



# ACTUARIAL VALUATION REPORT

*for the*

**City of Pittsburgh  
Municipal Pension Fund**

*as of*

**January 1, 2017**

**Report Date: March 28, 2018**

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## Section One: Commentary and Actuarial Disclosures

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At the request of the City of Pittsburgh, we have completed an actuarial valuation report for the City of Pittsburgh Municipal Pension Fund as of January 1, 2017. This actuarial valuation is based upon participant data as of January 1, 2017 furnished to us by the City and upon asset information as of December 31, 2016 as provided by the City, Maher Duessel, CPAs and GTM Lender Advisors, LLC. The data has been reviewed and determined to be reasonable and consistent (See Section 8). An audit of the data was beyond the scope of the assignment. The completeness and accuracy of the valuation results are dependent upon the completeness and accuracy of the data.

Unless otherwise noted herein, this report has been completed in accordance with generally accepted actuarial principles and practices, and reflects our current understanding of applicable laws and regulatory requirements. This valuation was prepared to satisfy the funding and disclosure requirements of Act 205 of 1984. It also contains the cost components that may be used to compute the Plan's Minimum Municipal Obligation (MMO) in accordance with that law. The funded status measures in this AVR are not intended to be appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations. This valuation should be used for no other purpose than those outlined herein.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to factors such as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and changes in plan provisions or applicable law.

One of the cost components of the Minimum Municipal Obligation is an amortization payment calculated according to specified rules of Act 205. The minimum amortization payment under Act 205 reflects the utilization of provisions of Act 82 of 1998 for which the City qualified. Under those provisions, the Unfunded Actuarial Accrued Liability as of January 1, 1998 is being amortized over 40 years calculated pursuant to special procedures described beginning on page 7. Bases for subsequent years are established according to the normal procedures of Act 205 of 1984 and amortized over various periods according to the source of the change in unfunded liability such as experience gains or losses, benefit changes, and assumption changes. These periods are not limited by average future service because the City qualifies for Distress Level II according to the requirements under Act 205 of 1984.

Because the Act 82 amortization methodology does not result in an actuarially appropriate funding level, this report also presents an actuarially recommended amortization payment based on a 30-year

“fresh start” amortization payment commencing as of January 1, 2011 and additional amortization bases added thereafter according to the normal procedures of Act 205 of 1984. (Refer to page 6 for further explanation)

The City’s pension plan assets are aggregated into a single trust. An annual calculation is made to determine each Plan’s portion of the assets. The receipts and disbursements for each Plan are added to the Plan’s allocated value from the prior year. Then, the year’s investment income is allocated proportionately to each Plan in accordance with procedures set forth in Act 205. As of December 31, 2016 the calculated market value of assets in the Municipal Pension Fund is \$210,405,662. Section Nine contains exhibits illustrating the calculation of this amount.

Section Nine also shows the development of the actuarial value of assets, which is determined by using the optional alternative asset smoothing method established in Act 44 of 2009. This method sets the actuarial value of assets equal to the greater of the prior asset value (adjusted for contributions and disbursements) increased at the actuarial assumed rate of interest less 1% and market value. This gives results that are biased relative to the market value. Due to this bias, this method does not comply with actuarial standards of practice. However, by the passage of Act 44 of 2009, this method is allowable for the determination of the Minimum Municipal Obligation. We have treated this method as a prescribed method selected by the Plan Sponsor. As of January 1, 2017, the AVA is 106.5% of the market value of assets.

The City Controller obtained third-party advice from which he determined that the dedicated stream of revenue created by Ordinances 42 and 44 of 2010 can be recognized as a pension plan asset for purposes of the required actuarial report under Act 205 and the Board of Trustees of the Comprehensive Municipal Pension Trust Fund unanimously directed us to combine the assets listed in the CAFR with the value of the revenue stream as determined by an independent accounting firm, Gleason & Associates. The value so provided is consistent with Paragraph 3.5 (Assets that are Difficult to Value) of ASOP 44, Selection and Use of Asset Valuation Methods for Pension Valuations. The Public Employee Retirement Commission (PERC) accepted the Revised Actuarial Valuation Report as of January 1, 2011 and subsequent valuation reports which included the present value of the revenue stream as a pension plan asset for Act 205 actuarial valuation purposes. The inclusion of the present value of this stream of dedicated future parking revenues does not imply that it necessarily qualifies as a pension plan asset under GAS accounting or for any other purpose.

## 2017 Results

Certain highlights of this actuarial valuation compared with the prior valuation are shown in Section Three. The use of pension bond proceeds to reduce the Unfunded Actuarial Accrued Liability has split the funding of the pension plan into actuarial costs and debt service. The actuarial costs consist of normal cost, administrative expense contributions and amortization payments to eliminate the remainder of the Unfunded Actuarial Accrued Liability. The actuarial information used to develop contribution requirements according to the rules of Act 205 is shown in Section Five. Debt service payments repay the money borrowed and subsequently deposited into the plan. Information concerning the annual debt service is contained in Section Ten. The demographics of the Plan population are summarized in Section Eight.

The actuarial cost components as of January 1, 2017 compared to the prior year are as follows:

	Prior Year 2015	Current Year 2017
<i>Normal Cost as a Percentage of Total W-2 Payroll</i>	7.254%	7.611%
<i>Expenses as a Percentage of Total W-2 Payroll</i>	0.700%	0.700%
<i>Minimum Amortization Payment</i>	\$10,781,992	\$10,402,353
<i>Actuarially Recommended Amortization Payment</i>	\$12,214,636	\$13,800,362

The change in actuarial costs from valuation to valuation can be affected by changes in Plan provisions, assumption changes, and experience changes. Pension bonds were issued in December 1996 and again in March 1998. The 2017 annual debt service payment for the bonds issued in 1996 is approximately \$3.09 million; The 2017 debt service payment for the bonds issued in March 1998 is approximately \$6.55 million. Both amounts are based on the original debt service schedule.

The decrease in the Minimum Amortization Payment was due to the amortization payment of expiring experience loss bases being greater than that of the assumption change and new experience loss base (explained later) being added.

## Assumption Changes

This valuation reflects several changes in the actuarial assumptions since the January 1, 2015 AVR. The most significant is the change in the interest rate assumption. The interest rate assumption represents the expected long-term rate of return on plan assets, including inflation. The City decided to lower the

assumed interest rate from 7.50% to 7.25% per year. We believe this to be a reasonable and more conservative assumption.

Act 205 requires that the City have an experience study prepared every four years. The purpose of the experience study is to compare the plan's actual experience with the valuation assumptions. This comparison can indicate that actuarial assumptions should be changed. Based on the January 1, 2017 experience study, the rates of employee turnover (increased by 20% for the first five years of employment), disability (reduced by 20% at all ages) and retirement and mortality improvement assumptions were changed. Refer to the 2017 Experience Study for a more detailed analysis of these changes.

A summary of the actuarial assumptions used for this valuation can be found in Section Seven. The net effect of the assumption changes was an increase in the actuarial accrued liability (AAL) of \$12,558,768. This amount will be amortized over 15 years.

### **Benefit Changes**

It is our understanding that there were no benefit changes during the period from January 1, 2015 through January 1, 2017. The benefits provided are summarized in Section Four of this report.

### **Experience Changes**

Plan experience during the year affects the Plan cost for the following year. Both the normal cost and the amortization payment can change.

Normal cost is the portion of the cost for active members allocated to the current year by the actuarial cost method. Unless plan provisions or assumptions change, normal cost usually remains fairly stable, changing only moderately from year to year. The changes that do occur relate to changes in the age and service distribution of the participant group.

Generally, changes affect the current year's actuarial experience gain or loss to a greater degree than they affect normal cost. Since foresight can never be perfect, actuarial assumptions will not perfectly match the experience that actually develops from year to year. The determination and amortization of experience gains and losses provide the mechanism for correcting these gains and losses and maintaining the Plan's funding on a sound basis.

The experience gain or loss computed in the current valuation reflects differences since the prior valuation between actual experience and the experience anticipated by the actuarial assumptions. For bases established in 2009 and later, Act 205 requires the amortization of experience gains or losses over a 20-year period. An experience gain will reduce the total amortization payment and an experience loss will increase the payment.

Table 2 shows the development of the experience gain/loss under the minimum funding rules of Act 205 utilizing the methodology prescribed under Act 82 of 1998 (described later in this Section). Table 2b shows the development of the same unfunded actuarial accrued liability without regard to Act 82 of 1998.

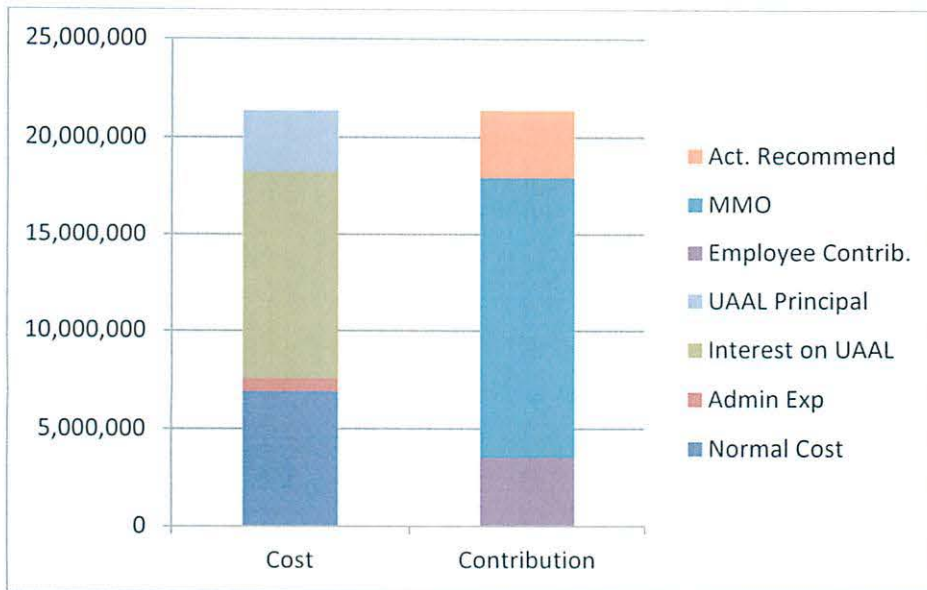
For 2017, a new experience loss base of \$2,152,962 has been established under the minimum funding rules of Act 205; a new experience loss base of \$5,318,956 was established for the actuarially recommended contribution. The primary components of the experience gain/loss are as follows:

There was a loss of \$4,302,960 due to return on the actuarial value of assets (AVA) that was less than the previously assumed 7.5% annual rate (under the Act 44 of 2009 smoothing method interest is credited on the AVA each year at a rate that is one percent less than the assumed interest rate of the plan). There was a demographic experience gain of \$3,265,042 attributable to various sources, including lower salary increases and fewer disabilities than expected.

There was also a loss from contributions that were less than required based on the January 1, 2015 AVR when not taking into account Act 82 (under the actuarially required contribution). The City contributed more than the MMO in both 2015 and 2016, which resulted in contribution gains being recognized under the minimum funding rules of Act 205, but less than the actuarially recommended contribution.

### **Cost / Contribution Comparison**

The following chart shows the annual cost components of the plan on the left (starting at the bottom: normal cost, administrative expenses, interest on the unfunded actuarial accrued liability and principal on the unfunded actuarial accrued liability) compared to the annual contribution requirements (starting at the bottom): employee contributions, MMO, actuarially recommended contribution (in excess of the MMO). As you can see, the majority of the plan funding is going towards interest on the unfunded liability. *Contributing only the MMO does not cover the entire interest on the unfunded liability, causing the unfunded liability to grow over time even if all assumptions of the plan are realized.*

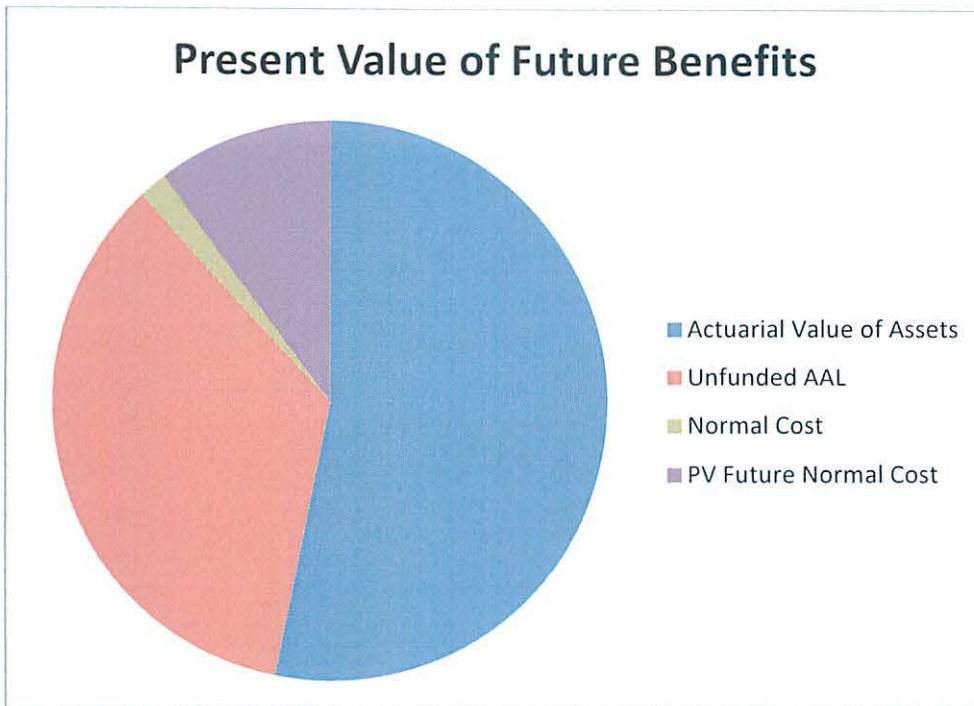


### Funded Ratios

A measure of comparison between valuations is the plan's funded ratio, the actuarial value of assets divided by the actuarial accrued liability. This ratio is currently 60.3% (refer to Table 1). As of January 1, 2015, the corresponding ratio was 60.8% so the current valuation shows a decrease of 0.5%. This decrease is primarily the result of adopting more conservative assumptions, which should improve plan funding levels over the long run. The funded ratio based on the market value of assets is 56.7%.

The following chart shows the present value of all future benefits expected to be paid from the plan for all current participants. The area in blue represents the portion covered by the actuarial value of assets. The areas in blue and red represent the portion of benefits that are considered accrued under the actuarial cost method. The green portion represents the normal cost, or portion to be accrued in the current year. The purple section is the portion of benefits current participants are expected to accrue in the future. As you can see, this is a very mature plan.





#### Act 82 of 1998

Act 82 of 1998 has a significant impact on the minimum funding requirements. We believe that the procedure for determining amortization amounts in accordance with Act 82 no longer produces an actuarially appropriate funding level. The adoption of a funding policy based on the alternative Actuarially Recommended Amortization Payment in this report is highly recommended.

Act 82 allowed the City to change the minimum funding amortization schedule for its Unfunded Actuarial Accrued Liability because pension bond proceeds were deposited by the City into the pension plan during 1998 that changed the ratio of the Actuarial Value of Assets to the Actuarial Accrued Liability by more than 25 percent. Act 82 allowed the City to amortize the January 1, 1998 Unfunded Actuarial Accrued Liability, reduced by pension bond proceeds deposited during 1998, over a 40-year period using a special procedure that was mechanically complex but lowered the amortization payment from what it otherwise would have been. The annual amortization payment was calculated in several steps. An amortization payment was calculated that would eliminate the Unfunded Actuarial Accrued Liability net of 1998 bond proceeds over a 40-year period using a statutory interest rate of 8.75 percent. Next, the future value of these payments at the end of the 40-year period was calculated using 8.75 percent interest. Finally, an amortization payment was calculated using 10 percent interest that would have the same future value at the end of the 40-year period as the previous calculation. The 10 percent amortization amount became the amortization payment starting in 1998.

There are several drawbacks to this approach in the long-term. Under the Act 82 amortization schedule, the outstanding balance of Unfunded Actuarial Accrued Liability for the affected 1998 base actually grows for several years, extending the funding of obligations beyond normal payment periods. For example, the Unfunded Actuarial Accrued Liability for this special base has increased from \$53,226,758 as of January 1, 1998 to \$85,704,196 as of January 1, 2017 and doesn't start to decline until during the year 2024. Therefore, this amortization method does not maintain normal generational funding objectives.

Act 82 requires that valuations include a comparative interest rate tabulation. This annual tabulation compares the balance of the accumulated Act 82 amortization payments using the actual earnings of the fund during the year with the balance assuming a 10 percent rate of return. If the fund earns more than 10 percent during the year, there will be an actuarial experience gain. If the fund earns less than 10 percent, there will be an actuarial experience loss on the comparative interest rate balance. When this legislation was enacted in 1998, investment conditions were different, and an average 10 percent rate of return on a significant block of assets no longer seems reasonable. This balance grows over time and the losses from this source will tend to grow significantly. In fact, because benefits are being paid out as contributions are coming in, the comparative interest rate balance, which isn't adjusted for benefit payments, eventually will become larger than the total market value of assets. In practice, this will likely lead to significant experience losses, an increasing pattern of amortization payments, and a funding ratio which will still be well below 100% at the end of the 40-year period due to remaining balances on these losses.

By contrast, funding the plan on the basis of the actuarially recommended amortization payment is expected to result in a more level amortization schedule, that will result in higher contributions now but ultimately lower contributions, and will likely lead to a funding ratio much closer to 100% by the fixed target year.

## **Other Measurements**

This report was prepared in order to satisfy the funding and disclosure requirements of Act 205 of 1984. The liabilities shown in this valuation are calculated on the basis that the pension plan is an ongoing concern. As such, the entry age actuarial cost method is utilized, and the interest rate used represents the expected long-term investment return assumption on plan assets. The actuarial assumptions used in this valuation may not be appropriate for other purposes. Therefore, Section Six presents alternative liability measurements for informational purposes only.

## Section Two: Certification

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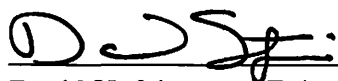
In the actuary's opinion, the actuarial assumptions used in the valuation are reasonably related to the experience of the Plan and to reasonable expectations. They represent the actuary's best estimate of anticipated experience under the Plan. To the best of our knowledge, the report is complete and accurate, based on the data herein and the disclosures in Section One.

We will be happy to answer any questions concerning this report and provide further information as needed.

### **MOCKENHAUPT BENEFITS GROUP**

I, David H. Stimpson, 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.

Prepared and Certified by:



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David H. Stimpson, E.A., F.C.A., M.A.A.A.  
Executive Vice President

## Section Three: Valuation Highlights

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<b>Participant Count</b>	<b>01/01/17</b>	<b>01/01/15</b>	<b>Change</b>
Total Active	1,718	1,694	24
Vested	837	908	(71)
Not Vested	881	786	95
Total In Payment Status	1,679	1,643	36
Retirement Benefits	1,343	1,299	44
Disability Benefits	233	249	(16)
Survivor Benefits	103	95	8
Deferred	56	65	(9)
<b>Total</b>	<b>3,453</b>	<b>3,402</b>	<b>51</b>

### Average Monthly Benefit

<i>In Payment Status</i>			
Retirement Benefits	\$ 1,192	\$ 1,111	\$81
Disability Benefits	\$ 1,051	\$ 1,044	\$7
Survivor Benefits	\$ 593	\$ 537	\$56
Deferred	\$ 1,671	\$ 1,496	\$175

### Active Participant Averages

Hire Age	34.7	34.4	0.3
Attained Age	48.2	49.3	(1.1)
Normal Retirement Age	60.6	60.5	0.1
Assumed Future Service	15.0	14.0	1.0
Monthly Compensation	\$3,939	\$3,711	\$228

### Financial Data

Market Value of Assets	\$ 210,405,662	\$ 202,613,838	\$ 7,791,824
Accumulated Employee Contributions	\$ 54,694,788	\$ 55,891,781	\$(1,196,993)

### Cost Components

Normal Cost as a percentage of total payroll	7.611%	7.254%	0.357%
Expenses as a percentage of total payroll	0.700%	0.700%	0.000%
Total	8.311%	7.954%	0.357%
Minimum Amortization Payment	\$10,402,353	\$10,781,992	\$(379,639)
Actuarially Recommended Amortization Payment	\$13,800,362	\$12,214,636	\$1,585,726

## Section Four: Summary of Plan Provisions

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The Summary of Plan Provisions below is included to clarify the basis of our actuarial valuation and is not meant to govern the operation of the Plan. The summary represents our understanding of the benefits provided by the Plan, based upon documentation provided by the Plan Sponsor and our understanding of the way in which the Plan Sponsor operates the Plan.

*Plan Year* ▼ Twelve-month period beginning January 1 and ending December 31

*Plan Established* ▼ May 28, 1915

### Principal Definitions

*Employee* ▼ Any full-time employee of the City of Pittsburgh other than a firefighter or police officer, and full-time employees of the Pittsburgh Water and Sewer Authority

*Retirement Benefit Commencement Date* ▼ Assumed to be the first day of the month coincident with or next following eligibility for and election to retire

*Service Increment* ▼ An additional monthly benefit of 1 percent of average compensation for each completed year of service in excess of 20 years to a maximum of \$100

*Service* ▼ Assumed to be completed years of service calculated from date of hire through date of retirement or severance

*Normal Form of Payment* ▼ Monthly pension benefit payable for life

### Participation Requirements

*Entry Date* ▼ Following completion of 90-day probationary period

**Compensation** ▼ Base wages, plus “acting” or “in-grade” pay

*Average Compensation* ▼ Averaged over the 3-year period prior to retirement or severance

*Members hired after December 31, 1987* ▼ Averaged over the 4-year period prior to retirement or severance

### Normal Retirement

#### *Eligibility*

*Employees other than Emergency Medical Services* ▼ Later of age 60 or completion of 8 years of service

*Emergency Medical Services Employees* ▼ Later of age 55 or completion of 8 years of service

*Monthly Benefit*

- ▼ Equal to 50% of average compensation and service increment, if any
- ▼ Prorated for service less than 20 years
- ▼ Upon reaching Social Security Normal Retirement Age reduced by 50% of social security benefit; the reduction shall not exceed 50% of the monthly benefit. This reduction shall not apply to Pittsburgh Water and Sewer Employees (regardless of hire date) or Emergency Medical Services Employees hired on or before January 1, 2006. City non-union employees and union employees whose union has negotiated to eliminate the reduction, who were hired on or before June 29, 2004 will not be subject to the reduction.

*Members hired prior to January 1, 1975 whose union has not negotiated the benefits level for employees hired on or after January 1, 1975 and before January 1, 1988.*

If pay is less than \$450:

- ▼ Equal to 60% of 3-year average pay
  - ▼ Not less than \$130
  - ▼ Plus service increment, if any
- OR

If pay is greater than \$450:

- ▼ 55% of first \$650 of 3-year average pay and 30% of excess
- ▼ Not less than \$270
- ▼ Plus service increment, if any
- ▼ Eligible retired members and spouses will receive additional monthly payment equal to coverage premium
- ▼ Employees hired after December 31, 1987 not eligible

*Supplemental Medical*

**Early Retirement**

*Eligibility*

*Benefit Amount*

- ▼ Later of age 50 *or* completion of 8 years of service
- ▼ Normal retirement benefit based upon average compensation at actual retirement
- ▼ May be deferred to age 60 *or* paid immediately in reduced amount
- ▼ Reduction will be 1/2 percent per month for each month that payment commences prior to age 60
- ▼ If 25 years of service, reduction applied only on benefits attributed to earnings in excess of \$7,800

*Members hired prior to January 1, 1975*

**Disability**

*Eligibility*

- ▼ Permanent disablement in line of duty *or*
- ▼ Permanent disablement (not in line of duty) after completing 8 years of service

*Benefit Amount*

- ▼ Normal retirement benefit at date of disablement
- ▼ Not prorated for service less than 20 years
- ▼ Participants hired after December 31, 1974 will have their benefit reduced by 50% of their social security benefit upon reaching age 65. The reduction shall not exceed 50% of the benefit.

*Members Hired After December 31, 1987*

- ▼ Normal retirement benefit if at least age 60 with 8 years of service
- ▼ Upon reaching age 65, reduced by 50% of the social security benefit. The reduction shall not exceed 50 percent of the benefit
- ▼ Disabled before age 60 with at least 8 years of service calculated as of age 60 with service being greater of:
  - (a) Service at disablement or
  - (b) The lesser of 20 years and completed service (assuming work until age 60)
- ▼ Benefit is reduced so that the sum of the plan benefit and workers' compensation does not exceed member's regular salary at time of disablement

*Benefit Commencement Date*

- ▼ First day of calendar month following determination of disablement *and*
- ▼ Continuing for the duration of disability prior to normal retirement date and life thereafter

**Vesting**

*Members hired prior to January 1, 1975*

- ▼ Attainment of age 40 *and*
- ▼ Completion of 8 years of service
- ▼ Completion of 15 years of service/no age requirement

*Vested Terminated Participants*

- ▼ Normal retirement benefit if contributions continue to age 50
- ▼ Benefit deferred to age 60, a benefit reduced as for early retirement may be elected at age 50.

**Death Benefits Before Retirement**

*Death After Early Retirement Eligibility*

- ▼ Surviving spouse entitled to 50% of pension that would have been payable if member retired at date of death
- ▼ Member's beneficiary receives amount equal to member's contributions

*Death Before Early Retirement Eligibility*

**Death Benefits After Retirement**

- ▼ Member's beneficiary receives amount equal to the excess, if any, of member's contributions over retirement benefit paid on member's behalf

*Members Hired Prior to 1988*

- ▼ Married employee may deduct up to \$100 per month from retirement benefit to provide a \$100 per month benefit payable to surviving spouse until death or remarriage

*Spouse Predeceases Retiree*

- ▼ Monthly benefit restored to full level for remainder of retiree's life
- ▼ At no time shall total benefit payment on behalf of member be less than the member's contributions to the fund

*Members Hired After December 31, 1987*

- ▼ Married member may elect a reduced pension
- ▼ Spouse will receive 50% of the reduced pension
- ▼ Member's pension not restored to full level if spouse predeceases retiree
- ▼ Total benefit payments on behalf of member will be no less than member's contribution to fund

**Employee Contributions**

*Members hired prior to January 1, 1988*

- ▼ 4% of compensation
- ▼ 5% of compensation

**Interest Credit**

*For non-union employees  
and members of unions that negotiated for  
the interest credit, who were hired on or before June 29, 2004*

- ▼ 5% compound interest per year



## Section Five: Development of Contribution Requirements

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**Table 1: Normal Cost and Actuarial Accrued Liability**

**Normal Cost**

Retirement Benefits	\$4,969,888
Disability Benefits	646,296
Preretirement Death Benefits	56,858
Refunds of Contributions	627,152
Medicare Premium Benefits	41,432
Vested Withdrawal Benefits	<u>579,680</u>
<b>Total</b>	<b>\$6,921,306</b>

**Actuarial Accrued Liability**

*Actuarial Present Value of Benefits at Attained Age*

	<u>Deferred</u>	<u>In Payment</u>	<u>Active</u>	<u>All</u>
Retirement Benefits	\$8,689,403	\$159,367,103	\$174,766,640	\$342,823,146
Disability Benefits	0	23,680,873	13,082,701	36,763,574
Survivor Benefits	0	6,569,856	0	6,569,856
Preretirement Death Benefits	0	0	1,604,909	1,604,909
Refunds of Contributions	0	0	2,630,029	2,630,029
Medicare Premium Benefits	503,629	16,118,012	7,290,376	23,912,017
Vested Withdrawal Benefits	<u>0</u>	<u>0</u>	<u>6,888,234</u>	<u>6,888,234</u>
<b>Total</b>	<b>\$9,193,032</b>	<b>\$205,735,844</b>	<b>\$206,262,889</b>	<b>\$421,191,765</b>

*Actuarial Present Value of Future Normal Costs* **(\$49,861,529)**

**Actuarial Accrued Liability** **\$371,330,236**

**Unfunded Actuarial Accrued Liability**

Actuarial Accrued Liability	\$ 371,330,236
Actuarial Value of Assets	<u>(224,014,919)</u>
<b>Unfunded Actuarial Accrued Liability</b>	<b>\$ 147,315,317 *</b>

**Funded Ratio** **60.3% \***

\* The unfunded actuarial accrued liability based on the market value of assets is \$160,924,574 and the funded ratio based on the market value of assets is 56.7%.

**Table 2: Actuarial Experience (Gain) Loss Determination**

**Reconciliation of Funded Status**

Unfunded Actuarial Accrued Liability as of January 1, 2015			\$135,583,659
	<b>2015</b>	<b>2016</b>	
Normal Cost Assumed	\$6,068,065	\$6,270,507	12,338,572
Assumed Administrative Expenses	585,577	609,000	1,194,577
Interest Charged at Valuation Rate			22,651,643
Contributions Made	<b>2015</b>	<b>2016</b>	
- Municipality	\$6,701,006	\$8,677,142	
- State Aid Allocated	6,528,190	7,445,647	
- Employees	<u>3,121,519</u>	<u>3,350,315</u>	\$(35,823,819)
Interest Credited at Valuation Rate			(2,226,001)
Special Adjustment Because of Higher Act 82 Interest Rate			<u>(14,740,679)</u>
Expected Unfunded Actuarial Accrued Liability Before Adjustments			\$118,977,952
Experience from Investment Return			
- Comparative Int. Rate Amortization Tab. (Gain) Loss		\$14,740,679	
- Other Investment Return (Gain) Loss		<u>4,302,960</u>	19,043,639
Experience (Gain) Loss from all Other Sources			(3,265,042)
Increase (Decrease) in Unfunded Actuarial Accrued Liability			
- Benefit Modifications for Actives		\$ 0	
- Benefit Modifications for Retirees		0	
- Changes in Actuarial Assumptions		<u>12,558,768</u>	<u>12,558,768</u>
Actual Unfunded Actuarial Accrued Liability			<u>\$147,315,317</u>

**Loss (Gain) to be Amortized**

Experience (Gain) Loss from January 1, 2015		\$15,778,597
Actuarially Required Contributions with Interest	\$24,424,185	
Actual Contributions with Interest	<u>(38,049,820)</u>	
Contribution (Gain) Loss		<u>(13,625,635)</u>
Loss (Gain) to be Amortized		\$2,152,962

**Comparative Interest Rate Amortization Tabulation**

<i>Balance Calculated Using Actual Investment Return</i>	<b>2015</b>	<b>2016</b>	
Act 82 Amortization Balance at January 1	\$139,711,017	\$146,254,714	
Act 82 Amortization Payment	<u>3,132,592</u>	<u>3,132,592</u>	
Comparative Interest Rate Balance at January 1	\$142,843,609	\$149,387,306	
Actual Investment Return on Balance	<u>3,411,105</u>	<u>12,158,633</u>	
Actual Act 82 Amort. Balance at December 31	\$146,254,714	\$161,545,939	\$161,545,939
<i>Balance Calculated Using 10 Percent Investment Return</i>			
Comparative Int. Rate Balance at January 1	\$142,843,609	\$160,260,562	
Interest at 10 Percent	<u>14,284,361</u>	<u>16,026,056</u>	
Comparative Act 82 Amort. Bal. at Dec. 31	\$157,127,970	\$176,286,618	\$176,286,618
<i>Comparative Interest Rate Amortization Tabulation (Gain) Loss</i>			\$14,740,679

**Table 2b: Analysis of Change in Unfunded Actuarial Accrued Liability**

**Reconciliation of Funded Status – Without Regard to Act 82**

Unfunded Actuarial Accrued Liability as of January 1, 2015			\$135,583,659
	<b>2015</b>	<b>2016</b>	
Normal Cost Assumed	\$6,068,065	\$6,270,507	12,338,572
Assumed Administrative Expenses	585,577	609,000	1,194,577
Interest Charged at Valuation Rate			22,651,643
Contributions Made	<b>2015</b>	<b>2016</b>	
- Municipality	\$6,701,006	\$8,677,142	
- State Aid Allocated	6,528,190	7,445,647	
- Employees	<u>3,121,519</u>	<u>3,350,315</u>	
			\$(35,823,819)
Interest Credited at Valuation Rate			<u>(2,226,001)</u>
Expected Unfunded Actuarial Accrued Liability Before Adjustments			\$133,718,631
Change in Unfunded Actuarial Accrued Liability due to			
Experience Loss (Gain)			
- from Investment Return		\$4,302,960	
- from all Other Sources		<u>(3,265,042)</u>	1,037,918
Benefit Modifications for Actives			0
Benefit Modifications for Retirees			0
Change in Actuarial Assumptions			<u>12,558,768</u>
Actual Unfunded Actuarial Accrued Liability			<u>\$147,315,317</u>
<b>Loss (Gain) to be Amortized</b>			
Experience (Gain) Loss from January 1, 2015			\$1,037,918
Actuarially Required Contributions with Interest		\$42,330,858	
Actual Contributions with Interest		<u>(38,049,820)</u>	
Contribution (Gain) Loss			<u>4,281,038</u>
Loss (Gain) to be Amortized			\$5,318,956

**Table 3: Amortization of Unfunded Actuarial Accrued Liability**

Source	Original Amount	Year Est.	Target Year	Remaining Balance	Remaining Payments	Annual Amount
<b>Initial</b>	\$53,226,758	1998	2037	\$85,704,196	21	\$3,132,592
<b>Assumption Change</b>	\$(4,327,036)	1998	2017	\$(415,688)	1	\$(415,688)
<b>Ben. Mod. - Actives</b>	15,075,742	2002	2021	6,173,923	5	1,413,385
<b>Investment Loss</b>	15,617,085	2002	2032	11,889,265	16	1,193,004
<b>Assumption Change</b>	(5,300,394)	2003	2022	(2,506,727)	6	(494,141)
<b>Ben. Mod. - Actives</b>	6,262,573	2003	2022	2,961,772	6	583,842
<b>Experience Loss</b>	4,617,946	2003	2017	502,407	1	502,407
<b>Investment Loss</b>	20,777,261	2003	2032	16,375,429	16	1,643,159
<b>Assumption Change</b>	(55,417)	2005	2024	(32,455)	8	(5,117)
<b>Ben. Mod.-Actives</b>	7,325,991	2005	2024	4,290,473	8	676,450
<b>Experience Gain</b>	(7,233,308)	2005	2019	(2,180,118)	3	(778,121)
<b>Experience Gain</b>	(3,323,763)	2007	2021	(1,545,392)	5	(353,784)
<b>Assumption Change</b>	(9,457,779)	2009	2028	(7,214,865)	12	(858,281)
<b>Experience Loss</b>	40,849,981	2009	2028	31,162,402	12	3,707,082
<b>Experience Gain</b>	(56,098,421)	2011	2030	(46,835,142)	14	(5,068,467)
<b>Assumption Change</b>	31,572,286	2013	2027	26,165,349	11	3,294,086
<b>Experience Gain</b>	(6,447,817)	2013	2032	(5,781,825)	16	(580,165)
<b>Experience Loss</b>	14,589,666	2015	2034	13,890,583	18	1,310,877
<b>Agg. Changes through Last Valuation</b>	N/A	N/A	2028	\$46,899,391	12	\$5,770,528
<b>Assumption Change</b>	\$12,558,768	2017	2031	\$12,558,768	15	\$1,306,049
<b>Ben. Mod. - Actives</b>	N/A					
<b>Ben. Mod. - Retired</b>	N/A					
<b>Experience Loss</b>	2,152,962	2017	2036	2,152,962	20	193,184
<b>Agg. Changes-2017</b>	N/A	N/A	2032	\$14,711,730	16	1,499,233
<b>Aggregate Changes</b>	N/A	N/A	2029	\$61,611,121	13	\$7,269,761
<b>Aggregate</b>	N/A	N/A	2062	\$147,315,317	46	\$10,402,353

**Details of Calculation of Act 82 Payment**

Act 82 Unfunded Actuarial Accrued Liability	\$ 53,226,758
40-Year Amortization Payment	\$ 4,437,482
Future Value at end of 40-Year period	\$ 1,525,108,142
Payment to provide same future value with 10% annual earnings	\$ 3,132,592

**Table 4: Municipal Contributions**

**Required Municipal Contributions (Reflecting Act 82 of 1998)**

The Financial Requirement of the Plan is based on the Normal Cost Percentage and other components shown below. The Normal Cost Percentage is applied to the payroll of the members for the applicable fiscal year.

Normal Cost (Table 1)	\$6,921,306
Total Annual Payroll	\$90,932,504
Percentages for Budget	
• Normal Cost (Normal Cost divided by Total Annual Payroll)	7.611%
• Administrative Expense (as a % of payroll)	0.700%
• Gross Normal Cost	8.311%
Net Amortization Payment (Table 3)	\$10,402,353
Funding Adjustment	\$ 0

**Amortization Payment for Actuarially Recommended Contribution**

See Section One for further explanation of the basis of this recommendation.

Source	Original Amount	Year Est.	Target Year	Remaining Balance	Remaining Payments	Annual Amount
<b>Initial</b>	\$95,641,110	2011	2040	\$89,095,534	24	\$7,402,698
<b>Experience Loss</b>	(3,290,204)	2013	2032	\$(2,950,361)	16	(296,048)
<b>Assumption Change</b>	31,572,286	2013	2027	26,165,349	11	3,294,086
<b>Experience Loss</b>	17,989,040	2015	2034	\$17,127,071	18	1,616,310
<b>Experience Loss</b>	5,318,956	2017	2036	5,318,956	20	477,267
<b>Assumption Change</b>	12,558,768	2017	2031	12,558,768	15	1,306,049
<b>Aggregate</b>			2035	\$147,315,317	19	\$ 13,800,362

**Table 5: Analysis of Sensitivity to Select Assumptions**

The actual costs of the plan will be determined by the experience of the plan over time. The present value of the projected liabilities shown in this (or any other) valuation of the plan is dependent upon the assumptions utilized. The assumed interest rate and assumed rates of retirement are two assumptions that have a significant impact on the expected costs of the plan.

To highlight the effect of these assumptions, we have calculated the impact on the calculated liabilities and actuarially recommended contribution of a change of 1% in the assumed interest rate and assuming that participants retire at twice the assumed rates.

**Interest Rate Sensitivity**

	<u>1% Decrease</u>	<u>Current %</u>	<u>1% Increase</u>
Interest Rate	6.25%	7.25%	8.25%
Actuarial Accrued Liability	\$407,321,964	\$371,330,236	\$340,321,486
Actuarial Value of Assets	<u>(224,014,919)</u>	<u>(224,014,919)</u>	<u>(224,014,919)</u>
Unfunded Actuarial Accrued Liability	\$183,307,045	\$147,315,317	\$116,306,567
Funded Ratio	55.0%	60.3%	65.8%
Normal Cost	\$8,386,414	\$6,921,306	\$5,774,376
Actuarially Recommended Amortization Payment	\$16,463,727	\$13,800,362	\$11,300,644
Estimated Impact on Actuarially Recommended Contribution	\$4,128,473	N/A	(\$3,646,648)

**Retirement Assumption Sensitivity**

	<b>Current Retirement Rates</b>	<b>Double the Current Retirement Rates</b>
Actuarially Accrued Liability	\$ 371,330,236	\$ 385,626,706
Actuarial Value of Assets	<u>(224,014,919)</u>	<u>(224,014,919)</u>
Unfunded Actuarial Accrued Liability	\$ 147,315,317	\$ 161,611,787
Funded Ratio	60.3%	58.1%
Normal Cost	\$6,921,306	\$7,087,726
Actuarially Recommended Amortization Payment	\$13,800,362	\$15,287,124
Estimated Impact on Actuarially Recommended Contribution	N/A	\$1,653,182

## Section Six: Other Measurements

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The Actuarial Accrued Liability (AAL) shown in this valuation is the target asset level based on the Entry Age Normal (EAN) actuarial cost method, which is used for pension funding. The AAL under the EAN cost method is the portion of the liability of projected future benefit payments, which includes future pay increases, attributable to past service. The AAL is typically greater than the present value of accrued benefits (which do not include future pay or service). While the assets are compared against the AAL to measure plan funding progress, it is also worth knowing how your assets compare against accrued benefits.

	<u>01/01/17</u>	<u>01/01/15</u>
<b>Assets at Market Value</b>	<b><u>\$210,405,662</u></b>	<b><u>\$ 202,613,838</u></b>
<b>Actuarial Present Value of Vested Benefits</b>		
Retired	\$ 205,735,844	
Deferred	9,193,032	
Employee Contributions	3,132,300	
Active	<u>124,927,067</u>	
<b>Total</b>	<b><u>\$ 342,988,243</u></b>	<b><u>\$ 316,663,348</u></b>
<b>Unfunded Actuarial Present Value of Vested Benefits</b>	<b><u>\$ 132,582,581</u></b>	<b><u>\$ 114,049,510</u></b>
<b>Actuarial Present Value of Accrued Benefits</b>		
Retired	\$ 205,735,844	
Deferred	9,193,032	
Employee Contributions	1,375,473	
Active	<u>134,056,709</u>	
<b>Total</b>	<b><u>\$ 350,361,058</u></b>	<b><u>\$ 323,546,457</u></b>
<b>Unfunded Actuarial Present Value of Accrued Benefits</b>	<b><u>\$ 139,955,396</u></b>	<b><u>\$ 120,932,619</u></b>

## Alternate Liability Measurement

As mentioned in Section 1, this report was prepared to satisfy the funding and disclosure requirements of Act 205 of 1984. The liabilities shown in this valuation are calculated on a going concern basis, meaning that the pension plan is presumed to continue to operate indefinitely. As such, the interest rate assumption used to value plan liabilities was selected to represent the expected long-term investment return on plan assets.

The results disclosed on this page are provided for informational purposes only and illustrate the liabilities and funding status measured on a terminal basis (rather than going concern basis), which is believed to be more closely associated with a “settlement value” of the plan. However, this is not based on any specific annuity quote and should not be construed as such. The primary differences between this measurement and those made for funding and state reporting purposes are that the benefits valued are only those earned as of the valuation date (accrued and vested benefits) and the interest rate of 3% was selected to approximate a low-risk bond rate.

<b>Assets at Market Value</b>		<b><u>\$ 210,405,662</u></b>
<b>Present Value of Vested Benefits (3%)</b>		
Retired	\$286,486,476	
Deferred	16,609,649	
Active	<u>226,320,808</u>	
<b>Total</b>		<b><u>\$529,416,933</u></b>
<b>Present Value of Accrued Benefits (3%)</b>		
Retired	\$286,486,476	
Deferred	16,609,649	
Active	<u>246,023,970</u>	
<b>Total</b>		<b><u>\$549,120,095</u></b>



## Section Seven: Actuarial Basis of Valuation

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### Actuarial Assumptions: January 1, 2017

#### Economic

Interest Rate 7.25% increase per year

This assumption represents the expected long-term rate of return, including inflation at 2.75%. It is based on the current investment policy of the plan and expected returns for the asset classes. This assumption was first adopted for the January 1, 2017 actuarial valuation report.

Salary Projection 4.0% increase per year

Merit Increase: 1.25% increase per year

Inflation: 2.75% increase per year

This assumption represents expectations of future salary increases. Allowance is made not only for base rate changes but also for such factors as merit increases, longevity increases, and promotions, which may occur over a participant's career. This assumption is based on an analysis of past salary increases and expectations of future wage increases and inflation. This assumption was reaffirmed in the January 1, 2017 experience study.

#### Social Security Benefits

Actives: Offset based on social security law in 2017, projected using an annual increase in the National Average Wage of 4 percent and an annual increase in the Social Security Consumer Price Index of 2.75 percent

Retirees: Offset based on:

- Actual benefit if 65 or older
- One third of original pension amount, if younger than 65

#### Medicare Premiums

For 2017, \$134.00 per month for new enrollees. Prior enrollees' premiums (other than those with high income surcharge) are approximately either \$109.00 or \$126.67. The premium for years thereafter is assumed to increase at a rate of 5.0% per year.

#### Employee Characteristics

Mortality

RP-2000 Mortality Tables, with adjustments to reflect Pittsburgh Pension Plan mortality experience as confirmed by experience studies. The adjusted rates are based upon the following:

*Active Participants*

RP-2000 Employee Rates projected with rates derived from the Long-Range Demographic Assumptions for the 2015 Social Security Administration's Trustee Report.

*Retired/Term Vested Participants*

RP-2000 Healthy Annuitant Mortality, rates adjusted by blue collar ratios, set forward one year and projected from 2000 with rates derived from the Long-Range Demographic Assumptions for the 2015 Social Security Administration's Trustee Report.

*Disability Retirees*

RP-2000 Healthy Annuitant Rates adjusted by blue collar ratios, set forward six years and projected from 2000 with rates derived from the Long-Range Demographic Assumptions for the 2015 Social Security Administration's Trustee Report.

*Surviving Beneficiaries*

RP-2000 Healthy Annuitant Rates adjusted by ratios of female beneficiary experience to overall female RP-2000 Healthy Annuitant Mortality Rates (Appendix D of *RP-2000 Mortality Tables Report*), set forward one year and projected from 2000 with rates derived from the Long-Range Demographic Assumptions for the 2015 Social Security Administration's Trustee Report.

Sample Base Rates (Rounded):

Age	Active Male Participant	Male Regular Retiree	Male Disabled Retiree	Male Beneficiary
45	0.15%	0.19%	0.59%	0.20%
55	0.30%	0.77%	1.15%	0.86%
65	0.76%	1.82%	2.93%	1.91%
75	N/A	4.77%	7.82%	4.51%
85	N/A	12.64%	19.98%	12.81%

Age	Active Female Participant	Female Regular Retiree	Female Disabled Retiree	Female Beneficiary
45	0.11%	0.15%	0.25%	0.15%
55	0.25%	0.32%	0.70%	0.55%
65	0.58%	1.25%	2.07%	1.47%
75	N/A	3.38%	5.42%	3.31%
85	N/A	9.23%	14.87%	9.01%

Withdrawal

Sample rates:

Age	Years of Service	
	<6	≥6
20	9.84%	8.20%
25	9.58%	7.98%
30	9.21%	7.67%
35	8.62%	7.18%
40	7.68%	6.40%
45	6.29%	5.24%
50	4.18%	3.49%
55	1.53%	1.28%
60	0.15%	0.12%

Disablement

Sample rates:

Age	Male	Female
30	0.05%	0.06%
40	0.11%	0.21%
50	0.34%	0.43%
60	1.00%	0.77%

Retirement Age

Percentage of eligible employees who retire at each age:

Age	Non-Emergency Medical Services		Emergency Medical Services EE
	<20 yrs of svc	≥20 yrs of svc	
50	4	4	3
51-54	3	3	3
55	3.5	3.5	40
56-57	3.5	3.5	20
58-59	3.5	5	20
60	6.5	12	20
61	10	20	20
62	20	25	40
63-64	20	20	40
65	20	25	100
66	40	40	N/A
67-69	50	50	N/A
70-74	70	70	N/A
75+	100	100	N/A

Exclusions

Non-participants

Percentage Married

Active: 80% of male participants and 65% of female participants.

Spouse Age

Female spouses are assumed to be two years younger than male spouses.

The demographic assumptions were based on the January 1, 2017 Experience Study. They are reasonably related to plan experience and represent best estimates of future plan experience.

## **Actuarial Basis of Valuation: Actuarial Cost Method**

The actuarial costs of this Plan are determined under the Entry Age Normal Actuarial Cost Method as described in Act 205 of 1984. The total contribution (the financial requirements of the Pension Plan) is made up of three components: normal cost, administrative expense and amortization payment or funding adjustment.

### **Normal Cost**

For each active participant covered by the Plan, normal cost is calculated to be the annual contribution necessary to completely fund the participant's pension by the participant's retirement age. Contributions are assumed to begin with the year of employment and to be a constant percentage of the participant's annual pay.

For the Plan, normal cost is expressed as a percentage of the total annual payroll of the participants used in the budgeting of required contributions.

### **Administrative Expense**

Estimated annual expense to be incurred by the fund for the contribution year for which the financial requirements are determined.

### **Actuarial Accrued Liability**

Total actuarial present value of all future benefits less the actuarial present value of the future normal costs. The total unfunded actuarial accrued liability as of the valuation date is the actuarial accrued liability less the total value of all assets owned by the Plan.

### **Amortization Payment**

Sum of the annual level amortization contribution requirements specified by the Act for the applicable portions of the unfunded actuarial accrued liability. The Plan's unfunded actuarial accrued liability was re-established in 1998. In the subsequent years, experience gains and losses, changes in benefit provisions, and changes in valuation assumptions would result in increases or decreases to the unfunded actuarial accrued liability. If the unfunded actuarial accrued liability is negative, the amortization payment is zero and a funding adjustment is created.

## Section Eight: Demographic Summaries

Demographic information provided by the City was modified in certain respects, prior to use in the valuation. New members' payroll amounts are annualized for the year of hire. In addition, adjustments were made to normalize the data, such as the following, after the City was unable to provide further clarification:

- Participants reported with very low wage amounts who were indicated as being off work due to disability or workers' compensation were valued with annualized wages in line with prior and subsequent years' wages.
- Participants reported as active in 2014 and 2016, but not reported for 2015 or reported with no or very low pay for 2015 were valued using 2015 wages equal to their annualized 2014 wages.
- Individuals reported as actives in prior years, who no longer appeared in the active data provided to us for 2015 and/or 2016 were assumed to have terminated employment during the calendar year in which they were first not included in the active data.
- Gross reported benefit payments were adjusted to net out the RABTF and Medicare Part B reimbursements received by the affected retired participants that are funded through pass-through payments from the City but are issued with and reported as part of the gross pension payment.

### Distribution of Active Members by Age and Service

Years of Service												
Age	Number of People in Category										Total by Age	
	1	2	3	4-5	6-10	11-15	16-20	21-25	26-30	30+		
<20	0	0	0	0	0	0	0	0	0	0	0	0
20-24	8	9	1	2	0	0	0	0	0	0	0	20
25-29	50	30	19	20	15	0	0	0	0	0	0	134
30-34	28	36	21	29	59	9	0	0	0	0	0	182
35-39	30	24	17	11	58	22	6	0	0	0	0	168
40-44	22	10	12	13	31	27	25	0	0	0	0	140
45-49	13	17	16	15	37	28	28	8	8	0	0	170
50-54	10	7	10	12	40	33	37	24	31	12	12	216
55-59	16	12	8	13	53	30	35	21	47	83	83	318
60-64	7	7	12	8	34	27	42	14	24	95	95	270
65+	0	3	0	3	14	12	10	12	10	36	36	100
<b>Total</b>	<b>184</b>	<b>155</b>	<b>116</b>	<b>126</b>	<b>341</b>	<b>188</b>	<b>183</b>	<b>79</b>	<b>120</b>	<b>226</b>	<b>226</b>	<b>1,718</b>

### Age Distribution of Deferred Vested Participants

Persons Entitled To Deferred Benefits			
Age Group	Number of People	Total Annual Benefit	Average Annual Benefit
< 30	0	\$ 0.00	\$ 0.00
30-34	0	0.00	0.00
35-39	0	0.00	0.00
40-44	0	0.00	0.00
45-49	3	55,930.92	18,643.64
50-54	15	301,551.24	20,103.42
55-59	30	662,558.16	22,085.27
60-64	7	99,143.04	14,163.29
65-69	0	0.00	0.00
70-74	1	3,779.88	3,779.88
75-79	0	0.00	0.00
80-84	0	0.00	0.00
85+	0	0.00	0.00
<b>Total</b>	<b>56</b>	<b>\$1,122,963.24</b>	<b>\$20,052.92</b>

## Age Distribution of Retired Participants

Regular Retirements			
Age Group	Number of People	Total Annual Benefit	Average Annual Benefit
< 30	0	\$ 0.00	\$ 0.00
30-34	0	0.00	0.00
35-39	0	0.00	0.00
40-44	0	0.00	0.00
45-49	0	0.00	0.00
50-54	3	26,562.60	8,854.20
55-59	35	462,176.52	13,205.04
60-64	241	4,339,081.32	18,004.49
65-69	324	5,737,779.84	17,709.20
70-74	227	3,258,570.12	14,354.93
75-79	198	2,347,653.84	11,856.84
80-84	132	1,459,221.00	11,054.70
85+	183	1,583,973.84	8,655.59
<b>Total</b>	<b>1,343</b>	<b>\$19,215,019.08</b>	<b>\$14,307.53</b>

### Age Distribution of Retired Participants

Disability Retirements			
Age Group	Number of People	Total Annual Benefit	Average Annual Benefit
< 30	0	\$ 0.00	\$ 0.00
30-34	0	0.00	0.00
35-39	1	13,990.68	13,990.68
40-44	0	0.00	0.00
45-49	2	34,574.52	17,287.26
50-54	2	26,986.56	13,493.28
55-59	39	677,698.56	17,376.89
60-64	61	924,687.96	15,158.82
65-69	44	527,946.24	11,998.78
70-74	29	298,538.16	10,294.42
75-79	17	139,615.08	8,212.65
80-84	18	132,462.96	7,359.05
85+	20	160,914.72	8,045.74
<b>Total</b>	<b>233</b>	<b>\$2,937,415.44</b>	<b>\$12,606.93</b>



## Age Distribution of Retired Participants

Survivors			
Age Group	Number of People	Total Annual Benefit	Average Annual Benefit
< 30	0	\$ 0.00	\$ 0.00
30-34	0	0.00	0.00
35-39	0	0.00	0.00
40-44	0	0.00	0.00
45-49	0	0.00	0.00
50-54	3	25,201.20	8,400.40
55-59	8	59,465.04	7,433.13
60-64	17	146,761.08	8,633.00
65-69	18	162,347.88	9,019.33
70-74	17	132,655.68	7,803.28
75-79	17	99,620.40	5,860.02
80-84	9	48,503.64	5,389.29
85+	14	58,536.48	4,181.18
<b>Total</b>	<b>103</b>	<b>\$733,091.40</b>	<b>\$7,117.39</b>

## Age Distribution of Retired Participants

All Persons Receiving Benefits			
Age Group	Number of People	Total Annual Benefit	Average Annual Benefit
< 30	0	\$ 0.00	\$ 0.00
30-34	0	0.00	0.00
35-39	1	13,990.68	13,990.68
40-44	0	0.00	0.00
45-49	2	34,574.52	17,287.26
50-54	8	74,750.36	9,843.80
55-59	82	1,999,340.12	14,626.10
60-64	319	5,410,530.36	16,960.91
65-69	386	6,428,073.96	16,653.04
70-74	273	3,689,763.96	13,515.62
75-79	232	2,586,889.32	11,150.39
80-84	159	1,640,187.60	10,315.65
85+	217	1,803,425.04	8,310.71
<b>Total</b>	<b>1,679</b>	<b>\$22,885,525.92</b>	<b>\$13,630.45</b>

## Demographic Data as of January 1, 2017

### Changes in Plan Participation for Active Members

Active Members	Number
As of January 1, 2015	1,694
New Entrants	<u>371</u>
Total	2,065
Separation from Active Service	
Transfer to another Plan	(14)
Separations w/Deferred Benefit	(8)
Separations w/o Deferred Benefit	(177)
Disability	(5)
Death	(3)
Retirement with a Service Retirement Benefit	<u>(140)</u>
Total Separations	(347)
Data Adjustments	<u>0</u>
Active Members as of January 1, 2017	1,718

### Changes in Plan Participants for Inactive Members and Survivors

	Deferred Vested	Regular Retirements	Disability Retirement	Survivors	Total
As of January 1, 2015	65	1,299	249	95	1,708
New Benefit Recipients	8	140	5	16	169
Death	0	(117)	(22)	(7)	(146)
Commencement of Deferred Benefits	(20)	20	0	0	0
Paid in Full	(2)	0	0	0	(2)
Changed Inactive Status	0	0	0	0	0
Net Data Adjustments	5	1	1	(1)	6
As of January 1, 2017	56	1,343	233	103	1,735

## Section Nine: Plan Assets

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### Combined Municipal Pension Trust Fund Calendar Year 2015

#### Source of Asset Information

The assets of the Aggregated Trust for the City's pension plans are summarized in the following tables based on the information provided by the City and by Maher Duessel. As directed by the Trustees of the City of Pittsburgh Comprehensive Municipal Pension Trust Fund, the values represent a combination of the assets listed in the City's 2015 Comprehensive Annual Financial Report (CAFR) and the present value calculated by GTM Lender Advisors of the dedicated stream of revenues created by City Ordinances 42 & 44 of 2010. Assets are shown at market value.

#### Summary of Values for Aggregated Trust

	<u>1/1/15</u>	<u>1/1/16</u>
Invested Portfolio	\$394,224,222	\$377,263,629
Dedicated Funding from Parking Assets	278,702,580	285,856,330
Accrued Interest	502,471	439,614
Accrued Contributions	0	0
Due from ICA	0	2,900,000
Accrued Expenses and Other Payables	<u>(2,661,230)</u>	<u>(2,800,517)</u>
Market Value of Assets - Accrual Basis	\$670,768,043	\$663,659,056

#### Summary of Transactions for the Aggregated Trust

Balance as of January 1, 2015		\$670,768,043
Contributions Toward Pension Liability		
- Policemen's	\$22,199,430	
- Firemen's	22,733,033	
- Municipal	<u>16,350,714</u>	61,283,178
Miscellaneous and Pass Through Items		5,569,038
Interest and Dividends		4,349,478
Net Appreciation (Decline) in Fair Value Of Investments		14,280,168
Payments to Participants		
- Policemen's	\$34,042,062	
- Firemen's	31,003,565	
- Municipal	<u>25,382,948</u>	(90,428,575)
Expenses		<u>(2,162,274)</u>
<b>Balance as of December 31, 2015</b>		<b>\$663,659,056</b>

**Undivided Participation Calculation Calendar Year 2015 - Accrual Basis**

	<u>Policemen's</u>	<u>Firemen's</u>	<u>Municipal</u>	<u>Total</u>
January 1, 2015 Market Value	\$247,240,380	\$220,913,824	\$202,613,838	\$670,768,043
Plan-Specific Contributions	23,373,302	22,972,620	18,464,515	64,810,437
Plan-Specific Distributions	<u>(34,533,416)</u>	<u>(31,250,876)</u>	<u>(25,630,426)</u>	<u>(91,414,718)</u>
Sub-Total	\$236,080,266	\$212,635,569	\$195,447,927	\$644,163,762
Allocation Percentages for Non-Investment Expenses	36.65%	33.01%	30.34%	100.00%
Allocated Non-Investment Expenses	(113,026)	(101,802)	(93,573)	(308,401)
Allocation Basis of Invested Portfolio	\$116,086,321	\$128,004,349	\$134,746,512	\$378,837,182
Allocation Percentages for Invested Portfolio	30.64%	33.79%	35.57%	100.00%
Allocated Investment Expenses	(265,897)	(293,195)	(308,638)	(867,730)
Allocated Investment Earnings	43,413	47,870	50,391	141,674
Allocation Percentages for Parking Revenue (Established 1/1/2011)	45.22%	31.90%	22.88%	100.00%
Allocated Change in Parking Asset Present Value	<u>9,284,579</u>	<u>6,548,374</u>	<u>4,696,796</u>	<u>20,529,750</u>
December 31, 2015 Market Value	\$245,029,336	\$218,836,816	\$199,792,904	\$663,659,056

**Contributions and Distributions for 2015 - Accrual Basis**

<b>Plan-Specific Contributions</b>	<u>Policemen's</u>	<u>Firemen's</u>	<u>Municipal</u>	<u>Total</u>
General Municipal Pension System State Aid	\$6,845,778	\$4,885,360	\$6,528,190	\$18,259,328
Member Contributions	3,522,891	4,256,291	3,121,519	10,900,701
City Contributions	11,830,762	13,591,382	6,701,006	32,123,149
Pass Through Contributions	1,173,872	228,728	2,079,118	3,481,718
Miscellaneous Income	<u>0</u>	<u>10,859</u>	<u>34,683</u>	<u>45,542</u>
<b>Total Contributions</b>	<b>\$23,373,302</b>	<b>\$22,972,620</b>	<b>\$18,464,515</b>	<b>\$64,810,437</b>
<b>Plan-Specific Distributions</b>				
Benefit Payments to Participants	\$33,681,336	\$31,001,673	\$24,557,546	\$89,240,555
Refunds to Participants	360,726	1,892	825,402	1,188,020
Administrative Expenses	<u>491,354</u>	<u>247,311</u>	<u>247,478</u>	<u>986,143</u>
<b>Total Distributions</b>	<b>\$34,533,416</b>	<b>\$31,250,876</b>	<b>\$25,630,426</b>	<b>\$91,414,718</b>

## Combined Municipal Pension Trust Fund Calendar Year 2016

### Source of Asset Information

The assets of the Aggregated Trust for the City's pension plans are summarized in the following tables based on the information provided by the City and by Maher Duessel. As directed by the Trustees of the City of Pittsburgh Comprehensive Municipal Pension Trust Fund, the values represent a combination of the assets listed in the City's 2016 Comprehensive Annual Financial Report (CAFR) and the present value calculated by GTM Lender Advisors of the dedicated stream of revenues created by City Ordinances 42 & 44 of 2010. Assets are shown at market value.

### Summary of Values for the Aggregated Trust

	<u>1/1/16</u>	<u>1/1/17</u>
Invested Portfolio	\$ 377,263,629	\$ 403,563,859
Dedicated Funding from Parking Assets	285,856,330	293,607,504
Accrued Interest	439,614	406,916
Accrued Contributions	0	0
Due From ICA	2,900,000	0
Accrued Expenses and Other Payables	<u>(2,800,517)</u>	<u>(2,148,375)</u>
Market Value of Assets – Accrual Basis	\$ 663,659,056	\$ 695,429,904

### Summary of Transactions for the Aggregated Trust

Balance as of January 1, 2016		\$ 663,659,056
Contributions Toward Pension Liability		
-Policemen's	\$ 25,552,362	
-Firemen's	25,655,622	
-Municipal	<u>19,473,105</u>	70,681,088
Miscellaneous and Pass Through Items		3,362,164
Interest and Dividends		4,182,349
Net Appreciation (Decline) in Fair Value of Investments		48,231,787
Payments to Participants		
-Policemen's	\$ 34,126,264	
-Firemen's	32,410,125	
-Municipal	<u>26,120,998</u>	(92,657,387)
Expenses		<u>(2,029,153)</u>
<b>Balance as of December 31, 2016</b>		<b>\$ 695,429,904</b>

**Undivided Participation Calculation Calendar Year 2016 - Accrual Basis**

	<u>Policemen's</u>	<u>Firemen's</u>	<u>Municipal</u>	<u>Total</u>
January 1, 2016 Market Value	\$245,029,336	\$218,836,816	\$199,792,904	\$663,659,056
Plan-Specific Contributions	26,710,287	25,874,981	21,301,906	73,887,174
Plan-Specific Distributions	<u>(34,584,952)</u>	<u>(32,665,448)</u>	<u>(26,365,666)</u>	<u>(93,616,066)</u>
Sub-Total	\$ 237,154,671	\$ 212,046,349	\$ 194,729,143	\$ 643,930,163
Allocation Percentages for Non-Investment Expenses	36.83%	32.93%	30.24%	100.00%
Allocated Non-Investment Expenses	(120,972)	(108,164)	(99,330)	(328,466)
Allocation Basis of Invested Portfolio	\$113,925,442	\$125,133,298	\$132,391,093	\$371,449,833
Allocation Percentages for Invested Portfolio	30.67%	33.69%	35.64%	100.00%
Allocated Investment Expenses	(227,577)	(249,966)	(264,464)	(742,008)
Allocated Investment Earnings	9,643,731	10,592,470	11,206,839	31,443,040
Allocation Percentages for Parking Revenue (Established 1/1/2011)	45.22%	31.90%	22.88%	100.00%
Allocated Change in Parking Asset Present Value	<u>9,554,764</u>	<u>6,738,935</u>	<u>4,833,475</u>	<u>21,127,174</u>
December 31, 2016 Market Value	\$256,004,618	\$229,019,624	\$210,405,662	\$695,429,904

**Contributions and Distributions for 2016 - Accrual Basis**

	<u>Policemen's</u>	<u>Firemen's</u>	<u>Municipal</u>	<u>Total</u>
<b>Plan-Specific Contributions</b>				
General Municipal Pension System State Aid	\$7,340,656	\$5,704,539	\$7,445,647	\$20,490,843
Member Contributions	3,609,255	3,947,756	3,350,315	10,907,326
City Contributions	14,602,451	16,003,327	8,677,142	39,282,919
Pass Through Contributions	1,157,926	208,236	1,801,421	3,167,583
Miscellaneous Income	<u>0</u>	<u>11,123</u>	<u>27,380</u>	<u>38,503</u>
<b>Total Contributions</b>	<b>\$26,710,287</b>	<b>\$25,874,981</b>	<b>\$21,301,906</b>	<b>\$73,887,174</b>
<b>Plan-Specific Distributions</b>				
Benefit Payments to Participants	\$33,720,761	\$32,409,184	\$25,493,272	\$91,623,217
Refunds to Participants	405,503	941	627,726	1,034,170
Administrative Expenses	<u>458,688</u>	<u>255,323</u>	<u>244,668</u>	<u>958,679</u>
<b>Total Distributions</b>	<b>\$34,584,952</b>	<b>\$32,665,448</b>	<b>\$26,365,666</b>	<b>\$93,616,066</b>

## Calculation of Actuarial Value of Assets

### Description of Method

The Actuarial Value of Assets is the greater of the Market Value of Assets or the value determined by a Tabular Smoothing Method which takes the Actuarial Value of Assets from the prior valuation report and brings it forward using a specified interest rate. The Actuarial Value of Assets in the prior report, contributions by year, and annual disbursements are each credited with interest at a rate of one percent less than the prior valuation interest rate assumption. The resulting value is further subject to a minimum of 80 percent and a maximum of 120 percent of the market value of assets.

### Development of the Actuarial Value of Assets

Market Value of Assets at January 1, 2017	\$210,405,662
Actuarial Value of Assets at January 1, 2015	\$210,113,317
Contributions During 2015	18,429,832
Disbursements During 2015	(26,032,637)
Interest Credited During 2015	<u>13,268,842</u>
Tabular Smoothing Value of Assets at January 1, 2016	\$215,779,354
Tabular Smoothing Value of Assets at January 1, 2016	\$215,779,354
Contributions During 2016	21,274,526
Disbursements During 2016	(26,729,461)
Interest Credited During 2016	<u>13,690,500</u>
Tabular Smoothing Value of Assets at January 1, 2017	\$224,014,919
Low Limit: 80% of Market Value	\$168,324,530
High Limit: 120% of Market Value	\$252,486,795
Actuarial Value of Assets at January 1, 2017	\$224,014,919



## Section Ten: Supplementary Exhibits for Plans Funded With Pension Bond Proceeds

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**Table 6: Unfunded Actuarial Accrued Liability Excluding Assets  
Arising from Pension Bond Proceeds**

<b>Assets Excluding Pension Bond Proceeds</b>			
Assets Excluding Bond Proceeds at January 1, 2015			\$73,213,737
<b>Receipts</b>	<b>2015</b>	<b>2016</b>	
Employer Contributions	\$9,417,959	\$8,724,128	
Employee Contributions	3,121,519	3,350,315	
State Aid	6,528,190	7,445,647	
Investment Income	547,710	490,583	
Net Appreciation	1,035,296	4,895,324	
Pass Through Contributions & Misc. Income	<u>2,113,801</u>	<u>1,828,801</u>	
Total Receipts			49,499,272
<b>Disbursements</b>			
Monthly Benefit Payments	\$22,478,428	\$23,691,851	
Refund of Employee Contributions	825,402	627,726	
Administrative Expenses	451,087	434,001	
Pass Through Payments	<u>2,079,118</u>	<u>1,801,421</u>	
Total Disbursements			(52,389,034)
<b>Assets Excluding Bond Proceeds at January 1, 2017</b>			<b>\$70,323,975</b>
<b>Development of Actuarial Value of Assets Excluding Bond Proceeds</b>			
Market Value of Assets Excluding Bond Proceeds at January 1, 2017			\$70,323,975
Actuarial Value of Assets Excluding Bond Proceeds at January 1, 2015			\$73,213,737
Contributions During 2015			21,146,785
Disbursements During 2015			(25,834,035)
Interest Credited During 2015			<u>4,376,722</u>
Tabular Smoothing Value of Assets at January 1, 2016			\$72,903,209
Tabular Smoothing Value of Assets at January 1, 2016			\$72,903,209
Contributions During 2016			21,321,511
Disbursements During 2016			(26,554,999)
Interest Credited During 2016			<u>4,409,131</u>
Tabular Smoothing Value of Assets at January 1, 2017			\$72,078,852
Low Limit: 80% of Market Value			\$56,259,180
High Limit: 120% of Market Value			\$84,388,769
<b>Actuarial Value of Assets Excluding Bond Proceeds at January 1, 2017</b>			<b>\$72,078,852</b>
<b>Unfunded Actuarial Accrued Liability Excluding Assets from Bond Proceeds</b>			
Actuarial Accrued Liability (Table 1)			\$371,330,236
Actuarial Value of Assets Excluding Bond Proceeds at January 1, 2017			<u>(72,078,852)</u>
Adjusted Unfunded Actuarial Accrued Liability			\$299,251,384

**Table 7: Amortization of Unfunded Actuarial Accrued Liability  
Excluding Assets Arising from Pension Bond Proceeds**

Source	Original Amount	Year Est.	Target Year	Remaining Balance	Remaining Payments	Annual Amount
<b>Initial</b>	\$154,981,297	1998	2037	\$249,546,421	21	\$9,121,224
<b>Assumption Change</b>	\$(4,327,036)	1998	2017	\$(415,688)	1	\$(415,688)
<b>Ben. Mod. - Actives</b>	15,075,742	2002	2021	6,173,922	5	1,413,385
<b>Investment Loss</b>	3,463,728	2002	2032	2,636,932	16	264,598
<b>Assumption Change</b>	(5,300,394)	2003	2022	(2,506,727)	6	(494,141)
<b>Ben. Mod. - Actives</b>	6,262,573	2003	2022	2,961,772	6	583,842
<b>Experience Loss</b>	4,981,603	2003	2017	541,971	1	541,971
<b>Investment Loss</b>	2,634,424	2003	2032	2,076,299	16	208,342
<b>Assumption Change</b>	(55,417)	2005	2024	(32,455)	8	(5,117)
<b>Ben. Mod - Actives</b>	7,325,991	2005	2024	4,290,473	8	676,450
<b>Experience Loss</b>	6,389,402	2005	2019	1,925,765	3	687,338
<b>Experience Gain</b>	(798,334)	2007	2021	(371,187)	5	(84,975)
<b>Assumption Change</b>	15,074,490	2009	2028	11,499,572	12	1,367,990
<b>Experience Loss</b>	8,218,578	2009	2028	6,269,542	12	745,825
<b>Experience Gain</b>	(53,453,311)	2011	2030	(44,626,807)	14	(4,829,483)
<b>Assumption Change</b>	31,572,286	2013	2027	26,165,349	11	3,294,086
<b>Experience Gain</b>	(1,634,169)	2013	2032	(1,465,377)	16	(147,040)
<b>Experience Loss</b>	13,275,267	2015	2034	12,639,165	18	1,192,779
<b>Agg. Changes Through Last Valuation</b>	N/A	N/A	2023	\$27,762,521	7	\$5,000,162
<b>Assumption Changes</b>	\$12,558,768	2017	2031	\$12,558,768	15	\$1,306,049
<b>Ben. Mod. - Actives</b>	N/A					
<b>Ben. Mod. - Ret.</b>	N/A					
<b>Experience Loss</b>	9,383,674	2017	2036	\$9,383,674	20	841,992
<b>Agg. Changes - 2017</b>	N/A	N/A	2033	\$21,942,442	17	\$2,148,041
<b>Aggregate Changes</b>	N/A	N/A	2026	\$49,704,963	10	\$7,148,203
<b>Aggregate</b>	N/A	N/A		\$299,251,384		\$16,269,427

**Details of the Calculation of Act 82 Payment**

Act 82 Unfunded Actuarial Accrued Liability	\$ 154,981,297
40-Year Amortization Payment	\$ 12,920,696
Future Value at end of 40-Year period	\$ 4,440,684,474
Payment to provide the same future value with 10% annual earnings	\$ 9,121,224

**Debt Service Schedule by Plan Year**  
**Pension Bond Issue of December 15, 1996**

	Date of Original Borrowing	Total Principal Borrowed	Total Principal to this Plan	Percentage to this Plan	Date of Refinancing
	12/15/96	\$37,710,000.00	\$37,710,000.00	100%	N/A
Plan Year	Required Principal Pymt.	Required Interest Pymt.	Annual Debt Service	Premium or Discount Amortized	Principal Balance at Valuation Date
1997		\$1,834,529.78	\$1,834,529.78		\$37,710,000.00
1998	\$525,000.00	2,564,976.25	3,089,976.25		37,710,000.00
1999	560,000.00	2,533,905.00	3,093,905.00		37,185,000.00
2000	590,000.00	2,499,965.00	3,089,965.00		36,625,000.00
2001	630,000.00	2,463,050.00	3,093,050.00		36,035,000.00
2002	670,000.00	2,423,065.00	3,093,065.00		35,405,000.00
2003	715,000.00	2,379,772.50	3,094,772.50		34,735,000.00
2004	760,000.00	2,332,930.00	3,092,930.00		34,020,000.00
2005	810,000.00	2,282,285.00	3,092,285.00		33,260,000.00
2006	865,000.00	2,227,631.25	3,092,631.25		32,450,000.00
2007	925,000.00	2,169,008.75	3,094,008.75		31,585,000.00
2008	985,000.00	2,106,210.00	3,091,210.00		30,660,000.00
2009	1,055,000.00	2,038,890.00	3,093,890.00		29,675,000.00
2010	1,125,000.00	1,966,950.00	3,091,950.00		28,620,000.00
2011	1,200,000.00	1,890,225.00	3,090,225.00		27,495,000.00
2012	1,285,000.00	1,808,220.00	3,093,220.00		26,295,000.00
2013	1,375,000.00	1,717,690.00	3,092,690.00		25,010,000.00
2014	1,475,000.00	1,617,940.00	3,092,940.00		23,635,000.00
2015	1,580,000.00	1,511,015.00	3,091,015.00		22,160,000.00
2016	1,695,000.00	1,396,390.00	3,091,390.00		20,580,000.00
2017	1,820,000.00	1,273,365.00	3,093,365.00		18,885,000.00
2018	1,950,000.00	1,141,415.00	3,091,415.00		17,065,000.00
2019	2,095,000.00	998,792.50	3,093,792.50		15,115,000.00
2020	2,250,000.00	844,545.00	3,094,545.00		13,020,000.00
2021	2,415,000.00	678,937.50	3,093,937.50		10,770,000.00
2022	2,590,000.00	501,260.00	3,091,260.00		8,355,000.00
2023	2,780,000.00	310,625.00	3,090,625.00		5,765,000.00
2024	2,985,000.00	105,967.50	3,090,967.50		2,985,000.00

**Debt Service Schedule by Plan Year**  
**Pension Bond Issue of March 10, 1998**

	Date of Original Borrowing	Total Principal Borrowed	Total Principal to this Plan	Percentage to this Plan	Date of Refinancing
	3/10/98	\$255,865,000.00	\$57,569,624.42	22.3%	N/A
Plan Year	Required Principal Pymt.	Required Interest Pymt.	Annual Debt Service	Premium or Discount Amortized	Principal Balance at Valuation Date
1997					
1998		\$1,873,403.84	\$1,873,403.84		\$57,569,624.42
1999	\$ 225,000.00	3,740,451.43	3,965,451.43		57,569,624.42
2000	225,000.00	3,727,795.18	3,952,795.18		57,344,624.42
2001	225,000.00	3,715,071.43	3,940,071.43		57,119,624.42
2002	225,000.00	3,702,111.43	3,927,111.43		56,894,624.42
2003	225,000.00	3,689,050.18	3,914,050.18		56,669,624.42
2004	225,000.00	3,675,853.93	3,900,853.93		56,444,624.42
2005	563,624.99	3,652,273.94	4,215,898.93		56,219,624.42
2006	521,999.99	3,619,574.69	4,141,574.68		55,655,999.43
2007	553,499.99	3,586,902.44	4,140,402.43		55,133,999.44
2008	577,124.99	3,552,346.23	4,129,471.22		54,580,499.45
2009	623,249.99	3,512,858.03	4,136,108.02		54,003,374.46
2010	677,249.99	3,469,880.22	4,147,130.21		53,380,124.47
2011	726,749.99	3,426,005.22	4,152,755.21		52,702,874.48
2012	1,775,249.98	3,347,373.91	5,122,623.89		51,976,124.49
2013	2,471,624.98	3,212,979.43	5,684,604.41		50,200,874.51
2014	2,630,249.97	3,049,022.22	5,679,272.19		47,729,249.53
2015	2,860,874.97	2,870,560.66	5,731,435.63		45,098,999.56
2016	3,050,999.97	2,678,424.72	5,729,424.69		42,238,124.59
2017	4,105,124.96	2,445,850.66	6,550,975.62		39,187,124.62
2018	2,977,874.97	2,215,653.17	5,193,528.14		35,081,999.66
2019	4,506,749.95	1,970,149.48	6,476,899.43		32,104,124.69
2020	4,814,999.95	1,662,531.73	6,477,531.68		27,597,374.74
2021	5,143,499.95	1,333,901.23	6,477,401.18		22,782,374.79
2022	5,495,624.94	982,810.12	6,478,435.06		17,638,874.84
2023	5,871,374.95	607,699.11	6,479,074.06		12,143,249.90
2024	6,271,874.95	206,971.86	6,478,846.81		6,271,874.95

## Section Eleven: Glossary

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### **Accrued Benefit**

The portion of the participant's retirement benefit that is attributable to service completed before the calculation date. The calculation typically uses actual service as of the calculation date and may involve other factors such as average pay at the determination date and projected service through the retirement eligibility date.

### **Act 205 of 1984**

Municipal Pension Plan Funding Standard and Recovery Act of December 18, 1984, P.L. 1005, No. 205. The Act controls pension funding in Pennsylvania. This Act also provides for reporting of actuarial information and for a recovery program for qualifying municipalities.

### **Actuarial Accrued Liability**

The portion of the actuarial cost assigned to prior years.

### **Actuarial Assumptions**

Factors used by the actuary to forecast future events. These factors include items relating to future economic conditions, the survival of the participants and their beneficiaries, and the length of employment.

### **Actuarial Cost Method**

A means of assigning costs to periods of employment. This method is used to determine a funding level that will provide sufficient assets to pay benefits for each participant upon retirement. Act 205 specifies that the entry age normal cost method, as described in the Act, should be used for this determination.

### **Actuarial Experience Gain or Loss**

The effect on the actuarial accrued liability of differences between events as predicted by the actuarial assumptions and those that actually occurred. This difference can increase or decrease the contribution in future years.

### **Actuarial Present Value**

The lump sum value that is equivalent to an expected series of future payments. This value is determined by using the actuarial assumptions. An actuarial present value, as of the valuation date, represents the amount of funds that would be sufficient to provide the series of payments, if experience precisely matches the actuarial assumptions.

### **Actuarial Value of Assets**

The value of current plan assets which is used by the actuary to evaluate the current funding status and determine future funding requirements. Under Act 205, a corridor limitation requires that this value be between 80 and 120 percent of the fair market value of the assets except for certain temporary periods for which an expanded corridor of between 70 and 130 percent of fair market value applies.

### **Administrative Expenses**

The average of expenses to administer the plan that is paid in the year preceding the most recent valuation and the anticipated expenses for the year following this valuation. The average is converted to a percentage of payroll and used as part of the Minimum Municipal Obligation calculation.

**Amortization Payment**

The annual payment required to eventually eliminate the unfunded actuarial accrued liability according to the schedule established in Act 205.

**Funded Ratio**

The actuarial value of assets divided by the actuarial accrued liability.

**Funding Adjustment**

Occurs when the actuarial value of assets exceeds the actuarial accrued liability; it is defined by Act 205 as 10 percent of the excess. This adjustment reduces the amount that must be contributed to the pension plan.

**General Municipal Pension System State Aid**

Annually municipalities receive a portion of the insurance premium tax levied on casualty insurance companies headquartered outside of Pennsylvania. If they have paid firefighters, they also receive a portion of the premium tax on out-of-state fire insurance companies. These taxes are distributed according to formulae contained in Act 205.

**Minimum Municipal Obligation**

The amount that must be contributed to a pension plan by a municipality for a given year. The calculation of this amount uses the normal cost, anticipated administrative expenses, amortization payment or funding adjustment, and anticipated employee contributions to determine a municipality's contribution requirement. General Municipal Pension System State Aid may be used to reduce the contribution.

**Normal Cost**

The actuarial cost assigned to a given year to pay for the portion of the anticipated benefit derived from service during that year.

**Unfunded Actuarial Accrued Liability**

The amount by which the actuarial accrued liability exceeds the actuarial value of assets. A valuation will identify the value of changes in the unfunded actuarial accrued liability that result from changes in plan benefits, actuarial assumptions, or actuarial gains and losses. A zero or negative unfunded actuarial accrued liability does not mean that no future contributions are required, only that the current accumulation of plan assets is deemed on or ahead of schedule.

**Vesting**

The participant's non-forfeitable right to receive a benefit, provided that the participant survives until benefit eligibility.