution levels

The panel rejected use of a risk-free rate — or rates on the Treasury yield curve — to discount liabilities despite the basis in economic theory to balance generational risks, instead

“Plans should be using rates of return that they believe can be achieved over the next 20- to 30-year period with a 50% probability,” the report said.

“The panel does not believe the rate should be aggressively conservative, as doing so may lead to a surplus.” When making assumptions, “it is important to consider the extent to which future economic and market conditions may differ from those of today or of the past,” ... noting that “the long-term secular decline in interest rates ... strongly suggests that the robust fixed-income performance of the past is not likely to be repeated in the future.”

It is our opinion that other specific factors in the Downstate System must also be considered in the choice of a “funding interest rate” assumption. The Police and Fire Pension funds in the Downstate System are limited in their investment opportunities by State Statutes. Depending upon the current amount of assets in the fund, various investments are not permitted. Unfortunately, in our opinion, these limitations have a negative impact on fund growth.

We believe that these statutory limitations are counter-productive to fund growth. Additionally, the newly applicable GASB disclosure rules require Financial Reporting under lower interest rate assumptions than historically used for funding calculations.

It is anticipated that many Pension Boards will reassess the overall investment portfolio to balance the competing funding requirements and the financial disclosure rules. We hope that the Legislature also will respond to the increasing need of more investment latitude to the Pension Fund Trustees.

What is the appropriate practice for measuring public pension plan liabilities: is it “level cost” or “market pricing?”¹

Actuaries and economists have been debating this ongoing controversy for ten years. Which of the competing methods is “correct,” and can both camps coexist?

The Methods

The level cost model is based on long-term methods and assumptions:

- discount rate is the long-term expected return on assets in the plan’s investment portfolio.
- cost method is a level cost based on projected benefits (generally Entry Age).
- such calculations are based on established funding practices.

Whereas the market pricing model uses current methods and assumptions:

- discount rate is based on market yields on low risk bonds (with a default risk comparable to the public pension promise).
- cost method is an increasing cost based on accrued benefits (Unit Credit).
- such calculations are based on “financial economics.”

¹ Excerpted from The Journal of the Conference of Consulting Actuaries, The Consulting Actuary, Volume XXIX Number 1

VALUATION OBJECTIVES

(Continued)

What is "financial economics?" The key tenet of financial economics is that there can be no arbitrage (no free lunch) where an investment yields an immediate risk-free profit. Two cash flows identical in amount, risk, etc. must have identical market prices (the Law of One Price), otherwise an arbitrage opportunity will exist. For pension plans, financial economics measures a liability by using the discount rate embedded in an asset portfolio with matching cash flows (namely bonds, in the view of market pricing proponents).

Liabilities should be valued without regard to funding strategy, and expected excess returns should be recognized after they materialize. Focus is on current values. Most discussion has been on whether public pension plans should disclose a market pricing type measure.

In fact, the three possible applications are (1) to disclose a market value Accrued Benefit Obligation (**ABO**), (2) to fund based on a risk-free rate based ABO, or (3) to invest only in bonds. The rationales for each are as follows:

1. The economic liability is an ABO valued at current market (default) risk-free rates;
2. Funding based on a risk-free discount rate (even if invested in equities) avoids kicking the "risk" can down the road to future generations of taxpayers; and
3. Investing only in bonds avoids increasing taxpayers' equity risk exposure.

Should public plans disclose a market pricing type measure using a (default) risk-free discount rate?

The Governmental Accounting Standards Board (GASB) first added the issue to their agenda in 2008. Following an "Invitation to comment," GASB issued a preliminary views document and two exposure drafts, before releasing final Statements 67 and 68 in August 2012. In those statements, GASB unequivocally endorsed the level cost model for accounting and financial reporting with the discount rate to be based on expected return (if the plan has assets) and the cost method to be Entry Age. The Actuarial Standards Board (ASB) began reviewing two key Actuarial Standards of Practice (ASOPs) in 2011. Following numerous discussion drafts, exposure drafts and working drafts, ASOP 4 (Measuring Pension Obligations) and ASOP 27 (Selecting Economic Assumptions) were revised in December 2012 and September 2013 respectively. Incorporating requests from the American Academy of Actuaries' (AAA) Public Interest Committee (PIC) and Board, the discussion draft of ASOP 4 defined a "market-consistent" present value (MCPV). However, resulting comments argued that the MCPV is a type of measure, not a single measure. When issued, the final ASOPs 4 and 27 instead stressed the "purpose of the measurement." ASOP 4 stated: "When measuring pension obligations and determining periodic costs or contributions, the actuary should reflect the purpose of the measurement." ASOP 27 stated: "The actuary should consider the purpose of the measurement as a primary factor in selecting a discount rate." Interestingly, both standards included the market-pricing model not only as a type of measurement but also as an example of a purpose of the measurement!

However, it should be noted that it is our opinion that, under current conditions, a market pricing valuation would cause confusion and, therefore, at this juncture we are not including a market-pricing model in this valuation report.

Specific thoughts on the Mortality Assumption

The mortality assumption can be viewed in one of two ways:

1. How long will a participant and or beneficiary continue to participate in the plan? – probability of surviving.
2. When will benefit accruals or payments cease? – probability of not surviving.

Mortality studies are generally performed based upon the experience of large populations and are published by the Society of Actuaries. In our opinion, **there are no *credible* published tables for the Downstate Police and Fire Pension System, despite the recent experience study completed by the Department of Insurance.** With the publication of the RP-2014 Mortality Table, we found it necessary to examine our existing mortality assumption (based upon the RP-2000 table issued in the early portion of this century).

**VALUATION OBJECTIVES
(Continued)**

The Downstate System contains many small funds which are not suitable for a mortality study (despite the DOI promulgation). We reject the use of the unloaded RP-2000 Blue Collar table and instead assume an increased mortality risk for public safety personnel. The RP-2014 table is unsuitable because it excluded any experience from public plans. The RP-2000 mortality table, in our opinion, is a more appropriate table to use as a base. The RP-2000 table, although a static table, comes with a generational approximation technique using a mortality projection scale. Two scales are provided by the study scale AA and Scale BB. Scale AA has been proven to be non-predictive and is no longer suggested. Scale BB is now the preferred projection scale. With all this in mind, our mortality assumption is the following:

**RP-2000 Combined Healthy Male with Blue Collar adjustment,
projected to 2015 by Scale BB.**

The Choice of the Actuarial Valuation Date and the Source of the Actuarial Data

Actuarial valuations can be performed as of any date. Ideally the data used (census and financial) should be representative of the fund on the actuarial valuation date. Actuarial Standards of Practice require the actuary to disclose the sources of the data and indicate whether the actuary has reviewed the data. The actuary additionally must disclose the extent of the actuary's reliance on the data and other relevant information to use of data supplied by others; any material adjustments or assumptions the actuary applied to the data, any limitations on the use of the actuarial work product due to uncertainty about the quality of the data and any unresolved concerns the actuary may have about the data that could have a material effect on the actuarial work product.

The actuarial valuation results presented in this report are calculated based upon data provided by each fund and/or sponsoring municipality and are taken from the Department of Insurance (DOI) Annual Statement Filing as of the end of the fiscal year prior to the valuation date. For example, funds with a fiscal year beginning January 1, 2016 use a valuation date of January 1, 2016 and actuarial data is used from the Annual Statement filing for the period ending December 31, 2015. This data is provided to the actuary by the fund, the fund's auditors, the sponsoring entity and/or the sponsoring entity's auditor. The data is used for both the actuarial valuation to determine funding for the fiscal year beginning on the valuation date; and is also used to calculate the Actuarially Determined Employer Contribution (ADEC) as required under GASB standards for the year ending on fiscal year prior to the valuation date.

The assumption is made that there is no material difference in data between these two dates and that this data is acceptable, without additional actuarial review or adjustment, for the valuation being presented.

Actuarial experience since the last actuarial valuation

As part of the actuarial valuation process, it is helpful to examine the actual experience of the fund as compared to the experience that is expected by the actuarial assumptions. The measurement of any deviations of actual to expected experience is commonly referred to as a "Gain and Loss Analysis". In performing this analysis, the actuary analyzes each actuarial assumption used in the valuation process. It is highly unlikely that actual experience will follow expected experience on a year-by-year basis. It is hoped that over the long term, if the actuarial assumptions are "reasonable", the total gains and losses will offset each other.

A "gain and loss analysis" is a useful tool to examine whether the actuarial assumptions used to determine the municipal tax levy are suitable. Care must be taken in placing too much credibility in a short-term analysis as the assumptions are more appropriately measured over the long term. Nonetheless, an annual evaluation of the actuarial assumptions will assist in identifying trends that, if unnoticed, can lead to inappropriate conclusions. When these trends are recognized, it is the actuary's responsibility to modify one or more of the assumptions to better anticipate future experience.

**VALUATION OBJECTIVES
(Continued)**

Some assumptions are easier to measure than others. In small plans, credible analysis can generally be made regarding the economic (financial) assumptions. These primarily include investment and salary increase assumptions. Unfortunately, it is often impossible to establish credible long-term analysis of demographic assumptions (rates of termination, disability, retirement and mortality). Therefore, in choosing demographic assumptions, the actuary generally relies upon standardized tabular assumptions modified only by fund-specific characteristics.

The actuarial gain and loss analysis for the current year is presented in Exhibit 3-C and 3-D of the report. Exhibit 3-C shows the impact of the actuarial gains or losses on the recommended minimum contribution through a reconciliation of this contribution from the end of the prior valuation year to the end of the current valuation year. Exhibit 3-D derives the actuarial gain or loss in total as well as separating the individual financial and demographic components.

The overall experience gain (loss) for the year was \$267,994 or 0.60% of the accrued liability at the beginning of the plan year. The dollar amount for the plan's current recommended minimum contribution is 102.00% of the prior year's contribution. When measured as a percentage of payroll, the contribution level has changed from 77.33% to 77.06%.

Thirty-year Projection of Liabilities

The final section of our report illustrates projected payments from the Trust Fund for a 30-year period commencing with the valuation date. These projections are based upon the actuarial assumptions selected concerning death, disability and retirement occurring. Care should be taken in interpreting or relying on these results— particularly for Funds with fewer than 200 participants. The credibility of this type of projection is rarely realized beyond 10 years. Exhibit 5D presents this projection. Exhibit 5D presents this projection.

RESULTS OF VALUATION

The following exhibits present the results of our actuarial valuation of the **City of Freeport Police Pension Fund** for the fiscal year May 1, 2017 through April 30, 2018.

Exhibit 1 indicates that the recommended minimum contribution, calculated using the Entry Age Normal Cost method (EANC), from the City is \$2,294,337 or 77.06% of total participating payroll. **Under the Entry Age Normal actuarial cost method selected, this percentage of payroll should remain reasonably level over the lifetime of the plan.** ✓

Exhibit 1 also indicates that the statutory minimum contribution, calculated using the Projected Unit Credit method (PUC), from the City is \$1,417,855 or 47.62% of total participating payroll. **Under the Projected Unit Credit actuarial cost method selected, this percentage of payroll should increase over the lifetime of the plan.** ✓

Exhibits 2 and 3 provide specific information used to develop the recommended minimum and statutorily required the City contribution.

Contribution amounts presented in this report have not been adjusted for interest to the date of payment. All values were determined based on the actuarial assumptions and methods as more fully described in Appendix 1 of this report.

Exhibit 4 presents a brief description of the demographic characteristics of the current member group.

Exhibit 5 shows information relating to the pension assets.

**GENERAL VALUATION RESULTS FOR FISCAL YEAR
MAY 1, 2017 THROUGH APRIL 30, 2018**

Recommended Minimum Contribution

1.	Entry Age Normal Cost:	\$ 601,839
2.	Unfunded Actuarial Accrued Liability (or Surplus):	21,801,737
3.	Actuarial Value of Assets:	22,754,282
4.	Annual Salaries of Active Police Officers:	2,863,010 ✓
5.	Recommended Minimum Contribution from the City:	2,294,337 ✓
	Contribution Percentage:	77.06%* ✓

Statutory Minimum Contribution

1.	Projected Unit Credit Normal Cost:	\$ 700,845
2.	Unfunded Actuarial Accrued Liability (or Surplus):	19,449,947
3.	Actuarial Value of Assets:	22,754,282
4.	Annual Salaries of Active Police Officers:	2,863,010
5.	Statutory Minimum Contribution from the City:	1,417,855
	Contribution Percentage:	47.62%*

* Projected for the fiscal year ending April 30, 2018.

SUMMARY OF SPECIFIC VALUATION RESULTS

	<u>Number</u>	<u>Actuarial Present Value of Projected Benefits</u>	<u>Entry Age Normal Cost</u>	<u>Projected Unit Credit Normal Cost</u>
1. Active Police Officers:	45			
Retirement Pension:		\$13,928,163	\$411,358	\$495,041
Survivors Pension:		343,526	19,022	20,576
Disability Pension:		2,154,821	113,326	125,171
Withdrawal Pension:		794,526	58,133	60,057
TOTAL	45	\$17,221,036	\$601,839	\$700,845
2. Inactive Police Officers and Survivors:				
Normal Retirees:	36	\$27,076,014		
Widows (Survivors):	15	3,189,658		
Children (Survivors):	0	0		
Disabled Retirees:	5	3,049,352		
Deferred Vested:	3	250,796		
Terminated/Separated:	13	31,886		
TOTAL	72	\$33,597,706		

**SUMMARY OF SPECIFIC VALUATION RESULTS
(Continued)**

	<i>Revised</i> Entry Age Normal (EAN)	<i>Statute Min</i> Projected Unit Credit (PUC)
3. Total Actuarial Present Value of Projected Benefits:	\$50,818,742	N/A
4. Actuarial Present Value of Future Normal Costs:	6,262,723	N/A
5. Actuarial Accrued Liability: [(3) - (4)]	44,556,019	42,204,229
6. Actuarial Value of Assets:	22,754,282	22,754,282
7. Unfunded Actuarial Accrued Liability (or Surplus) [(5) - (6)]	21,801,737	19,449,947
8. Funded Ratio Percentage: [(6) ÷ (5)] x 100	51.07%	53.91%

HISTORY OF FUNDED PERCENTAGES

For the Year beginning <u>May 1</u>	Valuation Assets	EAN Accrued Liabilities	EAN Funded Percentage	PUC Accrued Liabilities	PUC Funded Percentage
2017	\$22,754,282	\$44,556,019	51.07%	\$42,204,229	53.91%
2016	21,694,443	43,343,078	50.05%	40,986,592	52.93%
2015	20,504,447	41,895,288	48.94%	39,569,890	51.82%
2014	19,081,372	37,703,699	50.61%	35,331,236	54.01%
2013	20,483,634	36,437,331	56.22%	33,984,321	60.27%
2012	18,263,052	34,865,833	52.38%	32,501,651	56.19%

DEVELOPMENT OF RECOMMENDED MINIMUM CITY CONTRIBUTION

	Fiscal Year May 1, 2017 through <u>April 30, 2018</u>
1. Entry Age Normal Cost:	\$601,839
2. Recommended Minimum Payment to Amortize 100 % of the Entry Age Normal Unfunded Accrued Liability as a level dollar amount over 23.00068 Years from May 1, 2017:	1,807,564
3. Interest on (1) and (2):	168,658
4. Credit for Surplus:	0
5. Total Recommended Minimum Contribution for Fiscal Year 2018: [(1) + (2) + (3) + (4)], but not less than Statutorily Required	2,578,061
6. Active Member Contributions (9.91% of Salaries):	283,724
7. Net Recommended Minimum City Contribution: [(5) - (6)]	2,294,337 ←

DEVELOPMENT OF STATUTORILY REQUIRED CITY CONTRIBUTION
(NOTE THAT THIS CONTRIBUTION CALCULATION IS NOT RECOMMENDED)

	Fiscal Year May 1, 2017 through <u>April 30, 2018</u>
1. Projected Unit Credit Normal Cost:	\$700,845
2. Minimum Payment to Amortize 90% of the Projected Unit Credit Unfunded Accrued Liability as a level percentage of payroll over 23.00068 Years from May 1, 2017:	889,416
3. Interest on (1) and (2):	111,318
4. Credit for Surplus:	0
5. Total Statutorily Required Contribution for Fiscal Year 2018: [(1) + (2) + (3) + (4)]	1,701,579
6. Active Member Contributions (9.91% of Salaries):	283,724
7. Net Statutorily Required City Contribution: [(5) - (6)]	1,417,855 ←

Annual Requirement 1,701,579

**RECONCILIATION OF THE CHANGE
IN THE RECOMMENDED MINIMUM CITY CONTRIBUTION**

1.	Recommended Minimum Contribution for Year ending 4/30/2017:	\$2,249,443
2.	Increase in Normal Cost and Amortization Payment due to anticipated pay changes:	94,891
3.	Increase/ (Decrease) in Normal Cost resulting from actual pay changes:	(4,553)
4.	Effect of Asset Smoothing:	26,251
5.	Increase/ (Decrease) resulting from changes in assumptions:	0
6.	Increase/ (Decrease) resulting from other demographic and financial sources (retirements, deaths, new entrants, salary changes, etc.):	(71,695)
7.	Recommended Minimum Contribution for Year ending April 30, 2018:	\$2,294,337

**DERIVATION OF EXPERIENCE GAIN (LOSS) AND COST METHOD CHANGE
AS OF MAY 1, 2017**

1.	EANC Unfunded Actuarial Accrued Liability at May 1, 2018:	\$21,648,639
2.	Entry Age Normal Cost due at May 1, 2018:	596,733
3.	Interest on (1) and (2) to May 1, 2017 (at 7.00% per year):	1,557,176
4.	Contributions made for the prior year with interest to May 1, 2017:	1,732,817
5.	Expected EANC Unfunded Actuarial Accrued Liability at May 1, 2017 Before Assumption Changes [(1) + (2) + (3) - (4)]:	22,069,731
6.	Change in EANC Unfunded Actuarial Accrued Liability due to Assumptions Change at May 1, 2017:	0
7.	Expected EANC Unfunded Actuarial Accrued Liability at May 1, 2017 [(5) + (6)]:	22,069,731
8.	Actual EANC Unfunded Actuarial Accrued Liability at May 1, 2017:	21,801,737
9.	Gain (Loss) for the prior Plan Year [(7) - (8)]:	<u>\$267,994</u>

The experience gain (loss) reported above is the net result of the following:

1.	<u>FINANCIAL SOURCES</u>	
	a) Investment experience (based upon market value of assets):	\$ 737,251
	b) Contribution experience:	(886,306)
	c) Benefit Payments experience:	(2,907)
	d) Salary increases (greater)/lower than expected:	<u>45,790</u>
	Total from Financial Sources:	(106,172)
2.	<u>DEMOGRAPHIC SOURCES</u>	
	Mortality, retirement, disability, termination, etc.:	690,788
3.	<u>ACTUARIAL ADJUSTMENTS</u>	
	Market value adjustment for asset smoothing, including expenses	(316,622)
4.	<u>GAIN (LOSS) ALL SOURCES</u>	
	Total Gain (Loss) for the prior Plan Year [(1) + (2) + (3)]:	\$267,994

SUMMARY OF DEMOGRAPHIC INFORMATION AS OF MAY 1, 2017

	<u>Number</u>	<u>Projected Annual Salaries (Fiscal Year 2018)</u>
Active Police Officers:	45	\$2,863,010

	<u>Number</u>	<u>Total Monthly Benefits</u>
Normal Retirees:	36	\$148,860
Survivors (Widows):	15	36,998
Survivors (Children):	0	0
Disabled Retirees:	5	15,114
Deferred Vested:	3	0
Terminated/Separated:	13	31,886 *

* Return of Contributions

AVERAGE AGE OF ACTIVE EMPLOYEES

34.40

AVERAGE SERVICE OF ACTIVE EMPLOYEES

9.91

AVERAGE ANNUAL COMPENSATION

\$63,622

The actuarial valuation was performed as of May 1, 2017 to determine contribution requirements for fiscal year ending April 30, 2018

ASSET INFORMATION

According to the information provided by the Annual Filing with the Department of Insurance the following is provided:

Net Present Assets at Market Value	\$22,536,659
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The development of the Actuarial Value of Assets is shown in Exhibit 5-B

DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS

	Item	Amount	Timing	Weight for Amount	Weighted Amount
1.	Market Value of Assets, May 1, 2016				\$ 21,160,198
2.	Actual Income and Disbursements in prior year weighted for timing				
	Contributions Received During 2016-2017	1,678,951		50.00%	839,475
	Miscellaneous Revenue	188		50.00%	94
	Benefit Payments and Expenses Made During 2016-2017	2,492,670		(50.00)%	<u>(1,246,335)</u>
	Total				(406,765)
3.	Market Value of assets adjusted for actual income disbursements [(1) + 2(d)]				20,753,432
4.	Assumed rate of return on plan assets for the year			7.00%	
5.	Expected return on assets [(3) x (4)]				1,452,740
6.	Market Value of Assets, May 1, 2016*				21,160,198
7.	Income (less investment income) for prior year				1,678,951
8.	Disbursements paid in prior year				2,492,670
9.	Market Value of Assets, May 1, 2017				\$22,536,659
10.	Actual Return [(9) + (8) - (7) - (6)]				2,189,992
11.	Investment Gain/(Loss) for Prior Year [(10) - (5)]				737,251

**CITY OF FREEPORT
POLICE PENSION FUND**

**SUMMARY OF RESULTS
EXHIBIT 5-B**

12. Market Value of Assets, May 1, 2017:				\$22,536,659
13. Deferred investment gains and (losses) for last 4 years:				
	Plan Year Beginning	Gain/(Loss)	Percent Deferred	Deferred Amount
a)	2017	\$ 737,251	80%	\$ 589,801
b)	2016	\$ (2,269,853)	60%	\$ (1,361,912)
c)	2015	\$ (58,045)	40%	\$ (23,218)
d)	2014	\$2,888,527	20%	\$ 577,705
e)	Total	\$1,297,880		\$ (217,623)

14. Actuarial value of plan assets for funding, May 1, 2017: Item (12) less item 13(e):

Ad. B. 18

\$ 22,754,282

Notes: The calculated value is determined by adjusting the market value of assets to reflect investment gains and losses (the difference between the actual investment return and the expected investment return) during each of the last five years at the rate of 20% per year.

ANALYSIS OF INVESTMENT RETURN

<u>Fiscal Year Ending April 30</u>	<u>Annual Rate of Return</u>
2017	10.10%
2016	(3.67)
2015	6.27
2014	11.06
2013	11.06
2012	3.01
2011	11.14
2010	10.42
<u>Composite</u>	
2010-2017	7.30%

THIRTY - YEAR PROJECTION OF PAYMENTS

Year	-----Termination-----		-----Payouts from Active Group Upon-----		Retirement	Disability	-----Payouts from-----		Total
	Lump Sum	Deferred Pension	Death	Retirement			Retired Group	Deferred Pensioners	
2017	13,995	0	3,624	46,660	7,884	2,411,680	31,886	2,515,729	
2018	12,821	0	5,478	88,651	16,133	2,401,405	0	2,524,488	
2019	14,868	0	5,468	114,592	25,020	2,400,509	0	2,560,457	
2020	10,987	0	8,295	135,532	34,447	2,403,380	0	2,592,641	
2021	9,371	0	9,809	167,653	44,892	2,401,329	0	2,633,054	
2022	4,992	0	12,286	212,790	55,521	2,392,510	0	2,678,099	
2023	987	0	14,762	266,418	66,862	2,381,711	0	2,730,740	
2024	0	0	17,003	353,693	79,126	2,368,758	0	2,818,580	
2025	0	0	18,722	440,011	91,855	2,353,554	0	2,904,142	
2026	0	0	20,717	512,103	104,613	2,335,769	0	2,973,202	
2027	0	0	23,112	607,934	117,751	2,315,134	11,821	3,075,752	
2028	0	0	25,103	695,037	130,896	2,328,273	12,085	3,191,394	
2029	0	0	27,103	780,845	143,109	2,302,973	12,344	3,266,374	
2030	0	0	28,963	902,228	154,955	2,274,094	12,594	3,372,834	
2031	0	0	31,256	1,003,506	166,958	2,241,430	12,835	3,455,985	
2032	0	0	33,064	1,083,969	178,628	2,226,485	23,769	3,545,915	
2033	0	0	34,935	1,167,616	190,639	2,186,272	24,226	3,603,688	
2034	0	0	36,636	1,258,789	205,422	2,141,502	24,661	3,667,010	
2035	0	0	38,305	1,371,674	218,707	2,091,734	25,073	3,745,493	
2036	0	0	39,814	1,463,173	230,564	2,036,821	52,193	3,822,565	
2037	0	0	41,397	1,534,419	244,853	1,976,889	53,141	3,850,699	
2038	0	0	42,637	1,670,759	257,708	1,911,829	54,035	3,936,968	
2039	0	0	44,044	1,789,565	269,600	1,841,704	54,868	3,999,781	
2040	0	0	44,887	1,918,243	287,003	1,766,487	55,630	4,072,250	
2041	0	0	46,194	2,019,599	298,356	1,686,537	56,315	4,107,001	
2042	0	0	46,688	2,136,572	306,643	1,602,441	56,907	4,149,231	
2043	0	0	47,680	2,268,679	315,317	1,514,858	57,386	4,203,920	
2044	0	0	47,834	2,371,087	323,297	1,424,355	57,750	4,224,323	
2045	0	0	48,534	2,454,837	331,859	1,331,750	57,988	4,224,968	
2046	0	0	48,467	2,522,990	336,700	1,237,548	58,079	4,203,784	

ACTUARIAL ASSUMPTIONS

(Economic)

Investment Return

7.00% per annum, compounded annually (net of expenses).

Salary Increases

Representative values of assumed salary increases are as follows:

<u>Age</u>	<u>Increase %</u>
25	4.8611
30	2.9848
35	2.0341
40	1.5239
45	1.3083
50	1.1846
55	1.1220

An additional inflation allowance of 2.00% per year is added to the above.

Payroll Growth

It was assumed that payroll will grow 4.00% per year.

Cost of Living Adjustments

It was assumed that the Consumer Price Index – Urban (CPI-U) would increase 2.00% per year

Actuarial Asset Basis

The actuarial value of assets recognizes future gains and losses based on a 5-year smoothed market method as prescribed by Statute

In a 5-year smoothed market method, the current market value of assets is reduced (increased) for the current year and each of three succeeding years, by a portion of the gain/(loss) in market value during the prior year. Such gain/(loss) is determined as the excess/(deficit) of the current market value of assets over the market value of assets as of the prior year, increased to reflect interest at the actuarial rate and adjusted to reflect contributions and benefit payments during the prior year. The portion of such gain/(loss) by which the current market value of assets is reduced (increased) shall be 80% in the current year, 60% in the first succeeding year, 40% in the second succeeding year and 20% in the third succeeding year.

Additionally, in accordance with government accounting standards, the actuarial value of assets is adjusted to remove any contributions receivable on the reporting date.

Expenses

None assumed.

(Demographic)

Mortality

Active Lives

RP-2000 Combined Healthy Mortality Table (male) with blue collar adjustment projected by Scale BB to 2015. Five percent (5%) of deaths amongst active police officers are assumed to be in the performance of their duty.

Non-Active Lives

RP-2000 Combined Healthy Mortality Table (male) with blue collar adjustment projected by Scale BB and with a 150% load for participants under age 50.

Termination

Illustrative rates of withdrawal from the plan for reasons other than death or disability are as follows:

<u>Age</u>	<u>Rate of Withdrawal</u>
25	.0734
30	.0416
35	.0223
40	.0119
45	.0102

It is assumed that terminated police officers will not be rehired.

Disability Rates

Incidence of disability amongst police officers eligible for disability benefits:

<u>Age</u>	<u>Rate</u>
25	.0013
30	.0026
35	.0044
40	.0071
45	.0108
50	.0159

15% of disabilities amongst active police officers are assumed to be in the performance of their duty.

Retirement Rates

Retirements are assumed to occur between the ages of 50 and 69 in accordance with the following table:

<u>Age</u>	<u>Rate of Retirement</u>	<u>Age</u>	<u>Rate of Retirement</u>
50	.36	60	.22
51	.22	61	.30
52	.18	62	.39
53	.19	63	.48
54	.19	64	.57
55	.20	65	.65
56	.20	66	.74
57	.20	67	.83
58	.21	68	.91
59	.21	69	1.00

(Additional)

Marital Status

85% of police officers are assumed to be married.

Spouse's Age

Wives are assumed to be 3 years younger than their husbands.

Actuarial Cost Method:

Projected Unit Credit for statutory minimum

Entry Age Normal for recommended and GASB reporting

SUMMARY OF PRINCIPAL PLAN PROVISIONS

Definitions

Tier 1 – For Police Officers first entering Article 3 prior to January 1, 2011

Tier 2 – For Police Officers first entering Article 3 after December 31, 2010

Police Officer (3-106): Any person appointed to the police force and sworn and commissioned to perform police duties.

Persons excluded from Fund (3-109): Part-time officers, special police officer, night watchmen, traffic guards, clerks and civilian employees of the department. Also, police officers who fail to pay the required fund contributions or who elect the Self-Managed Plan option.

Creditable Service (3-110): Time served by a police officer, excluding furloughs in excess of 30 days, but including leaves of absences for illness or accident and periods of disability where no disability pension payments have been received and also including up to 3 years during which disability payments have been received provided contributions are made.

Pension (3-111)

Normal Pension Age

Tier 1 - Age 50 with 20 or more years of creditable service.

Tier 2 - Age 55 with 10 or more years of creditable service.

Normal Pension Amount

Tier 1 - 50% of the greater of the annual salary held in the year preceding retirement or the annual salary held on the last day of service, plus 2½% of such annual salary for service from 20 to 30 year (maximum 25%).

Tier 2 - 2½% of Final Average salary for each year of service. Final Average Salary is the highest salary based on the highest consecutive 96 months of the final 120 months of service

Early Retirement at age 50 with 10 or more years of service but with a penalty of ½% for each month prior to age 55.

Annual Salary capped at \$106,800 increased yearly by the lesser of ½ of the Consumer Price Index- Urban (CPI-U) or 3%. Salary for valuations beginning in 2017 is \$112,408.42

Minimum Monthly Benefit: \$1,159.27

Maximum Benefit Percentage: 75% of salary

Termination Retirement Pension Date

Separation of service after completion of between 8 and 20 years of creditable service.

Termination Pension Amount

Commencing at age 60, 2½% of annual salary held in the year preceding termination times years of creditable service or refund of contributions, or for persons terminating on or after July 1, 1987, 2½% of annual salary held on the last day of service times years of credible service, whichever is greater.

Pension Increase

Non-Disabled

Tier 1 - 3% increase of the original pension amount after attainment of age 55 for each year elapsed since retirement, followed by an additional 3% of the original pension amount on each January 1 thereafter. Effective July 1, 1993, 3% of the amount of pension payable at the time of the increase including increases previously granted, rather than 3% of the originally granted pension amount.

**SUMMARY OF PRINCIPAL PLAN PROVISIONS
(Continued)**

Tier 2 - The lesser of ½ of the Consumer Price Index- Urban (CPI-U) or 3% increase of the original pension amount after attainment of age 60, followed by an additional 3% of the original pension amount on each January 1 thereafter.

Disabled

3% increase of the original pension amount after attainment of age 60 for each year he or she received pension payments, followed by an additional 3% of the original pension amount in each January 1 thereafter.

Pension to Survivors (3-112)

Death of Retired Member

Tier 1 - 100% of pension amount to surviving spouse (or dependent children).

Tier 2 - 66 2/3% of pension amount to surviving spouse (or dependent children), subject to the following increase: the lesser of ½ of the Consumer Price Index- Urban (CPI-U) or 3% increase of the original pension amount after attainment of age 60, followed by an additional 3% of the original pension amount on each January 1 thereafter.

Death While in Service (Not in line of duty)

With 20 years of creditable service, the pension amount earned as of the date of death.

With between 10 and 20 years of creditable service, 50% of the salary attached to the rank for the year prior to the date of death.

Death in Line of Duty

100% of the salary attached to the rank for the last day of service year prior to date of death.

Minimum Survivor Pension

\$1,000 per month to all surviving spouses.

Disability Pension - Line of Duty (3-114.1)

Eligibility

Suspension or retirement from police service due to sickness, accident or injury while on duty.

Pension

Greater of 65% of salary attached to rank at date of suspension or retirement and the retirement pension available. Minimum \$1,000 per month.

Disability Pension - Not on Duty (3-114.2)

Eligibility

Suspension or retirement from police service for any cause other than while on duty.

Pension

50% of salary attached to rank at date of suspension or retirement. Minimum \$1,000 per month.

Other Provisions

Marriage After Retirement (3-120)

No surviving spouse benefit available.

Refund (3-124)

At death prior to completion of 10 years of service, contributions are returned without interest to widow.

At termination with less than 20 years of service, contributions are refunded upon request.

Contributions by Police Officers (3-125.1)

Beginning January 1, 2001, 9.91% of salary including longevity, but excluding overtime pay, holiday pay, bonus pay, merit pay or other cash benefit.

GLOSSARY

Actuarial Accrued Liability

See *Entry Age Normal Cost Method* and *Projected Unit Credit Cost Method*.

Actuarial Assumptions

The economic and demographic predictions used to estimate the present value of the plan's future obligations. They include estimates of investment earnings, salary increases, mortality, withdrawal and other related items. The *Actuarial Assumptions* are used in connection with the *Actuarial Cost Method* to allocate plan costs over the working lifetimes of plan participants.

Actuarial Cost Method

The method used to allocate the projected obligations of the plan over the working lifetimes of the plan participants. Also referred to as an *Actuarial Funding Method*.

Actuarial Funding Method

See *Actuarial Cost Method*

Actuarial Gain (Loss)

The excess of the actual *Unfunded Actuarial Accrued Liability* over the expected *Unfunded Actuarial Accrued Liability* represents an *Actuarial Loss*. If the expected *Unfunded Actuarial Accrued Liability* is greater, an *Actuarial Gain* has occurred.

Actuarial Present Value

The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of *Actuarial Assumptions*.

Actuarial Value of Assets

The asset value derived by using the plan's *Asset Valuation Method*.

Asset Valuation Method

A valuation method designed to smooth random fluctuations in asset values. The objective underlying the use of an asset valuation method is to provide for the long-term stability of employer contributions.

Employee Retirement Income Security Act of 1974 (ERISA)

The primary federal legislative act establishing funding, participation, vesting, benefit accrual, reporting, and disclosure standards for pension and welfare plans.

Entry Age Normal Cost Method

One of the standard actuarial funding methods in which the *Present Value of Projected Plan Benefits* of each individual included in the *Actuarial Valuation* is allocated on a level basis over the earnings of the individual between entry age and assumed exit age(s). The portion of this *Actuarial Present Value* allocated to a valuation year is called the *Normal Cost*. The portion of this *Actuarial Present Value* not provided for at a valuation date by the *Actuarial Present Value* of future *Normal Costs* is called the *Actuarial Accrued Liability*.

Normal Cost

The portion of the *Present Value of Projected Plan Benefits* that is allocated to a particular plan year by the *Actuarial Cost Method*. See *Entry Age Normal Cost Method* for a description of the Normal Cost under the *Entry Age Normal Cost Method*. See *Projected Unit Credit Cost Method* for a description of the Normal Cost under the *Projected Unit Credit Cost Method*.

Present Value of Future Normal Costs

The present value of future normal costs determined based on the *Actuarial Cost Method* for the plan. Under the *Entry Age Normal Cost Method*, this amount is equal to the excess of the *Present Value of Projected Plan Benefits* over the sum of the *Actuarial Value of Assets* and *Unfunded Actuarial Accrued Liability*.

Present Value of Projected Plan Benefits

The present value of future plan benefits reflecting projected credited service and salaries. The present value is determined based on the plan's actuarial assumptions.

**GLOSSARY
(Continued)**

Projected Unit Credit Cost Method

One of the standard actuarial funding methods in which the *Present Value of Projected Plan Benefits* of each individual included in the *Actuarial Valuation* is allocated by a consistent formula to valuation years. The *Actuarial Present Value* allocated to a valuation year is called the *Normal Cost*. The *Actuarial Present Value* of benefits allocated to all periods prior to a valuation year is called the *Actuarial Accrued Liability*.

Unfunded Actuarial Accrued Liability

The excess of the *Actuarial Accrued Liability* over the *Actuarial Value of Assets*.

NOTES