MINUTES OF THE MEETING OF
THE POLICE PENSION AND RELIEF BOARD

February 1, 2018

Members:
Lieutenant Kathleen Bancroft
Ret. Detective Kenneth Harris
Lieutenant John MacDonald
Commander Joseph Montoya
Laura Wachter, Deputy Manager of Safety

Investigating Committee:
Detective Jeffrey Baran
Technician Jeremy Casias
Detective Mark Crider (not present)
Sergeant Julie Wheaton (not present)

Non-Members In Attendance:
Robert McDermott, Assistant City Attorney
Dr. Alisa Koval, DHMC (not present)
chantell Trujillo, Safety Human Resources
John Schnittgrund, President Police Retiree’s Association
Dave Metzler

The meeting convened at 11:20 a.m.

Quorum of members are in attendance, and noted for minutes.

Review of October Minutes. Motion to approve minutes of the December 7, 2017 meeting by Lieutenant Bancroft. Commander Montoya seconded. VOTE: Passed by unanimous vote.

Executive Session re: Confidential medical information regarding return of sick leave.

MOTION: Motion to Enter Executive Session by Lieutenant Bancroft. Seconded by Lieutenant MacDonald. VOTE: Passed by unanimous vote. Executive Session began at 11:22 a.m. to discuss Donald Reed’s case.

After discussion of confidential information/evidence regarding the return of sick leave, the board reconvened the public meeting at 11:25 a.m.
ORIGINAL/RECURRING INJURIES

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<td>Donald Reed</td>
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MOTION: A motion to take No Action on the return of 16 hours of sick leave to Donald Reed was made by Lieutenant Bancroft, seconded by Commander Montoya. VOTE: Passed by unanimous vote.

WIDOW PETITIONS:

The following widow petitions were presented for consideration.

Herminia Munoz Castillo’s petition for widow benefits, related to Officer Winifred Kidd II, P68124.

After discussion:

MOTION: Motion to APPROVE the widow petition made by Commander Montoya and seconded by Lieutenant Bancroft. VOTE: Passed by unanimous vote.

OTHER OLD BUSINESS:

The Board discussed in public session issues regarding the pension review.

1. Last Chance Demand Letters. The City Attorneys Office is in the process of sending out last chance demand letters. A senior and junior litigator have been assigned and they are now drafting the last chance demand letters to go out within 15 days. A copy of the letter will be provided to the Board.

Executive Session re: Response to John Schnittgrund’s email inquiry.

MOTION: Motion to enter Executive Session by Lieutenant Bancroft. Seconded by Commander Montoya. VOTE: Passed by unanimous vote. Executive Session began at 11:29 a.m. to discuss the response to Schnittgrund’s email inquiry.

After discussion of confidential information regarding the response to an email inquiry, the Board reconvened the public meeting at 11:50 a.m.
NEW BUSINESS

The Board discussed in public session the following issues.

1. Retired Detective Kenneth Harris asked that Deputy Manager of Safety Laura Wachter or Chantell Trujillo as when the actuary is submitted.

2. Retirees want to know what the cost would be to award 100 percent of the deceased officer’s pension to the widow. An inquiry was made to whether or not the firefighter’s widows receive 100 percent of the deceased firefighter’s pension.

3. MOTION: A motion to read into the minutes the response to John Schnittgrund’s email inquiry was made by Lieutenant Bancroft. Seconded by Lieutenant MacDonald. The motion carried unanimously.

February 1, 2018

Mr. Schnittgrund:

This letter is written in response to your December 7, 2017 email inquiries.

1. What was the reason for the audit? Who discovered problems and what were the problems, if any?

The Board has a legal and fiduciary responsibility to ensure proper administration and accurate payments of the Old Hire Pension Fund per Charter 9.6.12. This review was proactively initiated by the Board to ensure appropriate calculations. The Board performed a sample audit in 2013 and the results of that audit prompted the Board to perform a full review of every pensioner and beneficiary to ensure accurate payments.

This Board had new members and there was discussion about the longevity changes and we wanted to ensure that all the longevity changes were implemented correctly. Realizing that the pension calculations had not been reviewed on a regular basis, the Board took proactive steps to review the calculations.

2. If there were complaints of wrong payment of benefit, why was it necessary to audit the complete fund?

The Board performed a sample audit of the fund in 2013, and because of the number of identified issues, voted to hire an independent accounting firm who is knowledgeable in municipal pension benefits and calculations to review the entirety of the pension distributions. The Board received various bids from accounting firms. CliftonLarsonAllen won the bid because they work with the FPPA and are experts in pension calculations as well as experienced with Colorado’s Old Hire Police Pension laws.

3. The audit agreement was amended 3 times. Why were 3 amendments needed and if mistakes were made is the correcting of the mistakes part of the amendments?

The contract for audit services was amended three times. CliftonLarsonAllen was originally contracted to perform a statistical audit (by sampling a number of calculations) of the previous review. However, due to the resulting error rate, the Board voted to perform 100% audit of every calculation.

The complexity of the calculation review was more than first anticipated. First, all appropriate ordinances had to be researched and pulled by the Office of the Clerk and Recorder and City Attorney’s Office. Simultaneously, an individual had to research all retiree personnel files (both physically stored and electronically stored), find the notarized retirement petition, scan it and note all the pertinent dates (hire, retirement, years/months of service). Some of the older files had to be researched through microfiche. It was a very time-consuming process. Finally, the Board amended the contract to add in the historical
payments to determine the amounts over and under paid for each year in anticipation of correcting any underpayments, or potentially collecting overpayments.

Finally, the Board has received guidance from legal counsel regarding how to notice and conduct executive sessions, how to post agendas and properly draft minutes. The Board is committed to transparency and will follow the guidance of the City Attorney, and Denver's Revised Municipal Code regarding those items.

Thank you for your inquiries.

Sincerely,
Police Old Hire Pension Board

The next regularly scheduled meeting will be held on Thursday, April 5, 2018 at 11:15 a.m.

MOTION: A motion to adjourn was made by Lieutenant Bancroft. Seconded by Lieutenant MacDonald. The motion carried unanimously.

The meeting was adjourned at 12:20 p.m.

Laura Wachter, Deputy Manager of Safety
Acting Chair, Police Pension and Relief Board

By signing below, the Secretary hereby certifies the above minutes were reviewed and approved by a majority vote of the Pension Board members at a regular meeting held on April 5, 2018.

ATTESTED TO: Chantell Trujillo
Acting Secretary
RECORD OF PROCEEDING April 5, 2018

MINUTES OF THE MEETING OF
THE POLICE PENSION AND RELIEF BOARD

April 5, 2018

Members:
Lieutenant Kathleen Bancroft
Ret. Detective Kenneth Harris
Lieutenant John MacDonald
Commander Joseph Montoya
Laura Wachter, Deputy Manager of Safety

Investigating Committee:
Detective Jeffrey Baran
Technician Jeremy Casias
Detective Mark Crider (not present)
Sergeant Julie Wheaton (not present)

Non-Members In Attendance:
Robert McDermott, Assistant City Attorney (not present)
Chantell Trujillo, Safety Human Resources
John Schnittgrund, President Police Retiree’s Association
Dave Metzler

The meeting convened at 11:24 a.m.

Quorum of members are in attendance, and noted for minutes:

Review of October Minutes. Motion to approve minutes of the February 1, 2017 meeting by Retired Detective Harris. Deputy Manager of Safety Wachter seconded. VOTE: Passed by unanimous vote.

Executive Session re: Confidential medical information regarding return of sick leave.

MOTION: Motion to Enter Executive Session by Lieutenant Bancroft. Seconded by Commander Montoya. VOTE: Passed by unanimous vote. Executive Session began at 11:25 a.m. to discuss Dalton Montgomery’s case.

After discussion of confidential information/evidence regarding the return of sick leave, the board reconvened the public meeting at 11:28 a.m.
ORIGINAL/RECURRING INJURIES

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<td>Dalton Montgomery</td>
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MOTION: A motion to APPROVE on the return of 8 hours of sick leave to Dalton Montgomery was made by Lieutenant Bancroft, seconded by Commander Montoya. VOTE: Passed by unanimous vote.

WIDOW PETITIONS:

The following widow petitions were presented for consideration.

Marsha Prince’s petition for widow benefits, related to Technician Roger Prince, P68054.

Rita William’s petition for widow benefits, related to Detective Lee Williams, P59027.

Veronica Ortiz’s petition for widow benefits, related to Police Officer Robert Ortiz, P72060.

Rose Morris’ petition for widow benefits, related to Sergeant Walter Morris, P68054.

Joanne Turner’s petition for widow benefits, related to Technician James Turner, P63013.

After discussion:

MOTION: Motion to APPROVE the widow petition made by Lieutenant Bancroft and seconded by Commander Montoya. VOTE: Passed by unanimous vote.

OTHER OLD BUSINESS:

The Board discussed in public session issues regarding the pension review.

1. Gary Rennert submitted a request to pay the amount he received back minus the amount paid in taxes.

   MOTION: A motion to require full payment to be paid back was made. Mr. Rennert would be eligible for a payment plan. He can file an amendment to have the amount paid in taxes returned. The motion was made by Lieutenant Bancroft and seconded by Commander Montoya. VOTE: Passed by unanimous vote.

2. There is no update on the status of the Last Chance Demand Letters.
3. Deputy Manager of Safety Wachter will provide a copy of the Last Chance Demand Letters to the Board.

4. Administrator Position: Secretary Chantell Trujillo will follow up on the status of the posting.

5. The Board wants documentation on requests.

The next regularly scheduled meeting will be held on Thursday, June 7, 2018 at 11:15 a.m.

MOTION: A motion to adjourn was made by Lieutenant Bancroft and seconded by Deputy Manager of Safety Wachter. The motion carried unanimously.

The meeting was adjourned at 11:53 p.m.

[Signature]
Laura Wachter, Deputy Manager of Safety
Acting Chair, Police Pension and Relief Board

By signing below, the Secretary hereby certifies the above minutes were reviewed and approved by a majority vote of the Pension Board members at a regular meeting held on June 7, 2018.

ATTESTED TO: [Signature]
Chantell Trujillo
Acting Secretary
MINUTES OF THE MEETING OF
THE POLICE PENSION AND RELIEF BOARD

June 7, 2018

Members:
Lieutenant Kathleen Bancroft
Ret. Detective Kenneth Harris
Lieutenant John MacDonald
Commander Joseph Montoya
Laura Wachter, Deputy Manager of Safety (not present)

Investigating Committee:
Detective Jeffrey Baran
Technician Jeremy Casias
Detective Mark Crider (not present)
Sergeant Julie Wheaton (not present)

Non-Members In Attendance:
Robert McDermott, Assistant City Attorney
Chantell Trujillo, Safety Human Resources
Jennifer Cockrum, Safety Human Resources
John Schnittgrund, President Police Retiree’s Association

The meeting convened at 11:19 a.m.

Quorum of members are in attendance, and noted for minutes.

Review of April Minutes. Motion to approve minutes of the April 5, 2018 meeting by Lieutenant Bancroft. Commander Montoya seconded. VOTE: Passed by unanimous vote.

Executive Session re: Confidential medical information regarding return of sick leave.

MOTION: Motion to Enter Executive Session by Commander Montoya. Seconded by Lieutenant Bancroft. VOTE: Passed by unanimous vote. Executive Session began at 11:20 a.m. to discuss Joel Bell’s case.
After discussion of confidential information/evidence regarding the return of sick leave, the board reconvened the public meeting at 11:22 a.m.

**ORIGINAL/RECURRING INJURIES**

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<td>Joel Bell</td>
<td>8</td>
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**MOTION:** A motion to APPROVE on the return of 8 hours of comp time to Joel Bell was made by Lieutenant Bancroft, seconded by Lieutenant MacDonald. VOTE: Passed by unanimous vote.

**WIDOW PETITIONS:**

The following widow petitions were presented for consideration.

Anna Taylor’s petition for widow benefits, related to Detective Clinton Taylor, P54009.

Wanda Bustillos’ petition for widow benefits, related to Sergeant Fred Bustillos, P62033.

Lynne Mullen’s petition for widow benefits, related to Detective Michael Mullen, P69096.

Kay Gavito’s petition for widow benefits, related to Sergeant Donald Gavito, P61021.

After discussion:

**MOTION:** Motion to APPROVE the widow petition made by Lieutenant Bancroft and seconded by Lieutenant MacDonald. VOTE: Passed by unanimous vote.

**OTHER OLD BUSINESS:**

The Board discussed in public session issues regarding the pension review.

1. Assistant City Attorney Rob McDermott discussed the status of the collection of payments.
   a. Letters and phone calls have been made to all members with an outstanding balance.
   b. We are down to approximately 10 cases.
   c. If payments are not made, the City will file suit.

2. **MOTION:** A motion was made requiring all outstanding payments be paid in full. The motion was made by Ret. Detective Ken Harris and seconded by Commander Montoya. VOTE: Passes by unanimous vote.
3. Pension Board Administrator Position: An update was given by Director of Safety HR, Jennifer Cockrum:
   b. Fourteen applications were received.
      i. Of the 14 applicants, 9 applicants had no pension experience.
      ii. The remaining applicants were referred to the hiring manager.
   c. Safety HR is in the process of interviewing.
   d. An offer should be made by the end of next week.
   e. The new Pension Board Administrator should start the first week of July 2018.

The next regularly scheduled meeting will be held on Thursday, August 2, 2018 at 11:15 a.m.

**MOTION:** A motion to adjourn was made by Lieutenant Bancroft and seconded by Commander Montoya. The motion carried unanimously.

The meeting was adjourned at 11:41 a.m.

[Signature]

Laura Wachter, Deputy Manager of Safety
Acting Chair, Police Pension and Relief Board

By signing below, the Secretary hereby certifies the above minutes were reviewed and approved by a majority vote of the Pension Board members at a regular meeting held on August 2, 2018.

**ATTESTED TO:**

[Signature]
Chantell Trujillo
Acting Secretary
MINUTES OF THE MEETING OF
THE POLICE PENSION AND RELIEF BOARD

August 2, 2018

Members:
Commander Kathleen Bancroft
Ret. Detective Kenneth Harris
Lieutenant John MacDonald
Division Chief Joseph Montoya
Laura Wachter, Deputy Manager of Safety

Investigating Committee:
Detective Jeffrey Baran (Not present)
Detective Jeremy Casias
Detective Mark Crider (Not present)
Sergeant Julie Wheaton (Not present)

Non-Members In Attendance:
Jennifer Cockrum, Safety Human Resources
Laura Hall, Safety Human Resources
Robert McDermott, Assistant City Attorney (Attended via conference call)
Chantell Trujillo, Safety Human Resources
Dave Metzler, Vice President Police Retiree’s Association

The meeting convened at 11:17 a.m.

Quorum of members are in attendance and noted for minutes.

Review of June Minutes. Motion to approve minutes of the June 7, 2018 meeting by Lieutenant MacDonald. Commander Bancroft seconded. VOTE: Passed by unanimous vote.

OTHER OLD BUSINESS:

The Board discussed in public session issues regarding the pension review.

1. Pension Review Update
a. 11 cases are ready to take action and file suit on
   i. One small amount, less than $200
b. Drafting litigation for the 11 cases- within one month hope to start filing against these cases

2. Discussion regarding Gary Rennert’s payback amount
   a. As of July 2- for the refund of $32,000, $6000 was given to government taxes
   b. Rennert sent $26,000 to FPPA
   c. Once he receives the 1099R, he will file to receive the $6000 taxes back and will forward that to FPPA once received
   d. Projected to be resolved in the next 3 to 4 months

NEW BUSINESS:

1. Introduction of the new Pension Plan Administrator, Laura Hall
   a. Mrs. Hall provided a summary of her qualifications
   b. Meeting with John Schnittgruند and other Old Hire pension members to discuss plan information and distributing the summary to Old Hire members

2. Board Member membership vote discussion
   a. Previous votes were done via email/online voting
   b. Reviewing process to conduct a vote at the end of 2018
   c. Current board members agreed to serve through the end of 2018

3. Plan expenses billed to FPPA
   a. Billed from Police Old Hire previously
   b. Going forward, expenses will be included in the Safety HR budget- Safety HR will bill FPPA directly

4. Ret. Detective Kenneth Harris question: Can widows receive full pension amount, not 2/3?
   a. There are no active members to vote anymore, does the charter need to change for retirees to vote on this?
   b. In general for any change that comes up, is a charter/ordinance/municipal code change needed?
   c. Result: City Attorney’s office will research

The next regularly scheduled meeting will be held on Thursday, October 4, 2018, at 11:15 a.m.

MOTION: A motion to adjourn was made by Division Chief Montoya and seconded by Lieutenant MacDonald. The motion carried unanimously.
The meeting was adjourned at 11:41 a.m.

[Signature]

Board Member Signature

By signing below, the Secretary hereby certifies the above minutes were reviewed and approved by a majority vote of the Pension Board members at a regular meeting held on October 3, 2018.

[Signature]

Laura Hall
Secretary

Date: 10/26/18
MINUTES OF THE MEETING OF  
THE POLICE PENSION AND RELIEF BOARD  

October 25, 2018

Members:  
Commander Kathleen Bancroft  
Ret. Detective Kenneth Harris  
Lieutenant John MacDonald (Not present)  
Division Chief Joseph Montoya  
Laura Wachter, Deputy Manager of Safety

Investigating Committee:  
Detective Jeffrey Baran (Not present)  
Detective Jeremy Casias (Not present)  
Detective Mark Crider (Not present)  
Sergeant Julie Wheaton (Not present)

Non-Members In Attendance:  
Robert McDermott, Assistant City Attorney (Not present)  
Laura Hall, Safety Human Resources  
Chantell Trujillo, Safety Human Resources  
Jennifer Cockrum, Safety Human Resources

The meeting convened at 2:35 p.m.

Quorum of members are in attendance and noted for minutes.

Review of August Minutes. Motion to approve minutes of the August 2, 2018 meeting by Retired Detective Harris. Commander Bancroft seconded. VOTE: Passed by unanimous vote.

OTHER OLD BUSINESS:

The Board discussed in public session issues regarding the pension review.

1. Pension Repayment Outstanding Amounts & Summary

   a. 11 cases to litigation as of the meeting  
   b. Any amounts we cannot collect we will ask CLA to repay us- asking them to make the balance whole.
c. Safety HR Director Cockrum will provide progress report each time the Pension Board meets. Current progress report is included in minutes in Appendix A.

2. Requested by Retired Detective Ken Harris to Asst City Attorney McDermott: What is required to change the voting to retirees? Currently the Charter notes only active members may vote; however, there are no active Old Hire members as of 2018.

WIDOW PETITIONS:

The following widow petitions were presented for consideration.

Pamela Cain’s petition for widow benefits, related to Technician John Cain, P65026.

Marlene Almond’s petition for widow benefits, related to Patrolman William Almond, P61049.

Nimphia Cito’s petition for widow benefits, related to Lieutenant Arthur Cito, P51003.

Pamela Davis petition for widow benefits, related to Patrolman Ellwin Haarhues, P54001.

After discussion:

MOTION: Motion to APPROVE the widow petitions made by Retired Detective Ken Harris and seconded by Division Chief Montoya. VOTE: Passed by unanimous vote.

NEW BUSINESS:

1. Rank Escalation Calculations and Notification of Engagement
   a. Safety HR is engaging outside firms to confirm rank escalation calculation.
   b. Pension Plan Administrator Laura Hall will confirm initial calculation.

2. RFP for Actuary Services in 2019
   b. Cannot use an outside firm because they are not currently engaged with the City.

3. 2018 Board Member Vote
   a. Official vote did not occur in January 2018.
   b. Due to litigation with CLA at the time of the pension board meeting in December 2017, all board members agreed to serve another year as they were familiar with the situation.
   c. Question to Asst City Attorney McDermott: can we adjust the December 2017 meeting minutes to include the 2018 vote was discussed?

MOTION: Motion to APPROVE adding the discussion regarding the 2018 vote to the December 2017 minutes made by Commander Bancroft and seconded by Retired Detective Ken Harris. VOTE: Passed by unanimous vote.
4. 2019 Board Member and Investigators Vote  
   a. Laura Hall will request nominations in December 2018.  
   b. Conduct the vote via email from January 1-15.  
   c. Commander Bancroft brought up the confidentiality agreements for each year- Laura Hall will research these.  
   d. Laura Hall will also confirm the Manager of Safety appointee.

5. 2018 FPPA Census  
   a. FPPA asks employers to confirm census information each January- address changes, deaths, remarriages, etc.  
   b. Mailing letter and survey to each Old Hire pension retiree or surviving spouse to:  
      i. Introduce Laura Hall as Pension Plan Administrator and provide her contact information.  
      ii. Confirm addresses, marital status, email address, Power of Attorney changes.  
      iii. Verify information and clean up data as we create online retiree database.  
   c. Census survey due back to Safety HR by November 30, 2018, and Laura Hall will collect and note any changes with FPPA by January 15, 2019.

6. 2018 Actuarial Valuation Memo and Review  
   a. Memo and review are included in minutes in Appendix B. Information on the study for all Old Hire employers is also linked here under the Employer Actuarial Resources section on the FPPA website.  
   b. Main points:  
      i. Reduced rate of return from 7.5% to 7.0%.  
      ii. Hold off on benefit assumptions until new assumption is set and asset allocation is determined.  
   c. The FPPA website has a comprehensive video that explains how to read the actuarial report. That is linked here.  
   d. The Denver Old Hire Police Pension Fund Actuarial study includes two studies the members requested regarding increasing the monthly benefit for surviving spouses from 2/3 of the Police Officer’s benefit at the time of death to 100% of the monthly benefit.  
      i. The scenarios note an increase of 5 million or 11 million in costs depending on the scenario.

The next regularly scheduled meeting will be held on Thursday, December 6, 2018 at 11:15 a.m.

**MOTION:** A motion to adjourn was made by Retired Detective Harris and seconded by Division Chief Montoya. The motion carried unanimously.

The meeting was adjourned at 3:13 p.m.
Laura Wachter, Deputy Manager of Safety
Appointed Chair, Police Pension and Relief Board

By signing below, the Secretary hereby certifies the above minutes were reviewed and approved by a majority vote of the Pension Board members at a regular meeting held on December 6, 2018.

ATTESTED TO:  Laura Hall, Secretary
To: Old Hire Police Pension Board  
From: Jennifer Cockrum, Director, Safety Human Resources  
Date: October 25, 2018  
Re: Pension Repayment Outstanding Amounts and Summary

228 pensioners were initially overpaid by approximately $1,132,000. The City has now recovered a significant portion of that amount. The uncollected amount, $344,460.21 is comprised of:

- $99,753.45 in discounts given to early payors to encourage repayment
- $149.40 overpayment amount that the City will not be pursuing in litigation due to the small amount
- $244,557.36 in uncollected overpayments...
  - Two of the beneficiaries have passed away, totaling $35,443.22, of which the City will not be pursuing the estates for these amounts.

The remaining $209,114.14 is in collection efforts and the City is prepared to litigate. Just recently, two of the delinquent pensioners executed payment plans totaling $41,977.62. The remaining delinquent pensioners and beneficiaries have not indicated a willingness to enter into repayment plans. Thus, the amount that the City is still pursuing stands at $167,136.52.

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MEMORANDUM

To: Affiliated Old Hire Fire or Police Department Employers
   Sent via email to FPPA Actuarial Contact

From: FPPA

Re: Old Hire Fire or Police Department Actuarial Valuation Results as of January 1, 2018

Date: July 2018

The actuarial valuation report as of January 1, 2018 for your Old Hire Fire or Police Department pension plan is available on the FPPA Employer Portal.

The actuarial valuation report has always played an important role as the basic source document for information regarding actuarially determined contributions and the funded status of pension plans. The Government Finance Officers Association (GFOA) recommends that state and local government finance officials and others with decision-making authority carefully review and understand their actuarial valuation report and use the information it contains to make policy decisions that ensure that pension benefits are funded in a sustainable manner. The purpose of an actuarial valuation is: 1) to determine the amount of actuarially determined contributions (i.e., an amount that, if contributed consistently and combined with investment earnings, would be sufficient to pay promised benefits in full over the long-term) and 2) to measure the plan’s funding progress.

To assist you in your budgeting process for 2019 on your Old Hire Fire or Police Department pension plan, please refer to the Annual Required Contribution (ARC) amount within the Executive Summary of this report.

At least every five years the FPPA Board of Directors, in accordance with best practices, reviews its economic and demographic actuarial assumptions. FPPA is currently in the process of completing an actuarial experience study where the assumption changes will be effective 1/1/2019. There is a strong indication that the investment return rate may decrease from the current 7.5%. In addition, there may be changes to the life expectancy assumptions. Both of these factors will likely increase future contribution requirements. As such, the FPPA Board of Directors is strongly encouraging the employer to continue paying the 2018 Actuarial Required Contribution in 2019 if it is greater than the proposed contribution in this report. The Board is also asking employers to hold off on any benefit improvements to the plan until the new assumption set and asset allocation is determined. FPPA may provide updated contribution recommendations for 2020 based on the outcome of the
experience and asset allocation studies, rather than waiting for the usual biennial cycle to reflect the assumption changes.

FPPA’s actuarial firm (Gabriel Roeder Smith) has created video presentations to assist the employer and the Old Hire Pension Board on understanding the Old Hire actuarial valuation report. You will find the video presentations on FPPA’s website at:  [http://www.FPPAco.org/old-hire.html](http://www.FPPAco.org/old-hire.html)

Please share this report and video presentations with your Old Hire Pension Board. If you have any questions concerning this report, please contact FPPA at 303-770-3772 or 800-332-3772.
To: Administrative Heads and Finance Officers of the Denver Old Hire Police Pension Fund; administered by FPPA
Date: June 2018
Subject: Actuarial Valuation Results as of January 1, 2018

This report contains the actuarial valuation results as of January 1, 2018 for your department as determined by Gabriel, Roeder, Smith & Company (GRS), actuary for the Fire and Police Pension Association (FPPA). Questions about this report should be directed to FPPA, rather than to Gabriel, Roeder, Smith & Company.

Financing Objectives

This valuation was prepared to determine the annual required contribution (ARC) for fiscal years 2019 and 2020. The ARC for FY2019 and FY2020 is $8,803,193 and is shown in Table 1, Item 11. The annual required contribution the department must pay is the calculated annual contribution, but not less than $0.

The department’s calculated annual contribution consists of the sum of three pieces: the normal cost, the amortization of the unfunded actuarial accrued liability (UAAL), and a component to cover administrative expenses. The calculated annual contribution is shown in Table 1, Item 10. Due to the many factors affecting a retirement system, users of this report should be aware that contributions made at that rate do not necessarily guarantee long-term benefit security.

The normal cost (shown in Table 1, Item 2) can be viewed as the regular, ongoing cost of the Plan. The normal cost is accrued over the working lifetime of a member and once a member reaches normal retirement age, there is no more normal cost. Because the Plan has no active members below their normal retirement age, the Plan has no normal cost.

The UAAL is the amount by which the actuarial value of assets falls short of, or exceeds, the actuarial accrued liability for this Plan. Under the current statutes, the UAAL must be amortized under a level dollar method in the lesser of 20 years or the average remaining life expectancy of the group, which currently is 17.47 years. Under these statutes, the amortization period for the 2018 actuarial valuation is 17 years. The required payment to amortize the UAAL is shown in Table 1, Item 8.

Benefit Provisions

This actuarial valuation reflects the provisions that were applicable to the Denver Old Hire Police Pension Fund as of the valuation date. The details of the actuarial calculations, based on the current benefit provisions, are described in this report. Departments are allowed to model three alternative benefit packages, if desired. If alternatives were requested, a summary of the alternative requested and the actuarial results based on those packages is shown in Table 17.

Actuarial Assumptions and Methods

This actuarial valuation uses the assumptions and methods that were adopted by the Board of Directors.
of FPPA based upon the actuary’s analysis and recommendations resulting from the 2015 Experience Study and effective in the January 1, 2016 valuations. A summary of those assumptions and methods can be found in Table 14. There were no actuarial or method changes made for this valuation.

Liabilities were determined under the entry age normal actuarial cost method.

The asset valuation method approximates smoothing over a five-year period by recognizing 20% of the difference between the projected actuarial value and the market value at the valuation date.

The results of the actuarial valuation are dependent on the actuarial assumptions used. Actual results can and almost certainly will differ, as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated annual contribution and funding periods. The actuarial calculations are intended to provide information for rational decision making.

This report does not include a detailed assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment.

**Assets**

Table 4 shows the market value of assets for this department and Table 5 shows the development of the actuarial value of assets. The actuarial value is an adjusted market value. It reflects only a portion of the excess (or shortfall) between recent investment returns and the corresponding expected returns based on the annual investment return assumption. The actuarial value recognizes 20% of the difference between the projected actuarial value and the market value at the valuation date with the additional 80% of the difference recognized over the next four years (20% per year). This smoothed average approach dampens the year-to-year fluctuations in the calculated annual contribution.

**Member Data**

Member data as of January 1, 2018 was supplied by FPPA, as supplied by the department throughout the normal course of business. GRS did not subject the data to any auditing procedures but reviewed it and tested it for reasonableness and consistency. The member count is shown in Table 3.

**Experience**

Actuarial experience is measured by comparing the expected valuation results with the actual valuation results at the valuation date. The expected valuation results are calculated as if all of the actuarial assumptions had been met. For instance, a gain/(loss) attributable to investment experience is realized when the pension fund assets earn over/(under) the actuarial assumed earnings rate and a gain/(loss) attributable to liability experience is realized when the pension fund liabilities are less/(greater) than the actuarial assumptions predicted (e.g. members not living as long as expected, rank escalation or cost-of-living increases were greater than expected, etc.).

During the two year period since the prior valuation, the plan experienced liability losses and investment losses due to actual experience deviating from assumptions. Table 2 shows the detailed calculations of the gains and losses since the prior valuation.
GASB Accounting


Projected Actuarial Results

To allow the City to anticipate future contribution requirements for the Fund, we have projected the actuarial status of the Fund as of January 1, 2020. The following table provides the calculated annual contribution for Fiscal Years 2019 & 2020 based on the January 1, 2018 actuarial valuation and an estimated annual required contribution for Fiscal Years 2021 and 2022, based on three different investment return scenarios in 2018 & 2019 and a projected January 1, 2020 actuarial valuation.

<table>
<thead>
<tr>
<th>Fiscal Year (FY)</th>
<th>Annual Required Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Assuming 3.5% return in FY 2018 &amp; 2019</td>
</tr>
<tr>
<td>2019 &amp; 2020</td>
<td>$8,803,193</td>
</tr>
<tr>
<td>2021 &amp; 2022</td>
<td>$10,214,974</td>
</tr>
</tbody>
</table>

The projected liabilities are calculated by rolling forward the liabilities as of January 1, 2018, taking into account interest and benefit payments for the year, including mortality incidence and anticipated cost of living increases. The 7.5% scenario above coincides with the actuarial investment return assumption of 7.5%. The 3.5% and 11.5% scenarios demonstrate the impact of small amounts of investment return volatility. Actual investment return volatility could exceed the illustrated +/-4% deviation from the actuarial investment return assumption of 7.50%.

In addition to investment return experience, demographic experience and future assumption changes could also impact the actual Annual Required Contribution for fiscal years 2021 and 2022.

Tables

This report includes the following sections:

- The executive summary includes a condensed summary of the demographic, financial, and actuarial data.
- Table 1 provides the details of the development of the required contribution.
- Table 2 shows the sources of change in the calculated annual contribution since the prior valuation.
• Table 3 shows historical actuarial and demographic data for the department.
• Tables 4, 5, 6, and 7 show the development of the financial information.
• Tables 8 and 9 provide information that used to be required under the Governmental Accounting Standards Board Statement No. 25 (GASB 25) and No. 27 (GASB 27). These are provided for historical comparison purposes only. These statements have been replaced by GASB 67 and GASB 68 and results under those standards will be provided in a separate report.
• Table 10 shows historical cash flow information.
• Tables 11, 12, and 13 show demographic data for the department.
• Table 14 shows the actuarial assumptions and methods used to calculate the liabilities.
• Table 15 is a summary of the benefit provisions for the department.
• Table 16 provides definitions of several terms used throughout the report.
• Table 18 shows a description of and an analysis of any alternative studies requested by the department.

Certification

We certify that the information included herein and contained in the 2018 Actuarial Valuation Report is accurate and fairly presents the actuarial position of the Denver Old Hire Police Pension Fund as of January 1, 2018. For financial reporting purposes, the projection of benefits for this Plan does not explicitly incorporate the potential effects of the contractual limits on employer contributions, if applicable.

The supporting schedules in this report were prepared by the actuaries and can be used for completing the actuarial section of the Comprehensive Annual Financial Report. To the best of our knowledge, the supporting schedules fully and fairly disclose the actuarial conditions of the plan.

All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, the results presented comply with the requirements of the State of Colorado statutes and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board. The undersigned are independent actuaries. Mr. Newton and Ms. Woolfrey are members of the Society of Actuaries and the American Academy of Actuaries, and are also Enrolled Actuaries. Both are experienced in performing valuations for public retirement systems.

Respectfully submitted,
Gabriel Roeder Smith & Company

[Signatures]

Dana Woolfrey, FSA, EA, MAAA
Consultant and Actuary

Joseph Newton, FSA, EA, MAAA
Senior Consultant
## Executive Summary

### Membership
<table>
<thead>
<tr>
<th>Item</th>
<th>January 1, 2018</th>
<th>January 1, 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of:</td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>- Active members</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>- Members in DROP</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>- Disabled members</td>
<td>297</td>
<td>322</td>
</tr>
<tr>
<td>- Retired members</td>
<td>450</td>
<td>478</td>
</tr>
<tr>
<td>- Beneficiaries</td>
<td>261</td>
<td>251</td>
</tr>
<tr>
<td>- Total</td>
<td>1,009</td>
<td>1,052</td>
</tr>
</tbody>
</table>

- Annualized payroll supplied by FPPA: $0 $0
- Annualized monthly benefits paid: $58,117,465 $56,467,330

### Assets
<table>
<thead>
<tr>
<th>Item</th>
<th>January 1, 2018</th>
<th>January 1, 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market value</td>
<td>$618,125,199</td>
<td>$605,938,591</td>
</tr>
<tr>
<td>Actuarial value</td>
<td>611,658,533</td>
<td>630,910,491</td>
</tr>
<tr>
<td>Return on market value - Prior year</td>
<td>14.7%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Return on market value - Prior year minus 1</td>
<td>5.3%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Average return on actuarial value</td>
<td>6.8%</td>
<td>7.1%</td>
</tr>
<tr>
<td>Contribution for prior year</td>
<td>$7,987,837</td>
<td>$18,088,845</td>
</tr>
<tr>
<td>Contribution for prior year minus 1</td>
<td>$5,027,201</td>
<td>$16,266,495</td>
</tr>
<tr>
<td>Ratio of actuarial value to market value</td>
<td>99.0%</td>
<td>104.1%</td>
</tr>
</tbody>
</table>

### Actuarial Information
<table>
<thead>
<tr>
<th>Item</th>
<th>January 1, 2018</th>
<th>January 1, 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actuarial accrued liability</td>
<td>$691,034,748</td>
<td>$702,470,993</td>
</tr>
<tr>
<td>Unfunded actuarial accrued liability/(surplus)</td>
<td>79,376,215</td>
<td>71,560,502</td>
</tr>
<tr>
<td>Amortization period (years)</td>
<td>17</td>
<td>20</td>
</tr>
<tr>
<td>Calculated annual contribution</td>
<td>$8,803,193</td>
<td>$7,987,837</td>
</tr>
<tr>
<td>Funded ratio</td>
<td>88.5%</td>
<td>89.8%</td>
</tr>
</tbody>
</table>

### Annual Required Contribution (ARC)
<table>
<thead>
<tr>
<th>Item</th>
<th>January 1, 2018</th>
<th>January 1, 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>For year ending December 31, 2019</td>
<td>$8,803,193</td>
<td>$7,987,837</td>
</tr>
<tr>
<td>For year ending December 31, 2020</td>
<td>$8,803,193</td>
<td>$7,987,837</td>
</tr>
</tbody>
</table>
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Table 1 - Development of Annual Required Contribution

<table>
<thead>
<tr>
<th>Description</th>
<th>January 1, 2018 (1)</th>
<th>January 1, 2016 (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Covered payroll</td>
<td>$ 0</td>
<td>$ 0</td>
</tr>
<tr>
<td>2. Normal cost</td>
<td>$ 0</td>
<td>$ 0</td>
</tr>
<tr>
<td>3. Actuarial accrued liability for active members</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Present value of future benefits for active members</td>
<td>$ 0</td>
<td>$ 0</td>
</tr>
<tr>
<td>b. Less: present value of future normal costs</td>
<td>$ 0</td>
<td>$ 0</td>
</tr>
<tr>
<td>c. Actuarial accrued liability (a. - b.)</td>
<td>$ 0</td>
<td>$ 0</td>
</tr>
<tr>
<td>4. Total actuarial accrued liability for:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Retirees and beneficiaries</td>
<td>$ 468,347,928</td>
<td>$ 471,314,584</td>
</tr>
<tr>
<td>b. Disabled members</td>
<td>221,400,917</td>
<td>229,917,665</td>
</tr>
<tr>
<td>c. Members in DROP</td>
<td>1,285,903</td>
<td>1,238,744</td>
</tr>
<tr>
<td>d. Active members (3c.)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>e. Total</td>
<td>$ 691,034,748</td>
<td>$ 702,470,993</td>
</tr>
<tr>
<td>5. Actuarial value of assets</td>
<td>$ 611,658,533</td>
<td>$ 630,910,491</td>
</tr>
<tr>
<td>6. Unfunded actuarial accrued liability (UAAL)/(surplus) (4e. - 5.)</td>
<td>$ 79,376,215</td>
<td>$ 71,560,502</td>
</tr>
<tr>
<td>7. Funded ratio</td>
<td>88.51%</td>
<td>89.81%</td>
</tr>
<tr>
<td>8. Required payment to amortize the UAAL/(surplus) over 17 years from January 1, 2018</td>
<td>$ 8,199,819</td>
<td>$ 7,044,326</td>
</tr>
<tr>
<td>9. Administrative expenses</td>
<td>$ 603,374</td>
<td>$ 943,511</td>
</tr>
<tr>
<td>10. Total calculated annual contribution (2. + 8. + 9.)</td>
<td>$ 8,803,193</td>
<td>$ 7,987,837</td>
</tr>
<tr>
<td>11. Annual required contribution (10., not less than 0)</td>
<td>$ 8,803,193</td>
<td>$ 7,987,837</td>
</tr>
<tr>
<td>12. Total present value of benefits (4e. + 3b.)</td>
<td>$ 691,034,748</td>
<td>$ 702,470,993</td>
</tr>
</tbody>
</table>
Table 2 - Change in UAAL/Calculated Contribution

1. Unfunded actuarial accrued liability (UAAL) as of January 1 of prior valuation year $ 71,560,502
2. Benefit modifications from prior valuation 0
3. Total normal cost for FY2016 & FY2017 0
4. Contributions less administrative expenses during FY2016 (4,014,544)
5. Contributions less administrative expenses during FY2017 (7,793,746)
6. Interest at 7.5% $ 10,381,411
7. Expected UAAL as of this valuation (sum of 1. to 6.) $ 70,133,623
8. Actual UAAL at end of period $ 79,376,215
9. Actuarial gain/(loss) for the period (7. - 8.) $ (9,242,592)

SOURCE OF GAINS/(LOSSES)
10. Asset gain/(loss) (See Table 7) $ (8,180,290)
11. Salary/rank liability gain/(loss) for the period $ (2,263,791)
12. Net liability gain/(loss) for the period (9. - 10. - 11.) $ 1,201,489

Change in Calculated Annual Contribution

1. Calculated annual contribution 2016 $ 7,987,837
2. Benefit changes $ 0
3. Change in expense charge (340,137)
4. Assumption/method changes 0
5. Investment experience 928,408
6. Salary/rank experience 256,925
7. Change due to excess contribution/contribution shortfall* 0
8. Mortality and other liability experience (29,840)
9. Total change $ 815,356
10. Calculated annual contribution 2018 $ 8,803,193

* Item 7 captures any difference in the future contribution requirements created by the actual contributions under the State Funding Agreement being different than the calculated annual contribution during 2016 or 2017.
### Table 3 - Actuarial Experience

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Number of members</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Active</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>13</td>
<td>24</td>
</tr>
<tr>
<td>b. Retired</td>
<td>450</td>
<td>478</td>
<td>502</td>
<td>525</td>
<td>537</td>
<td>550</td>
<td>540</td>
</tr>
<tr>
<td>c. DROP</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>15</td>
<td>24</td>
<td>47</td>
<td>90</td>
</tr>
<tr>
<td>d. Beneficiaries</td>
<td>261</td>
<td>251</td>
<td>256</td>
<td>266</td>
<td>259</td>
<td>249</td>
<td>235</td>
</tr>
<tr>
<td>e. Disabled</td>
<td>297</td>
<td>322</td>
<td>335</td>
<td>343</td>
<td>370</td>
<td>374</td>
<td>374</td>
</tr>
<tr>
<td>f. Total</td>
<td>1,009</td>
<td>1,052</td>
<td>1,099</td>
<td>1,150</td>
<td>1,193</td>
<td>1,233</td>
<td>1,263</td>
</tr>
<tr>
<td><strong>2. Covered payroll</strong></td>
<td>$0</td>
<td>$0</td>
<td>$89,936</td>
<td>$88,137</td>
<td>$243,061</td>
<td>$992,604</td>
<td>$1,725,096</td>
</tr>
<tr>
<td><strong>3. Average compensation</strong></td>
<td>$0</td>
<td>$0</td>
<td>$89,936</td>
<td>$88,137</td>
<td>$81,020</td>
<td>$76,354</td>
<td>$71,879</td>
</tr>
<tr>
<td><strong>4. Based on granting full rank escalation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Normal cost</td>
<td>$691,034,748</td>
<td>$702,470,993</td>
<td>$683,727,443</td>
<td>$712,386,457</td>
<td>$716,975,792</td>
<td>$727,609,391</td>
<td>$710,811,984</td>
</tr>
<tr>
<td>b. Accrued liability</td>
<td>611,658,533</td>
<td>630,910,491</td>
<td>621,002,687</td>
<td>505,553,053</td>
<td>542,909,358</td>
<td>614,546,679</td>
<td>525,072,070</td>
</tr>
<tr>
<td>c. Actuarial value of assets</td>
<td>79,376,215</td>
<td>71,560,502</td>
<td>62,724,756</td>
<td>206,833,404</td>
<td>174,066,434</td>
<td>113,062,712</td>
<td>185,739,914</td>
</tr>
<tr>
<td>d. Unfunded liability</td>
<td>17</td>
<td>20</td>
<td>19</td>
<td>20</td>
<td>20</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>e. Remaining amortization period</td>
<td>88.5%</td>
<td>89.8%</td>
<td>90.8%</td>
<td>71.0%</td>
<td>75.7%</td>
<td>84.5%</td>
<td>73.9%</td>
</tr>
<tr>
<td>f. Funded ratio</td>
<td>1,009</td>
<td>1,052</td>
<td>1,099</td>
<td>1,150</td>
<td>1,193</td>
<td>1,233</td>
<td>1,263</td>
</tr>
<tr>
<td><strong>5. Total calculated annual contributions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Amount</td>
<td>$8,803,193</td>
<td>$7,987,837</td>
<td>$5,027,201</td>
<td>$19,468,864</td>
<td>$17,154,339</td>
<td>$10,622,766</td>
<td>$19,190,804</td>
</tr>
<tr>
<td>b. Per member</td>
<td>8,725</td>
<td>7,593</td>
<td>4,574</td>
<td>16,929</td>
<td>14,379</td>
<td>8,615</td>
<td>15,195</td>
</tr>
<tr>
<td><strong>6. Annual required contribution</strong></td>
<td>$8,803,193</td>
<td>$7,987,837</td>
<td>$5,027,201</td>
<td>$19,468,864</td>
<td>$17,154,339</td>
<td>$28,867,776</td>
<td>$28,863,474</td>
</tr>
</tbody>
</table>

Item 5 above is the calculated contribution as it is described throughout the report: normal cost, plus the amortization of the UAAL under the policy as described in the current statutes, plus an explicit charge for administrative expenses.
Table 4 - Reconciliation of Net Plan Assets

<table>
<thead>
<tr>
<th></th>
<th>Year Ending</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12/31/2017</td>
<td>12/31/2016</td>
<td></td>
</tr>
<tr>
<td>1. Market value of assets at beginning of year</td>
<td>$ 584,034,459</td>
<td>$ 605,938,591</td>
<td></td>
</tr>
<tr>
<td>2. Revenue for the year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Plan direct inflows</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i. Employer contributions</td>
<td>$ 7,987,837</td>
<td>$ 5,027,201</td>
<td></td>
</tr>
<tr>
<td>ii. State contributions</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>iii. Affiliations</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>iv. Plan directed expenses</td>
<td>(220)</td>
<td>(74,505)</td>
<td></td>
</tr>
<tr>
<td>v. Total</td>
<td>$ 7,987,617</td>
<td>$ 4,952,696</td>
<td></td>
</tr>
<tr>
<td>b. Allocated income</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i. Interest</td>
<td>$ 1,629,491</td>
<td>$ 1,626,850</td>
<td></td>
</tr>
<tr>
<td>ii. Dividends</td>
<td>4,307,854</td>
<td>4,553,810</td>
<td></td>
</tr>
<tr>
<td>iii. Other Income</td>
<td>5,104,119</td>
<td>2,378,281</td>
<td></td>
</tr>
<tr>
<td>iv. Net change accrued income</td>
<td>363,570</td>
<td>(20,832)</td>
<td></td>
</tr>
<tr>
<td>v. Unrealized gain/(loss)</td>
<td>49,907,995</td>
<td>14,310,255</td>
<td></td>
</tr>
<tr>
<td>vi. Realized gain/(loss)</td>
<td>26,953,805</td>
<td>12,941,112</td>
<td></td>
</tr>
<tr>
<td>vii. Total</td>
<td>$ 88,266,834</td>
<td>$ 35,789,476</td>
<td></td>
</tr>
<tr>
<td>c. Total Revenue (2a. + 2b.)</td>
<td>$ 96,254,451</td>
<td>$ 40,742,172</td>
<td></td>
</tr>
<tr>
<td>3. Expenditures for the year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Plan direct outflows</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i. Net benefits</td>
<td>$ (56,248,498)</td>
<td>$ (56,901,343)</td>
<td></td>
</tr>
<tr>
<td>ii. Refunds</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>iii. Total</td>
<td>$ (56,248,498)</td>
<td>$ (56,901,343)</td>
<td></td>
</tr>
<tr>
<td>b. Allocated expense</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i. Investment expenses</td>
<td>$ (5,721,342)</td>
<td>$ (4,806,809)</td>
<td></td>
</tr>
<tr>
<td>ii. Directed plan expenses</td>
<td>(523)</td>
<td>(12,633)</td>
<td></td>
</tr>
<tr>
<td>iii. Allocated fees and expenses</td>
<td>(193,348)</td>
<td>(925,519)</td>
<td></td>
</tr>
<tr>
<td>iv. Total allocated expenditures</td>
<td>$ (5,915,213)</td>
<td>$ (5,744,961)</td>
<td></td>
</tr>
<tr>
<td>c. Total expenditures (3a. + 3b.)</td>
<td>$ (62,163,711)</td>
<td>$ (62,646,304)</td>
<td></td>
</tr>
<tr>
<td>4. Increase/(Decrease) in net assets (2c. + 3c.)</td>
<td>$ 34,090,740</td>
<td>$ (21,904,132)</td>
<td></td>
</tr>
<tr>
<td>5. Market value of assets at end of year (1. + 4.)</td>
<td>$ 618,125,199</td>
<td>$ 584,034,459</td>
<td></td>
</tr>
</tbody>
</table>
Table 5 - Development of Actuarial Value of Assets

<table>
<thead>
<tr>
<th></th>
<th>Year Ending</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12/31/2017</td>
</tr>
<tr>
<td>1. Actuarial value of assets at beginning of year</td>
<td>$ 614,245,276</td>
</tr>
<tr>
<td>2. Cash flow for the year</td>
<td></td>
</tr>
<tr>
<td>a. Contributions</td>
<td>$ 7,987,837</td>
</tr>
<tr>
<td>b. State contributions</td>
<td>0</td>
</tr>
<tr>
<td>c. Affiliation contributions</td>
<td>0</td>
</tr>
<tr>
<td>d. Benefit payments</td>
<td>(56,248,498)</td>
</tr>
<tr>
<td>e. Administrative and other expenses</td>
<td>(194,091)</td>
</tr>
<tr>
<td>f. Net cash flow</td>
<td>$ (48,454,752)</td>
</tr>
<tr>
<td>3. Expected investment earnings</td>
<td>$ 44,251,342</td>
</tr>
<tr>
<td>4. Expected actuarial value of assets at end of year</td>
<td>$ 610,041,867</td>
</tr>
<tr>
<td>5. Actual market value of assets at end of year</td>
<td>$ 618,125,199</td>
</tr>
<tr>
<td>6. Excess earnings/(shortfall)</td>
<td>$ 8,083,332</td>
</tr>
<tr>
<td>7. Excess earnings/(shortfall) recognized (Table 6, Item 6)</td>
<td>$ 1,616,666</td>
</tr>
<tr>
<td>8. Final actuarial value of assets (Item 4 + Item 7)</td>
<td>$ 611,658,533</td>
</tr>
</tbody>
</table>
## Table 6 - Development of Amounts to be Recognized in the Actuarial Value of Assets

<table>
<thead>
<tr>
<th>Year Ending</th>
<th>12/31/2017</th>
<th>12/31/2016</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
</tbody>
</table>

1. Remaining deferrals of excess (shortfall) of investment income from prior years
   a. Current year - 4  | $ 0  | $ 0  |
   b. Current year - 3  | 0    | 0    |
   c. Current year - 2  | (18,728,925) | 0 |
   d. Current year - 1  | (11,481,892) | (24,971,900) |
   e. Total             | $ (30,210,817) | $ (24,971,900) |

2. Current year (Table 5, Item 6 - Table 6, Item 1)  | $ 38,294,149 | $ (14,352,365) |

3. Amounts to be immediately recognized due to offsetting current year experience (Item 2) against prior year deferrals (Item 1)
   a. Current year - 4  | $ 0  | $ 0  |
   b. Current year - 3  | 0    | 0    |
   c. Current year - 2  | 18,728,925 | 0 |
   d. Current year - 1  | 11,481,892 | 0 |
   e. Current year      | (30,210,817) | 0 |
   f. Total             | $ 0  | $ 0  |

4. Remaining prior year deferrals
   a. Current year - 4  | $ 0  | $ 0  |
   b. Current year - 3  | 0    | 0    |
   c. Current year - 2  | 0    | 0    |
   d. Current year - 1  | 0    | (24,971,900) |
   e. Current year      | 8,083,332 | (14,352,365) |
   f. Total             | $ 8,083,332 | $ (39,324,265) |

5. Deferral of excess (shortfall) of investment income for:
   a. Current year - 4  | $ 0  | $ 0  |
   b. Current year - 3  | 0    | 0    |
   c. Current year - 2  | 0    | 0    |
   d. Current year - 1  | 0    | (18,728,925) |
   e. Current year      | 6,466,666 | (11,481,892) |
   f. Total             | $ 6,466,666 | $ (30,210,817) |

6. Total amount recognized in actuarial value of assets (Item 3.f + Item 4.f. - Item 5.f.)  | $ 1,616,666 | $ (9,113,448) |
Table 7 - Gain/(Loss) on Actuarial Value of Assets

<table>
<thead>
<tr>
<th>Description</th>
<th>January 1, 2018 (1)</th>
<th>January 1, 2016 (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Actuarial assets, prior valuation</td>
<td>$630,910,491</td>
<td>$621,002,687</td>
</tr>
<tr>
<td>2. Total contributions since prior valuation</td>
<td>$13,015,038</td>
<td>$34,355,340</td>
</tr>
<tr>
<td>3. Benefits and refunds since prior valuation</td>
<td>$(113,149,841)</td>
<td>$(110,463,538)</td>
</tr>
<tr>
<td>4. Administrative and other expenses since prior valuation*</td>
<td>$(1,206,748)</td>
<td>$0</td>
</tr>
<tr>
<td>5. Assumed net investment income at 7.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Beginning assets</td>
<td>$98,185,445</td>
<td>$96,643,543</td>
</tr>
<tr>
<td>b. Contributions</td>
<td>879,243</td>
<td>2,554,062</td>
</tr>
<tr>
<td>c. Benefits, refunds and administrative expenses</td>
<td>$(8,794,805)</td>
<td>$(8,432,721)</td>
</tr>
<tr>
<td>d. Total</td>
<td>$90,269,883</td>
<td>$90,764,884</td>
</tr>
<tr>
<td>6. Expected actuarial assets (1. + 2. + 3. + 4. + 5.)</td>
<td>$619,838,823</td>
<td>$635,659,373</td>
</tr>
<tr>
<td>7. Actual actuarial assets, this valuation</td>
<td>$611,658,533</td>
<td>$630,910,491</td>
</tr>
<tr>
<td>8. Net asset gain/(loss) since prior valuation (7. - 6.)</td>
<td>$(8,180,290)</td>
<td>$(4,748,882)</td>
</tr>
</tbody>
</table>

* Item 4 is not applicable as of January 1, 2016 since the change in expense assumption was prospective only and did not impact the gain or loss on the actuarial value of assets as of January 1, 2016.
## Table 8 - Statement of Funding Progress

<table>
<thead>
<tr>
<th>Date</th>
<th>Actuarial Value of Assets (AVA)</th>
<th>Actuarial Accrued Liability (AAL)</th>
<th>Unfunded Actuarial Accrued Liability (UAAL)</th>
<th>Funded Ratio (2)/(3)</th>
<th>Annual Covered Payroll (6)</th>
<th>UAAL as a percent of payroll (4)/(6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 1, 2002</td>
<td>$569,909,130</td>
<td>$707,291,731</td>
<td>$137,382,601</td>
<td>80.6%</td>
<td>$7,016,883</td>
<td>1958%</td>
</tr>
<tr>
<td>January 1, 2004</td>
<td>486,479,556</td>
<td>714,358,186</td>
<td>227,878,630</td>
<td>68.1%</td>
<td>2,825,965</td>
<td>8064%</td>
</tr>
<tr>
<td>January 1, 2006</td>
<td>525,072,070</td>
<td>710,811,984</td>
<td>185,739,914</td>
<td>73.9%</td>
<td>1,725,096</td>
<td>10767%</td>
</tr>
<tr>
<td>January 1, 2008</td>
<td>614,546,679</td>
<td>727,609,391</td>
<td>113,062,712</td>
<td>84.5%</td>
<td>992,604</td>
<td>11391%</td>
</tr>
<tr>
<td>January 1, 2010</td>
<td>542,909,358</td>
<td>716,975,792</td>
<td>174,066,434</td>
<td>75.7%</td>
<td>243,061</td>
<td>71614%</td>
</tr>
<tr>
<td>January 1, 2012</td>
<td>505,553,053</td>
<td>712,386,457</td>
<td>206,833,404</td>
<td>71.0%</td>
<td>88,137</td>
<td>234673%</td>
</tr>
<tr>
<td>January 1, 2014</td>
<td>621,002,687</td>
<td>683,727,443</td>
<td>62,724,756</td>
<td>90.8%</td>
<td>89,936</td>
<td>69744%</td>
</tr>
<tr>
<td>January 1, 2016</td>
<td>630,910,491</td>
<td>702,470,993</td>
<td>71,560,502</td>
<td>89.8%</td>
<td>0</td>
<td>N/A</td>
</tr>
<tr>
<td>January 1, 2018</td>
<td>611,658,533</td>
<td>691,034,748</td>
<td>79,376,215</td>
<td>88.5%</td>
<td>0</td>
<td>N/A</td>
</tr>
</tbody>
</table>

The funded status measure may be appropriate for assessing the need for future contributions. The funded status is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.
Table 9 - History of Employer Contributions

The "Annual Required Contribution" (ARC) is the sum of the normal cost and the amortization of the UAAL. This is a historical standardized measure that was previously calculated in accordance with Statements No. 25 and No. 27 of the Governmental Accounting Standards Board (GASB).

The following exhibit shows a history of the ARC and the actual contributions made to the Plan.

<table>
<thead>
<tr>
<th>Fiscal Year Ending</th>
<th>Annual Required Contribution</th>
<th>Actual Contribution</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 31, 2015</td>
<td>$5,027,201</td>
<td>$18,088,845</td>
<td>360%</td>
</tr>
<tr>
<td>December 31, 2016</td>
<td>5,027,201</td>
<td>5,027,201</td>
<td>100%</td>
</tr>
<tr>
<td>December 31, 2017</td>
<td>7,987,837</td>
<td>7,987,837</td>
<td>100%</td>
</tr>
<tr>
<td>December 31, 2018</td>
<td>7,987,837</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>
# Table 10 - Cash Flow Analysis

<table>
<thead>
<tr>
<th>Year Ending December 31,</th>
<th>Contributions for the Year</th>
<th>Benefit Payments **</th>
<th>Expenditures During the Year</th>
<th>Total</th>
<th>External Cash Flow for the Year</th>
<th>Market Value of Assets</th>
<th>External Cash Flow as Percent of Market Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
<td>(7)</td>
</tr>
<tr>
<td>2007</td>
<td>$ 34,096,594</td>
<td>$ (49,747,310)</td>
<td>$ (4,365,411)</td>
<td>$ (54,112,721)</td>
<td>$ (20,016,127)</td>
<td>$ 630,783,998</td>
<td>(3.2%)</td>
</tr>
<tr>
<td>2008</td>
<td>33,779,121</td>
<td>(52,246,118)</td>
<td>(4,478,125)</td>
<td>(56,724,243)</td>
<td>(22,945,122)</td>
<td>429,217,493</td>
<td>(5.3%)</td>
</tr>
<tr>
<td>2009</td>
<td>16,340,087</td>
<td>(54,451,742)</td>
<td>(3,372,276)</td>
<td>(57,824,018)</td>
<td>(41,483,931)</td>
<td>470,876,900</td>
<td>(8.8%)</td>
</tr>
<tr>
<td>2010</td>
<td>16,275,535</td>
<td>(53,994,869)</td>
<td>(3,557,195)</td>
<td>(57,552,064)</td>
<td>(41,276,529)</td>
<td>492,426,728</td>
<td>(8.4%)</td>
</tr>
<tr>
<td>2011</td>
<td>16,268,386</td>
<td>(55,528,689)</td>
<td>(3,704,240)</td>
<td>(59,232,929)</td>
<td>(42,964,543)</td>
<td>455,929,187</td>
<td>(9.4%)</td>
</tr>
<tr>
<td>2012</td>
<td>20,677,751</td>
<td>(56,410,198)</td>
<td>(4,190,258)</td>
<td>(60,600,456)</td>
<td>(39,922,705)</td>
<td>471,145,294</td>
<td>(8.5%)</td>
</tr>
<tr>
<td>2013</td>
<td>136,553,486</td>
<td>(55,869,871)</td>
<td>(5,138,633)</td>
<td>(61,008,504)</td>
<td>75,544,982</td>
<td>630,564,534</td>
<td>12.0%</td>
</tr>
<tr>
<td>2014</td>
<td>16,266,495</td>
<td>(55,136,881)</td>
<td>(976,383)</td>
<td>(56,113,264)</td>
<td>(39,846,769)</td>
<td>632,809,278</td>
<td>(6.3%)</td>
</tr>
<tr>
<td>2015</td>
<td>18,088,845</td>
<td>(55,326,657)</td>
<td>(910,638)</td>
<td>(56,237,295)</td>
<td>(38,148,450)</td>
<td>605,938,591</td>
<td>(6.3%)</td>
</tr>
<tr>
<td>2016</td>
<td>5,027,201</td>
<td>(56,901,343)</td>
<td>(1,012,657)</td>
<td>(57,914,000)</td>
<td>(52,886,799)</td>
<td>584,034,459</td>
<td>(9.1%)</td>
</tr>
<tr>
<td>2017</td>
<td>7,987,837</td>
<td>(56,248,498)</td>
<td>(194,091)</td>
<td>(56,442,589)</td>
<td>(48,454,752)</td>
<td>618,125,199</td>
<td>(7.8%)</td>
</tr>
<tr>
<td>2018*</td>
<td>7,987,837</td>
<td>(57,576,307)</td>
<td>(603,374)</td>
<td>(58,179,681)</td>
<td>(50,191,844)</td>
<td>612,410,550</td>
<td>(8.2%)</td>
</tr>
<tr>
<td>2019*</td>
<td>8,803,193</td>
<td>(58,292,627)</td>
<td>(618,458)</td>
<td>(58,911,085)</td>
<td>(50,107,892)</td>
<td>606,354,403</td>
<td>(8.3%)</td>
</tr>
<tr>
<td>2020*</td>
<td>8,803,193</td>
<td>(58,924,938)</td>
<td>(633,919)</td>
<td>(59,558,857)</td>
<td>(50,755,664)</td>
<td>599,171,982</td>
<td>(8.5%)</td>
</tr>
</tbody>
</table>

* Cash flow estimated based on expected contributions and expected benefit payments.

** Expected Benefit Payments for 2018 and beyond include expected retirements, expected mortality and if applicable, future cost of living increases.
### Table 11 - Membership Data

<table>
<thead>
<tr>
<th></th>
<th>January 1, 2018</th>
<th>January 1, 2016</th>
<th>January 1, 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
</tbody>
</table>

1. Active members
   a. Number          | 0               | 0               | 1               |
   b. Total payroll   | $0              | $0              | $89,936         |
   c. Average annual salary | $0            | $0              | $89,936         |
   d. Average age     | N/A             | N/A             | 59.0            |
   e. Average service | N/A             | N/A             | 36.4            |

2. Members in DROP
   a. Number          | 1               | 1               | 5               |
   b. Total annual benefits | $76,268        | $71,109         | $348,771        |
   c. Average annual benefit | $76,268       | $71,109         | $69,754         |
   d. Average age     | 63.0            | 61.0            | 61.4            |

3. Service retirees
   a. Number          | 450             | 478             | 502             |
   b. Total annual benefits | $28,499,726    | $28,070,828     | $27,973,712     |
   c. Average annual benefit | $63,333        | $58,726         | $55,725         |
   d. Average age     | 71.6            | 69.9            | 68.0            |

4. Disabled retirees
   a. Number          | 297             | 322             | 335             |
   b. Total annual benefits | $19,280,232    | $19,300,674     | $18,799,002     |
   c. Average annual benefit | $64,917        | $59,940         | $56,116         |
   d. Average age     | 76.0            | 74.6            | 73.5            |

5. Beneficiaries
   a. Number          | 261             | 251             | 256             |
   b. Total annual benefits | $10,261,239    | $9,024,719      | $8,558,612      |
   c. Average annual benefit | $39,315        | $35,955         | $33,432         |
   d. Average age     | 77.8            | 77.1            | 76.3            |
<table>
<thead>
<tr>
<th>Age</th>
<th>Number</th>
<th>Average Monthly Pension</th>
<th>Number</th>
<th>Average Monthly Pension</th>
<th>Number</th>
<th>Average Monthly Pension</th>
<th>Number</th>
<th>Average Monthly Pension</th>
<th>Number</th>
<th>Average Monthly Pension</th>
<th>Number</th>
<th>Average Monthly Pension</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
<td>(7)</td>
<td>(8)</td>
<td>(9)</td>
<td>(10)</td>
<td>(11)</td>
<td></td>
</tr>
<tr>
<td>Less than 50</td>
<td>0</td>
<td>$ 0</td>
<td>0</td>
<td>$ 0</td>
<td>0</td>
<td>$ 0</td>
<td>0</td>
<td>$ 0</td>
<td>0</td>
<td>$ 0</td>
<td>0</td>
<td>$ 0</td>
</tr>
<tr>
<td>50-54</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>3,070</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>3,070</td>
<td></td>
<td></td>
</tr>
<tr>
<td>55-59</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2,953</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2,953</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60-64</td>
<td>18</td>
<td>5,673</td>
<td>2</td>
<td>8,280</td>
<td>11</td>
<td>3,262</td>
<td>1</td>
<td>6,356</td>
<td>32</td>
<td>5,028</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65-69</td>
<td>112</td>
<td>5,301</td>
<td>46</td>
<td>5,720</td>
<td>19</td>
<td>3,523</td>
<td>0</td>
<td>0</td>
<td>177</td>
<td>5,219</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70-74</td>
<td>209</td>
<td>5,194</td>
<td>87</td>
<td>5,466</td>
<td>56</td>
<td>3,220</td>
<td>0</td>
<td>0</td>
<td>352</td>
<td>4,947</td>
<td></td>
<td></td>
</tr>
<tr>
<td>75-79</td>
<td>78</td>
<td>5,383</td>
<td>63</td>
<td>5,400</td>
<td>43</td>
<td>3,368</td>
<td>0</td>
<td>0</td>
<td>184</td>
<td>4,918</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greater than 80</td>
<td>33</td>
<td>5,265</td>
<td>99</td>
<td>5,165</td>
<td>125</td>
<td>3,248</td>
<td>0</td>
<td>0</td>
<td>257</td>
<td>4,245</td>
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<tr>
<td>All</td>
<td>450</td>
<td>$ 5,278</td>
<td>297</td>
<td>$ 5,410</td>
<td>261</td>
<td>$ 3,276</td>
<td>1</td>
<td>$ 6,356</td>
<td>1,009</td>
<td>$ 4,800</td>
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<tr>
<td>Valuation Year</td>
<td>Added to Rolls</td>
<td></td>
<td></td>
<td>Rolls-End of Year</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>January 1</td>
<td>Number</td>
<td>Annual Benefits*</td>
<td>Number</td>
<td>Annual Benefits</td>
<td>Number</td>
<td>Annual Benefits</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
<td>(7)</td>
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<td></td>
<td></td>
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<tr>
<td>2004</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>1,265</td>
<td>$48,911,916</td>
<td>N/A</td>
<td>$38,666</td>
<td>N/A</td>
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<tr>
<td>2006</td>
<td>51</td>
<td>$2,793,910</td>
<td>77</td>
<td>$2,655,899</td>
<td>1,239</td>
<td>$49,049,927</td>
<td>0.3%</td>
<td>$39,588</td>
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<tr>
<td>2008</td>
<td>47</td>
<td>$5,710,545</td>
<td>66</td>
<td>$2,385,924</td>
<td>1,220</td>
<td>$52,374,548</td>
<td>6.8%</td>
<td>$42,930</td>
<td>67.7</td>
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<tr>
<td>2010</td>
<td>45</td>
<td>$4,670,611</td>
<td>75</td>
<td>$2,864,670</td>
<td>1,190</td>
<td>$54,180,489</td>
<td>3.4%</td>
<td>$45,530</td>
<td>69.1</td>
<td></td>
<td></td>
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<tr>
<td>2012</td>
<td>37</td>
<td>$4,913,605</td>
<td>78</td>
<td>$3,180,451</td>
<td>1,149</td>
<td>$55,913,643</td>
<td>3.2%</td>
<td>$48,663</td>
<td>70.3</td>
<td></td>
<td></td>
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<tr>
<td>2014</td>
<td>27</td>
<td>$3,076,348</td>
<td>78</td>
<td>$3,309,894</td>
<td>1,098</td>
<td>$55,680,097</td>
<td>(0.4%)</td>
<td>$50,710</td>
<td>71.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>27</td>
<td>$4,029,699</td>
<td>73</td>
<td>$3,242,466</td>
<td>1,052</td>
<td>$56,467,330</td>
<td>1.4%</td>
<td>$53,676</td>
<td>73.1</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2018</td>
<td>40</td>
<td>$5,686,842</td>
<td>83</td>
<td>$4,036,707</td>
<td>1,009</td>
<td>$58,117,465</td>
<td>2.9%</td>
<td>$57,599</td>
<td>74.5</td>
<td></td>
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</tr>
</tbody>
</table>

* Includes cost-of-living adjustments granted since the prior valuation.
### Table 14 - Summary for Actuarial Assumptions, Methods, and Changes

The calculations set forth in this report are based on the following assumptions:

1. **Investment Return Rate**
   - 7.5% per annum (net of investment expenses), compounded annually

2. **Rates of Decrement due to:**
   - **Retirement**
     - Any age with 25 years of service.

3. **Post-Retirement Mortality**
   - a) **Healthy Retirees, Beneficiaries, and Disabled Retirees (retired after January 1, 1980)**
     - For ages less than 55, RP-2014 Mortality Tables for Blue Collar Employees. For ages 65 and older, RP-2014 Mortality Tables for Healthy Annuitants. For ages 55 through 64, a blend of the previous tables. All tables generationally projected with Scale BB (rates projected through 2018 shown below)

     | Age | Males | females |
     |-----|-------|---------|
     | 50  | 2.156 | 1.221   |
     | 55  | 3.655 | 1.953   |
     | 60  | 7.135 | 4.527   |
     | 65  | 12.020| 8.314   |
     | 70  | 18.352| 13.308  |
     | 75  | 29.659| 21.888  |
     | 80  | 48.817| 36.365  |

   - b) **Disabled Retirees (retired before January 1, 1980)**
     - RP-2014 Disabled Generational Mortality Table generationally projected with Scale BB with a minimum 3% rate for males and 2% rate for females (rates projected through 2018 shown below)

<pre><code> | Age | Males | females |
 |-----|-------|---------|
 | 50  | 30.000| 20.000  |
 | 55  | 30.000| 20.000  |
 | 60  | 30.000| 20.000  |
 | 65  | 30.191| 20.000  |
 | 70  | 37.979| 26.873  |
 | 75  | 51.102| 39.110  |
 | 80  | 72.121| 58.129  |
</code></pre>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4.</td>
<td><strong>Salary Increase Rate</strong></td>
</tr>
<tr>
<td>5.</td>
<td><strong>Administrative Expenses</strong></td>
</tr>
<tr>
<td>6.</td>
<td><strong>Marital Status</strong></td>
</tr>
<tr>
<td></td>
<td>a) <strong>Percent married</strong></td>
</tr>
<tr>
<td></td>
<td>b) <strong>Age difference</strong></td>
</tr>
<tr>
<td>7.</td>
<td><strong>Benefit Escalation</strong></td>
</tr>
<tr>
<td>8.</td>
<td><strong>Changes in Actuarial Assumptions</strong></td>
</tr>
<tr>
<td>9.</td>
<td><strong>Changes in Actuarial Methods</strong></td>
</tr>
<tr>
<td></td>
<td><strong>For Full Rank Escalation, 3.5% is the assumed annual increase for all benefits.</strong></td>
</tr>
<tr>
<td>10.</td>
<td><strong>Actuarial Cost Method</strong></td>
</tr>
</tbody>
</table>
change in the normal cost due to the deferral, and it is assumed that payments are made in the middle of the year.

Under this method, experience gains and losses (i.e. decreases or increases in accrued liabilities), attributable to deviations in experience from the actuarial assumptions, adjust the unfunded actuarial accrued liability.

11. Asset Valuation Method

The asset valuation method is based on a comparison of expected and actual asset values. The actuarial value of assets is equal to the market value of assets less a five-year phase in of the Excess (Shortfall) between expected investment return and actual income determined as follows:

- At the beginning of each plan year, an expected actuarial asset value is calculated as the sum of the previous year’s actuarial value increased with a year’s interest at the Plan valuation rate plus net cash flow (excluding expenses) adjusted for interest (at the same rate) to the end of the previous plan year.
- The difference between the expected actuarial asset value and the actual market value is the investment gain or loss for the previous plan year.
- If the current year’s difference is the opposite sign of any of the prior year’s deferred Excesses\(\text{\textless}\)\textbf{ShortFalls}, then the prior year’s bases (starting with the oldest) are reduced dollar for dollar along with the current year’s base. Any remaining bases are then recognized over five years (20% per year) from their initial creation.

12. Amortization Policy Used to Determine Contribution Requirement

As of January 1, 2009:

The UAAL must be amortized under a level dollar method over 20 years but not more than the average remaining life expectancy of the group.

Before January 1, 2009:

Old Hire plans used a variety of amortization periods. Some used a 40 year period beginning in 1982 and some used a 10 year period beginning in 1992, but not more than the average remaining life expectancy of the group.
Table 15 - Summary of Benefit Provisions

A. **Eligibility**
   Members included are active employees hired prior to April 8, 1978, electing to remain covered under the provisions of the City’s current plan.

B. **Compensation**
   Base salary including longevity, sick and vacation pay.

C. **Contribution Rate**
   The state completed its statutory requirement to fund this plan on 5/31/2013. Funding for this plan is now the sole obligation of the City. The City contribution is made based on the last actuarial study. For 2017 and 2018, the City is contributing $7,987,837 to the plan.

D. **Normal Retirement Benefit**
   A member's Normal Retirement Date shall be the date on which he has completed twenty-five years of credited service. The normal retirement benefit shall be 2% of monthly rate of salary at date of retirement multiplied by the member's years of credited service, not to exceed 30 years before July 1, 1992. For each year of service after Normal Retirement Date and after July 1, 1992, the increase shall be 4% per year to an overall maximum of 74%.

E. **Termination Benefit**
   1. **Vested Retirement Benefit**
      None.
   2. **Severance Benefit**
      In lieu of a future pension, a Police Officer after completing ten years of service and before completing 20 years of service may upon termination elect to have his accumulated contributions refunded to him in a lump sum at the attainment of age 55. After completion of 20 years of service, a Police Officer shall be eligible for a monthly pension equal to 2% of the basic rate of salary received at time of his termination, multiplied by years of service. The benefit is payable when the Police Officer would have completed 25 years of service had he remained employed.

F. **Death and Disability Benefits**
   1. **Pre-Retirement Death and Disability Benefit**
      The surviving spouse of an active member who dies after attaining eligibility for retirement benefits shall be paid $50 per month for each dependent child under the age of 19. This allowance shall terminate when the dependent child reaches age 19.
Table 15 - Summary of Benefit Provisions (Continued)

2. Post-Retirement Death and Disability Benefit
   At the death of a retired Police Officer the officer’s surviving spouse shall receive until death a monthly pension equal to two-thirds of the monthly benefit of the Police Officer at the time of death. This change was made effective January 1, 2000. Prior to the change, the monthly pension was payable until death or remarriage of the member’s beneficiary.

3. Post-Withdrawal Death Benefit
   None.

G. Cost-of-Living Adjustment (COLA)
   If adopted by the municipality benefits are increased in proportion to pay for rank at retirement. This provision has been adopted by the City of Denver. The current law has limited the increase to 3% for benefits earned after January 1, 1980.

H. Deferred Retirement Option Plan (DROP)
   A member may elect to participate in the DROP after reaching eligibility for Normal Retirement. A member can continue to work while participating in the DROP, but must terminate employment within 5 years of entry into the DROP. The member’s percentage of retirement benefit is frozen at the time of entry into the DROP. The monthly payments that begin at entry into the DROP are accumulated until the member terminates service, at which time the DROP accumulated benefits can be paid as a lump sum, if desired. The member continues contributing 8% of pay which is credited to the DROP. Effective March 1, 2003, the member shall self-direct the investments of their DROP funds.

I. Supplemental Retirement Benefit
   None.

J. Stabilization Reserve Account (SRA)
   None.

K. Plan Amendments
   None.

L. Details
   Details of the benefit provisions can be found at:

   Title II – Revised Municipal Code
   Chapter 18 – Employee and Officer Pay and Benefits
   Article XIV – Police and Fire Pension
   Division 1 – Old Hire Police Pension Plan
Table 16 - Definition of Terms

1. **Actuarial Cost Method**
   A method for determining the actuarial present value of future benefits and allocating such value to time periods in the form of a normal cost and an actuarial accrued liability.

2. **Present Value of Future Benefits**
   This is computed by projecting the total future benefit cash flow from the Plan, using actuarial assumptions, and then discounting the cash flow to the valuation date.

3. **Normal Cost**
   Computed differently under different actuarial cost methods, the normal cost generally represents the value of the portion of the participant's anticipated retirement, termination, and/or death and disability benefits accrued during a year.

4. **Actuarial Accrued Liability**
   Computed differently under different actuarial cost methods. Generally actuarial accrued liability represents the value of the portion of the participant's anticipated retirement, termination, and/or death and disability benefits accrued as of the valuation date.

5. **Entry Age Actuarial Cost Method**
   A method under which a participant's actuarial present value of future benefits is allocated on a level basis over the earnings of the participant between his/her entry into the Plan and his/her assumed exit.

6. **Unfunded Actuarial Accrued Liability**
   The difference between total actuarial present value of future benefits over the sum of the tangible assets of the Plan and the actuarial present value of the members' future normal costs. The Plan is underfunded if the difference is positive and overfunded if the difference is negative.

7. **Actuarial Value of Assets**
   The value of cash, investments, and other property belonging to the Plan, as valued by the actuary for purposes of the actuarial valuation.
8. **Actuarial Gain or Loss**

From one valuation to the next, if the experience of the plan differs from that anticipated by the actuarial assumptions, an actuarial gain or loss occurs. For example, an actuarial gain would occur if the assets in the trust had a yield of 12% based on actuarial value, while the assumed yield on the actuarial value of assets was 7.5%.
Table 17 - Supplemental Studies

For each actuarial valuation, the plan can request up to three proposed amendments to be studied by the actuary. The following is the descriptions and results of these studies.

A. Increase death benefit

1. Amendment

Increase the monthly benefit for future surviving spouses from (two-thirds) 2/3 of the monthly benefit of the Police Officer at the time of death to 100% of monthly benefit, effective January 1, 2018. The benefit for all current surviving spouses shall remain at 2/3 of the monthly benefit at time of death.

2. Analysis

<table>
<thead>
<tr>
<th>Item</th>
<th>Current Plan (1)</th>
<th>Proposed Plan (2)</th>
<th>Difference (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>b. Calculated Contribution</td>
<td>$8,803,193</td>
<td>$14,502,322</td>
<td>$5,699,129</td>
</tr>
</tbody>
</table>

3. Comments

None

B. Increase death benefit

1. Amendment

Increase the monthly benefit for all current and future surviving spouses from (two-thirds) 2/3 of the monthly benefit of the Police Officer at the time of death to 100% of monthly benefit, effective January 1, 2018.

2. Analysis

<table>
<thead>
<tr>
<th>Item</th>
<th>Current Plan (1)</th>
<th>Proposed Plan (2)</th>
<th>Difference (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Unfunded Actuarial Accrued Liability</td>
<td>$79,376,215</td>
<td>$177,480,496</td>
<td>$98,104,281</td>
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<tr>
<td>b. Calculated Contribution</td>
<td>$8,803,193</td>
<td>$19,937,374</td>
<td>$11,134,181</td>
</tr>
</tbody>
</table>

3. Comments

None

Note: Any changes to the Current Plan benefits will impact the employer's annual financial statements.
Table 17 - Supplemental Studies (Continued)

reports per Governmental Accounting Standards Board Statement No. 68 (GASB 68). Employers will incorporate the change in benefits (improvements or reductions in benefits) within the Total Pension Liability in the measurement period in which they occur. Due to the one year lag between the end of the measurement period and the employer’s reporting period, the increase in Total Pension Liability arising from the benefit change will be included in the Pension Expense in the employer reporting year immediately following the year in which the change was effective. For example, if Denver Old Hire Police were to adopt Plan B above, the Net Pension Liability and Pension Expense would increase by at least $98,104,281 (the difference in the Unfunded Actuarial Accrued Liability between Plan B and the Current Plan). This amount could be larger depending on whether the Single Discount Rate used under GASB 68 for your Plan is different than the valuation’s investment return assumption of 7.5%. If you have questions regarding GASB 68, you will find information at www.FPPAco.org/GASB.htm or contact your auditor.
MINUTES OF THE MEETING OF
THE POLICE PENSION AND RELIEF BOARD

December 6, 2018

Members:
Commander Kathleen Bancroft
Ret. Detective Kenneth Harris
Lieutenant John MacDonald
Division Chief Joseph Montoya
Laura Wachter, Deputy Manager of Safety

Investigating Committee:
Detective Jeffrey Baran (Not present)
Technician Jeremy Casias (Not present)
Detective Mark Crider (Not present)
Sergeant Julie Wheaton (Not present)

Non-Members In Attendance:
Robert McDermott, Assistant City Attorney
Laura Hall, Safety Human Resources
Jennifer Cockrum, Safety Human Resources
John Schnittgrund, President, Denver Police Retirees Association

The meeting convened at 11:32 a.m.

Quorum of members are in attendance and noted for minutes.

Review of October Minutes. Motion to approve minutes of the October 25, 2018 meeting by Commander Kathleen Bancroft. Lieutenant John MacDonald seconded. VOTE: Passed by unanimous vote.

OLD BUSINESS:
The Board discussed in public session issues regarding the pension review.

1. Pension Repayment Outstanding Amounts & Summary
   a. Updated memo with current amounts is attached in Appendix A.
   b. An additional pensioner passed away in March 2018, who had no surviving spouse or family- there is no decision yet on pursuing the funds
   c. There are no additional repayment plans entered since October
d. If the City is not able to collect the remaining funds, they will look to CLA firm for anything they are unable to collect from the retirees

2. Requested by Retired Detective Ken Harris to Asst City Attorney McDermott: What is required to change the voting to retirees?
   a. See answer in email, attached to minutes.
   b. Discussion: Ken Harris notes there cannot be any changes to the charter because there are no active Old Harris left to vote

WIDOW PETITIONS:

The following widow petitions were presented for consideration.

Sara Green’s petition for widow benefits, related to Patrolman Carnell Green, P57043.

Anna Walter’s petition for widow benefits, related to Captain Gary Walter, P68013.

Kathleen Cox’s petition for widow benefits, related to Police Officer Jimmy Cox, P65012.

Sandra Minor’s petition for widow benefits, related to Captain Charles Minor, P50016.

Donna Jean McLellan’s petition for widow benefits, related to Detective William McLellan, P65008.

After discussion:

MOTION: Motion to APPROVE the Minor and McLellan widow petition made by Retired Detective Ken Harris and seconded by Commander Kathleen Bancroft. It was noted there were more listed on the other side of the case list. Motion to APPROVE the remaining widow petitions made by Commander Kathleen Bancroft and seconded by Lieutenant John MacDonald. VOTE: Passed by unanimous vote.

NEW BUSINESS:

1. Review Widow Petition Document
   a. An updated Widow Petition document was reviewed by the Board Members.
      i. The current document has sections crossed out that are no longer relevant.
         Reviewed a streamlined version of the document for approval to use going forward.
      ii. Laura Hall will make a few minor updates to the wording and resend to all Board Members for final review

MOTION: Motion to APPROVE and begin using the Revised Widow Petition after final review made by Retired Detective Ken Harris and seconded by Lieutenant John MacDonald. VOTE: Passed by unanimous vote.
2. Rank Escalation Calculations
   a. Pension Plan Administrator Laura Hall will confirm initial calculation—engaged outside
      firm to confirm calculation
   b. Received request from FPPA on Dec 5, due to FPPA by December 31
   c. Suggestion made to write up rank escalation process—Laura Hall will do this

3. Note: Laura Wachter will confirm the budget passed before the Actuary Reports from FPPA came
   out. She will send information to the Board Members via email.

4. RFP for Actuary Services in 2019
   b. Cannot use an outside firm because they are not currently engaged with the City.

5. 2018 Board Member Vote
   a. Official vote did not occur in January 2018.
   b. Due to litigation with CLA at the time of the pension board meeting in December 2017, all
      board members agreed to serve another year as they were familiar with the situation.
   c. Question to Asst City Attorney McDermott: can we adjust the December 2017 meeting
      minutes to include the 2018 vote was discussed?
         i. Rob McDermott confirmed: I do not advise you change the 2017 minutes. I advise you
            document what is needed in the current minutes.
         ii. We confirmed this in the October 2018 minutes, so nothing else is needed

6. 2019 Board Member and Investigators Vote
   a. Laura Hall will request nominations starting Monday, Dec 10 via email to all Badged DPD
      i. Commander Bancroft agreed to disperse the notice to the Districts also
   b. Conduct the vote via email from January 1-15.
   c. Confidentiality agreements—found them from 2015
      i. Generic for the department only—not Pension Board
      ii. Asst City Attorney McDermott agreed to review and begin revising them so they
          are specific to the Pension Board
   d. Laura Hall will also confirm the Manager of Safety appointee.

7. 2018 FPPA Census
   a. FPPA asks employers to confirm census information each January—address changes,
      deaths, remarriages, etc.
   b. Mailing letter and survey to each Old Hire pension retiree or surviving spouse to:
      i. Introduce Laura Hall as Pension Plan Administrator and provide her contact
         information.
      ii. Confirm addresses, marital status, email address, Power of Attorney changes.
      iii. Verify information and clean up data as we create online retiree database.
c. Census survey due back to Safety HR by November 30, 2018, and Laura Hall will collect and note any changes with FPPA by January 15, 2019.
d. Received almost 1400 back
e. 995 police notices were mailed out
f. Will have specific numbers of returns and more information at next meeting
   i. DPRA President John Schnittgrund confirmed Laura Hall can send him names of those we do not hear from to try to get a hold of them
   ii. Any others we are not able to reach, we will work with FPPA to find them
g. Using this to help build database in Access- so we have all our retiree information in one place- name, rank, YOS, medical plan, spouse information, and so on

The next regularly scheduled meeting will be held on Thursday, February 7, 2019 at 11:15 a.m.

MOTION: A motion to adjourn was made by Commander Kathleen Bancroft and seconded by Lieutenant John MacDonald. The motion carried unanimously.

The meeting was adjourned at 12:05 a.m.

[Signature]
Laura Wachtel, Deputy Manager of Safety
Appointed Chair, Police Pension and Relief Board

By signing below, the Secretary hereby certifies the above minutes were reviewed and approved by a majority vote of the Pension Board members at a regular meeting held on February 7, 2019.

ATTESTED TO:
[Signature]
Laura Hall, Secretary
To: Old Hire Police Pension Board
From: Jennifer Cockrum, Director, Safety Human Resources
Date: December 6, 2018
Re: Pension Repayment Outstanding Amounts and Summary

228 pensioners were initially overpaid by approximately $1,132,000. The City has now recovered a significant portion of that amount. The uncollected amount, $344,460.21 is comprised of:

- $99,753.45 in discounts given to early payors to encourage repayment
- $149.40 overpayment amount that the City will not be pursuing in litigation due to the small amount
- $267,519.58 in uncollected overpayments...
  - Two of the beneficiaries have passed away, totaling $35,443.22, of which the City will not be pursuing the estates for these amounts.
  - An additional pensioner passed away on 3/5/2018 with no surviving spouse ( ), who owed $22,962.22.

The remaining $186,151.92 is in collection efforts and the City is prepared to litigate. Just recently, two of the delinquent pensioners executed payment plans totaling $41,977.62. The remaining delinquent pensioners and beneficiaries have not indicated a willingness to enter into repayment plans. Thus, the amount that the City is still pursuing stands at $144,174.30.

<table>
<thead>
<tr>
<th>Name (REDACTED)</th>
<th>Outstanding Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brezzle, Jesse</td>
<td>$13,300.64</td>
</tr>
<tr>
<td>Griffith Jr., Roy</td>
<td>$7,512.00</td>
</tr>
<tr>
<td>Grimm, Robert (Donna Grimm)</td>
<td>$4,006.99</td>
</tr>
<tr>
<td>Grisham, Roger</td>
<td>$25,503.83</td>
</tr>
<tr>
<td>Holland, Beal</td>
<td>$10,867.77</td>
</tr>
<tr>
<td>Jevnager, Robert (Janice Jevnager)</td>
<td>$2,290.01</td>
</tr>
<tr>
<td>Monahan, Ross</td>
<td>$3,267.30</td>
</tr>
<tr>
<td>Niebur, Ronald</td>
<td>$12,613.84</td>
</tr>
<tr>
<td>Rames, John (Karen Rames)</td>
<td>$27,885.43</td>
</tr>
<tr>
<td>Smith, Robert</td>
<td>$36,926.49</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$144,174.30</td>
</tr>
</tbody>
</table>