

Illinois Public Retirement Systems

April 2020



A Report on the Financial Condition of the Illinois Municipal, Chicago and Cook County Pension Funds of Illinois

Chicago Transit Authority Retirement Fund

Cook County Employees' Pension Fund

Cook County Forest Preserve Employees' Pension Fund

Firemen's Annuity and Benefit Fund of Chicago

Illinois Municipal Retirement Fund

Laborers' Annuity and Benefit Fund of Chicago

Metropolitan Water Reclamation District Retirement Fund

Municipal Employees' Annuity and Benefit Fund of Chicago

Park Employees' Annuity and Benefit Fund of Chicago

Policemen's Annuity and Benefit Fund of Chicago

Public School Teachers' Pension and Retirement Fund of Chicago

Commission on Government Forecasting & Accountability

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April 2020

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Executive Summary

This report examines the financial status of various public employee retirement systems in Chicago and Cook County, along with the Illinois Municipal Retirement Fund, as of Fiscal Year (FY) 2018. The fiscal year ends December 31 for all systems, except for two systems, the Chicago Transit Authority Pension Fund and Public School Teachers' Pension and Retirement Fund of Chicago. The Chicago Transit Authority Pension Fund ends its fiscal year on January 1, and the Public School Teachers' Pension and Retirement Fund of Chicago ends its fiscal year on June 30. The following is a summary of the findings:

- The Chicago Transit Authority Retirement Fund covers all employees of the Chicago Transit Authority. At the end of FY 2018 (January 1, 2019) there were 8,159 active employees and 8,020 employee annuitants. Total Actuarial Assets of the system at the end of that year were \$1.836 billion and Total Actuarial Liabilities were \$3.489 billion.
- The Cook County Employees' Pension Fund covers all persons employed and paid by the County. At the end of 2018 there were 19,671 active employees and 15,820 employee annuitants. Total Actuarial Assets of the system at the end of that year were \$10.513 billion and Total Actuarial Liabilities were \$17.304 billion.
- The Cook County Forest Preserve Employees' Retirement Fund covers all persons employed and paid by the Forest Preserve. At the end of 2018 there were 536 active employees and 387 employee annuitants. Total Actuarial Assets of the system at the end of that year were \$202.9 million and Total Actuarial Liabilities were \$336.7 million.
- The Firemen's Annuity and Benefit Fund of Chicago covers anyone employed by the City of Chicago in its fire services whose duty it is to in any way participate in the work of controlling and extinguishing fires. At the end of 2018 there were 4,487 active employees and 3,422 employee annuitants. Total Actuarial Assets of the system at the end of that year were \$1.130 billion and Total Actuarial Liabilities were \$6.156 billion.
- The Illinois Municipal Retirement Fund covers employees hired by the following units of government: (1) All counties except Cook and (for non-teachers) all school districts except Chicago, (2) Other units of government with general taxing powers, such as cities, villages, townships and special districts, (3) Units of government without general taxing powers, associations or cooperatives authorized to participate by State statute. At the end of 2018 there were 176,517 active employees and 119,222 employee annuitants. Total Actuarial Assets of the system at the end of that year were \$40.830 billion and Total Actuarial Liabilities were \$45.354 billion.

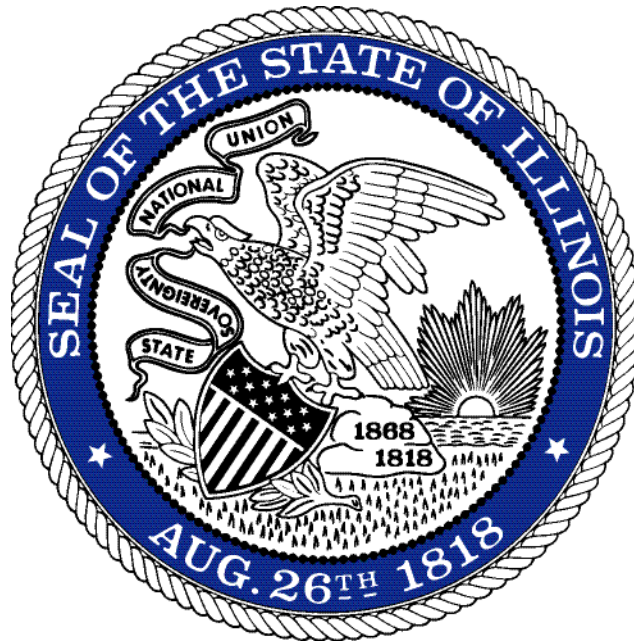
- The Laborers' Annuity and Benefit Fund of Chicago (LABF) covers persons employed by the City of Chicago in a position classified as labor service by the employer, persons employed by the Board of Education under the labor service classification, or anyone employed by a retirement board of any other annuity and benefit fund in the city. At the end of 2018 there were 2,715 active employees and 2,594 employee annuitants. Total Actuarial Assets of the system at the end of that year were \$1.185 billion and Total Actuarial Liabilities were \$2.653 billion.
- The Metropolitan Water Reclamation District Retirement Fund covers any person employed by the District whose duties include service during a calendar year for a minimum of 120 days. At the end of 2018 there were 1,832 active employees and 1,848 employee annuitants. Total Actuarial Assets of the system at the end of that year were \$1.470 billion and Total Actuarial Liabilities were \$2.601 billion.
- The Municipal Employees' Annuity and Benefit Fund of Chicago covers persons appointed under civil service rules who are employed by the City of Chicago and Board of Education of Chicago (except teachers), temporary and non-career service employees, aldermen and other officials of the City and the Board that make written application. At the end of 2018 there were 31,285 active employees and 21,393 employee annuitants. Total Actuarial Assets of the system at the end of that year were \$4.196 billion and Total Actuarial Liabilities were \$16.809 billion.
- The Park Employees' Annuity and Benefit Fund of Chicago covers all persons employed by the Chicago Park District. At the end of 2018 there were 3,187 active employees and 2,136 employee annuitants. Total Actuarial Assets of the system at the end of that year were \$366.8 million and Total Actuarial Liabilities were \$1.142 billion.
- The Policemen's Annuity and Benefit Fund of Chicago covers any employee in the Police Department of the City of Chicago sworn and designated by law as a police officer. At the end of 2018 there were 13,438 active employees and 9,930 employee annuitants. Total Actuarial Assets of the system at the end of that year were \$3.145 billion and Total Actuarial Liabilities were \$13.215 billion.
- The Public School Teachers' Pension and Retirement Fund of Chicago covers certified teachers and employees of the Chicago public schools. At the end of FY 2018 (June 30, 2018) there were 28,958 active employees and 24,897 employee annuitants. Total Actuarial Assets of the system on that date were \$10.969 billion and Total Actuarial Liabilities were \$22.923 billion.
- For most of the retirement systems, this report contains multi-year funding projections performed by the systems' actuaries. Unless otherwise noted, all long-term funding projections are based upon the retirement systems' Fiscal Year or Calendar Year 2018 actuarial valuation. The statutory funding requirements differ for each system and are

outlined at the beginning of each system’s chapter under the heading “Required Employer Contributions”. In cases where a recent legislative enactment has changed a particular system’s funding requirement, the Public Act number is displayed in the tables showing multi-year funding projections.

- The table below shows a summary of the financial condition of the Chicago Retirement Systems. Based upon the actuarial value of assets, the total unfunded liabilities for the city of Chicago’s retirement systems are \$44.689 billion. Please note that this amount does not include IMRF, Cook County Employees’ Pension Fund, or Cook County Forest Preserve Pension Fund.

Summary of Financial Condition					
Chicago Retirement Systems Combined (Excludes IMRF and Cook County Funds)					
FY 2018					
(\$ in Millions)					
System	Annual Payroll	Actuarial Liabilities	Actuarial Assets	Unfunded Liabilities	Funded Ratio
Chicago Transit Authority	623.0	3,489.0	1,835.8	1,653.2	52.6%
Firemen's Annuity & Benefit Fund	457.0	6,155.9	1,130.4	5,025.5	18.4%
Laborers' Annuity and Benefit Fund	211.5	2,652.9	1,185.3	1,467.6	44.7%
Metropolitan Water Fund	187.8	2,601.2	1,470.3	1,130.9	56.5%
Municipal Employees' Annuity and Benefit Fund	1,734.6	16,808.6	4,195.6	12,613.0	25.0%
Park Employees' Annuity and Benefit Fund	133.1	1,142.3	366.8	775.5	32.1%
Policemen's Annuity and Benefit Fund	1,205.3	13,214.7	3,145.1	10,069.5	23.8%
Public School Teachers' Pension Fund	2,094.8	22,922.9	10,969.0	11,953.9	47.9%
TOTAL	6,647.1	68,987.5	24,298.3	44,689.1	35.2%

I. Recent Pension Legislation



Public Act 96-0889 (Creation of Tier II)

Senate Bill 1946 – Cullerton (Madigan)

I. Overview of Key Provisions of Public Act 96-0889 (SB 1946)

Effective Date

- January 1, 2011

Systems Impacted

- IMRF, Chicago Municipal, Cook County, Cook County Forest Preserve, Chicago Laborers, Chicago Park District, Metropolitan Water, SERS, SURS, TRS, Chicago Teachers (Judges and GA separate; CTA, Police, and Fire excluded)

Retirement Eligibility – Except State Policemen, Firefighters, and Correctional Guards

- Normal Retirement: 67 years old with 10 years of service
- Early Retirement: 62 years old with 10 years of service with a 6% per year reduction in benefits for each year under age 67
- Annuity based on highest 8 years out of last 10 years of service
- Annual Final Average Salary may not exceed \$106,800, as automatically increased by the lesser of 3% or one-half of the annual increase in the CPI-U during the preceding 12-month calendar year.

Retirement Eligibility – State Policemen, Firefighters, and Correctional Guards

- Normal Retirement: 60 years old with 20 years of service
- State Policemen, Firefighters, DOC Guards are still eligible for Alternative Formula

Annual Increases in Annuity

- Increases begin at the latter of the first anniversary of retirement or at age 67
- Increases equal to the lesser of 3% or one-half the annual increase in the CPI-U during the preceding 12-month calendar year; if increase in CPI is zero or if there is a decrease in CPI, then no COLA is payable
- Increase not compounded

Survivor Benefits

- 66.7% of the earned retirement benefit at death
- Increased by the lesser of 3% or one-half of the annual increase in the CPI-U during the preceding 12-month calendar year
- Increases not compounded

“Double Dipping” Prohibited

- Prohibition on simultaneously collecting a pension and a salary with public employer

Chicago Teachers’ Extension of Funding Plan

- Contributions specified in Fiscal Years 2011 – 2016
- New Goal: CTPF must reach 90% by 2059

Retirement Eligibility – Judges and General Assembly

- Normal Retirement: 67 years old with 8 years of service
- Early Retirement: 62 years old with 8 years of service

Change in Benefit Formula – Judges and General Assembly

- 3% of Final Average Salary for each year of service
- Maximum annuity 60% of Final Average Salary
- Retirement annuity based on highest 8 out of final 10 years of service

Annual Increase in Annuity – Judges and General Assembly

- Increases begin after attainment of age 67
- Increases equal to the lesser of 3% or one-half of the annual increase in the CPI-U during the preceding 12-month calendar year
- Increases compounded

Annual Increase in Survivor’s Annuity – Judges and General Assembly

- 66.7% of the earned retirement benefit at death
- Increased by the lesser of 3% or one-half of the annual increase in the CPI-U during the preceding 12-month calendar year
- Increases compounded

Public Act 96-1495 (Creation of Tier II)

Senate Bill 3538 – Link (McCarthy)

I. Overview of Key Provisions of Public Act 96-1495 (SB 3538)

Effective Date

- New employees beginning service after January 1, 2011

Systems Impacted

- IMRF (Sheriff's Law Enforcement Personnel), Chicago Police, Chicago Firefighters, Downstate Police, Downstate Firefighters

Retirement Eligibility

- Normal Retirement: 55 years old with 10 years of service
- Early Retirement: 50 years old with 10 years of service with a 0.5% per month reduction in benefits for each month age is under 55
- Annuity based on highest 8 years out of last 10 years of service
- Annual Final Average Salary may not exceed \$106,800, as automatically increased by the lesser of 3% or one-half of the annual increase in the CPI-U during the preceding 12-month calendar year.

Annual Increases in Annuity

- Increases begin at the later of the first anniversary of retirement or at age 60.
- Increases equal to the lesser of 3% or one-half the annual increase in the CPI-U during the preceding 12-month calendar year; if increase in CPI is zero or if there is a decrease in CPI, then no COLA is payable
- Increase not compounded

Survivor Benefits

- 66.7% of the earned retirement benefit at death
- Increased by the lesser of 3% or one-half of the annual increase in the CPI-U during the preceding 12-month calendar year
- Increases not compounded

Funding Requirements

- Downstate and Chicago municipal contributions must be sufficient to achieve a 90% funded ratio by FY 2040 using a level percentage of payroll contribution rate.
- Whenever city contributions are not sufficient to achieve this funding goal, the retirement system will notify the Illinois State Comptroller.
- Upon receiving this notification, the Comptroller will divert funds owed by the State to the City in a sufficient amount to eliminate the shortfall in contributions.

- The State may divert all of the funds owed to the city beginning in FY2018. The diversion limit in FY 2016 is 33.3% and is 66.7% in FY 2017.

Calculation of the Funded Ratio

- Asset Market Values equal Asset Actuarial Values on March 30, 2011.
- Thereafter, Asset Actuarial Values will be used for all funded ratios.
- Income smoothing will be used after March 30, 2011 to calculate Asset Actuarial Values. A 5-year period (20% per year rate) will be used to recognize all investment revenues and losses.

Pension Calculations

- Retirement annuities are calculated to equal 2.5% of final average salary times the total years of service.
- Total retirement annuities are limited to 75% of final average salary.

Public Act 99-0506

Senate Bill 0777 – Cullerton (Currie)

I. Overview of Key Provisions of Public Act 99-0506 (SB 0777)

Effective Date

- May 30, 2016

Systems Impacted

- Chicago Police and Chicago Fire

Annuity Payment

- Adjusted from \$1,050 to an amount calculated by the poverty guidelines of the United States Department of Health and Human Services

City Contribution

- Fixed contribution schedule for Chicago Police:
 - 2016: \$420,000,000
 - 2017: \$464,000,000
 - 2018: \$500,000,000
 - 2019: \$557,000,000
 - 2020: \$579,000,000
- Fixed contribution schedule for Chicago Fire:
 - 2016: \$199,000,000
 - 2017: \$208,000,000
 - 2018: \$227,000,000
 - 2019: \$235,000,000
 - 2020: \$245,000,000

Tax Levy

- Beginning in tax levy year 2020, the city shall levy a tax annually in a manner that will increase the funding ratio to 90% by 2055.

Minimum Employer Contribution

- Shall be determined using the entry age normal actuarial cost method

Video Gaming

- Proceeds collected from a Chicago casino shall be contributed to Police and Fire Funds.

Delinquent Payments

- The Funds may take legal action if the city does not make the required contributions by December 31st of that year.

Public Act 99-0905

Senate Bill 0440 – Mulroe (Burke)

I. Overview of Key Provisions of Public Act 99-0905 (SB 0440)

Effective Date

- November 29, 2016

Systems Impacted

- Chicago Police and Chicago Fire

Retirement Eligibility

- Tier 2 retirees are included when determining death benefit eligibility.
- Tier 2 members that withdraw before age 50 (or 57 with less than 10 service years) are eligible for a refund equal to the amount deducted from their salary.

Salary Deductions

- Salary deductions for present employees and future entrants will contribute to the Funds for Tier 2 monthly retirement annuity, in addition to age and service annuity and widow's annuity.

Annual Increases in Annuity

- Increases equal to 1.5% begin at the latter of the first anniversary of retirement or at age 55 for members who retire with at least 20 years of service and born before 1966.
- Subsequent increases will occur on January 1st of each year.
- Maximum total increase of 30%
- For members born between 1955 and 1966, the increase shall be equal to 3% non-compounded with no maximum.
- Starting in 2017, members who would have qualified for these increases prior to the effective date shall receive all increases retroactively.
- Starting in 2017, the minimum widow's annuity shall be no less than 125% of the Federal Poverty Level.

Tier 2 Surviving Spouses

- Qualified to receive a Tier 2 surviving spouse annuity in lieu of the standard widow's annuity
- If the deceased member was receiving a Tier 2 monthly retirement annuity at the date of his/her death, the Tier 2 surviving spouse's annuity shall be in the amount of 66 2/3% of the member's monthly annuity at the date of death.
- If the deceased member was not receiving a Tier 2 monthly retirement annuity at the time of death, the Tier 2 surviving spouse's annuity shall be the greater of:

- 30% of the annual maximum salary attached to the rank of a first class police officer or firefighter at the time of death.
 - 66 2/3% of the Tier 2 monthly retirement annuity that the deceased member would have been eligible to receive
- If the deceased member was in active service with at least 1½ but less than 10 years of service at the time of death, the Tier 2 surviving spouse's annuity shall be 30% of the annual maximum salary attached to the rank of a first class police officer or firefighter at the time of death.
 - If a member's death resulted from an act of duty or prevented him/her from resuming active service, then in addition to the Tier 2 surviving spouse's annuity, the spouse shall be qualified to receive compensation annuity or supplemental annuity, in order to bring the total benefit up to the applicable 75% salary limitation, but subject to the existing Tier 2 salary cap.
 - Tier 2 surviving spouse's annuities shall not be less than the amount of the minimum widow's annuity.

Tier 2 Surviving Children and Parents

- Tier 2 surviving children and parents are qualified to receive a Tier 2 annuity. The Tier 2 annuity is in lieu of, but equal to, the standard annuity.
- Any salary used for computing a Tier 2 annuity shall be subject to the existing Tier 2 salary cap.

Public Act 100-0023

Senate Bill 0042 – Trotter (Harris)

* As of writing, the Tier 3 plan is implemented by two pension funds, the Municipal Employees’ Annuity and Benefit Fund of Chicago (MEABF) and Laborers’ Annuity and Benefit Fund of Chicago (LABF).

I. Overview of Key Provisions of Public Act 100-0023 (SB 0042)

Effective Date

- July 6, 2017

Systems Impacted

- The General Assembly Retirement System (GARS), Firemen’s Annuity and Benefit Fund of Chicago, MEABF, Cook County Employees’ Pension Fund, Cook County Forest Preserve Employees’ Pension Fund, LABF, Park Employees’ Annuity and Benefit Fund of Chicago, State Employees’ Retirement System (SERS), State Universities Retirement System (SURS), Teachers’ Retirement System (TRS), Public School Teachers’ Pension and Retirement Fund of Chicago (CTPF), and Judges’ Retirement System (JRS)

Optional Tier 3 Hybrid Plan

Tier 3 Availability

- SERS, SURS, and TRS:
 - Tier 3 benefits are available as soon as the board of that respective system authorizes members to begin participation.
 - Each of these systems shall endeavor to make participation available as soon as possible. This requirement is referred to as the “implementation date.”
 - Newly hired and existing Tier 2 members must make the election to participate in Tier 3 within 30 days of becoming a member or participant in the pertinent system.
- MEABF, Cook County Employees, Cook County Forest Preserve Employees, LABF, Park Employees, and CTPF:
 - Tier 3 benefits are available beginning 6 months after the governing body of the unit of local government approves participation in the plan via adoption of a resolution or ordinance.
 - No later than 5 months after the resolution or ordinance approving participation in Tier 3, the affected system shall prepare and implement the defined contribution component of the Tier 3 hybrid plan.
 - Newly hired members must make the election to participate in the Tier 3 hybrid system within 30 days of becoming a member or participant in the pertinent system.

Tier 3 Benefits Summary

(Tier 3 benefits and eligibility may be different for MEABF and LABF, as shown below.)

- Retirement Annuity: 1.25% for each year of service credit multiplied by final average salary
- Normal Retirement: determined by Social Security Administration, but no earlier than 67 years of age with at least 10 years of service
- COLA: Beginning 1 year after annuity start date and equal to 50% of the CPI-W
- Survivor's/Widow's Annuity: 66 2/3% of participant's retirement annuity
- Employee Contribution for the DB component: 6.2% of salary (cannot exceed normal cost)
- Employee Contribution for the DC component: 4% minimum
- Employer Contributions for the DC component: between 2% and 6% of salary
 - Employer contributions vest when they are paid into a participant's account.
 - Employee and employer contributions are transferrable into other qualified plans.
- For SURS and TRS
 - Employer Contribution is the DB Normal Cost less the Employee Contribution, plus 2%. (expressed as a % of payroll)

MEABF and LABF Retirement Eligibility (New Tier 3 DB Schedule of Benefits)

- Between October 1, 2017 and November 15, 2017, existing Tier 2 members who began service prior to the effective date of this Act (July 6, 2017) shall make an irrevocable decision to be eligible for the new Tier 3 retirement options described below:
 - Those who elect to gain eligibility for the new Tier 3 schedule of benefits will be subject to the Tier 3 employee contribution rates.
- Tier 3 Employee Contribution Rates
 - After the effective date of this Act, but prior to January 1, 2018: 7.5%
 - January 1, 2018 and prior to January 1, 2019: 8.5%
 - January 1, 2019 and thereafter: the lesser of:
 - Normal Cost using the Entry Age Normal (EAN) actuarial method (no less than 6.5%)
 - 9.5%
 - This rate (the lesser of the normal cost or 9.5%) shall resume until the systems have reached a 90% funding ratio, at which point the employee contribution shall be reduced to 5.5% of salary.
 - If the funding ratio falls below 75%, then the employee contribution shall revert to the previous amount.
- Tier 3 Benefits
 - New hires that are at least 65 years of age with at least 10 years of service credit are entitled to a retirement annuity upon written application.
 - New hires who retire between the age of 60 and 65, with at least 10 years of service credit, shall have their annuity reduced by 0.5% for each month that he or she is under age 65.

Changes in State Contributions

- For SURS and TRS, in fiscal years 2018 through 2020, the State shall contribute an additional 2% of payroll of each Tier 3 employee.
- For SURS and TRS, if the amount of a participant's salary exceeds the amount of the Governor's salary, the employer shall pay to the System an amount equal to the employer normal cost multiplied by the excess amount of salary.
- State contribution-altering changes in actuarial or investment assumptions shall be implemented and smoothed over a 5-year period beginning in FY 18.
- State contribution-altering changes in actuarial or investment assumptions that first applied in fiscal year 2014, 2015, 2016, or 2017 shall be retroactively smoothed over a 5-year period, beginning with and including the year in which the actuarial change first applied.
 - By November 1, 2017, the amount of the State Contribution shall be recertified to include retroactive smoothing.

Chicago Fire COLA

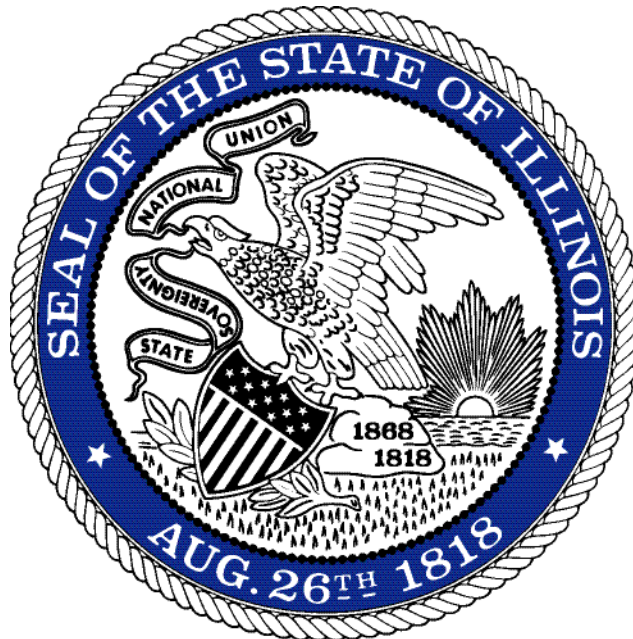
- Firefighters born after December 31, 1954 but before January 1, 1966 and retired after September 1, 1967 are entitled to a 3% noncompounded annuity increase upon:
 - The 1st of the month following the 1-year anniversary of retirement, and every 1st of January thereafter.
 - Or following the attainment of age 55 if they were not 55 after 1 year of retirement
- Firefighters that meet the aforementioned criteria prior to this Act will receive an increase to their annuity as if they had received a 3% increase each year rather than 1.5%.

Chicago Municipal and Laborers Tax Levy

- Beginning in 2017, the property tax levy cannot exceed the amount of the city's total required contribution for the following year.

II. Chicago Transit Authority Retirement Fund

- **Plan Summary**
- **Active Employees**
- **Employee Annuitants**
- **Average Salaries**
- **Average Retirement Annuity**
- **Funded Ratios**
- **Change in Unfunded Liabilities**
- **Investment Income**
- **Investment Rates of Return**
- **Systems Experience**
- **Changes in Net Assets**
- **Asset Allocation**



Note: All data shown in this section is based upon the system's Actuarial Valuation and CAFR as of January 1, 2019.

Chicago Transit Authority Pension Fund

Plan Summary

Retirement Age

- Normal Retirement Age for CTA employees is 65.
- Employees hired before January 18, 2008 may retire early at age 55 with 3 years of continuous service, or after completion of 25 years of continuous service at any age. (Employees who have at least 25 years of service do not have their annuities reduced by 5% for each year younger than 65, regardless of age). Employees hired after September 5, 2001 may retire with unreduced benefits after attaining age 55 and completing 25 years of service.
- For employees hired after January 18, 2008, an employee may retire with unreduced benefits upon attainment of age 64 with 25 years of service. An employee may retire with a reduced benefit upon attainment of age 55 with 10 years of service (reduction of 5% for each year or fraction younger than age 65).

Retirement Formula

- 2.15% of final average salary for each year of service for employees retiring on or after January 1, 2001

Maximum Annuity

- 70% of final average salary

Salary Used to Calculate Pension

- Highest average compensation over any four calendar years out of the final 10 years of service prior to normal retirement

Annual COLA

- Made on an ad-hoc basis; recent increase of \$40 per month for members who retired on or after 1/1/1991 but before 1/1/2000
- Another ad-hoc increase (the most recent) was made for members as part of an Arbitration Award ruling of June 26, 2007.

Employee Contributions

- 13.324% of salary (FY 2020-2040)

Employer Contributions

- 20.647% of salary (FY 2020-2040)

Pursuant to P.A. 95-0708, the CTA shall make contributions so that the funded ratio does not decline below 60% in any year before FY 2040. If the funded ratio drops below 60%, the contributions shall be increased to reach 60% within 10 years. Beginning FY 2040, the CTA Article of the Pension Code provides for a minimum contribution by the CTA, determined either by the CTA Pension Board of Trustees or the Auditor General, to bring the funded ratio of the Plan up to or no less than 90% by Dec. 31, 2059.

CHART 1

**CHICAGO TRANSIT AUTHORITY PENSION FUND
Active Employees**

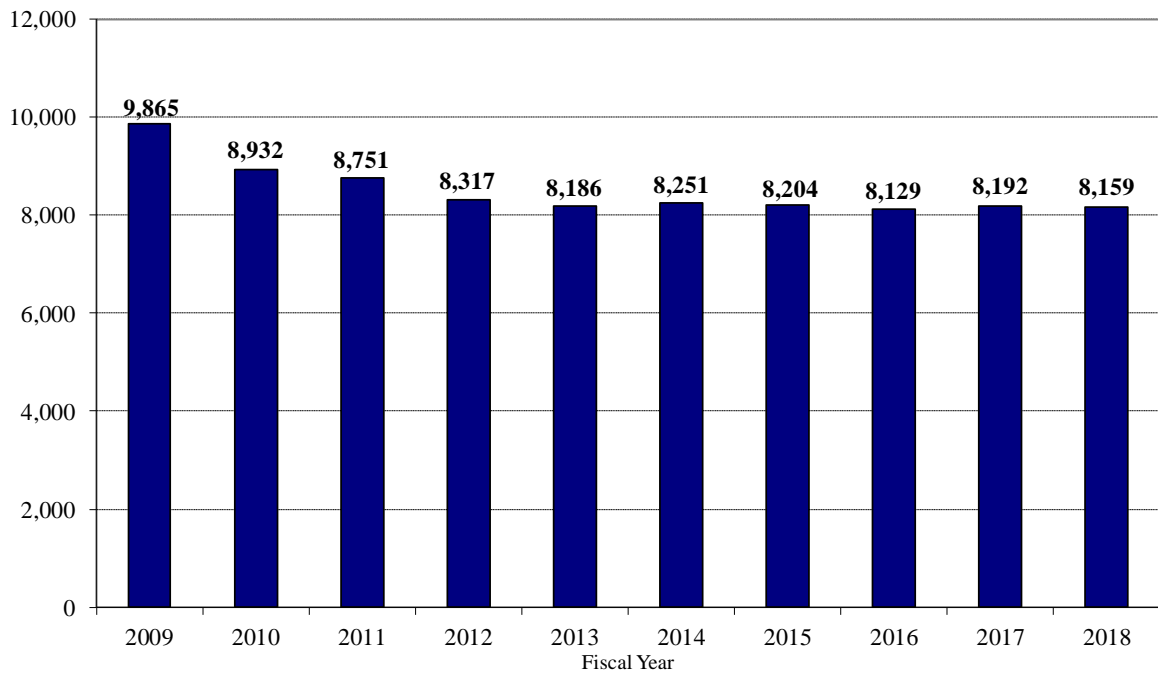


CHART 2

**CHICAGO TRANSIT AUTHORITY PENSION FUND
Employee Annuitants**

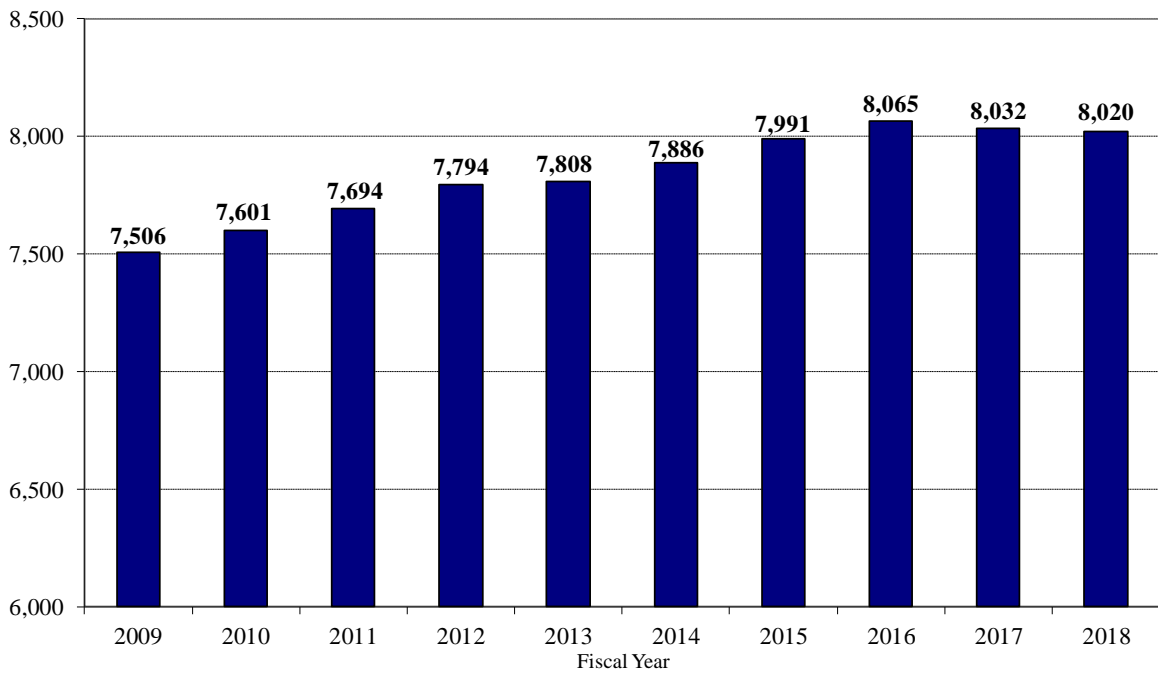


CHART 3

**CHICAGO TRANSIT AUTHORITY PENSION FUND
Average Employee Salaries**

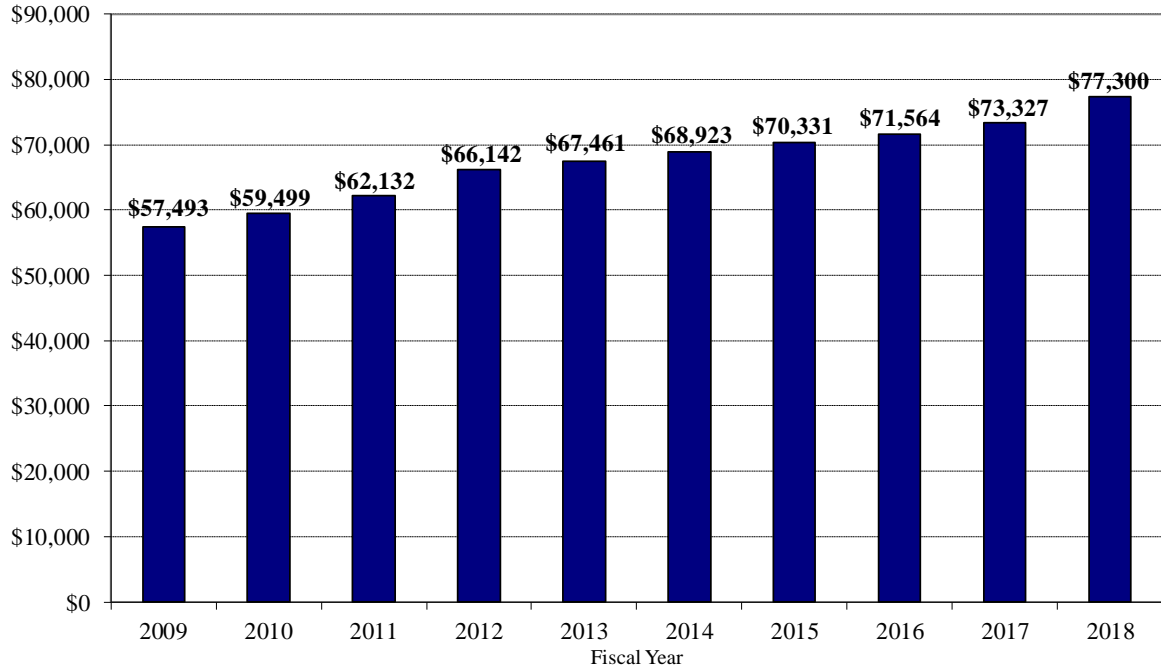


CHART 4

**CHICAGO TRANSIT AUTHORITY PENSION FUND
Average Retirement Annuities**

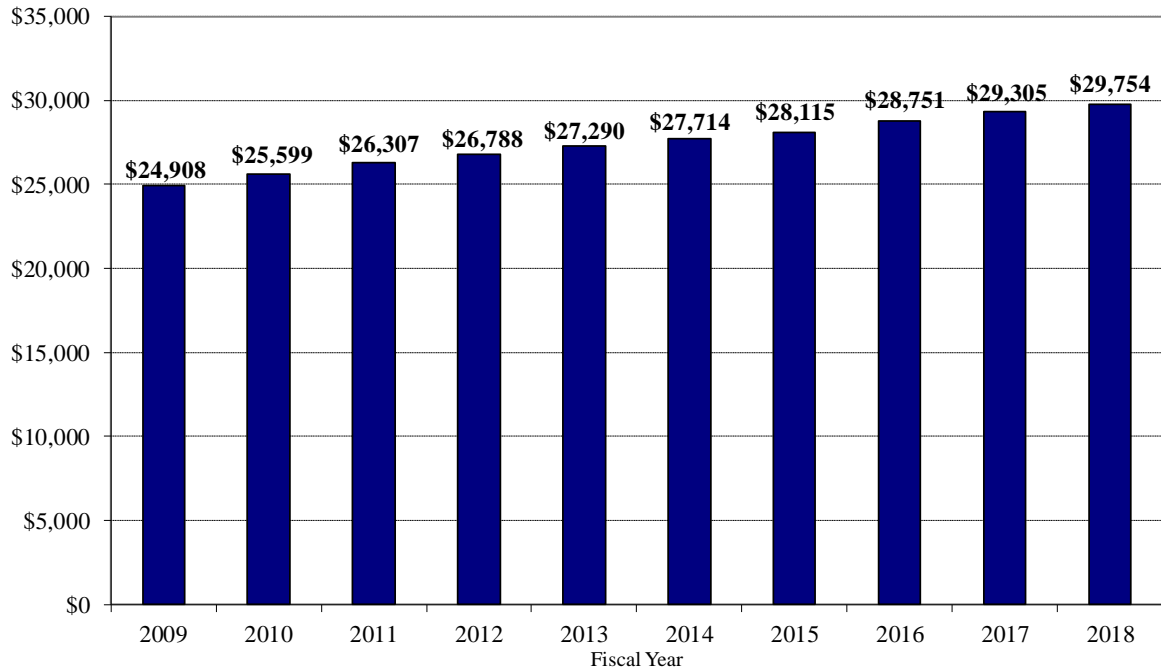


CHART 5

CHICAGO TRANSIT AUTHORITY PENSION FUND
Funded Ratio
FY 2009 - FY 2018

All figures based upon the actuarial value of assets.

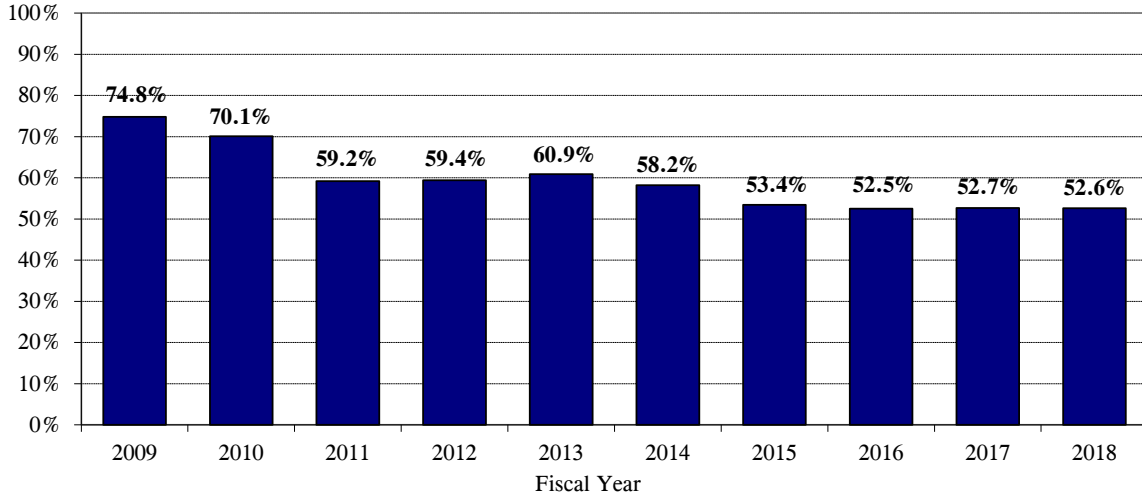
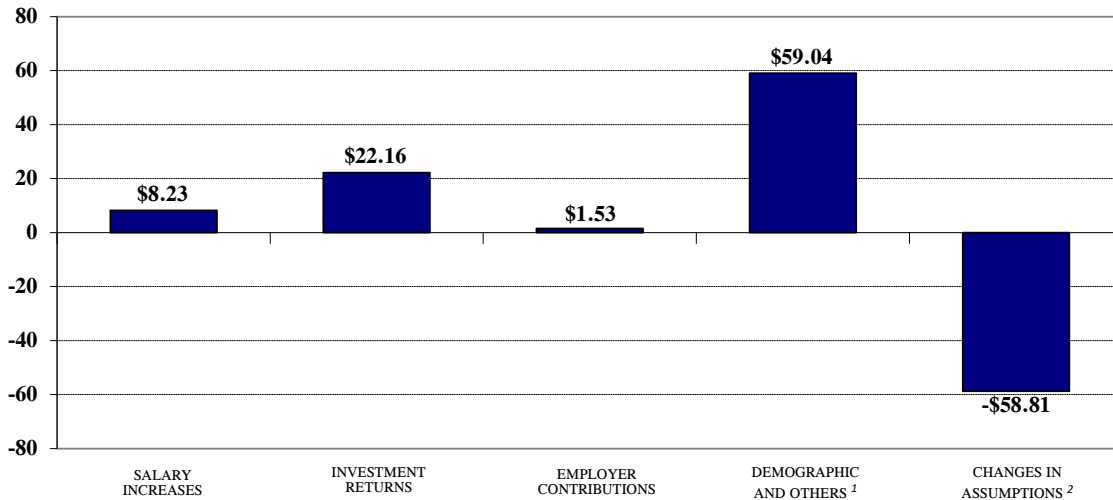


CHART 6

CHICAGO TRANSIT AUTHORITY PENSION FUND
Analysis of Actuarial (Gains) and Losses
Year ended December 31, 2018
(\$ in Millions)

TOTAL ACTUARIAL LOSSES
 EQUALS \$32.16 MIL



¹ Unfunded liability increased mostly due to data updates, "programming refinement," and the net effect of unfavorable demographic experiences.

² Unfunded liability decreased due to the net effect of changes in assumptions, some of which include updating mortality rates, lowering the inflation rate, etc.

CHART 7

CHICAGO TRANSIT AUTHORITY PENSION FUND Investment Income FY 2009 - FY 2018 Actuarially Assumed Rate of Return: 8.25% (\$ in Millions)

All figures based upon the market value of assets.

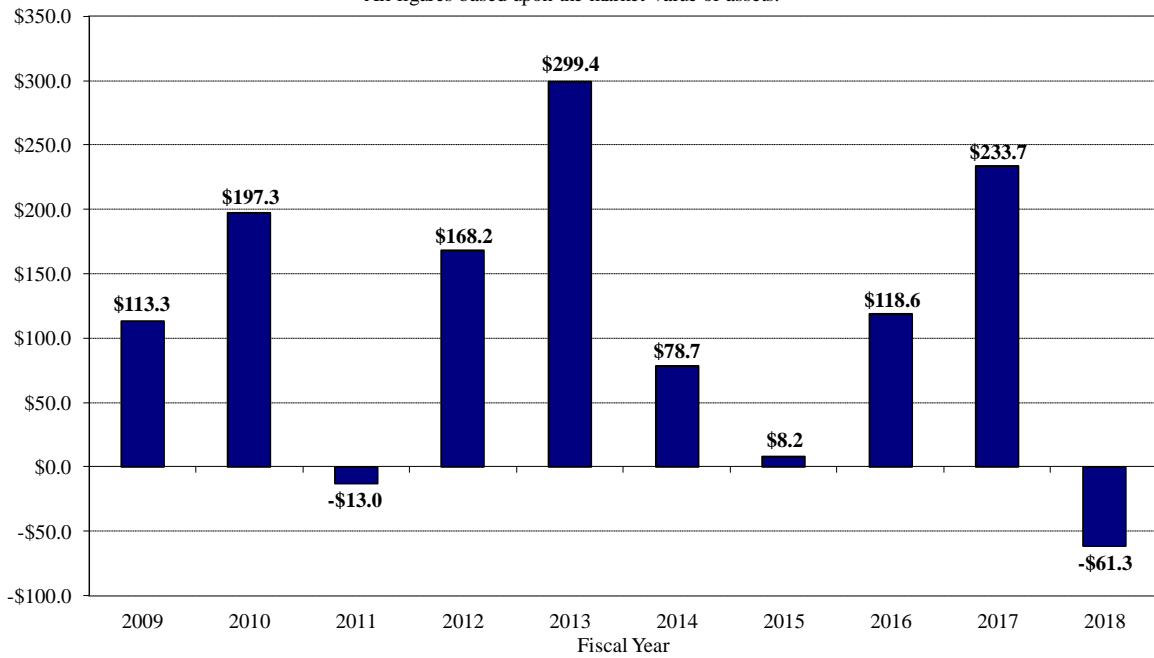


CHART 8

CHICAGO TRANSIT AUTHORITY PENSION FUND Rate of Return FY 2009 - FY 2018 Actuarially Assumed Rate of Return: 8.25%

All figures based upon the market value of assets.

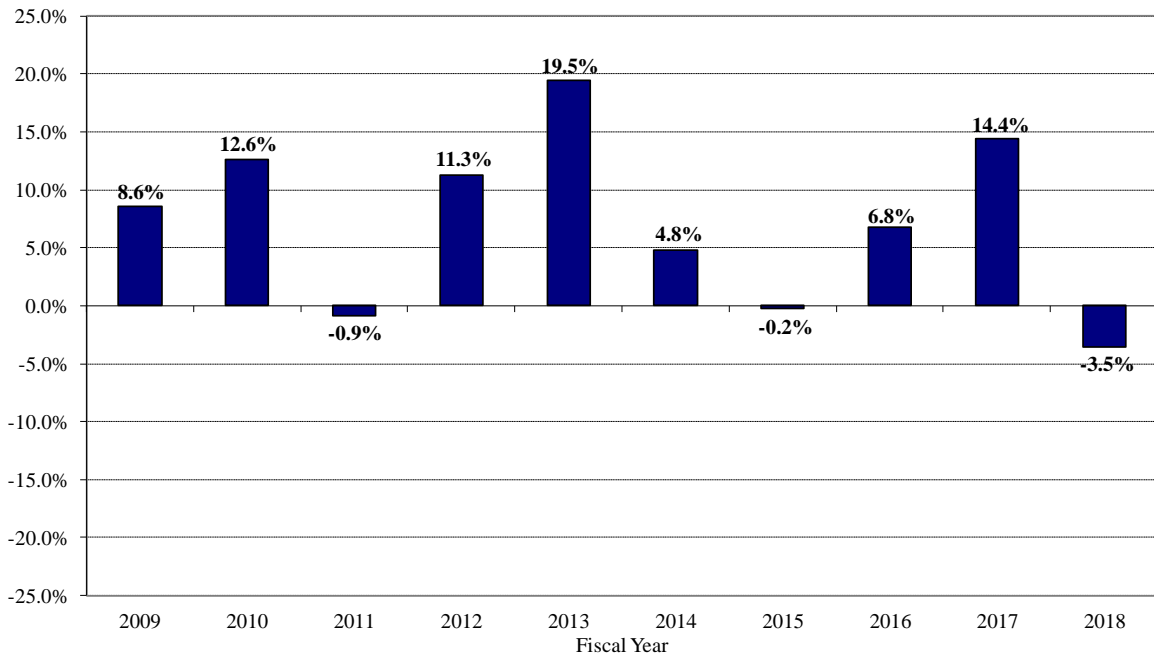


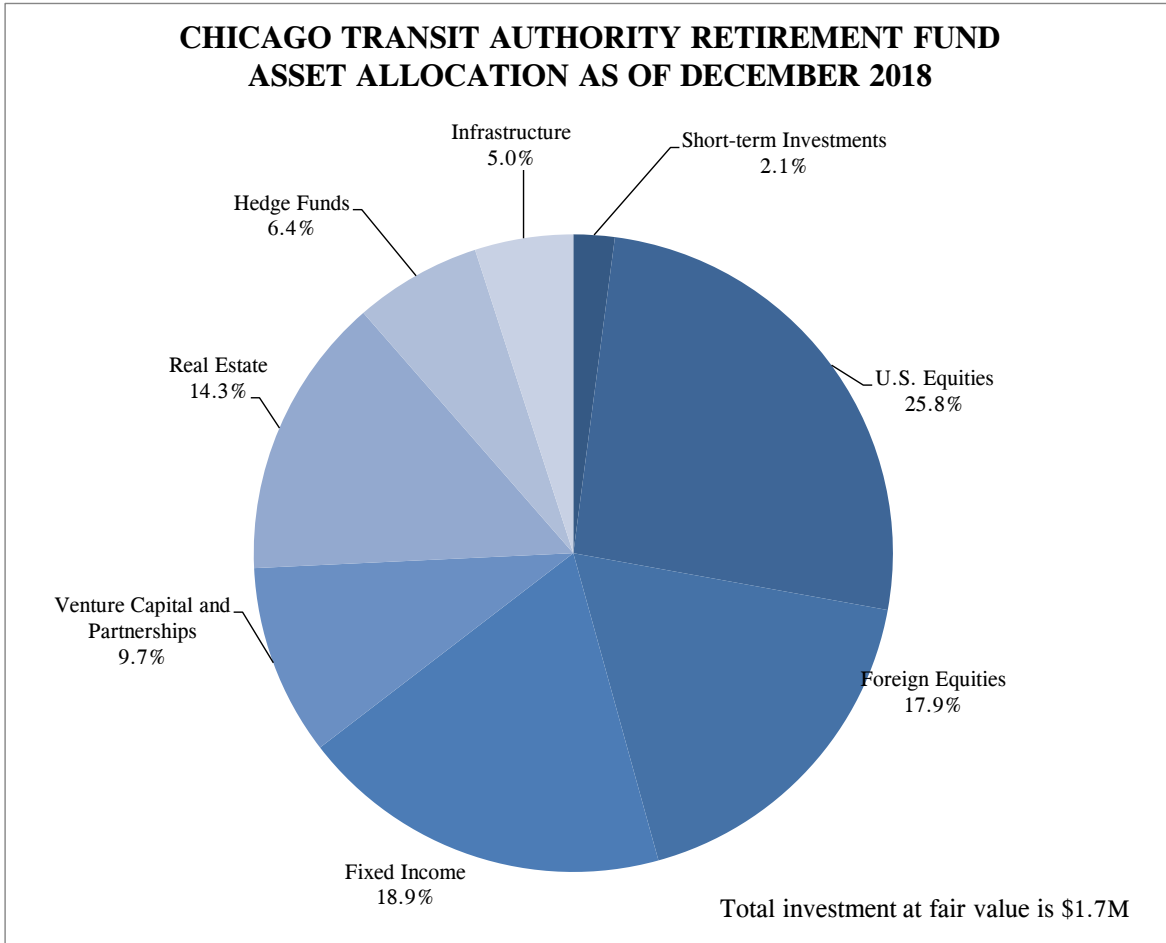
TABLE 1

CHICAGO TRANSIT AUTHORITY PENSION FUND					
System Experience, FY 2009 - FY 2018					
(\$ in Thousands)					
Fiscal Year	Annual Payroll	Actuarial Liabilities	Actuarial Assets	Unfunded Liabilities	Funded Ratio
2018	623.0	3,489.0	1,835.8	1,653.2	52.6%
2017	595.0	3,423.2	1,802.2	1,621.0	52.6%
2016	575.4	3,338.6	1,752.5	1,586.2	52.5%
2015	573.5	3,267.1	1,743.2	1,523.9	53.4%
2014	564.8	3,186.2	1,855.9	1,330.3	58.2%
2013	550.6	3,105.6	1,892.7	1,212.9	60.9%
2012	548.5	2,867.3	1,702.8	1,164.5	59.4%
2011	541.4	2,808.2	1,662.2	1,146.0	59.2%
2010	528.3	2,724.2	1,910.0	814.2	70.1%
2009	567.2	2,588.4	1,936.8	651.6	74.8%

TABLE 2

CHICAGO TRANSIT AUTHORITY PENSION FUND										
Changes in Net Assets										
(\$ in Thousands)										
Fiscal Years	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Additions to Assets										
Employer	\$117.1	\$104.5	\$83.9	\$82.8	\$82.3	\$79.5	\$62.8	\$60.3	\$56.3	\$41.4
Employees	\$78.3	\$70.3	\$59.6	\$59.0	\$58.6	\$56.8	\$48.4	\$47.2	\$45.3	\$35.0
Net Investment Income	-\$61.3	\$233.7	\$118.6	\$8.2	\$78.7	\$299.4	\$168.2	-\$13.0	\$197.2	\$113.3
Other	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Total Asset Additions (A)	\$134.1	\$408.5	\$262.0	\$150.0	\$219.5	\$435.7	\$279.4	\$94.5	\$298.8	\$189.7
Deductions from Assets										
Benefits	\$274.5	\$269.1	\$261.7	\$253.8	\$246.0	\$238.7	\$232.7	\$222.2	\$216.2	\$212.6
Refunds	\$7.4	\$7.3	\$4.8	\$6.4	\$7.1	\$4.9	\$4.0	\$2.9	\$2.2	\$2.1
Rebates	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Administrative Expenses	\$2.9	\$2.5	\$2.3	\$2.6	\$3.1	\$2.1	\$2.1	\$2.0	\$2.0	\$2.2
Other	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Total Asset Deductions (B)	\$284.8	\$279.0	\$268.9	\$262.7	\$256.3	\$245.7	\$238.8	\$227.1	\$220.4	\$216.9
Change in Net Assets (A-B=C)	-\$150.7	\$129.5	-\$6.8	-\$112.7	-\$36.8	\$190.0	\$40.6	-\$132.6	\$78.4	-\$27.2

CHART 9



III. Cook County Employees' Pension Fund

- Plan Summary
- Active Employees
- Employee Annuitants
- Average Salaries
- Average Retirement Annuity
- Funded Ratios
- Change in Unfunded Liabilities
- Investment Income
- Investment Rates of Return
- Systems Experience
- Changes in Net Assets
- System Projections
- Asset Allocation



Note: All data shown in this section is based upon the system's Actuarial Valuation and CAFR as of December 31, 2018.

Cook County Employees' Pension Fund Tier 1 Plan Summary

Retirement Age

- Age 50 with 10 years of service

Retirement Formula

- 2.4% of final average salary for each year of service

Maximum Annuity

- 80% of final average salary

Salary Used to Calculate Pension

- Highest average monthly salary for any 48 consecutive months within the final 10 years of service

Annual COLA

- 3% compounded

Employee Contributions

- 8.5% of salary

Employer Contributions

The County levies a tax annually equal to the total amount of contributions made by employees in the calendar year two years prior to the year of the levy, multiplied by 1.54.

Note: Benefits shown are for employees hired prior to January 1, 2011 (Tier 1 employees), the effective date of P.A. 96-0889. See P.A. 96-0889 in Section I for a summary of benefits for employees hired after January 1, 2011 (Tier 2 employees).

CHART 10

**COOK COUNTY EMPLOYEES' PENSION FUND
Active Employees**

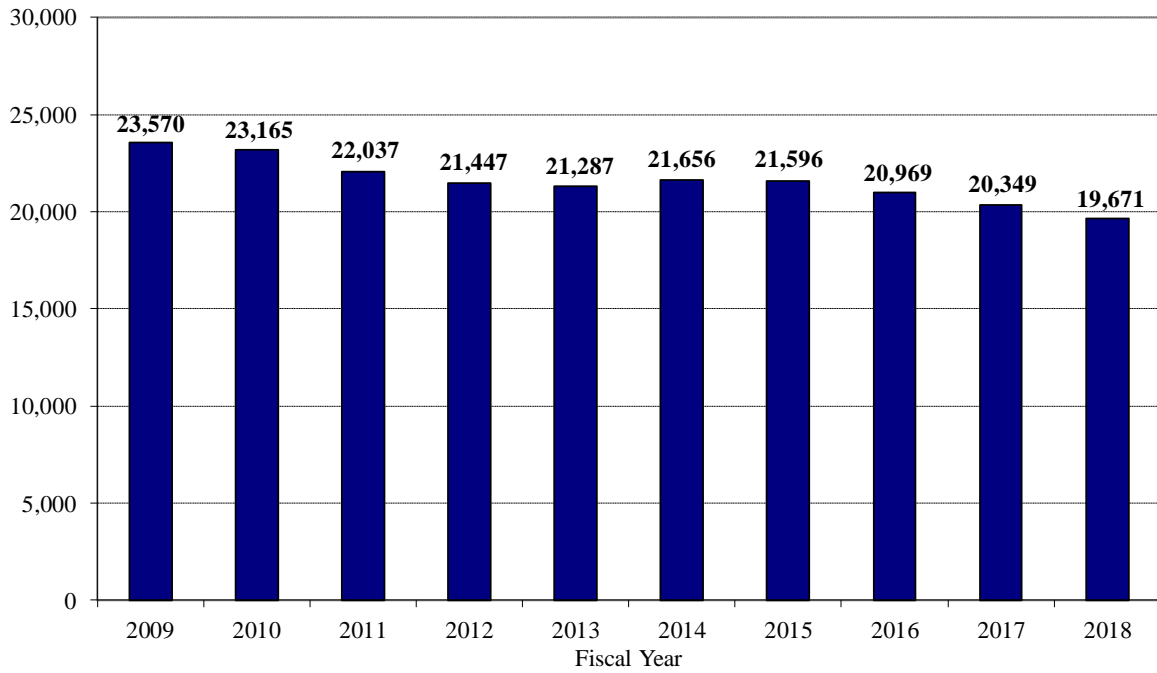


CHART 11

**COOK COUNTY EMPLOYEES' PENSION FUND
Employee Annuitants**

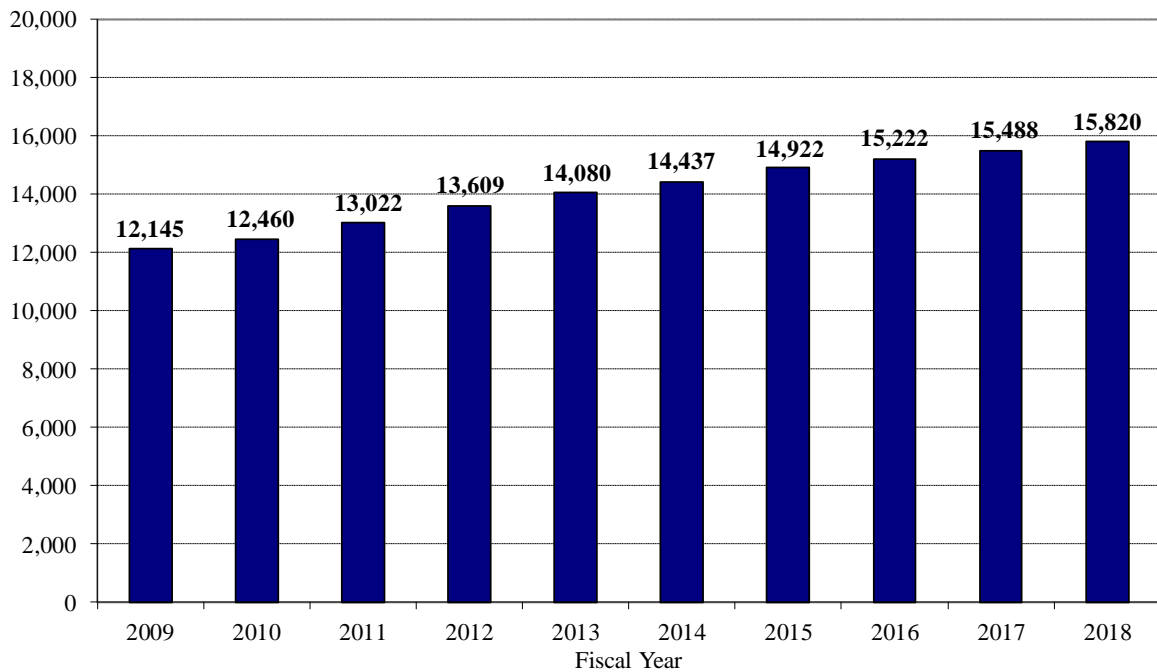


CHART 12

**COOK COUNTY EMPLOYEES' PENSION FUND
Average Employee Salaries**

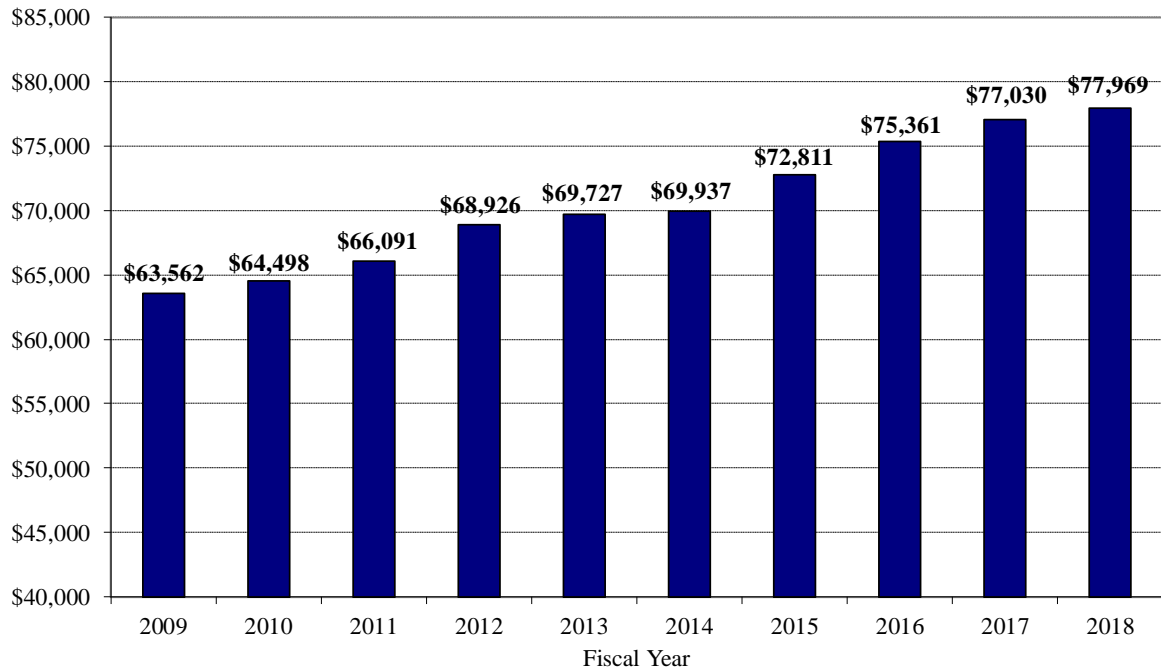


CHART 13

**COOK COUNTY EMPLOYEES' PENSION FUND
Average Retirement Annuities**

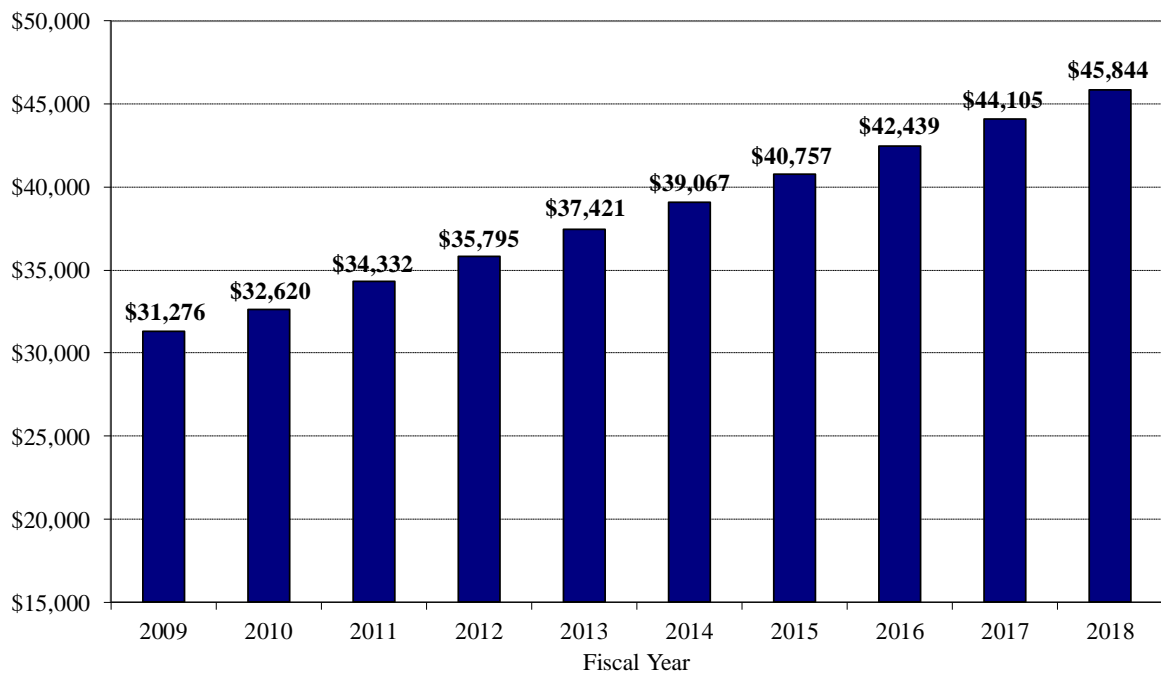


CHART 14

COOK COUNTY EMPLOYEES' PENSION FUND
Funded Ratio
FY 2009 - FY 2018

All figures based upon the actuarial value of assets.

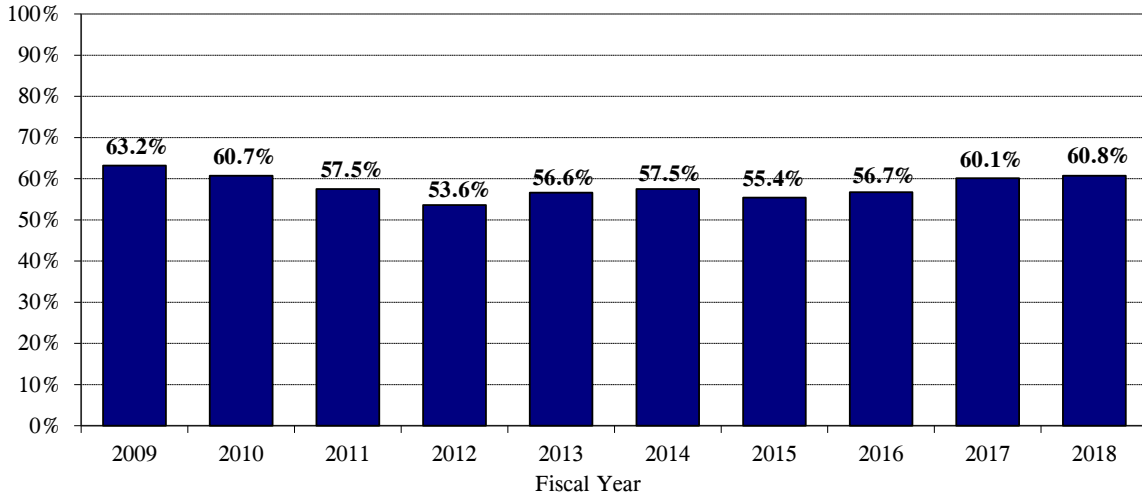
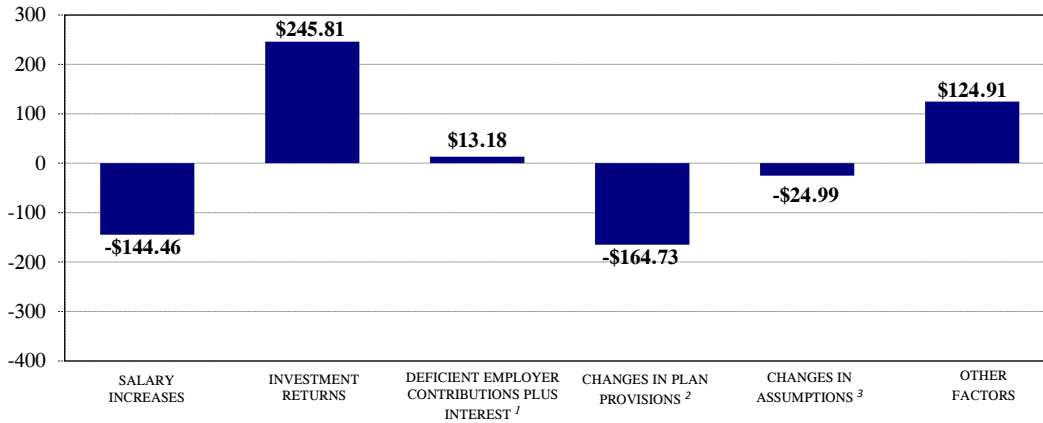


CHART 15

COOK COUNTY EMPLOYEES' PENSION FUND
Change in Unfunded Liabilities
Year ended December 31, 2018
(\$ in Millions)

All figures based upon the actuarial value of assets.

TOTAL INCREASE EQUALS
\$49.7 MIL



¹ The unfunded liability increased due to employer contribution plus interest being less than normal cost, plus interest. A supplemental employer contribution of \$378.4 million is included in the employer contribution.

² The unfunded liability decreased due to provision changes in the retiree health insurance plan, which include changing the 2019 subsidy rates for member health benefits and survivor health benefits.

³ The unfunded liability decreased as an assumption used for the retiree health insurance plan was reset and no adjustment was made in the fund's 2018 valuation due to the uncertainty of the implementation of the Affordable Care Act.

CHART 16

COOK COUNTY EMPLOYEES' PENSION FUND Investment Income FY 2009 - FY 2018 Actuarially Assumed Rate of Return: 7.25% (\$ in Millions)

All figures based upon the market value of assets.

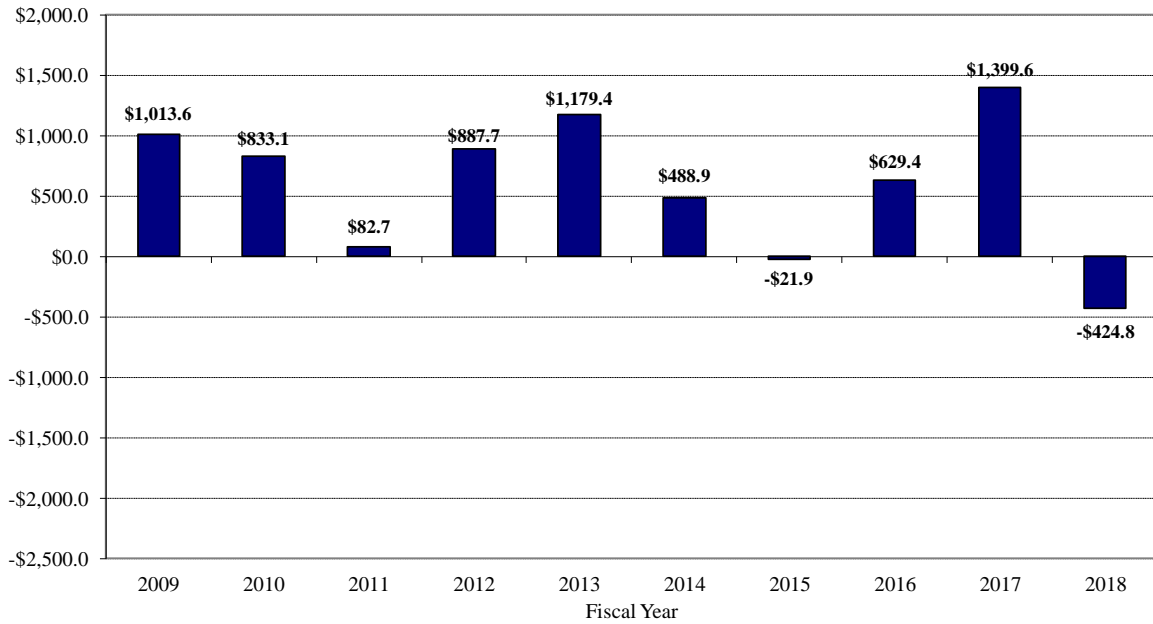


CHART 17

COOK COUNTY EMPLOYEES' PENSION FUND Rate of Return FY 2009 - FY 2018 Actuarially Assumed Rate of Return: 7.25%

All figures based upon the market value of assets.

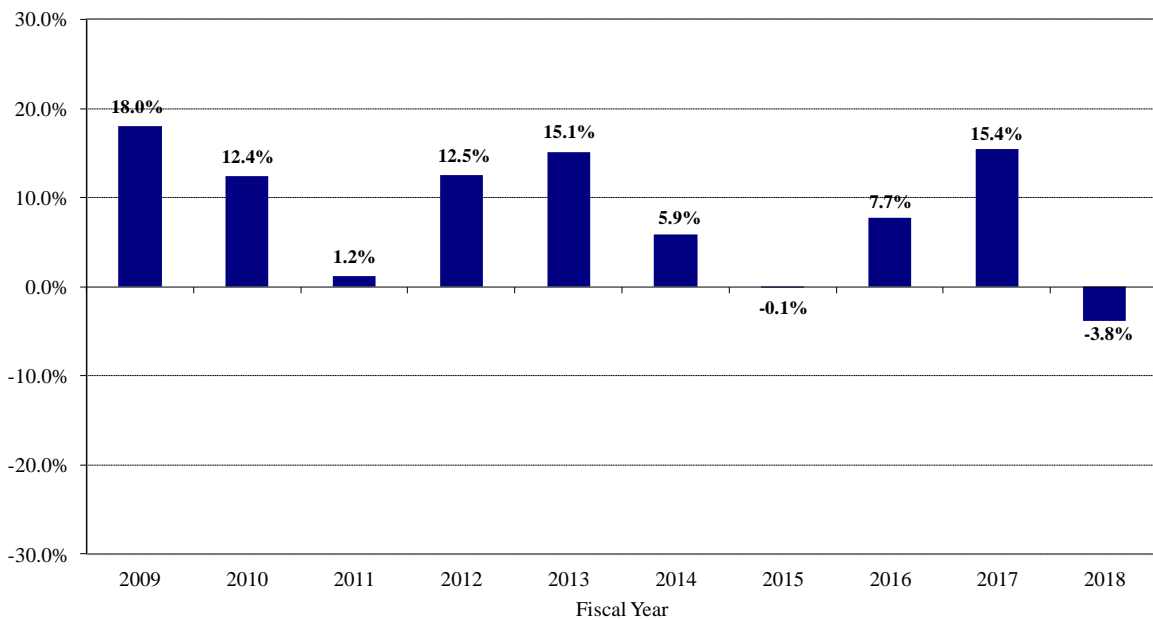


TABLE 3

COOK COUNTY EMPLOYEES' PENSION FUND					
System Experience, FY 2009 - FY 2018					
(\$ in Millions)					
Fiscal Year	Annual Payroll	Actuarial Liabilities	Actuarial Assets	Unfunded Liabilities	Funded Ratio
2018	1,533.7	17,303.8	10,512.8	6,791.0	60.8%
2017	1,567.5	16,889.5	10,148.2	6,741.3	60.1%
2016	1,580.3	16,726.5	9,488.2	7,238.2	56.7%
2015	1,572.4	16,232.2	8,991.0	7,241.2	55.4%
2014	1,514.6	15,318.8	8,810.5	6,508.3	57.5%
2013	1,484.3	14,812.1	8,381.4	6,430.6	56.6%
2012	1,478.3	14,630.3	7,833.9	6,796.4	53.6%
2011	1,456.4	13,724.0	7,897.1	5,826.9	57.5%
2010	1,494.1	13,142.1	7,982.3	5,159.8	60.7%
2009	1,498.2	12,575.5	7,945.6	4,629.9	63.2%

TABLE 4

COOK COUNTY EMPLOYEES' PENSION FUND										
Changes in Net Assets										
(\$ in Millions)										
Fiscal Years	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Additions to Assets										
Employer	\$587.7	\$559.21	\$464.3	\$186.8	\$190.0	\$187.8	\$190.7	\$195.3	\$181.5	\$183.7
Employees	\$134.2	\$138.83	\$139.4	\$137.7	\$129.3	\$127.6	\$130.6	\$127.6	\$129.4	\$127.8
Net Investment Income	-\$424.8	\$1,399.63	\$629.4	-\$21.9	\$488.9	\$1,179.4	\$887.7	\$82.9	\$833.1	\$1,013.6
Other	\$27.5	\$23.27	\$13.9	\$11.5	\$9.7	\$8.5	\$10.2	\$17.4	\$12.8	\$11.8
Total Asset Additions (A)	\$324.6	\$2,120.98	\$1,247.0	\$314.1	\$818.0	\$1,503.4	\$1,219.2	\$423.2	\$1,156.8	\$1,336.9
Deductions from Assets										
Benefits	\$831.7	\$790.35	\$742.4	\$701.0	\$645.6	\$601.8	\$563.1	\$523.4	\$482.5	\$452.0
Refunds	\$33.7	\$33.00	\$26.7	\$33.3	\$26.3	\$29.9	\$33.1	\$29.1	\$25.0	\$20.4
Rebates	\$0.0	\$0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Administrative Expenses	\$5.1	\$5.41	\$5.4	\$5.2	\$5.0	\$4.3	\$4.3	\$4.1	\$4.1	\$4.3
Other	\$0.0	\$0.00	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Total Asset Deductions (B)	\$870.5	\$828.75	\$774.5	\$739.5	\$677.0	\$636.0	\$600.5	\$556.6	\$511.6	\$476.7
Change in Net Assets (A-B=C)	-\$545.9	\$1,292.23	\$472.6	-\$425.4	\$141.0	\$867.4	\$618.7	-\$133.4	\$645.2	\$860.2

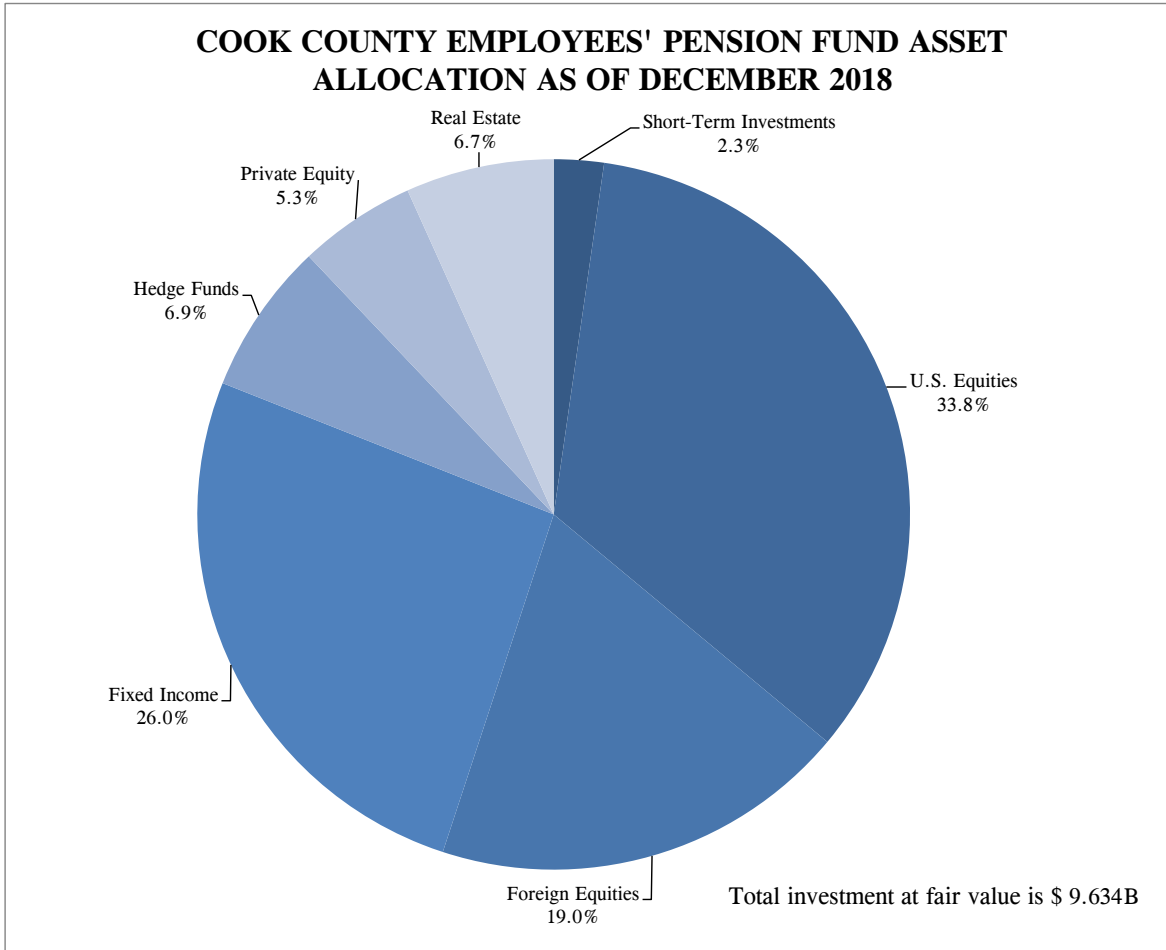
Table 5 below contains funding projections based on the December 31, 2018 actuarial valuation of the Cook County Employees' Pension Fund. As shown in the table below, under the current funding policy the Cook County Employees' Pension Fund is projected to run out of assets by 2041 if all future assumptions are met and no additional contributions are made.

TABLE 5

Cook County Employees' Pension Fund Actuarial Valuation Projection Results as of December 31, 2018 (\$ in Millions)								
Calendar Year	Capped Payroll	Total County Contribution	County Contribution As % of Payroll	Total Employee Contribution	Accrued Liability	Actuarial Value of Assets	Unfunded Liabilities	Funded Ratio
2019	1,612.6	503.5	31.2%	142.0	17,304.0	10,513.0	6,791.0	60.8%
2020	1,650.9	207.4	12.6%	145.3	17,862.0	10,715.0	7,147.0	60.0%
2021	1,689.5	200.4	11.9%	148.7	18,405.0	10,733.0	7,672.0	58.3%
2022	1,729.4	212.1	12.3%	152.2	18,932.0	10,702.0	8,230.0	56.5%
2023	1,771.0	212.4	12.0%	155.9	19,439.0	10,486.0	8,952.0	53.9%
2024	1,813.7	222.2	12.3%	159.7	19,923.0	10,449.0	9,474.0	52.4%
2025	1,857.4	227.4	12.2%	163.5	20,384.0	10,361.0	10,023.0	50.8%
2026	1,902.9	232.9	12.2%	167.5	20,818.0	10,212.0	10,606.0	49.1%
2027	1,950.5	238.5	12.2%	171.7	21,224.0	9,999.0	11,225.0	47.1%
2028	2,000.3	244.2	12.2%	176.1	21,602.0	9,720.0	11,882.0	45.0%
2029	2,052.0	250.2	12.2%	180.6	21,953.0	9,372.0	12,581.0	42.7%
2030	2,105.4	256.5	12.2%	185.3	22,277.0	8,953.0	13,324.0	40.2%
2031	2,160.2	263.0	12.2%	190.2	22,573.0	8,458.0	14,115.0	37.5%
2032	2,217.6	269.8	12.2%	195.2	22,841.0	7,885.0	14,956.0	34.5%
2033	2,277.3	276.8	12.2%	200.5	23,081.0	7,230.0	15,851.0	31.3%
2034	2,338.9	284.1	12.1%	205.9	23,295.0	6,491.0	16,804.0	27.9%
2035	2,401.9	291.6	12.1%	211.4	23,485.0	5,666.0	17,819.0	24.1%
2036	2,467.1	299.5	12.1%	217.2	23,650.0	4,750.0	18,900.0	20.1%
2037	2,534.6	307.6	12.1%	223.1	23,793.0	3,741.0	20,052.0	15.7%
2038	2,604.8	315.8	12.1%	229.3	23,915.0	2,635.0	21,280.0	11.0%
2039	2,677.8	324.4	12.1%	235.7	24,018.0	1,429.0	22,588.0	6.0%
2040	2,752.8	333.3	12.1%	242.3	24,106.0	122.0	23,984.0	0.5%
2041	2,829.3	342.5	12.1%	249.1	24,182.0	-1,291.0	25,473.0	-5.3%
2042	2,909.4	352.1	12.1%	256.1	24,248.0	-2,814.0	27,061.0	-11.6%
2043	2,992.4	362.0	12.1%	263.4	24,308.0	-4,449.0	28,757.0	-18.3%
2044	3,078.0	372.0	12.1%	270.9	24,367.0	-6,199.0	30,566.0	-25.4%
2045	3,166.5	382.6	12.1%	278.7	24,430.0	-8,068.0	32,498.0	-33.0%
2046	3,256.7	393.5	12.1%	286.7	24,502.0	-10,059.0	34,561.0	-41.1%
2047	3,348.5	404.7	12.1%	294.8	24,585.0	-12,180.0	36,765.0	-49.5%
2048	3,442.9	416.4	12.1%	303.1	24,682.0	-14,437.0	39,119.0	-58.5%
2049	3,539.6	428.2	12.1%	311.6	24,795.0	-16,840.0	41,634.0	-67.9%
2050	3,638.9	440.3	12.1%	320.3	24,926.0	-19,396.0	44,323.0	-77.8%
2051	3,740.1	452.7	12.1%	329.2	25,080.0	-22,117.0	47,196.0	-88.2%
2052	3,843.0	465.4	12.1%	338.3	25,253.0	-25,015.0	50,268.0	-99.1%
2053	3,948.3	478.5	12.1%	347.6	25,445.0	-28,108.0	53,553.0	-110.5%

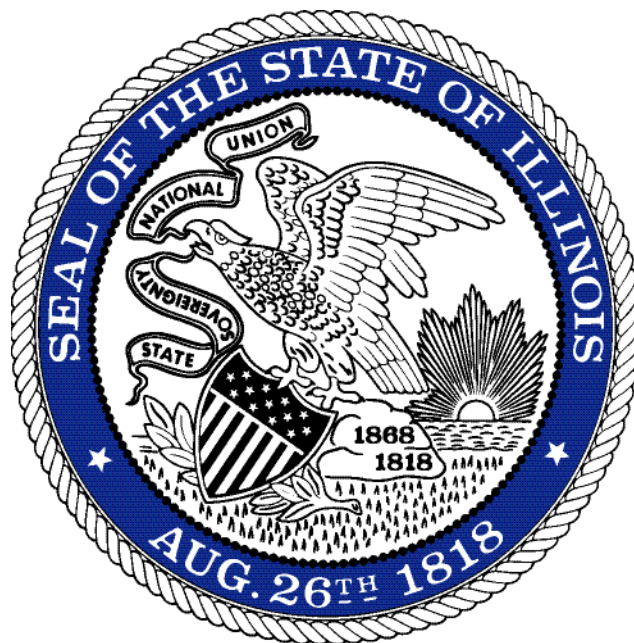
NOTE: County contribution for 2019 includes a \$320.3 million supplemental contribution of which \$25 million was paid in 2018.

CHART 18



IV. Cook County Forest Preserve Employees' Pension Fund

- Plan Summary
- Active Employees
- Employee Annuitants
- Average Salaries
- Average Retirement Annuity
- Funded Ratios
- Change in Unfunded Liabilities
- Investment Income
- Investment Rates of Return
- Systems Experience
- Changes in Net Assets
- System Projections
- Asset Allocation



Note: All data shown in this section is based upon the system's Actuarial Valuation and CAFR as of December 31, 2018.

Cook County Forest Preserve Employees' Pension Fund Tier 1 Plan Summary

Retirement Age

- Age 50 with 10 years of service

Retirement Formula

- 2.4% of final average salary for each year of service

Maximum Annuity

- 80% of final average salary

Salary Used to Calculate Pension

- Highest average monthly salary for any 48 consecutive months within the final 10 years of service

Annual COLA

- 3% compounded

Employee Contributions

- 8.5% of salary

Employer Contributions

The Forest Preserve District levies a tax annually equal to the total amount of contributions made by employees in the calendar year two years prior to the year of the levy, multiplied by 1.30.

Note: Benefits shown are for employees hired prior to January 1, 2011 (Tier 1 employees), the effective date of P.A. 96-0889. See P.A. 96-0889 in Section I for a summary of benefits for employees hired after January 1, 2011 (Tier 2 employees).

CHART 19

**COOK COUNTY FOREST PRESERVE PENSION FUND
Active Employees**

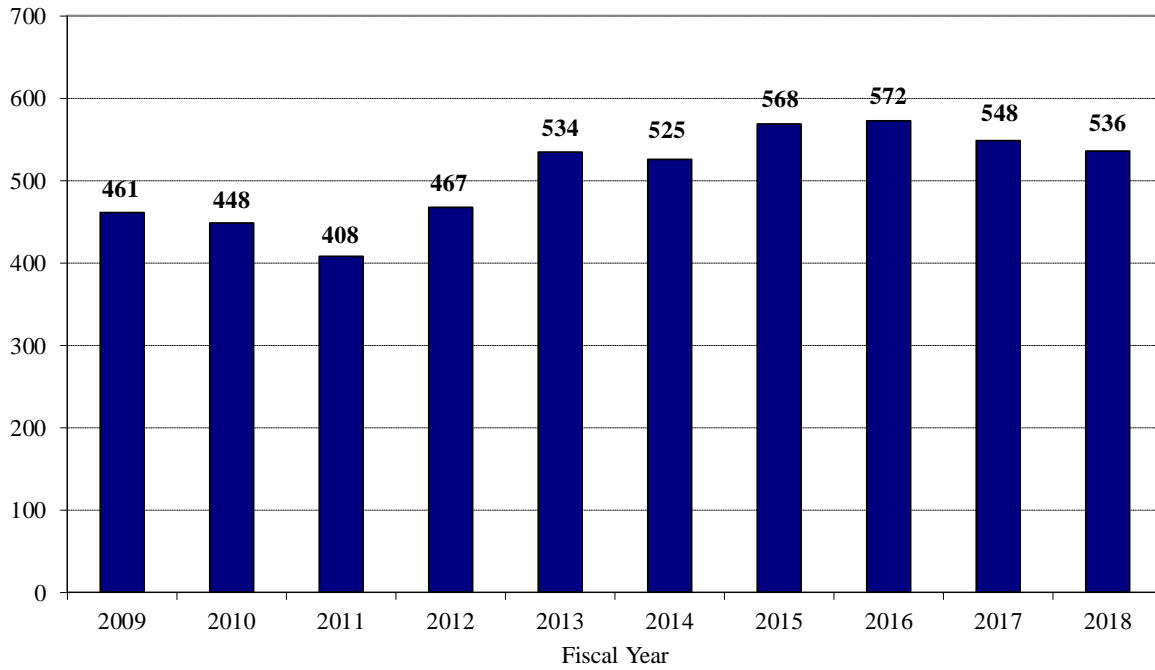


CHART 20

**COOK COUNTY FOREST PRESERVE PENSION FUND
Employee Annuitants**

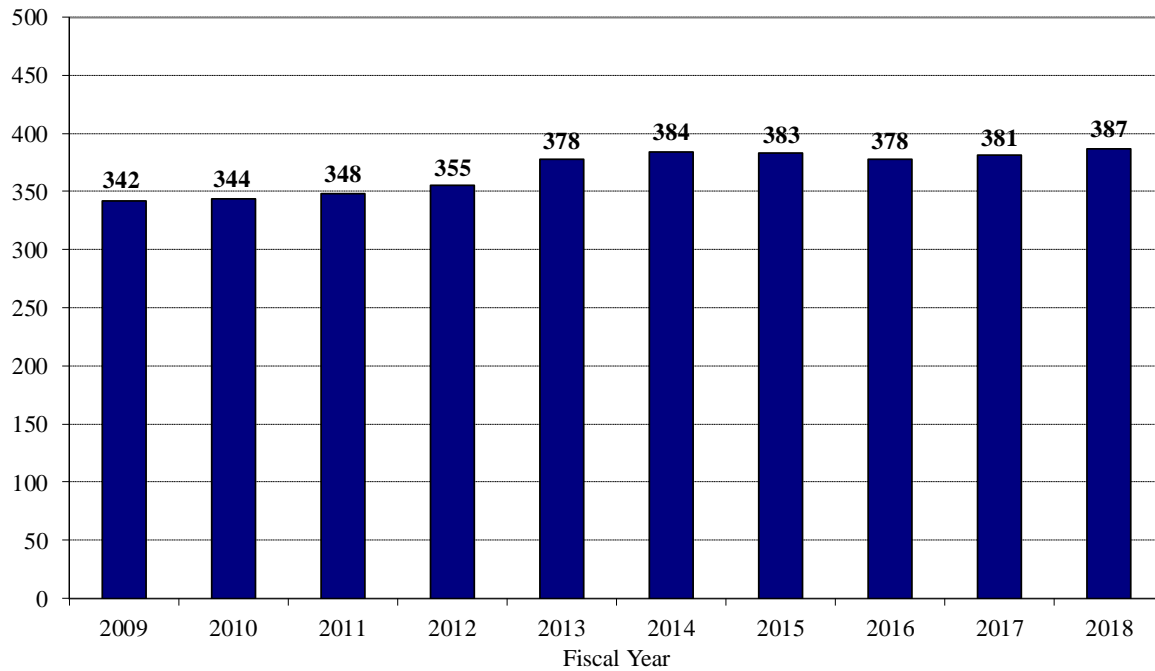


CHART 21

**COOK COUNTY FOREST PRESERVE PENSION FUND
Average Employee Salaries**

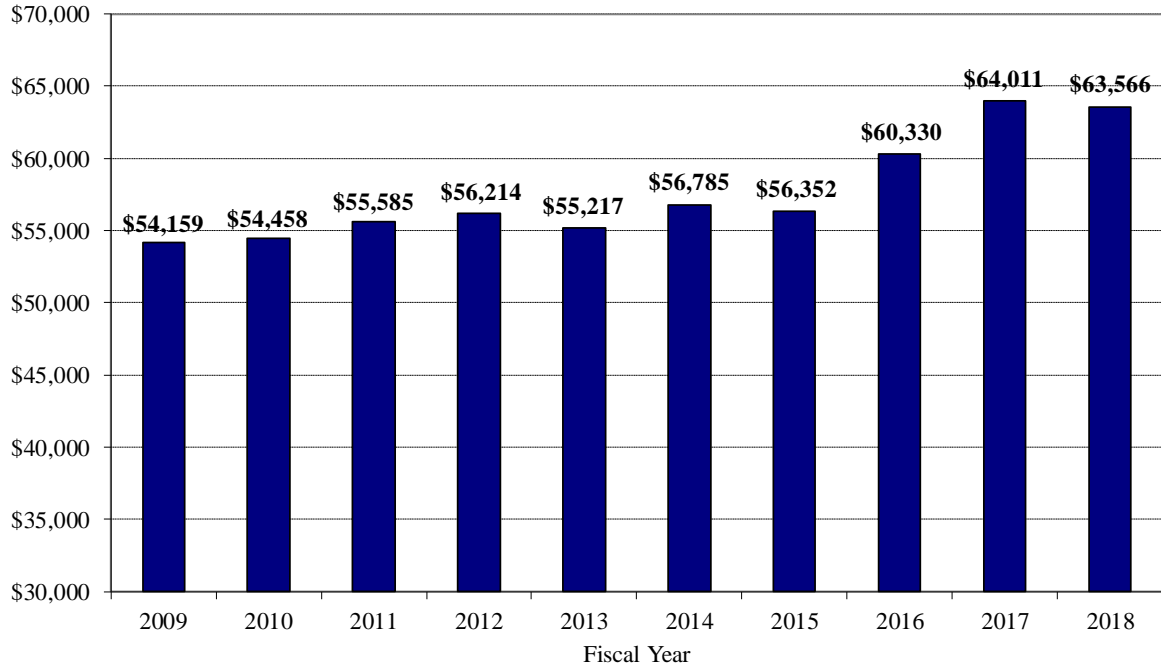


CHART 22

**COOK COUNTY FOREST PRESERVE PENSION FUND
Average Retirement Annuities**

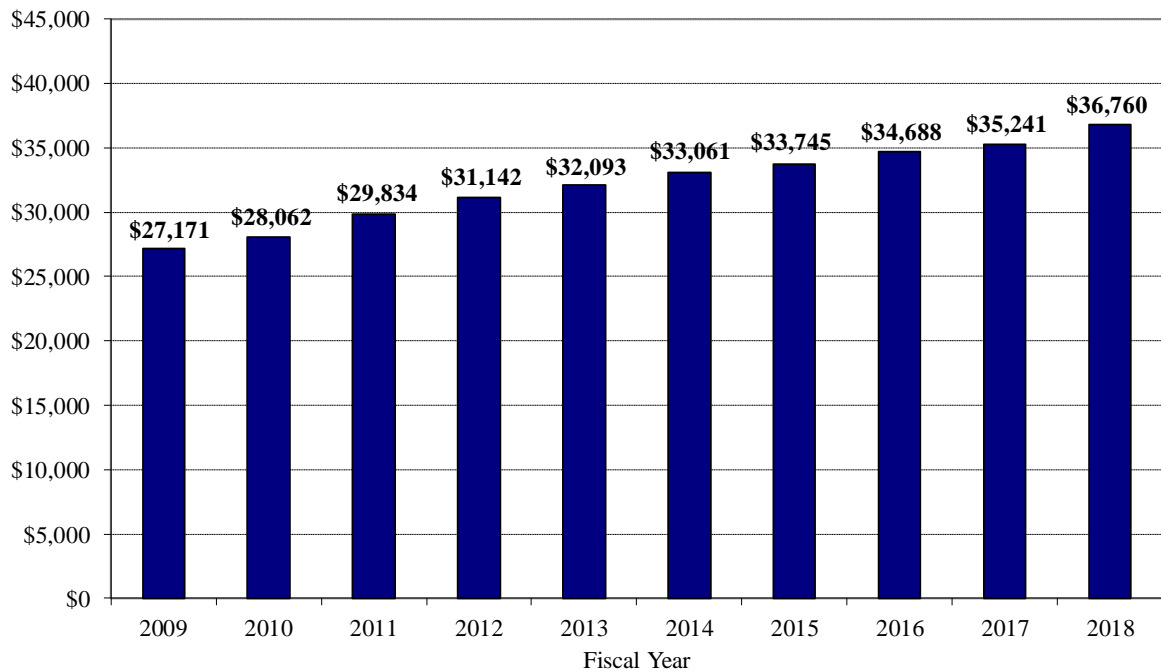


CHART 23

**COOK COUNTY FOREST PRESERVE PENSION FUND
Funded Ratio
FY 2009 - FY 2018**

All figures based upon the actuarial value of assets.

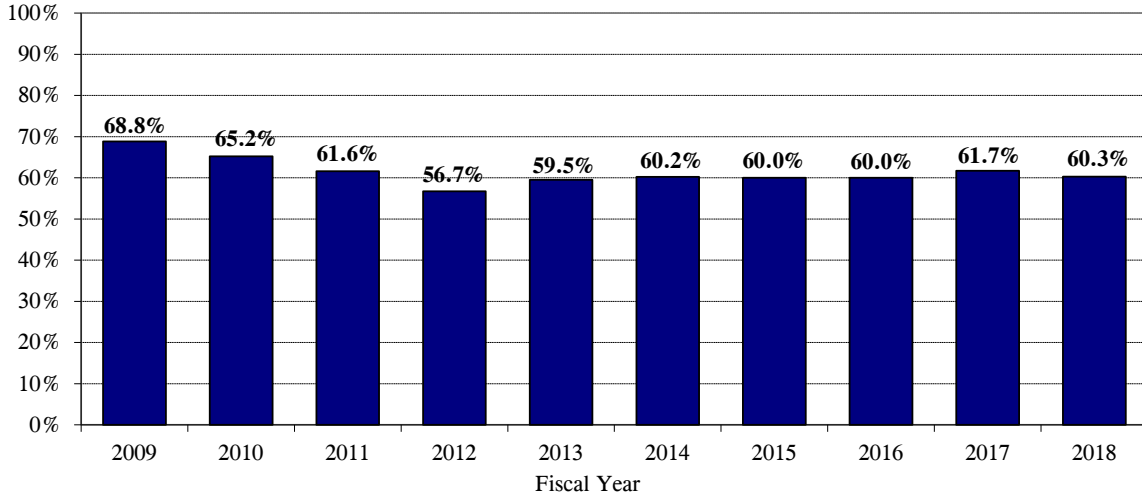
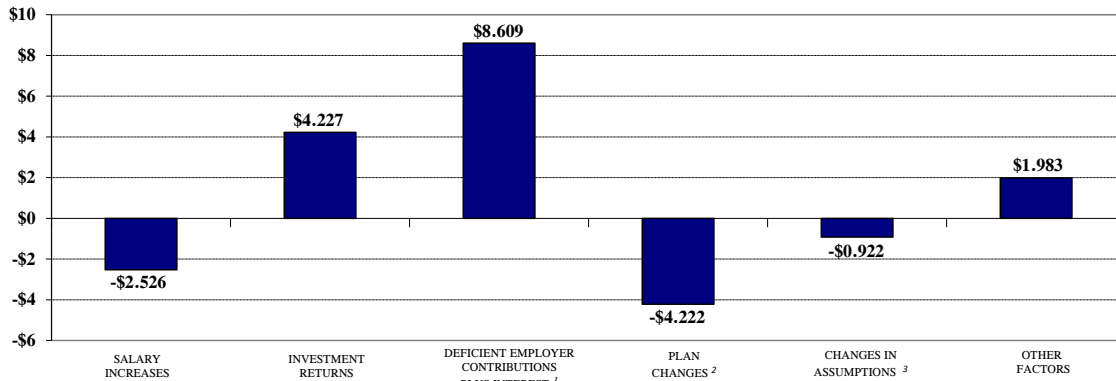


CHART 24

**COOK COUNTY FOREST PRESERVE PENSION FUND
Change in Unfunded Liabilities
Year ended December 31, 2018
(\$ in Millions)**

All figures based upon the actuarial value of assets.

TOTAL INCREASE EQUALS
\$7.15 MIL



¹ Unfunded liability increased due to employer contributions plus interest being less than normal cost, plus interest.

² The unfunded liability decreased due to provision changes in the retiree health insurance plan, which include changing the 2019 subsidy rates for member health benefits and survivor health benefits.

³ The unfunded liability decreased as an assumption used for the retiree health insurance plan was reset and no adjustment was made in the fund's 2018 valuation due to the uncertainty of the implementation of the Affordable Care Act.

CHART 25

COOK COUNTY FOREST PRESERVE PENSION FUND
Investment Income FY 2009 - FY 2018
Actuarially Assumed Rate of Return: 7.25%
(\$ in Millions)

All figures based upon the market value of assets.

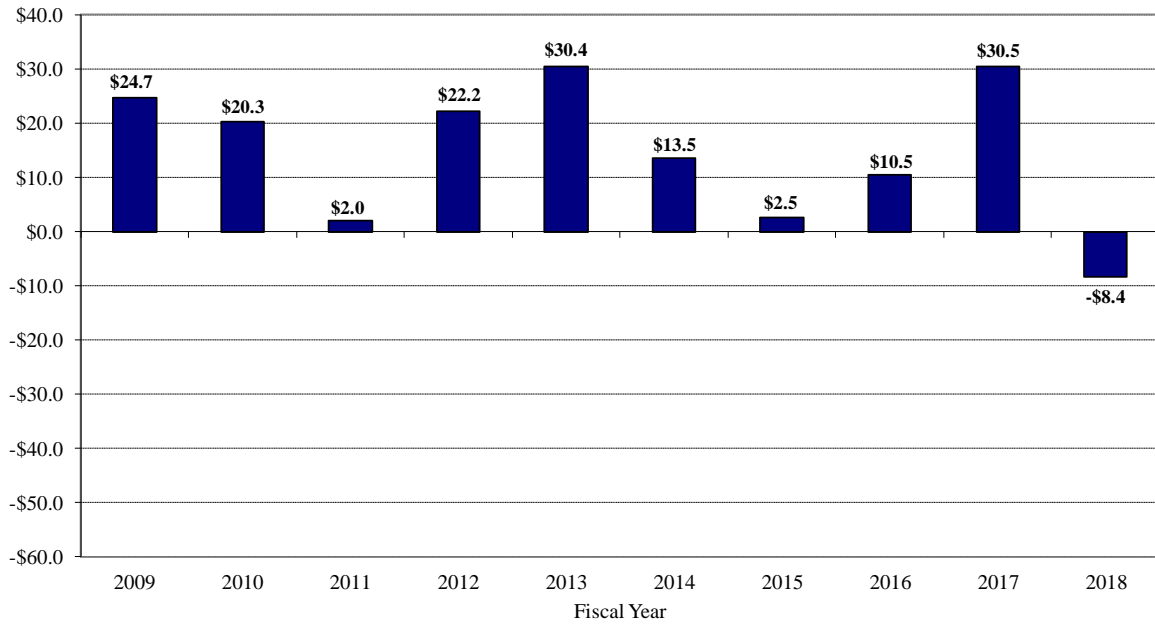


CHART 26

COOK COUNTY FOREST PRESERVE PENSION FUND
Rate of Return FY 2009 - FY 2018
Actuarially Assumed Rate of Return: 7.25%
All figures based upon the market value of assets.

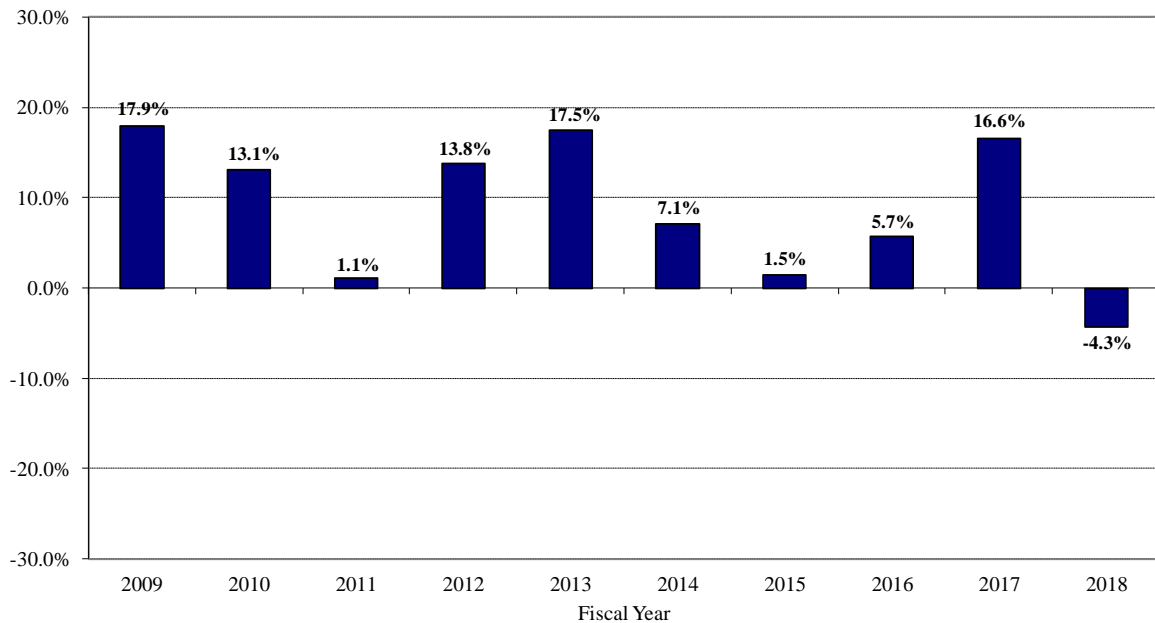


TABLE 6

COOK COUNTY FOREST PRESERVE PENSION FUND					
System Experience, FY 2009 - FY 2018					
(\$ in Millions)					
Fiscal Year	Annual Payroll	Actuarial Liabilities	Actuarial Assets	Unfunded Liabilities	Funded Ratio
2018	34.1	336.7	202.9	133.8	60.3%
2017	35.1	330.9	204.3	126.6	61.7%
2016	34.5	330.2	198.2	132.0	60.0%
2015	32.0	322.8	193.7	129.0	60.0%
2014	29.7	315.2	189.9	125.3	60.2%
2013	26.3	306.9	182.6	124.4	59.5%
2012	26.3	304.5	172.6	131.9	56.7%
2011	22.7	289.3	178.1	111.2	61.6%
2010	24.4	282.4	184.1	98.3	65.2%
2009	25.0	274.0	188.4	85.6	68.8%

TABLE 7

COOK COUNTY FOREST PRESERVE PENSION FUND										
Changes in Net Assets										
(\$ in Millions)										
Fiscal Years	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Additions to Assets										
Employer	\$4.1	\$3.5	\$3.4	\$3.5	\$3.1	\$2.9	\$3.1	\$3.3	\$2.7	\$2.6
Employees	\$3.1	\$3.3	\$3.2	\$2.8	\$2.6	\$2.7	\$2.5	\$2.3	\$2.4	\$2.4
Net Investment Income	-\$8.4	\$30.5	\$10.5	\$2.5	\$13.5	\$30.4	\$22.2	\$2.0	\$20.3	\$24.7
Other	\$0.9	\$0.6	\$0.3	\$0.2	\$0.2	\$0.2	\$0.2	\$0.5	\$0.2	\$0.2
Total Asset Additions (A)	-\$0.3	\$37.9	\$17.4	\$9.0	\$19.5	\$36.1	\$28.0	\$8.1	\$25.6	\$29.9
Deductions from Assets										
Benefits	\$18.3	\$18.0	\$17.5	\$17.2	\$16.7	\$15.7	\$14.2	\$13.6	\$13.0	\$12.4
Refunds	\$1.1	\$0.6	\$0.7	\$0.6	\$1.0	\$1.0	\$1.2	\$0.6	\$0.4	\$0.5
Rebates	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Administrative Expenses	\$0.2	\$0.2	\$0.2	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1
Other	\$0.2	\$0.1	\$0.1	\$0.0	\$0.2	-\$0.1	\$0.2	-\$0.3	\$0.3	\$0.1
Total Asset Deductions (B)	\$19.7	\$18.8	\$18.5	\$18.0	\$17.9	\$16.6	\$15.7	\$14.0	\$13.8	\$13.1
Change in Net Assets (A-B=C)	-\$20.0	\$19.2	-\$1.1	-\$9.0	\$1.6	\$19.5	\$12.3	-\$5.9	\$11.8	\$16.8

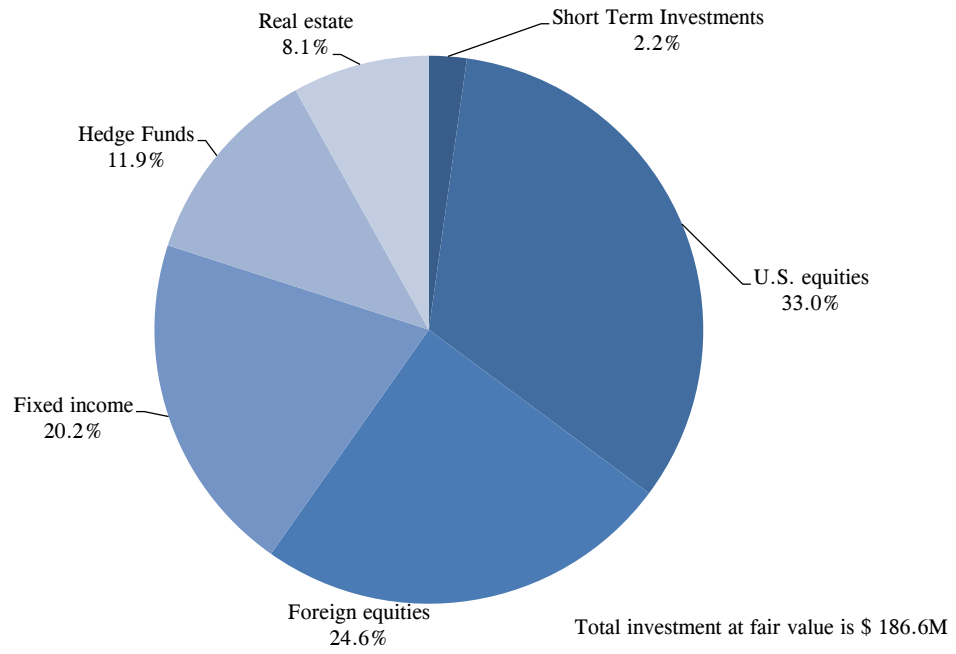
Table 8 below contains funding projections based on the December 31, 2018 actuarial valuation of the Cook County Forest Preserve Pension Fund. As shown in the table below, under the current funding policy the Cook County Forest Preserve Pension Fund is projected to run out of assets by 2038 if all future assumptions are met and no additional contributions are made.

TABLE 8

Cook County Forest Preserve Pension Fund Actuarial Valuation Projection Results as of December 31, 2018 (\$ in Millions)								
Fiscal Year	Capped Payroll	Total County Contribution	County Contribution As % of Payroll	Total Employee Contribution	Accrued Liability	Actuarial Value of Assets	Unfunded Liabilities	Funded Ratio
2019	34.6	4.0	11.6%	3.0	337.0	203.0	134.0	60.3%
2020	35.2	4.2	11.8%	3.1	345.0	198.0	147.0	57.4%
2021	35.8	3.9	11.0%	3.2	354.0	195.0	159.0	55.2%
2022	36.4	3.8	10.6%	3.2	362.0	192.0	170.0	53.0%
2023	37.0	3.8	10.4%	3.3	370.0	184.0	186.0	49.7%
2024	37.6	4.0	10.6%	3.3	378.0	180.0	198.0	47.6%
2025	38.2	4.0	10.6%	3.4	385.0	174.0	211.0	45.3%
2026	38.9	4.1	10.5%	3.4	392.0	168.0	224.0	42.8%
2027	39.7	4.2	10.5%	3.5	398.0	160.0	238.0	40.1%
2028	40.5	4.2	10.5%	3.6	404.0	150.0	254.0	37.2%
2029	41.4	4.3	10.4%	3.6	410.0	140.0	270.0	34.1%
2030	42.3	4.4	10.4%	3.7	415.0	128.0	288.0	30.8%
2031	43.3	4.5	10.4%	3.8	421.0	114.0	306.0	27.2%
2032	44.3	4.6	10.4%	3.9	426.0	100.0	326.0	23.4%
2033	45.4	4.7	10.3%	4.0	431.0	83.0	347.0	19.3%
2034	46.6	4.8	10.3%	4.1	435.0	65.0	370.0	15.0%
2035	47.8	4.9	10.3%	4.2	440.0	46.0	394.0	10.5%
2036	48.9	5.0	10.3%	4.3	445.0	25.0	420.0	5.6%
2037	50.1	5.2	10.3%	4.4	450.0	2.0	448.0	0.5%
2038	51.4	5.3	10.3%	4.5	455.0	-22.0	478.0	-4.9%
2039	52.6	5.4	10.3%	4.6	460.0	-49.0	510.0	-10.7%
2040	53.8	5.6	10.3%	4.7	465.0	-78.0	543.0	-16.8%
2041	55.2	5.7	10.3%	4.9	470.0	-110.0	580.0	-23.3%
2042	56.6	5.8	10.3%	5.0	475.0	-144.0	619.0	-30.3%
2043	58.1	6.0	10.3%	5.1	480.0	-181.0	660.0	-37.6%
2044	59.6	6.1	10.3%	5.2	485.0	-220.0	705.0	-45.4%
2045	61.2	6.3	10.3%	5.4	490.0	-263.0	753.0	-53.6%
2046	62.8	6.4	10.3%	5.5	495.0	-308.0	804.0	-62.2%
2047	64.5	6.6	10.3%	5.7	501.0	-357.0	859.0	-71.3%
2048	66.3	6.8	10.3%	5.8	508.0	-410.0	917.0	-80.7%
2049	68.1	7.0	10.2%	6.0	515.0	-466.0	980.0	-90.4%
2050	69.8	7.2	10.3%	6.1	522.0	-525.0	1,048.0	-100.6%
2051	71.7	7.4	10.3%	6.3	531.0	-589.0	1,120.0	-111.1%
2052	73.6	7.6	10.3%	6.5	539.0	-658.0	1,197.0	-122.0%
2053	75.6	7.8	10.3%	6.7	549.0	-732.0	1,280.0	-133.4%

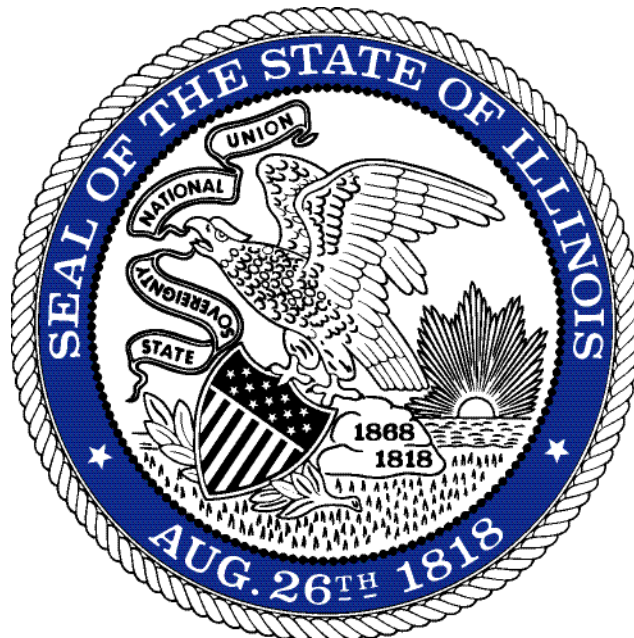
CHART 27

**COOK COUNTY FOREST PRESERVE EMPLOYEES'
PENSION FUND ASSET ALLOCATION AS OF DECEMBER 2018**



V. Firemen's Annuity and Benefit Fund of Chicago

- Plan Summary
- Active Employees
- Employee Annuitants
- Average Salaries
- Average Retirement Annuity
- Funded Ratios
- Change in Unfunded Liabilities
- Investment Income
- Investment Rates of Return
- Systems Experience
- Changes in Net Assets
- System Projections
- Asset Allocation



Note: All data shown in this section is based upon the system's Actuarial Valuation and CAFR as of December 31, 2018.

Firemen's Annuity and Benefit Fund of Chicago

Tier 1 Plan Summary

Retirement Age

- Age 50 with 20 years of service
- Age 50 with 10 years of service (accumulated annuity)
- Mandatory retirement at age 63, except for emergency medical technicians

Retirement Formula

- For employees with 20 or more years of service, 50% of final average salary plus 2.5% of final average salary for each year in excess of 20

Maximum Annuity

- 75% of final average salary

Salary Used to Calculate Pension

- Average of 4 highest consecutive years within final 10 years of service

Annual COLA

- 3% non-compounded with no limit at age 55, or the first anniversary of retirement if born before 1/1/66
- 1.5% non-compounded at age 60 or the first anniversary of retirement if born after 1/1/66 with 30% maximum

Employee Contributions

- 9.125% of salary

Required Employer Contributions

Pursuant to P.A. 99-0506, the employer contributions for payment year 2016 through 2020 are specified as follows: \$199 million in 2016, \$208 million in 2017, \$227 million in 2018, \$235 million in 2019, and \$245 million in 2020. After payment year 2020, the city (employer) is required to make an annual actuarially determined contribution as a level percentage of pay, with a funding goal of 90% by the end of 2055, based upon the actuarial value of fund assets and application of required actuarial assumptions and methodologies.

Note: Benefits shown are for employees hired prior to January 1, 2011 (Tier 1 employees), the effective date for P.A. 96-1495. See P.A. 96-1495 in Section I for a summary of benefits for employees hired after January 1, 2011 (Tier 2 employees).

CHART 28

FIREMEN'S ANNUITY & BENEFIT FUND OF CHICAGO
Active Employees

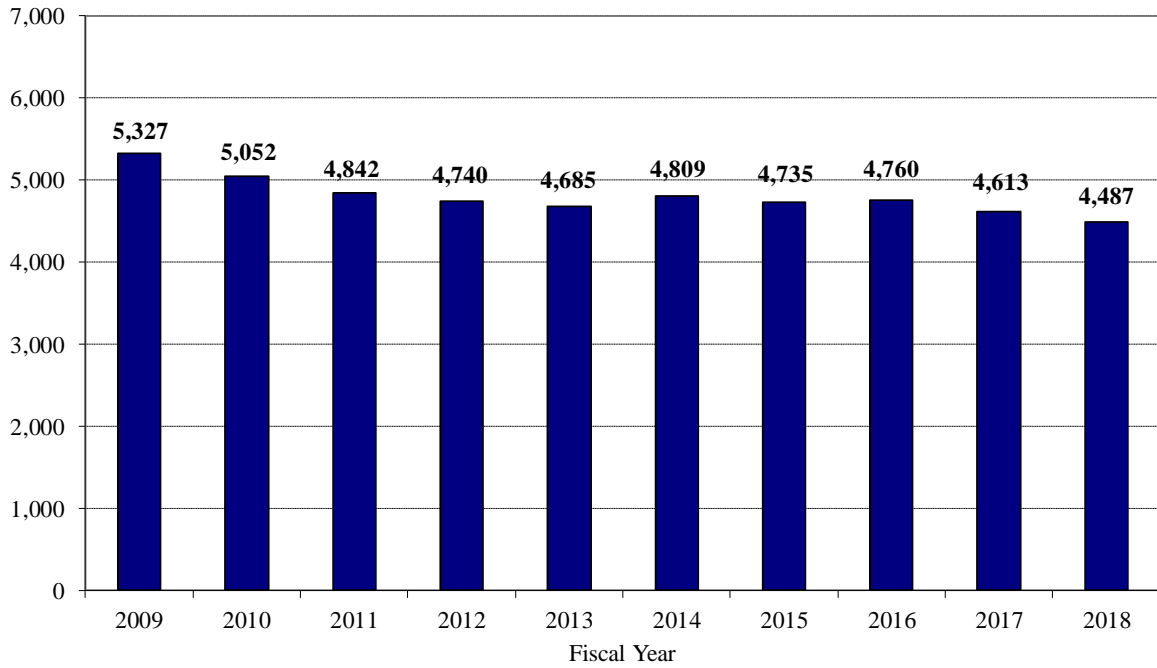


CHART 29

FIREMEN'S ANNUITY & BENEFIT FUND OF CHICAGO
Employee Annuitants

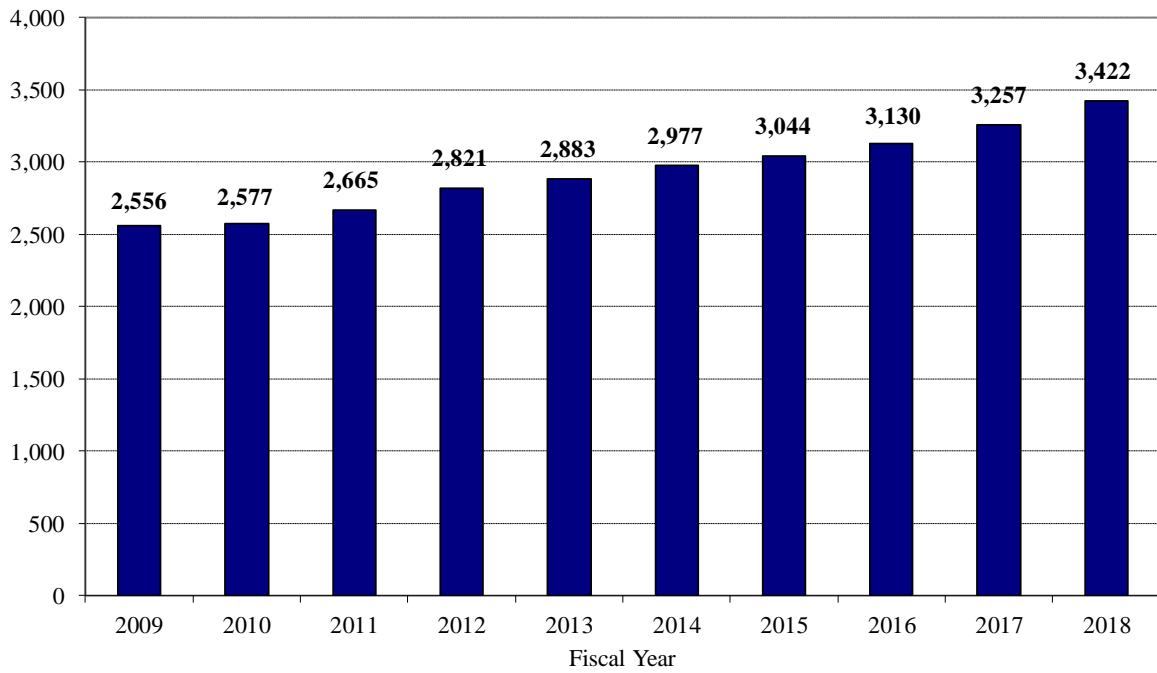


CHART 30

FIREMEN'S ANNUITY & BENEFIT FUND OF CHICAGO
Average Employee Salaries

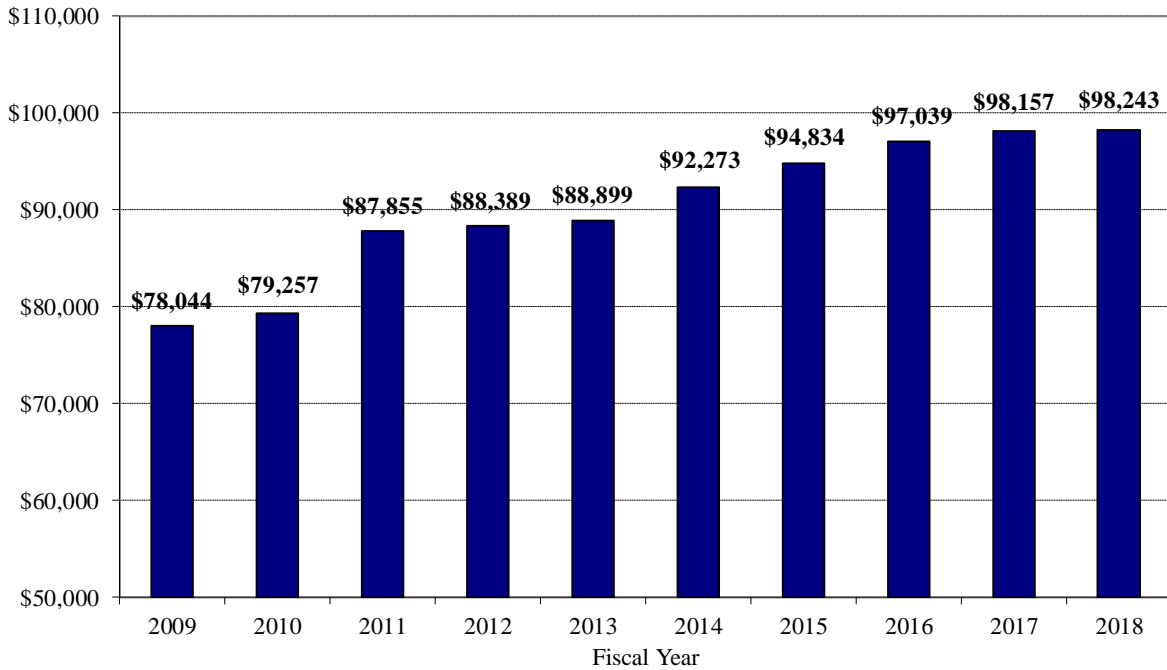


CHART 31

FIREMEN'S ANNUITY & BENEFIT FUND OF CHICAGO
Average Retirement Annuity

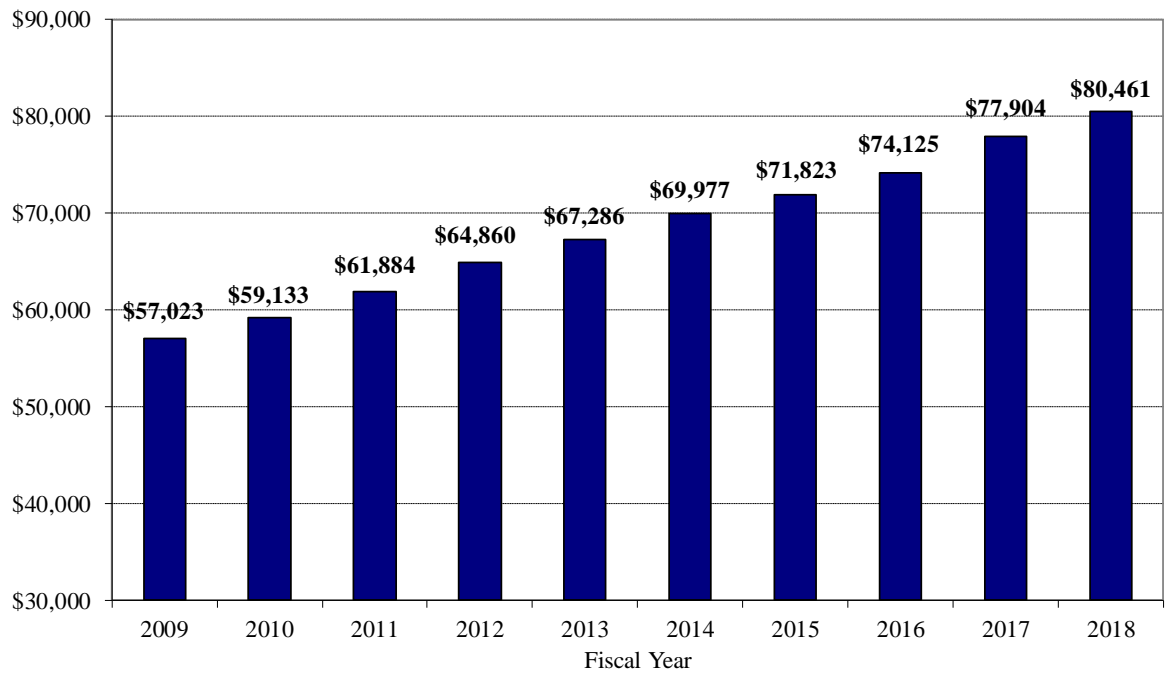


CHART 32

**FIREMEN'S ANNUITY & BENEFIT FUND OF CHICAGO
Funded Ratio
FY 2009 - FY 2018**

All figures based upon the actuarial value of assets.

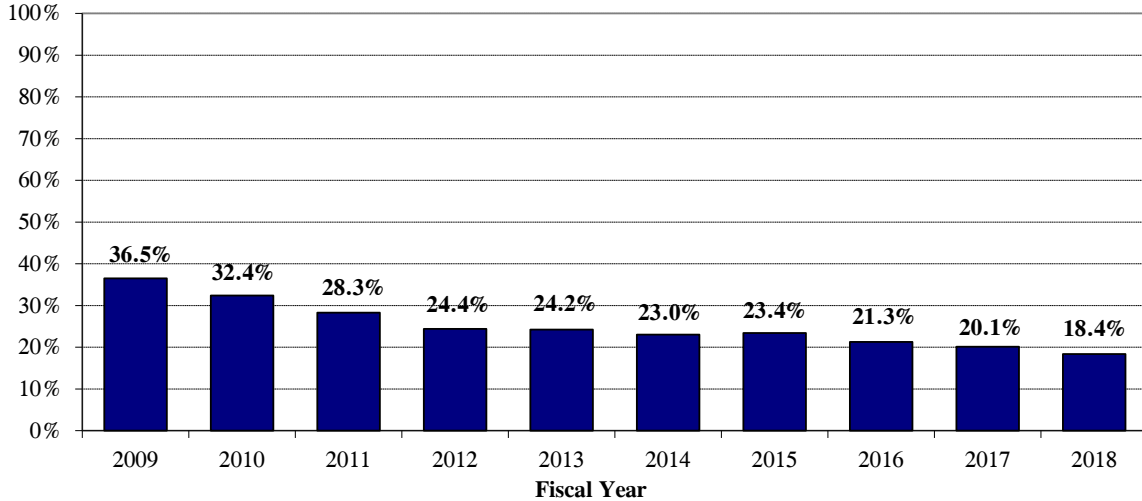
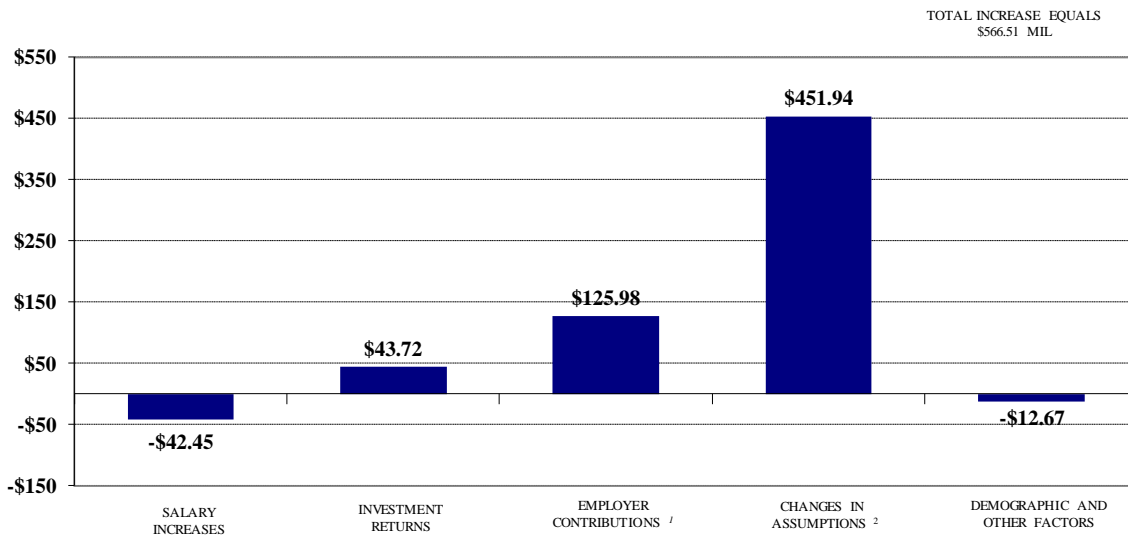


CHART 33

**FIREMEN'S ANNUITY & BENEFIT FUND OF CHICAGO
Change in Unfunded Liabilities
Year ended December 31, 2018
(\$ in Millions)**



¹ Unfunded liability increases due to employer contributions plus interest being less than normal cost, plus interest.

² Economic actuarial assumptions were changed to reflect the results of the fund's 2018 Economic Assumption Review, resulting in an increase in unfunded liability. One of the key changes was to lower the assumed rate of return from 7.5% to 6.75%.

CHART 34

FIREMEN'S ANNUITY & BENEFIT FUND OF CHICAGO
Investment Income FY 2009 - FY 2018
Actuarially Assumed Rate of Return: 6.75%
(\$ in Millions)

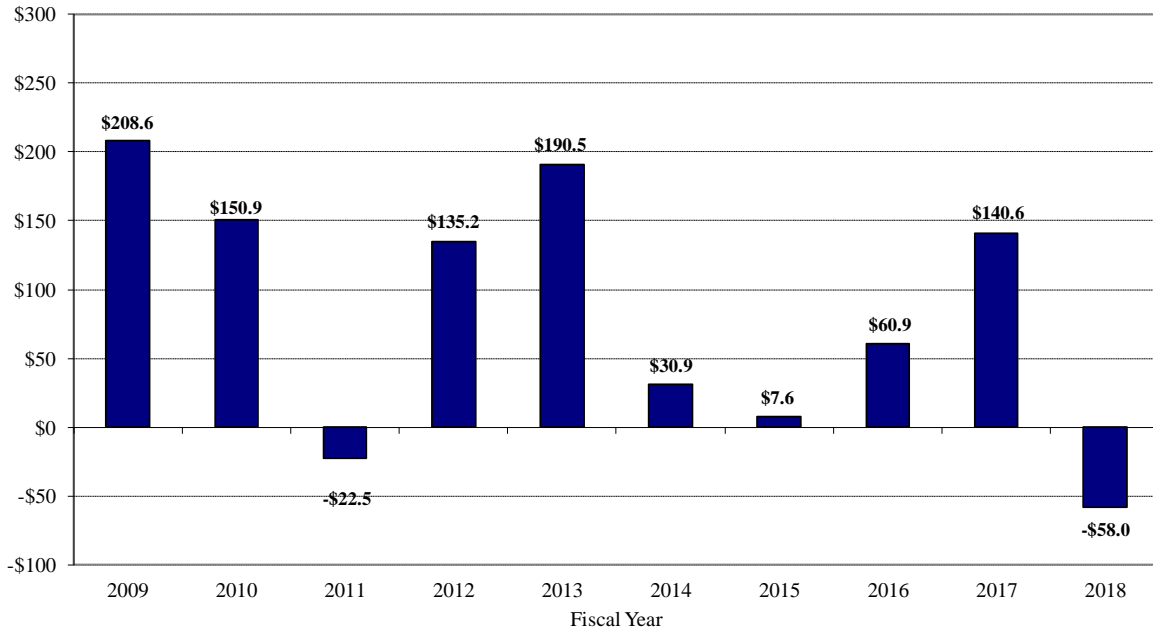


CHART 35

FIREMEN'S ANNUITY & BENEFIT FUND OF CHICAGO
Rate of Return Earned FY 2009 - FY 2018
Actuarially Assumed Rate of Return: 6.75%

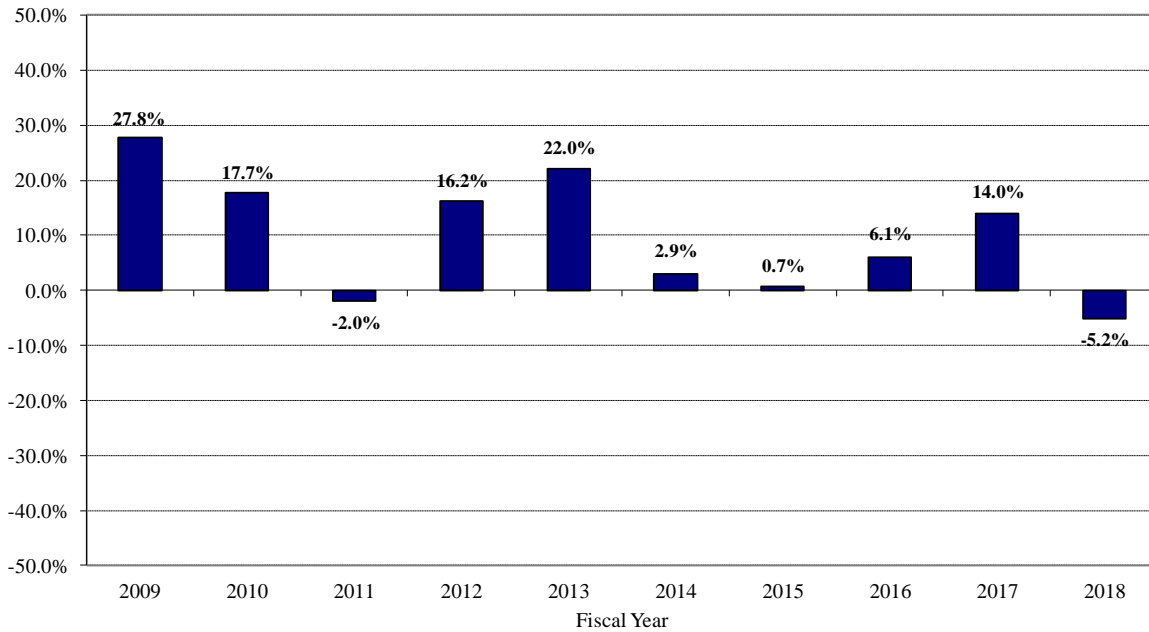


TABLE 9

FIREMEN'S ANNUITY & BENEFIT FUND OF CHICAGO					
System Experience, FY 2009 - FY 2018					
(\$ in Millions)					
Fiscal Year	Annual Payroll	Actuarial Liabilities	Actuarial Assets	Unfunded Liabilities	Funded Ratio
2018	457.0	6,155.9	1,130.4	5,025.5	18.4%
2017	469.4	5,582.4	1,123.4	4,459.0	20.1%
2016	478.5	5,045.9	1,074.9	3,971.0	21.3%
2015	465.2	4,666.8	1,081.0	3,585.8	23.2%
2014	460.2	4,343.6	988.1	3,355.5	22.7%
2013	416.5	4,136.4	991.2	3,145.2	24.0%
2012	419.0	4,066.3	993.3	3,073.0	24.4%
2011	425.4	3,898.9	1,101.7	2,797.2	28.3%
2010	400.4	3,703.2	1,198.1	2,505.1	32.4%
2009	400.9	3,476.8	1,269.2	2,207.6	36.5%

TABLE 10

FIREMEN'S ANNUITY & BENEFIT FUND OF CHICAGO										
Changes in Net Assets										
(\$ in Millions)										
Fiscal Years	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Additions to Assets										
Employer	\$249.7	\$228.5	\$156.2	\$238.5	\$109.8	\$106.2	\$84.1	\$85.5	\$83.6	\$91.8
Employees	\$45.9	\$47.4	\$49.0	\$46.6	\$48.1	\$42.5	\$53.3	\$51.9	\$41.7	\$41.6
Net Investment Income	-\$58.0	\$140.6	\$60.9	\$7.6	\$30.9	\$190.5	\$135.2	-\$22.4	\$150.9	\$208.6
Other	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	-\$0.1	\$3.5	\$0.0	\$0.0	\$0.0
Total Asset Additions (A)	\$237.6	\$416.4	\$266.0	\$292.6	\$188.7	\$339.2	\$276.1	\$115.0	\$276.2	\$342.0
Deductions from Assets										
Benefits	\$320.6	\$302.5	\$285.2	\$276.8	\$264.0	\$249.6	\$231.2	\$221.5	\$215.8	\$199.0
Refunds	\$4.1	\$3.6	\$3.7	\$3.6	\$2.3	\$2.2	\$2.6	\$2.1	\$1.8	\$2.1
Rebates	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Administrative Expenses	\$3.3	\$3.2	\$3.2	\$3.1	\$3.1	\$3.1	\$2.5	\$2.5	\$3.1	\$3.0
Other	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$1.1	\$1.2	\$1.1	\$0.4
Total Asset Deductions (B)	\$327.9	\$309.3	\$292.1	\$283.5	\$269.4	\$254.9	\$237.4	\$227.3	\$221.8	\$204.5
Change in Net Assets (A-B=C)	-\$90.4	\$107.1	-\$26.1	\$9.1	-\$80.7	\$84.3	\$38.7	-\$112.3	\$54.4	\$137.5

Table 11 below contains funding projections based on the December 31, 2018 actuarial valuation of the Firemen’s Annuity and Benefit Fund of Chicago.

TABLE 11

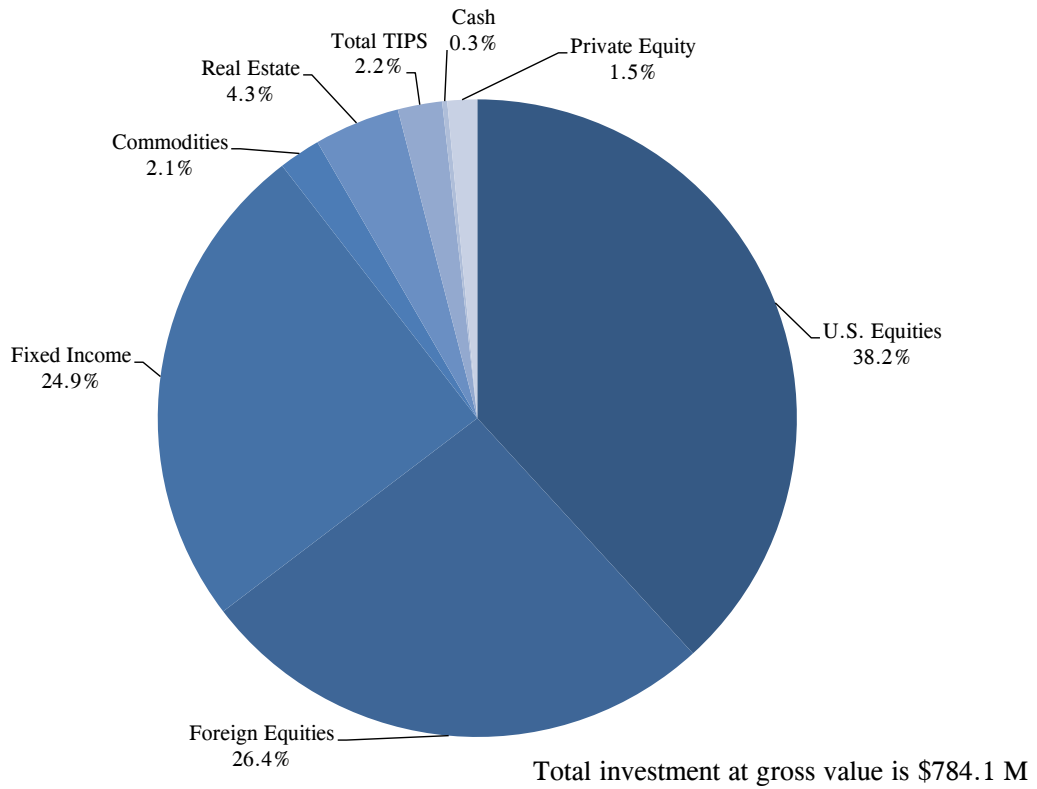
Firemen's Annuity and Benefit Fund of Chicago Actuarial Valuation Projection Results as of December 31, 2018 (\$ in Millions)								
Fiscal Year	Capped Payroll	Total City Contribution	Total City Contribution As % of Payroll	Total Employee Contribution	Accrued Liability	Actuarial Value of Assets	Unfunded Liabilities	Funded Ratio
2018	457.0	249.7	54.6%	45.9	6,155.9	1,130.4	5,025.5	18.4%
2019	461.3	245.0	53.1%	42.6	6,316.9	1,088.7	5,228.3	17.2%
2020	469.8	371.3	79.0%	44.4	6,471.7	1,172.3	5,299.4	18.1%
2021	479.1	378.6	79.0%	45.3	6,620.2	1,254.2	5,365.9	18.9%
2022	490.1	387.3	79.0%	46.3	6,763.2	1,322.8	5,440.4	19.6%
2023	503.3	397.7	79.0%	47.6	6,901.9	1,422.2	5,479.7	20.6%
2024	517.4	408.8	79.0%	48.9	7,035.9	1,524.8	5,511.2	21.7%
2025	531.1	419.7	79.0%	50.2	7,164.5	1,630.0	5,534.4	22.8%
2026	543.4	429.4	79.0%	51.3	7,286.3	1,736.5	5,549.8	23.8%
2027	556.5	439.8	79.0%	52.5	7,401.6	1,845.2	5,556.4	24.9%
2028	571.6	451.7	79.0%	53.9	7,511.9	1,959.5	5,552.4	26.1%
2029	586.4	463.4	79.0%	55.3	7,617.7	2,080.4	5,537.3	27.3%
2030	598.8	473.1	79.0%	56.5	7,718.9	2,206.7	5,512.1	28.6%
2031	607.1	479.7	79.0%	57.3	7,814.3	2,335.4	5,478.9	29.9%
2032	615.1	486.0	79.0%	58.0	7,904.2	2,466.9	5,437.3	31.2%
2033	622.6	492.0	79.0%	58.7	7,988.6	2,601.5	5,387.1	32.6%
2034	629.4	497.4	79.0%	59.3	8,068.1	2,739.8	5,328.3	34.0%
2035	635.4	502.1	79.0%	59.8	8,143.4	2,882.6	5,260.9	35.4%
2036	640.9	506.4	79.0%	60.3	8,215.1	3,030.5	5,184.6	36.9%
2037	646.2	510.6	79.0%	60.7	8,283.8	3,184.6	5,099.2	38.4%
2038	651.9	515.1	79.0%	61.2	8,350.1	3,346.5	5,003.6	40.1%
2039	657.6	519.6	79.0%	61.7	8,414.9	3,517.7	4,897.2	41.8%
2040	663.1	524.0	79.0%	62.1	8,478.8	3,699.2	4,779.6	43.6%
2041	668.4	528.2	79.0%	62.5	8,541.9	3,891.8	4,650.1	45.6%
2042	674.0	532.6	79.0%	63.0	8,604.7	4,096.8	4,507.9	47.6%
2043	679.8	537.2	79.0%	63.4	8,667.5	4,315.6	4,351.9	49.8%
2044	685.9	542.0	79.0%	63.9	8,730.6	4,549.4	4,181.2	52.1%
2045	692.4	547.1	79.0%	64.4	8,794.3	4,799.7	3,994.6	54.6%
2046	699.3	552.6	79.0%	64.9	8,859.2	5,068.4	3,790.8	57.2%
2047	706.7	558.4	79.0%	65.5	8,925.7	5,357.2	3,568.5	60.0%
2048	713.9	564.1	79.0%	66.1	8,994.6	5,667.8	3,326.8	63.0%
2049	721.6	570.2	79.0%	66.8	9,066.8	6,002.7	3,064.2	66.2%
2050	729.6	576.5	79.0%	67.5	9,143.2	6,364.2	2,779.0	69.6%
2051	737.8	583.0	79.0%	68.2	9,223.9	6,754.2	2,469.8	73.2%
2052	746.1	589.6	79.0%	69.0	9,309.4	7,174.4	2,135.0	77.1%
2053	754.5	596.2	79.0%	69.7	9,399.8	7,626.8	1,773.0	81.1%
2054	763.0	602.9	79.0%	70.5	9,495.7	8,113.7	1,382.0	85.4%
2055	771.6	609.7	79.0%	71.3	9,597.6	8,637.5	960.2	90.0%

TABLE 12

Firemen's Annuity and Benefit Fund of Chicago Projected Normal Cost as of December 31, 2018 (\$ in Millions)						
Fiscal Year	Employer's Normal Cost	Employer's Normal Cost as a % of Payroll	Employee Contributions	Employee Contributions as a % of Payroll	Total Normal Cost	Total Normal Cost as a % of Payroll
2018	42.1	9.2%	45.9	10.0%	88.0	19.3%
2019	59.3	12.9%	42.6	9.2%	101.8	22.1%
2020	57.6	12.3%	44.4	9.5%	102.1	21.7%
2021	57.3	12.0%	45.3	9.5%	102.6	21.4%
2022	57.2	11.7%	46.3	9.4%	103.5	21.1%
2023	57.4	11.4%	47.6	9.4%	105.0	20.9%
2024	57.7	11.2%	48.9	9.4%	106.6	20.6%
2025	58.0	10.9%	50.2	9.4%	108.1	20.4%
2026	58.0	10.7%	51.3	9.4%	109.4	20.1%
2027	58.2	10.5%	52.5	9.4%	110.8	19.9%
2028	58.8	10.3%	53.9	9.4%	112.7	19.7%
2029	59.4	10.1%	55.3	9.4%	114.7	19.6%
2030	59.7	10.0%	56.5	9.4%	116.2	19.4%
2031	59.7	9.8%	57.3	9.4%	117.0	19.3%
2032	59.7	9.7%	58.0	9.4%	117.7	19.1%
2033	59.7	9.6%	58.7	9.4%	118.3	19.0%
2034	59.6	9.5%	59.3	9.4%	118.9	18.9%
2035	59.5	9.4%	59.8	9.4%	119.3	18.8%
2036	59.4	9.3%	60.3	9.4%	119.7	18.7%
2037	59.3	9.2%	60.7	9.4%	120.0	18.6%
2038	59.3	9.1%	61.2	9.4%	120.5	18.5%
2039	59.3	9.0%	61.7	9.4%	120.9	18.4%
2040	59.3	8.9%	62.1	9.4%	121.4	18.3%
2041	59.4	8.9%	62.5	9.4%	121.9	18.2%
2042	59.6	8.8%	63.0	9.3%	122.5	18.2%
2043	59.8	8.8%	63.4	9.3%	123.3	18.1%
2044	60.2	8.8%	63.9	9.3%	124.1	18.1%
2045	60.7	8.8%	64.4	9.3%	125.1	18.1%
2046	61.3	8.8%	64.9	9.3%	126.3	18.1%
2047	62.1	8.8%	65.5	9.3%	127.6	18.1%
2048	63.1	8.8%	66.1	9.3%	129.2	18.1%
2049	64.3	8.9%	66.8	9.3%	131.1	18.2%
2050	65.6	9.0%	67.5	9.3%	133.1	18.2%
2051	67.0	9.1%	68.2	9.2%	135.2	18.3%
2052	68.5	9.2%	69.0	9.2%	137.5	18.4%
2053	70.2	9.3%	69.7	9.2%	139.9	18.5%
2054	72.0	9.4%	70.5	9.2%	142.5	18.7%
2055	73.9	9.6%	71.3	9.2%	145.3	18.8%

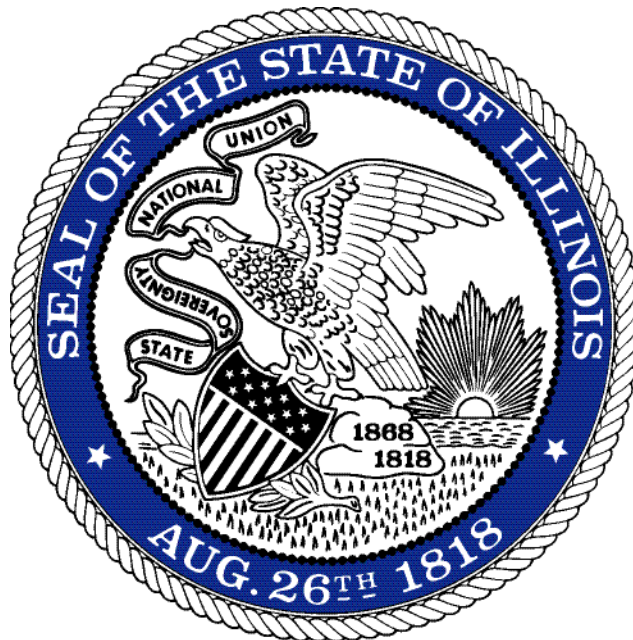
CHART 36

**FIREMEN'S ANNUITY AND BENEFIT FUND OF CHICAGO
ASSET ALLOCATION AS OF DECEMBER 31, 2018**



VI. Illinois Municipal Retirement Fund

- Plan Summary
- Active Employees
- Employee Annuitants
- Average Salaries
- Average Retirement Annuity
- Funded Ratios
- Change in Unfunded Liabilities
- Investment Income
- Investment Rates of Return
- Systems Experience
- Changes in Net Assets
- Asset Allocation



Note: All data shown in this section is based upon the system's Actuarial Valuation and CAFR as of December 31, 2018.

Illinois Municipal Retirement Fund – Regular Formula Tier 1 Plan Summary

Retirement Age

- Age 60 with 8 or more years of service
- Age 55 with 35 or more years of service

Retirement Formula

- 1.67% of final average salary for each of the first 15 years of service, plus
- 2.0% of final average salary for each year of service in excess of 15

Maximum Annuity

- 75% of final average salary

Salary Used to Calculate Pension

- Average of the 4 highest consecutive years within the final 10 years

Annual COLA

- 3% non-compounded

Employee Contributions

- 4.5% of salary. In addition, IMRF members contribute to Social Security.

Employer Contributions

Each IMRF employer makes contributions to individual accounts which, when combined with member contributions and investment income, will be sufficient to provide future benefits for its own employees.

Note: Benefits shown are for employees hired prior to January 1, 2011 (Tier 1 employees), the effective date of P.A. 96-0889. See P.A. 96-0889 in Section I for a summary of benefits for employees hired after January 1, 2011 (Tier 2 employees).

Illinois Municipal Retirement Fund Sheriff's Law Enforcement Personnel Plan (SLEP) Plan Summary

Retirement Age

- Age 50 with 20 or more years of service

Retirement Formula

- 2.5% of final rate of earnings for each year of service

Maximum Annuity

- 80% of final average salary

Salary Used to Calculate Pension

- Average of the 4 highest consecutive years within the final 10 years

Annual COLA

- 3% non-compounded

Employee Contributions

- 7.5% of salary

Employer Contributions

Each IMRF employer makes contributions to individual accounts which, when combined with member contributions and investment income, will be sufficient to provide future benefits for its own employees.

Note: Benefits shown are for employees hired prior to January 1, 2011, the effective date of P.A. 96-0889 and P.A. 96-1495. See P.A. 96-0889 & P.A. 96-1495 in Section I for a summary of benefits for employees hired after January 1, 2011 (Tier 2 employees).

CHART 37

**ILLINOIS MUNICIPAL RETIREMENT FUND
Active Employees**

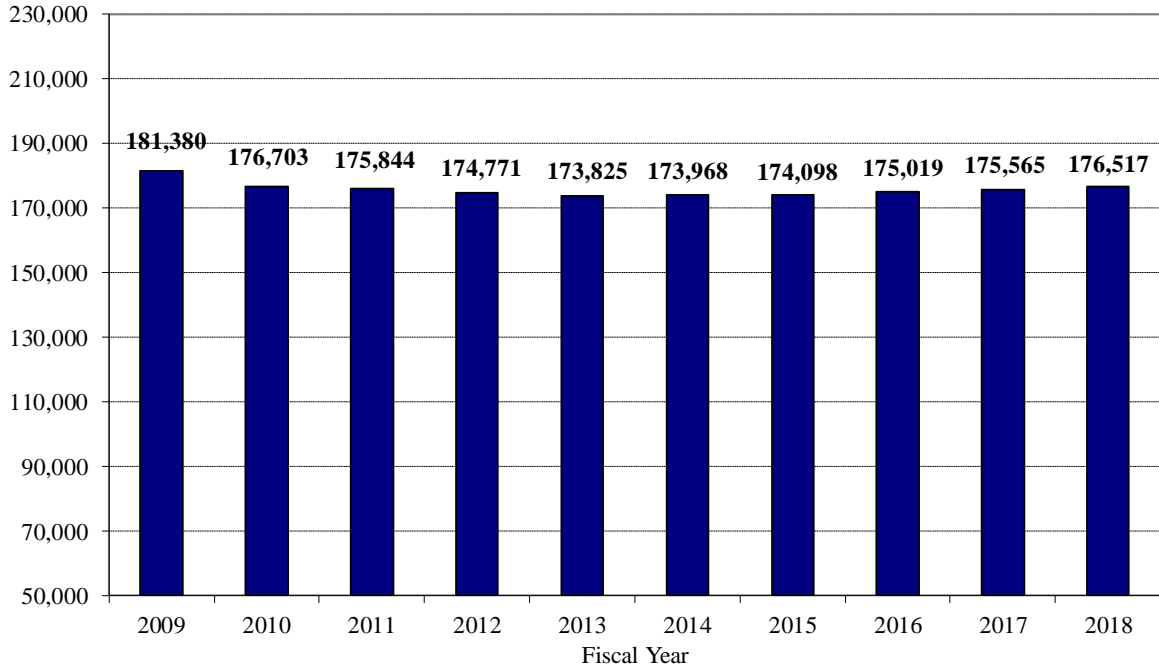


CHART 38

**ILLINOIS MUNICIPAL RETIREMENT FUND
Employee Annuitants**

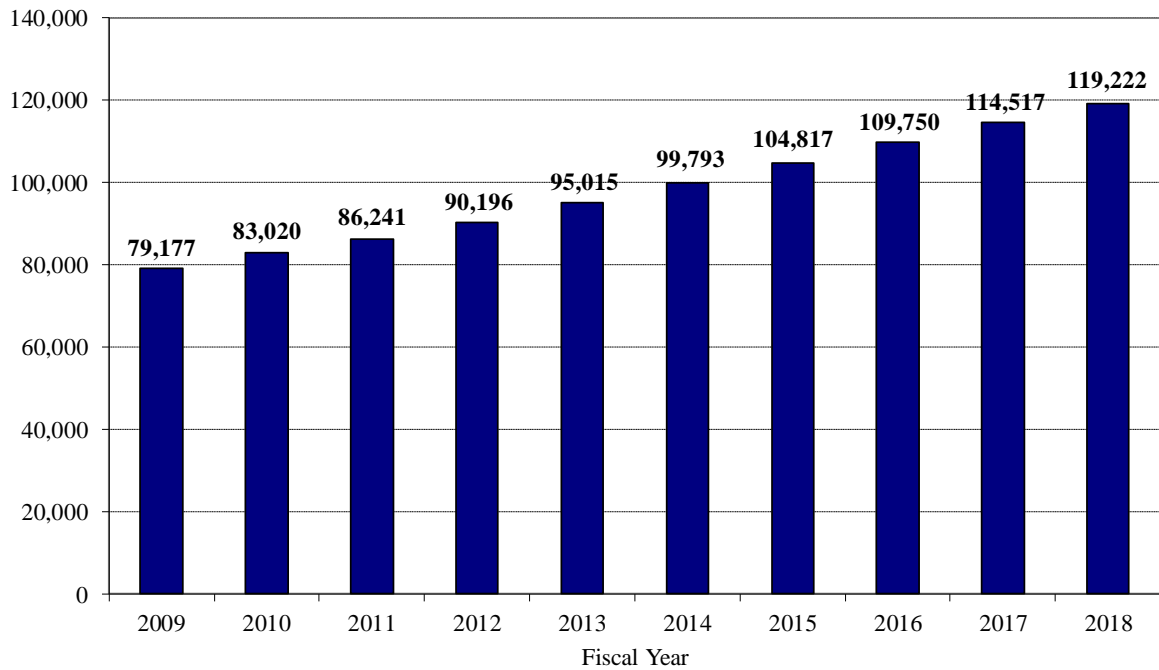


CHART 39

**ILLINOIS MUNICIPAL RETIREMENT FUND
Average Employee Salaries**

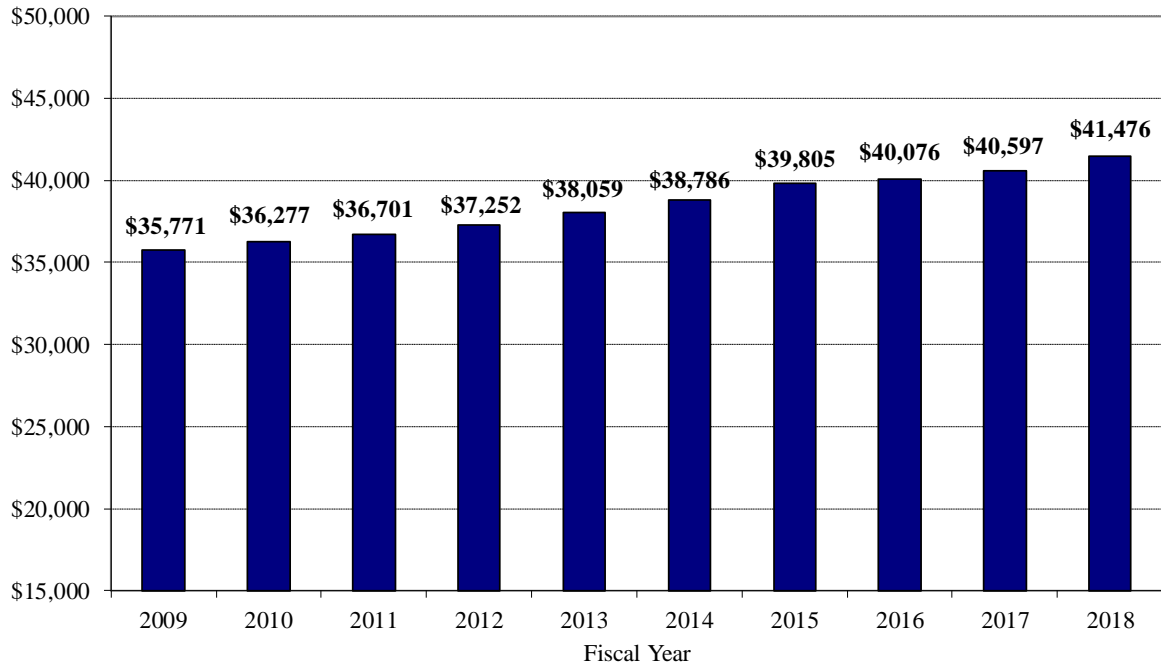


CHART 40

**ILLINOIS MUNICIPAL RETIREMENT FUND
Average Retirement Annuity**

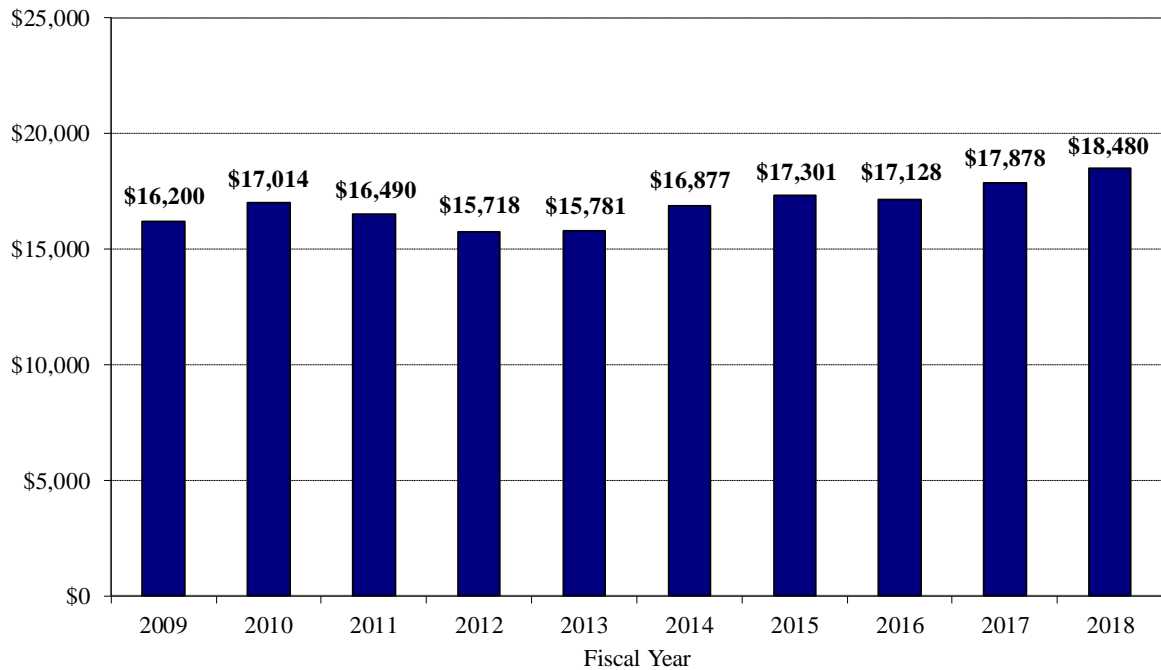


CHART 41

ILLINOIS MUNICIPAL RETIREMENT FUND
Funded Ratio
FY 2009 - FY 2018

All figures based upon the actuarial value of assets.

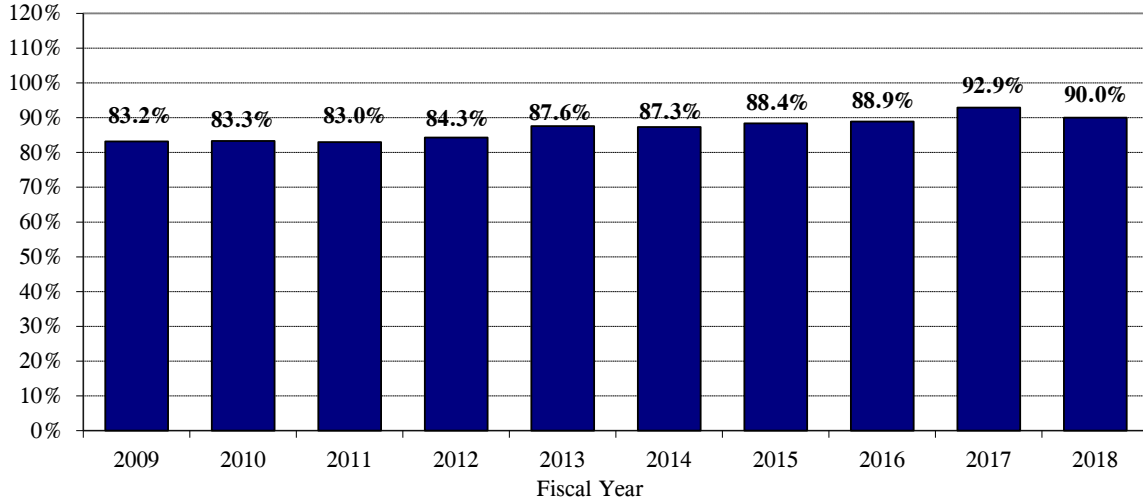
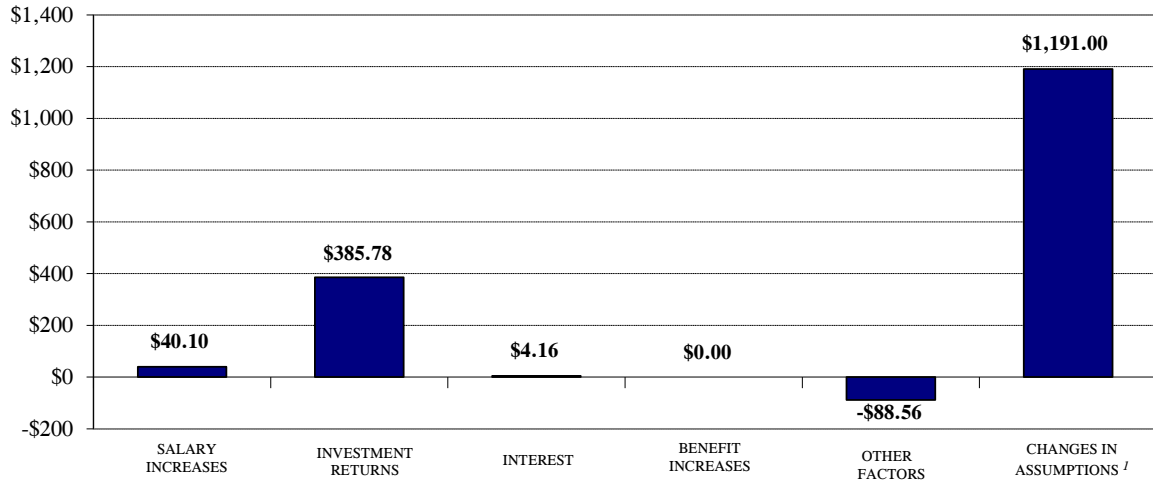


CHART 42

ILLINOIS MUNICIPAL RETIREMENT FUND
Change in Unfunded Liabilities
Year ended December 31, 2018
(\$ in Millions)

TOTAL INCREASE EQUALS
\$1,532.48 MIL

All figures based upon the actuarial value of assets.



¹ An actuarial loss occurred as IMRF lowered its investment return assumption to 7.25% from 7.50%.

CHART 43

ILLINOIS MUNICIPAL RETIREMENT FUND
Investment Income 2009 - 2018
 Actuarially Assumed Rate of Return: 7.25%
 (\$ in Millions)
 All figures based upon the market value of assets.

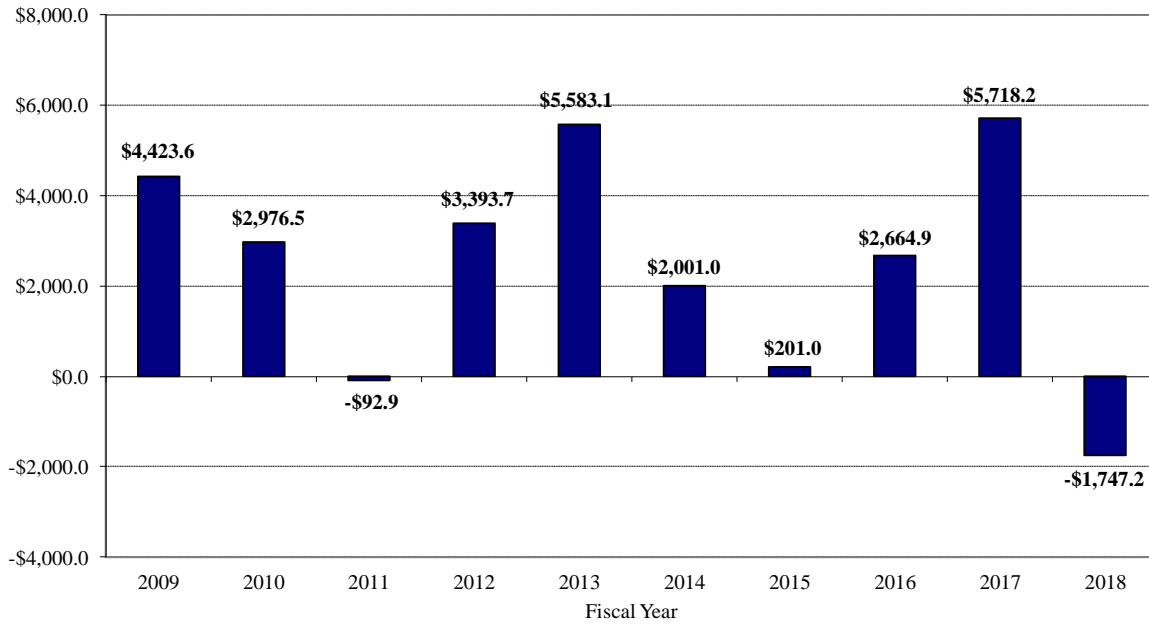


CHART 44

ILLINOIS MUNICIPAL RETIREMENT FUND
Rate of Return 2009 - 2018
 Actuarially Assumed Rate of Return: 7.25%
 All figures based upon the market value of assets.

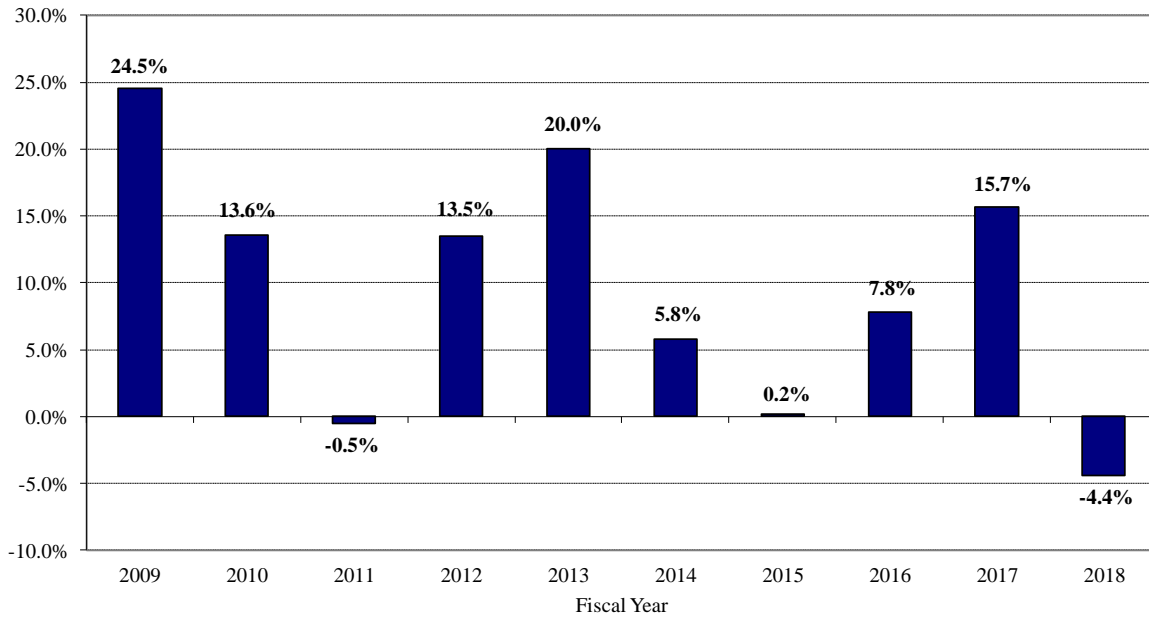


TABLE 13

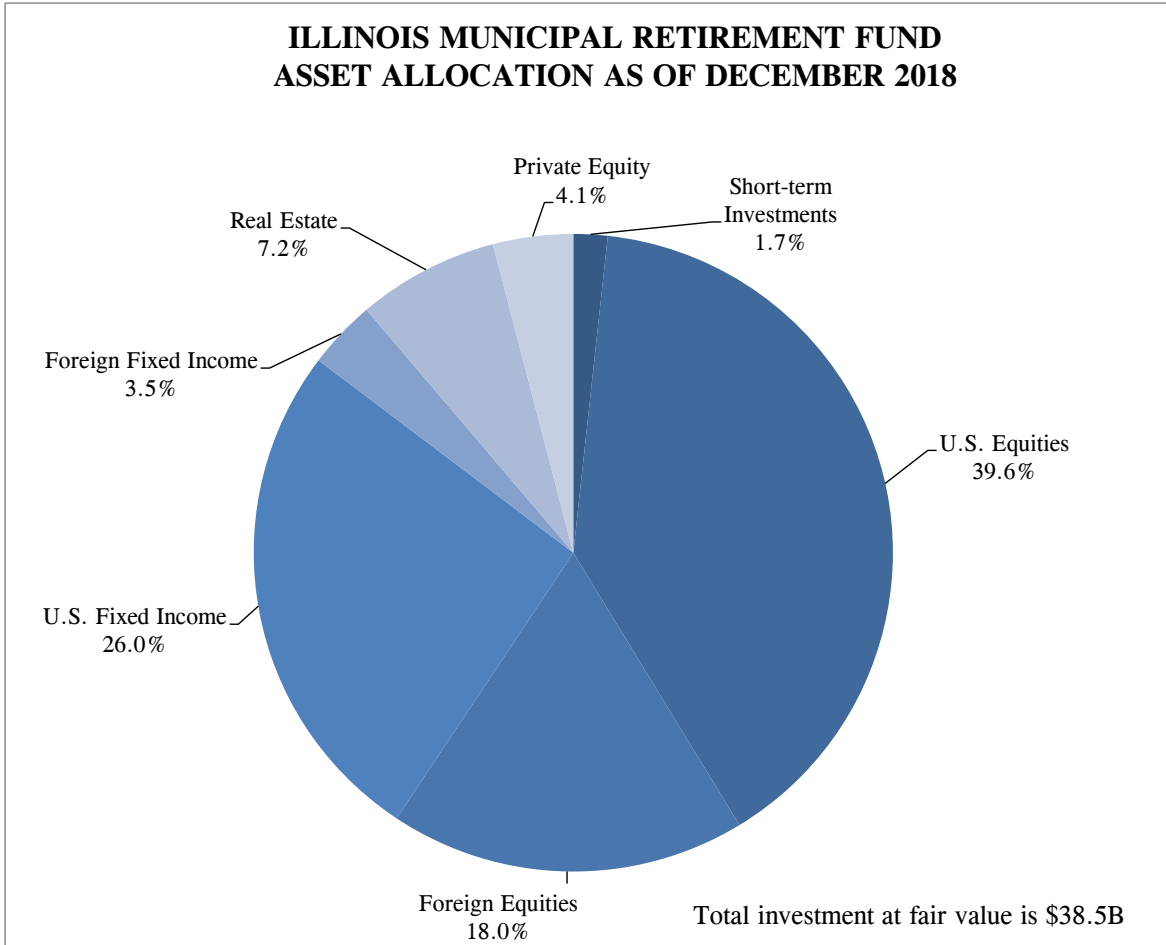
ILLINOIS MUNICIPAL RETIREMENT FUND					
System Experience, FY 2009 - FY 2018					
(\$ in Millions)					
Fiscal Year	Annual Payroll	Actuarial Liabilities	Actuarial Assets	Unfunded Liabilities	Funded Ratio
2018	7,321.5	45,354.1	40,830.0	4,524.1	90.0%
2017	7,127.5	42,179.5	39,187.8	2,991.7	92.9%
2016	7,006.7	41,358.7	36,773.4	4,585.3	88.9%
2015	6,919.3	39,486.6	34,913.1	4,573.4	88.4%
2014	6,732.5	37,465.1	32,700.2	4,764.9	87.3%
2013	6,602.5	34,356.6	30,083.0	4,273.5	87.6%
2012	6,496.1	32,603.2	27,491.8	5,111.4	84.3%
2011	6,431.3	30,962.8	25,711.3	5,251.5	83.0%
2010	6,391.2	29,129.2	24,251.1	4,878.1	83.3%
2009	6,461.7	27,345.1	22,754.8	4,590.3	83.2%

TABLE 14

ILLINOIS MUNICIPAL RETIREMENT FUND										
Changes in Net Assets										
(\$ in Millions)										
Fiscal Years	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Additions to Assets										
Employer	\$947.6	\$903.5	\$933.9	\$900.5	\$923.4	\$931.0	\$883.2	\$800.8	\$770.2	\$660.4
Employees	\$413.9	\$393.7	\$380.4	\$368.0	\$351.1	\$338.9	\$330.8	\$327.7	\$324.9	\$324.1
Total Investment Income	-\$1,747.2	\$5,718.2	\$2,664.9	\$200.7	\$2,001.4	\$5,583.1	\$3,393.7	-\$92.9	\$2,976.5	\$4,423.6
Other	\$0.0	\$0.0	\$0.0	\$0.5	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Total Asset Additions (A)	-\$385.7	\$7,015.5	\$3,979.2	\$1,469.7	\$3,275.9	\$6,853.0	\$4,607.7	\$1,035.6	\$4,071.6	\$5,408.0
Deductions from Assets										
Benefits	\$2,195.0	\$2,043.6	\$1,902.1	\$1,758.2	\$1,626.8	\$1,503.4	\$1,389.8	\$1,284.4	\$1,178.0	\$1,077.8
Refunds	\$48.0	\$42.6	\$37.7	\$36.7	\$39.2	\$36.9	\$34.1	\$32.9	\$32.2	\$27.4
Rebates	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Administrative Expenses	\$32.2	\$31.0	\$37.6	\$28.7	\$26.4	\$25.5	\$24.5	\$23.1	\$22.3	\$22.0
Other	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Total Asset Deductions (B)	\$2,275.2	\$2,117.2	\$1,977.4	\$1,823.6	\$1,692.4	\$1,565.8	\$1,448.4	\$1,340.4	\$1,232.5	\$1,127.2
Change in Net Assets (A-B=C)	-\$2,660.9	\$4,898.3	\$2,001.8	-\$354.0	\$1,583.5	\$5,287.2	\$3,159.3	-\$304.8	\$2,839.1	\$4,280.8

¹ Total investment income consists of gains from investment activity and security lending activity, excluding related expenses.

CHART 45



VII. Laborers' Annuity and Benefit Fund of Chicago

- Plan Summary
- Active Employees
- Employee Annuitants
- Average Salaries
- Average Retirement Annuity
- Funded Ratios
- Change in Unfunded Liabilities
- Investment Income
- Investment Rates of Return
- Systems Experience
- Changes in Net Assets
- System Projections
- Normal Cost Projections
- Asset Allocation



Note: All data shown in this section is based upon the system's Actuarial Valuation and CAFR as of December 31, 2018.

Laborers' Annuity and Benefit Fund of Chicago

Tier 1 Plan Summary

*Pursuant to P.A. 100-0023 that created a third tier of benefits for new members, LABF implemented the Tier 3 plan. Please see P.A. 100-0023 in Section I for more information.

Retirement Age

- Age 60 with 10 years of service
- Age 55 with 20 years of service
- Age 50 with at least 30 years of service
- Age 55 with 10 years of service (money purchase)

Retirement Formula

- 2.4% of final average salary for each year of service

Maximum Annuity

- 80% of final average salary

Salary Used to Calculate Pension

- Average of 4 highest consecutive years within final 10 years of service

Annual COLA

- 3% compounded

Employee Contributions

- Currently 8.5% of salary

Required Employer Contributions

Pursuant to P.A. 100-0023, the required employer contributions for payment year 2018 through 2022 are specified as follows: \$36 million in 2018, \$48 million in 2019, \$60 million in 2020, \$72 million in 2021, and \$84 million in 2022. After the payment year 2022, the City of Chicago is required to contribute an amount equal to the sum of the net employer normal cost and an amortization of the unfunded liability as a level percent of payroll so that the funded ratio reaches 90% by 2058.

Note: Benefits shown are for employees hired prior to January 1, 2011 (Tier 1 employees), the effective date of P.A. 96-0889. See P.A. 96-0899 in Section I for a summary of benefits for employees hired after January 1, 2011 (Tier 2 employees).

CHART 46

LABORERS' ANNUITY AND BENEFIT FUND OF CHICAGO
Active Employees

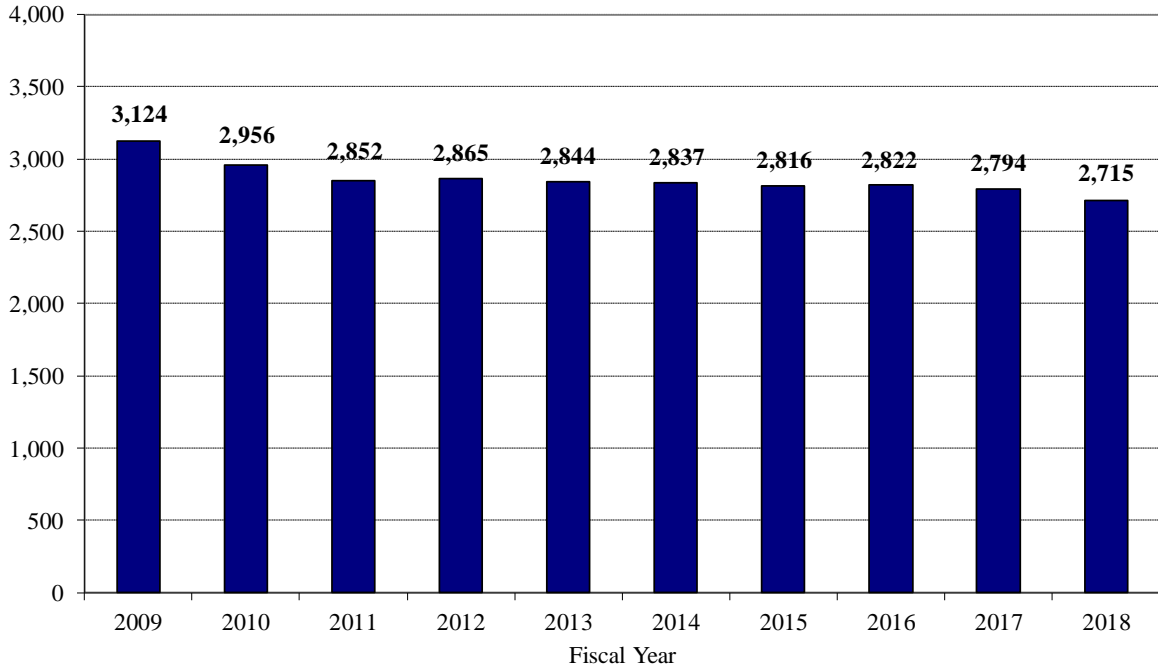


CHART 47

LABORERS' ANNUITY AND BENEFIT FUND OF CHICAGO
Employee Annuitants

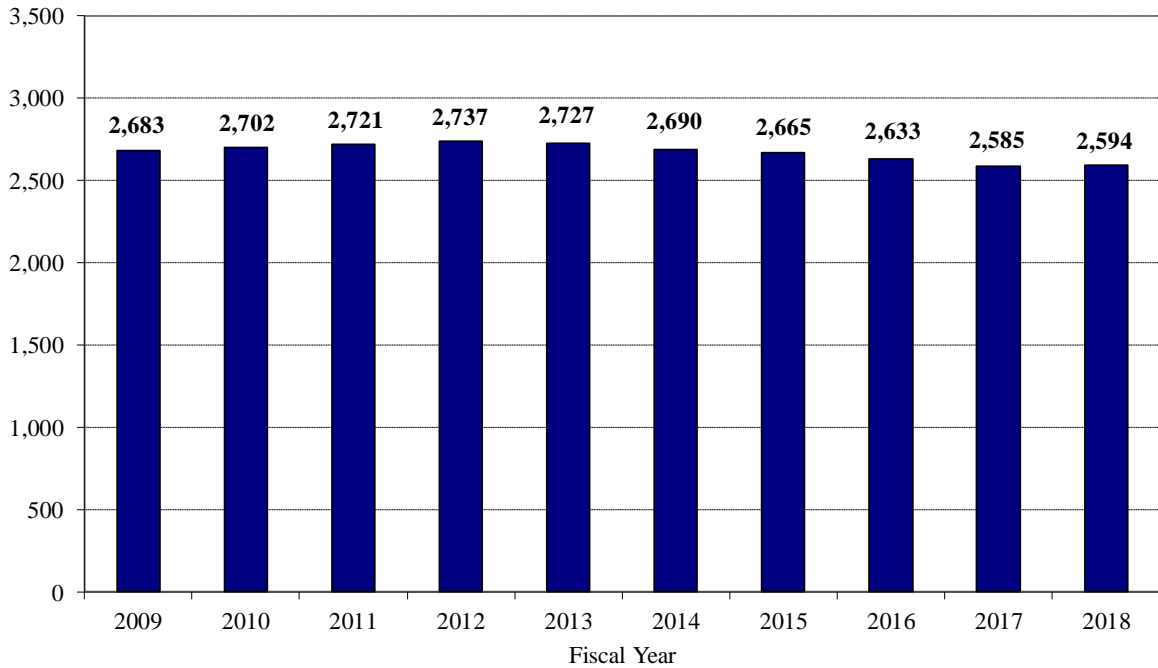


CHART 48

**LABORERS' ANNUITY AND BENEFIT FUND OF CHICAGO
Average Employee Salaries**

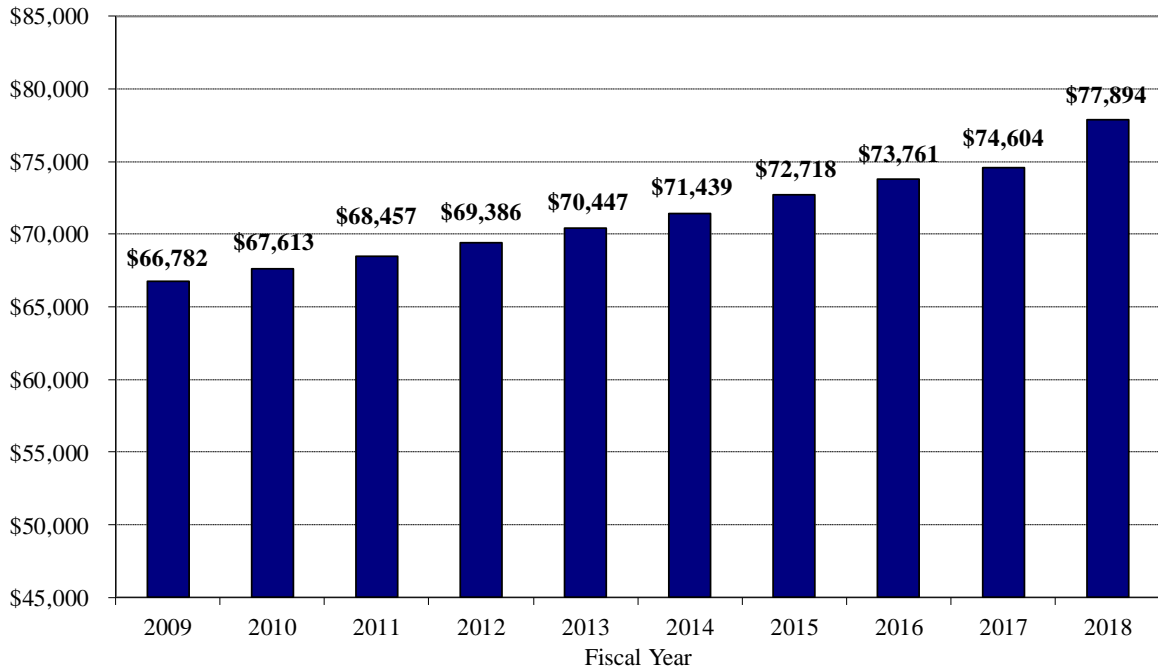


CHART 49

**LABORERS' ANNUITY AND BENEFIT FUND OF CHICAGO
Average Retirement Annuities**

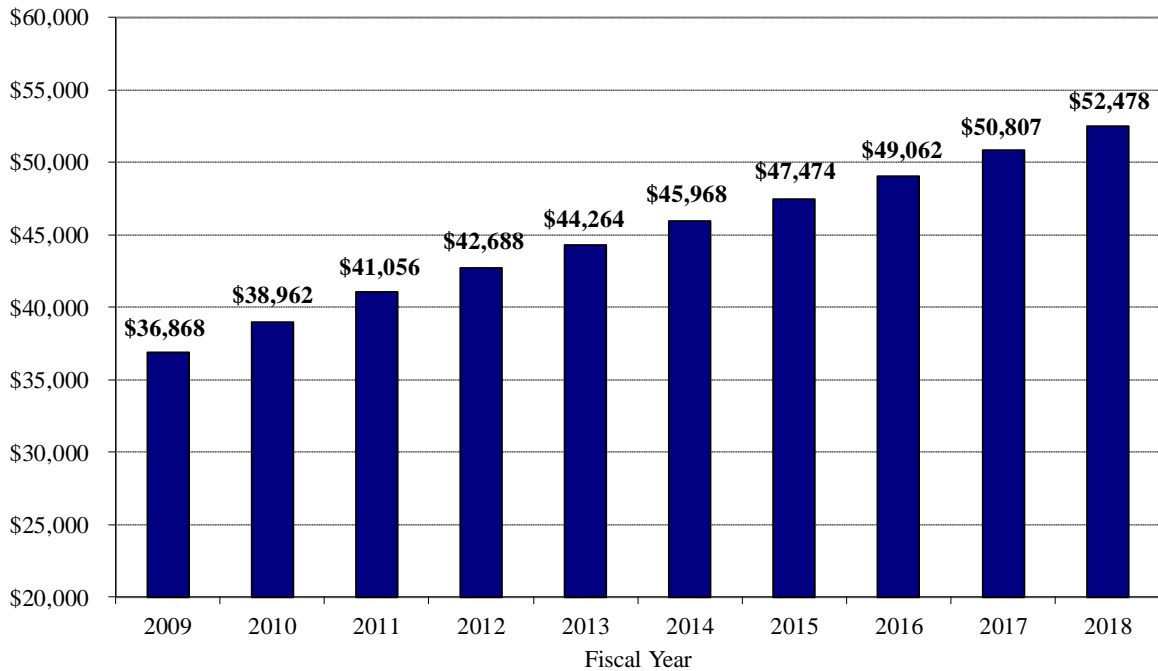


CHART 50

LABORERS' ANNUITY AND BENEFIT FUND OF CHICAGO
Funded Ratio
FY 2009 - FY 2018

All figures based upon the actuarial value of assets.

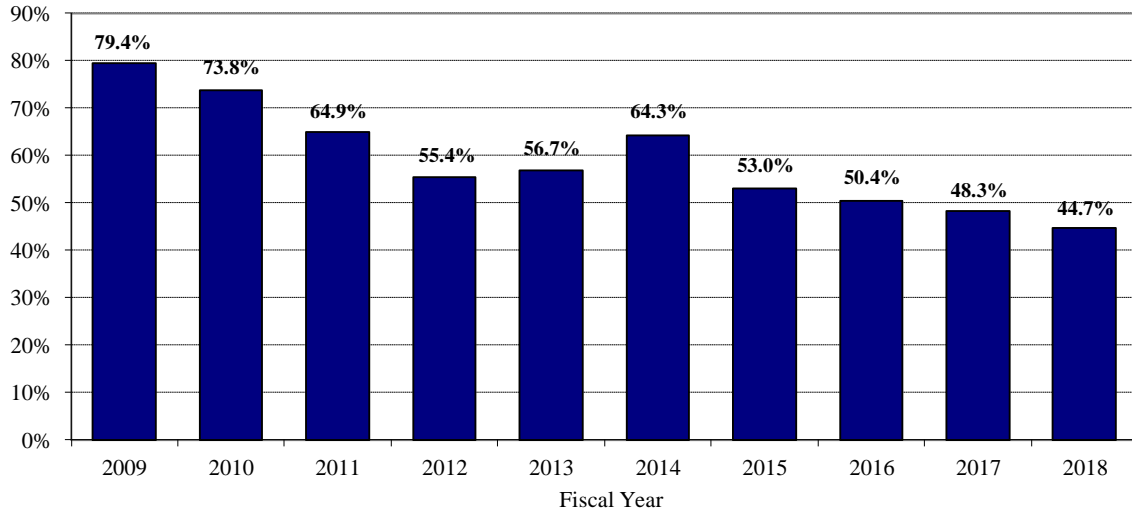
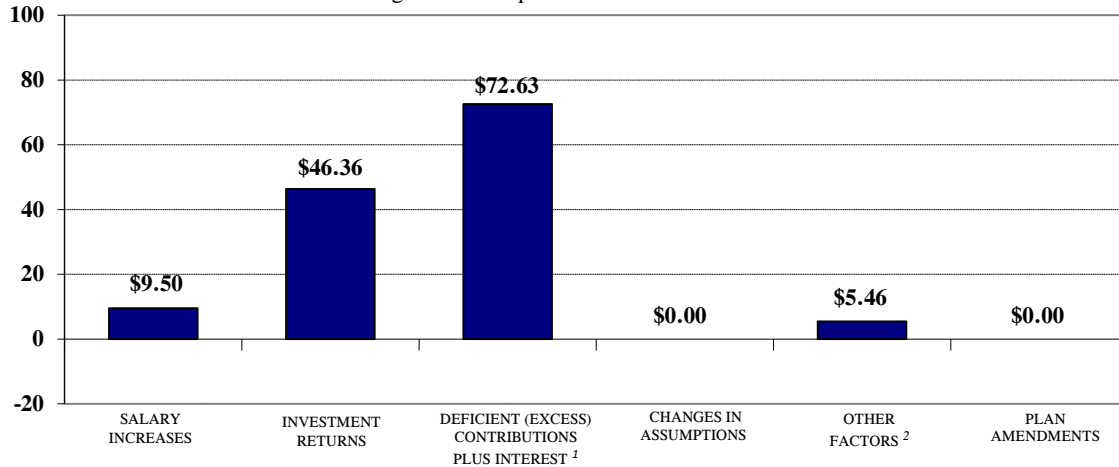


CHART 51

LABORERS' ANNUITY AND BENEFIT FUND OF CHICAGO
Change in Unfunded Liabilities
Year ended December 31, 2018
(\$ in Millions)

TOTAL INCREASE EQUALS
\$133.96 MIL

All figures based upon the actuarial value of assets.



¹ Unfunded liability increased due to employer contributions plus interest being less than normal cost plus interest.

² Includes actuarial losses from retirement, termination, and mortality as well as data changes.

CHART 52

LABORERS' ANNUITY AND BENEFIT FUND OF CHICAGO
Investment Income, FY 2009 - FY 2018
Actuarially Assumed Rate of Return: 7.25%
(\$ in Millions)

All figures based upon the market value of assets.

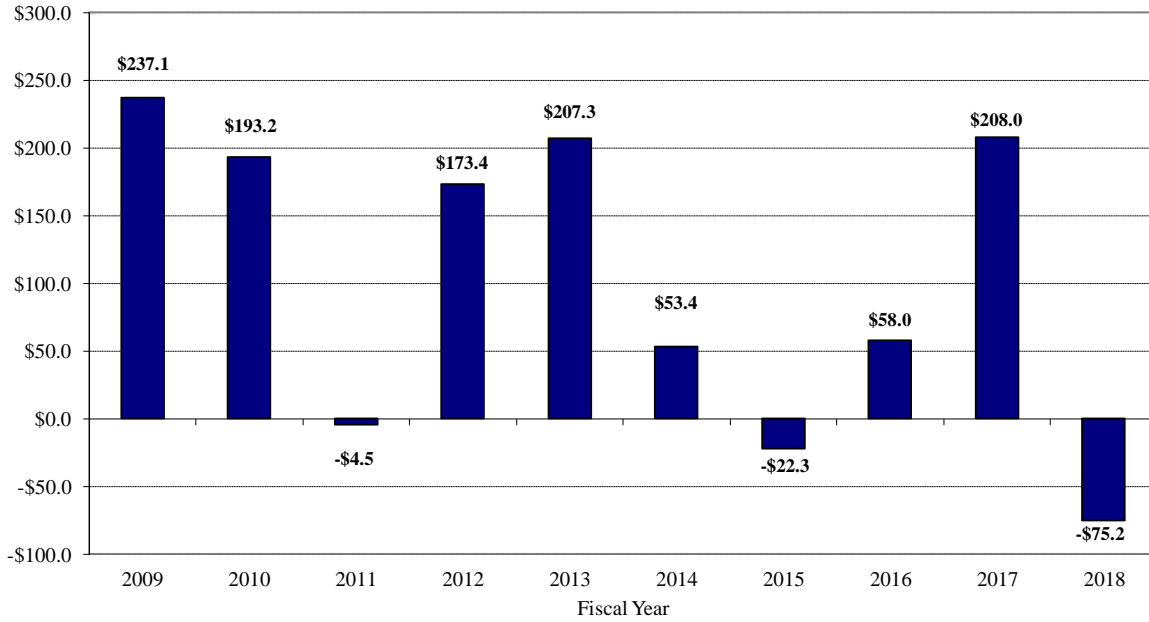


CHART 53

LABORERS' ANNUITY AND BENEFIT FUND OF CHICAGO
Rate of Return, FY 2009 - FY 2018
Actuarially Assumed Rate of Return: 7.25%

All figures based upon the market value of assets.

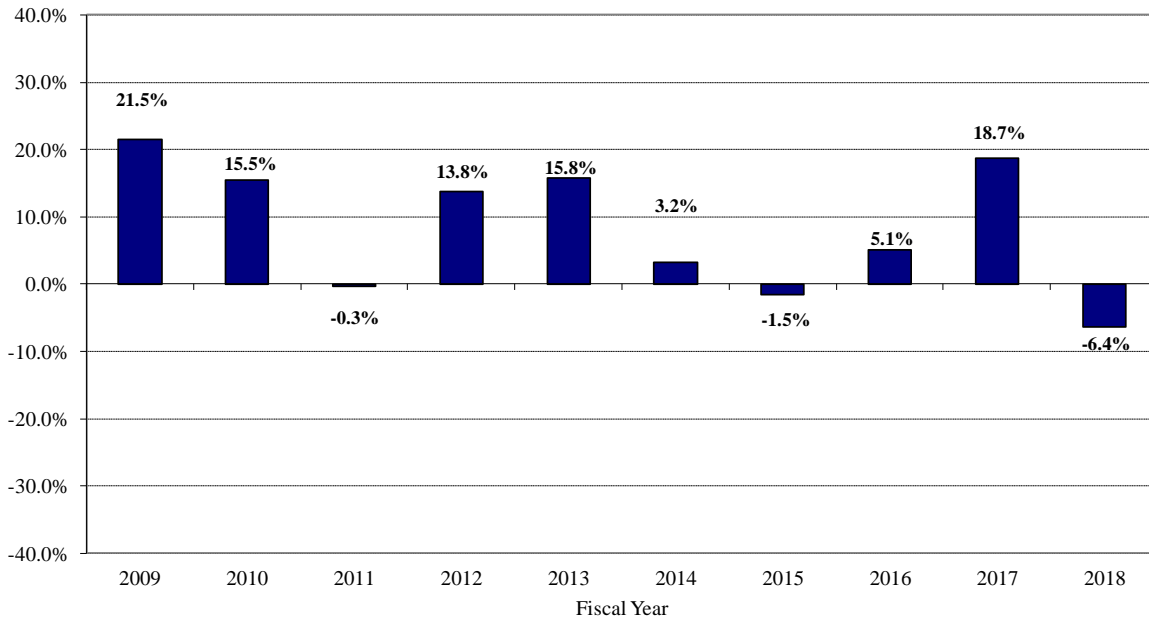


TABLE 15

LABORERS' ANNUITY AND BENEFIT FUND OF CHICAGO					
System Experience, 2009 - 2018					
(\$ in Millions)					
Fiscal Year	Annual Payroll	Actuarial Liabilities	Actuarial Assets	Unfunded Liabilities	Funded Ratio
2018	211.5	2,652.9	1,185.3	1,467.6	44.7%
2017	208.4	2,578.7	1,245.1	1,333.6	48.3%
2016	208.2	2,509.3	1,263.7	1,245.6	50.4%
2015	204.8	2,469.9	1,308.7	1,161.2	53.0%
2014	202.7	2,111.7	1,357.5	754.3	64.3%
2013	200.4	2,390.6	1,354.3	1,036.3	56.7%
2012	198.8	2,374.8	1,315.9	1,058.9	55.4%
2011	195.2	2,191.2	1,422.4	768.8	64.9%
2010	199.9	2,071.4	1,529.4	542.0	73.8%
2009	208.6	2,017.5	1,601.4	416.1	79.4%

TABLE 16

LABORERS' ANNUITY AND BENEFIT FUND OF CHICAGO										
Changes in Net Assets										
(\$ in Millions)										
Fiscal Year	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Additions to Assets										
Employer	\$48.5	\$35.5	\$14.4	\$14.6	\$14.5	\$14.1	\$14.4	\$15.3	\$18.0	\$17.2
Employees	\$17.8	\$17.4	\$17.2	\$16.8	\$16.4	\$16.4	\$16.6	\$16.1	\$16.3	\$17.5
Net Investment Income	-\$75.4	\$207.7	\$57.7	-\$22.8	\$52.9	\$206.7	\$172.6	-\$5.1	\$193.2	\$237.1
Other	\$0.2	\$0.2	\$0.3	\$0.4	\$0.5	\$0.6	\$0.8	\$0.6	\$0.0	\$0.0
Total Asset Additions (A)	-\$8.9	\$260.8	\$89.7	\$9.1	\$84.3	\$237.8	\$204.4	\$26.9	\$227.5	\$271.8
Deductions from Assets										
Benefits	\$157.3	\$154.8	\$153.8	\$152.2	\$147.9	\$144.3	\$139.7	\$133.5	\$127.0	\$121.0
Refunds	\$2.7	\$2.3	\$2.8	\$2.5	\$2.1	\$2.9	\$2.6	\$3.0	\$2.3	\$2.8
Rebates	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Administrative Expenses	\$3.9	\$4.0	\$4.1	\$3.8	\$3.8	\$4.1	\$4.7	\$4.0	\$3.9	\$3.7
Other	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Total Asset Deductions (B)	\$163.9	\$161.0	\$160.6	\$158.5	\$153.9	\$151.3	\$147.0	\$140.5	\$133.2	\$127.5
Change in Net Assets (A-B=C)	-\$172.9	\$99.8	-\$70.9	-\$149.4	-\$69.6	\$86.5	\$57.4	-\$113.6	\$94.3	\$144.3

Table 17 below contains funding projections based on the December 31, 2018 actuarial valuation of the Laborers' and Retirement Board Employees' Annuity and Benefit Fund of Chicago.

TABLE 17

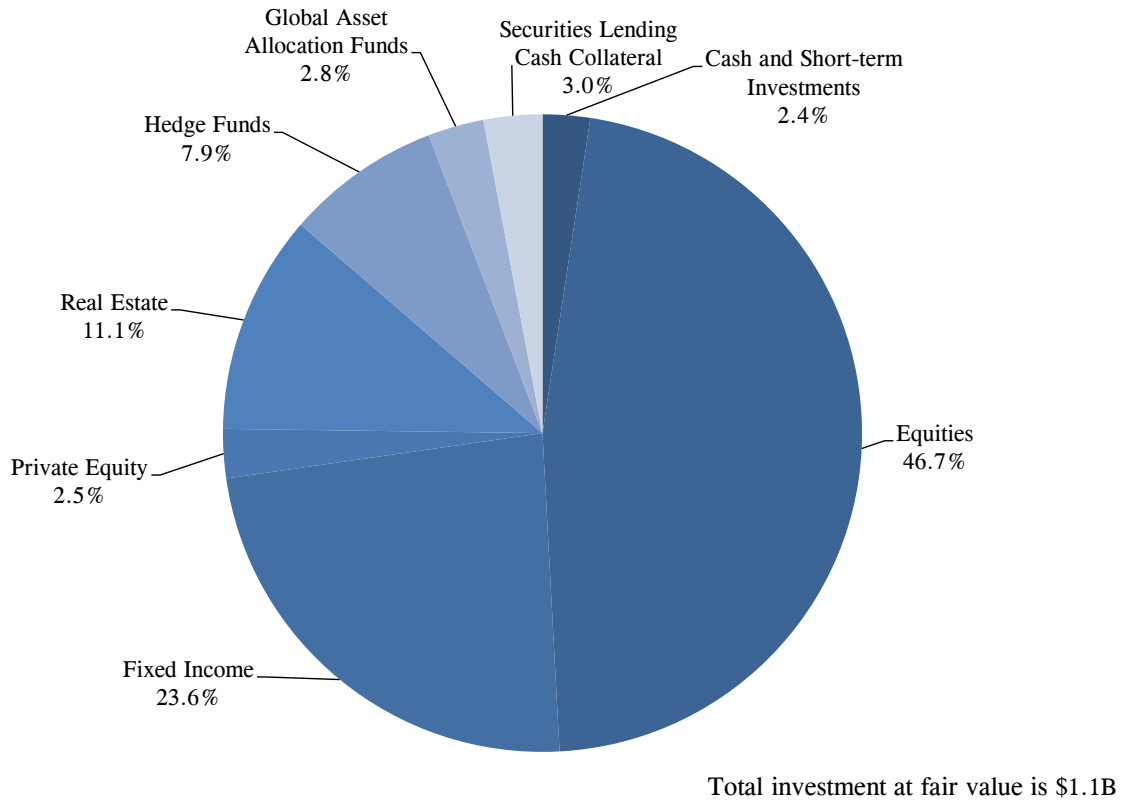
Laborers' Annuity and Benefit Fund of Chicago									
Actuarial Valuation Projection Results as of December 31, 2018									
(\$ in Millions)									
Fiscal Year	Capped Payroll	Total Employer Contribution	Employer Contribution As % of Payroll	Employee Contribution	Total Actuarial Liability	Actuarial Value of Assets	Unfunded Actuarial Liability	Funded Ratio	
2018		211.5	48.5	22.9%	17.8	2,652.9	1,185.3	1,467.6	44.7%
2019		214.4	60.0	28.0%	17.9	2,709.4	1,126.2	1,583.2	41.6%
2020		218.0	72.0	33.0%	18.5	2,763.2	1,095.1	1,668.1	39.6%
2021		222.2	84.0	37.8%	19.1	3,056.6	1,074.8	1,981.7	35.2%
2022		227.2	131.5	57.9%	19.8	3,107.9	1,070.4	2,037.6	34.4%
2023		232.2	133.6	57.6%	20.5	3,157.7	1,095.4	2,062.3	34.7%
2024		237.3	135.8	57.2%	21.3	3,205.2	1,118.3	2,086.9	34.9%
2025		242.8	138.1	56.9%	22.1	3,249.6	1,138.9	2,110.8	35.0%
2026		248.5	140.4	56.5%	23.0	3,291.0	1,156.9	2,134.1	35.2%
2027		254.6	142.9	56.1%	23.9	3,328.6	1,172.0	2,156.5	35.2%
2028		261.0	145.6	55.8%	24.9	3,361.7	1,184.3	2,177.4	35.2%
2029		267.3	148.2	55.5%	25.9	3,391.3	1,194.4	2,197.0	35.2%
2030		273.8	150.9	55.1%	26.9	3,416.0	1,201.5	2,214.5	35.2%
2031		280.6	153.8	54.8%	27.9	3,435.6	1,206.3	2,229.3	35.1%
2032		287.0	156.5	54.5%	28.9	3,450.9	1,208.9	2,242.0	35.0%
2033		293.3	159.1	54.2%	29.9	3,461.6	1,209.4	2,252.3	34.9%
2034		299.8	161.9	54.0%	30.9	3,467.6	1,208.5	2,259.1	34.9%
2035		306.5	164.8	53.8%	31.8	3,469.6	1,207.2	2,262.4	34.8%
2036		313.0	167.6	53.6%	32.8	3,468.6	1,206.2	2,262.4	34.8%
2037		319.7	170.6	53.4%	33.7	3,464.6	1,206.4	2,258.2	34.8%
2038		326.1	173.5	53.2%	34.6	3,458.9	1,208.2	2,250.7	34.9%
2039		332.7	176.4	53.0%	35.5	3,451.2	1,212.0	2,239.2	35.1%
2040		339.4	179.4	52.9%	36.4	3,442.2	1,219.4	2,222.8	35.4%
2041		346.1	182.6	52.7%	37.3	3,432.8	1,231.6	2,201.1	35.9%
2042		352.7	185.7	52.6%	38.1	3,424.3	1,249.7	2,174.6	36.5%
2043		359.5	188.9	52.5%	39.0	3,095.1	1,274.6	1,820.6	41.2%
2044		366.2	192.1	52.5%	39.8	3,088.6	1,307.2	1,781.4	42.3%
2045		372.8	195.2	52.4%	40.6	3,084.4	1,348.0	1,736.4	43.7%
2046		379.8	198.6	52.3%	41.4	3,082.8	1,398.1	1,684.8	45.4%
2047		386.7	201.9	52.2%	42.3	3,084.5	1,458.4	1,626.2	47.3%
2048		393.7	205.3	52.2%	43.1	3,089.6	1,529.6	1,560.0	49.5%
2049		400.9	208.8	52.1%	43.9	3,098.5	1,612.8	1,485.7	52.1%
2050		408.0	212.4	52.0%	44.8	3,111.2	1,708.5	1,402.7	54.9%
2051		415.1	215.9	52.0%	45.6	3,127.2	1,816.9	1,310.3	58.1%
2052		422.5	219.6	52.0%	46.5	3,146.1	1,938.3	1,207.8	61.6%
2053		429.8	223.3	51.9%	47.4	3,167.9	2,073.6	1,094.3	65.5%
2054		437.4	227.0	51.9%	48.3	3,192.6	2,223.4	969.2	69.6%
2055		445.0	230.9	51.9%	49.2	3,220.2	2,388.8	831.4	74.2%
2056		452.6	234.7	51.9%	50.2	3,250.5	2,570.6	680.0	79.1%
2057		460.4	238.7	51.8%	51.1	3,284.1	2,770.1	514.0	84.3%
2058		468.3	242.7	51.8%	52.0	3,320.9	2,988.7	332.2	90.0%
2059		475.8	44.3	9.3%	52.8	3,360.7	3,024.6	336.1	90.0%
2060		482.9	58.9	12.2%	34.9	3,402.8	3,062.5	340.3	90.0%
2061		489.6	59.9	12.2%	35.4	3,447.0	3,102.3	344.7	90.0%
2062		496.2	60.6	12.2%	35.9	3,493.1	3,143.8	349.3	90.0%
2063		502.8	61.3	12.2%	36.4	3,540.9	3,186.8	354.1	90.0%
2064		509.3	62.0	12.2%	36.9	3,590.3	3,231.3	359.0	90.0%
2065		515.8	62.8	12.2%	37.3	3,641.0	3,276.9	364.1	90.0%
2066		522.3	63.6	12.2%	37.8	3,693.0	3,323.7	369.3	90.0%
2067		528.8	64.4	12.2%	38.3	3,746.2	3,371.5	374.6	90.0%

TABLE 18

Laborers' Annuity and Benefit Fund of Chicago Projected Normal Cost as of December 31, 2018 (\$ in Millions)						
Fiscal Year	Employer's Normal Cost	Employer's Normal Cost as a % of Payroll	Employee Contributions	Employee Contributions as a % of Payroll	Total Normal Cost	Total Normal Cost as a % of Payroll
2018	21.5	10.2%	17.8	8.4%	39.3	18.6%
2019	22.9	10.7%	17.9	8.4%	40.9	19.1%
2020	22.6	10.4%	18.5	8.5%	41.1	18.8%
2021	22.4	10.1%	19.1	8.6%	41.4	18.6%
2022	22.1	9.7%	19.8	8.7%	41.9	18.4%
2023	21.8	9.4%	20.5	8.8%	42.3	18.2%
2024	21.5	9.1%	21.3	9.0%	42.8	18.0%
2025	21.1	8.7%	22.1	9.1%	43.3	17.8%
2026	20.8	8.4%	23.0	9.2%	43.7	17.6%
2027	20.3	8.0%	23.9	9.4%	44.3	17.4%
2028	19.9	7.6%	24.9	9.5%	44.8	17.2%
2029	19.5	7.3%	25.9	9.7%	45.4	17.0%
2030	19.1	7.0%	26.9	9.8%	45.9	16.8%
2031	18.7	6.7%	27.9	9.9%	46.6	16.6%
2032	18.2	6.3%	28.9	10.1%	47.1	16.4%
2033	17.3	5.9%	29.9	10.2%	47.2	16.1%
2034	16.9	5.6%	30.9	10.3%	47.7	15.9%
2035	16.5	5.4%	31.8	10.4%	48.3	15.8%
2036	16.2	5.2%	32.8	10.5%	49.0	15.7%
2037	16.0	5.0%	33.7	10.5%	49.7	15.5%
2038	15.8	4.8%	34.6	10.6%	50.4	15.4%
2039	15.5	4.7%	35.5	10.7%	51.0	15.3%
2040	15.3	4.5%	36.4	10.7%	51.7	15.2%
2041	15.1	4.4%	37.3	10.8%	52.4	15.1%
2042	15.8	4.5%	38.1	10.8%	53.9	15.3%
2043	15.8	4.4%	39.0	10.8%	54.7	15.2%
2044	15.7	4.3%	39.8	10.9%	55.5	15.2%
2045	15.7	4.2%	40.6	10.9%	56.3	15.1%
2046	15.7	4.1%	41.4	10.9%	57.1	15.0%
2047	15.7	4.1%	42.3	11.1%	58.0	15.3%
2048	15.7	4.0%	43.1	10.9%	58.8	14.9%
2049	15.8	3.9%	43.9	11.0%	59.7	14.9%
2050	15.9	3.9%	44.8	11.0%	60.7	14.9%
2051	16.0	3.9%	45.6	11.0%	61.6	14.8%
2052	16.1	3.8%	46.5	11.0%	62.6	14.8%
2053	16.3	3.8%	47.4	11.0%	63.6	14.8%
2054	16.4	3.8%	48.3	11.0%	64.7	14.8%
2055	16.6	3.7%	49.2	11.1%	65.8	14.8%
2056	16.8	3.7%	50.2	11.1%	66.9	14.8%
2057	17.0	3.7%	51.1	11.1%	68.1	14.8%
2058	17.2	3.7%	52.0	11.1%	69.2	14.8%
2059	17.5	3.7%	52.8	11.1%	70.3	14.8%
2060	36.4	7.5%	34.9	7.2%	71.3	14.8%
2061	36.9	7.5%	35.4	7.2%	72.3	14.8%
2062	37.4	7.5%	35.9	7.2%	73.3	14.8%
2063	37.9	7.5%	36.4	7.2%	74.3	14.8%
2064	38.4	7.5%	36.9	7.2%	75.3	14.8%
2065	38.9	7.5%	37.3	7.2%	76.3	14.8%
2066	39.4	7.6%	37.8	7.2%	77.2	14.8%
2067	40.0	7.6%	38.3	7.2%	78.2	14.8%

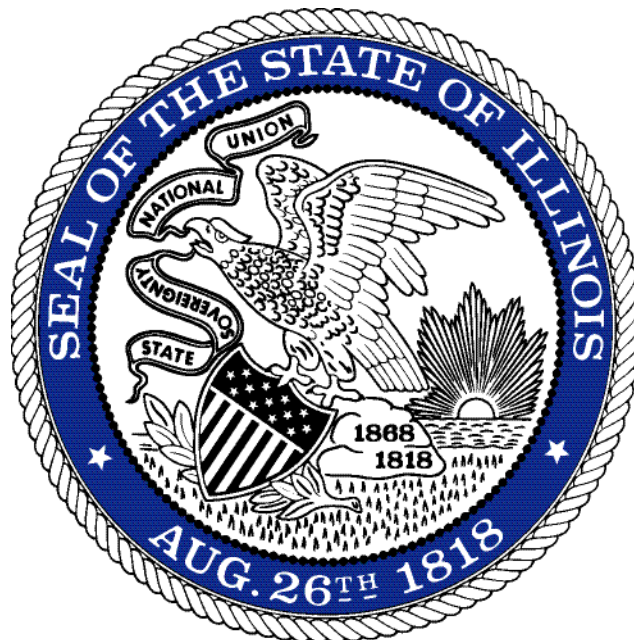
CHART 54

**LABORERS' ANNUITY AND BENEFIT FUND OF CHICAGO
ASSET ALLOCATION AS OF DECEMBER 2018**



VIII. Metropolitan Water Reclamation District Retirement Fund

- Plan Summary
- Active Employees
- Employee Annuitants
- Average Salaries
- Average Retirement Annuity
- Funded Ratios
- Change in Unfunded Liabilities
- Investment Income
- Investment Rates of Return
- Systems Experience
- Changes in Net Assets
- Asset Allocation



Note: All data shown in this section is based upon the system's Actuarial Valuation and CAFR as of December 31, 2018.

Metropolitan Water Reclamation District Retirement Fund - Tier 1 Plan Summary

Retirement Age

- Age 60 with 5 years of service
- Age 50 with 10 years of service (Age 55 if hired after 6/13/97)

Retirement Formula

- 2.2% of final average salary for the first 20 years of service, plus
- 2.4% of final average salary for each year in excess of 20

Maximum Annuity

- 80% of final average salary

Salary Used to Calculate Pension

- Any 52 consecutive pay periods within the final 10 years of service

Annual COLA

- 3% compounded

Employee Contributions (as modified by P.A. 97-0894)

- Beginning on January 1, 2015, the Tier 1 employee contribution rate has increased to 12% of salary, where it will remain until the MWRD pension fund reaches a 90% funded ratio. Upon attainment of a 90% funding ratio, the member contribution rate will revert back to 9%. These changes to the Tier 1 employee contribution rate were made by HB 4513 (P.A. 97-0894), which became effective on August 3rd, 2012. Tier 2 employees contribute 9.0% of salary (unchanged by P.A. 97-0894).

Employer Contributions (as modified by P.A. 97-0894)

The District levies a tax annually that is the level percentage of payroll necessary to reach a 90% funding level by FY 2050. However, no annual levy shall exceed the total amount of contributions made by employees in the calendar year 2 years prior to the year of the levy, multiplied by 4.19.

Note: Benefits shown on this page are for employees hired prior to January 1, 2011 (Tier 1 employees). Tier 1 and Tier 2 employee contribution rates are shown here so as to distinguish the changes made to Tier 1 contribution rates as a result of P.A. 97-0894. For a summary of benefits for employees hired after January 1, 2011 (Tier 2 employees), see P.A. 96-0889 in Section I.

CHART 55

**METROPOLITAN WATER PENSION FUND
Active Employees**

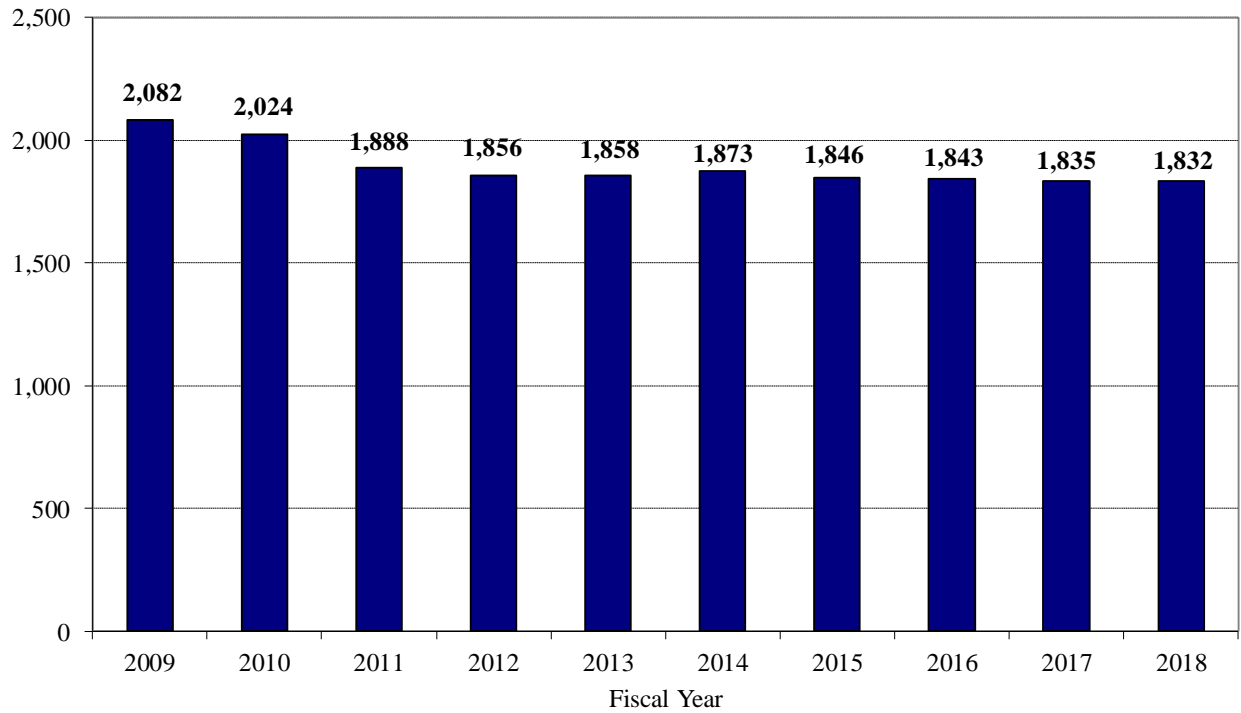


CHART 56

**METROPOLITAN WATER PENSION FUND
Employee Annuitants**

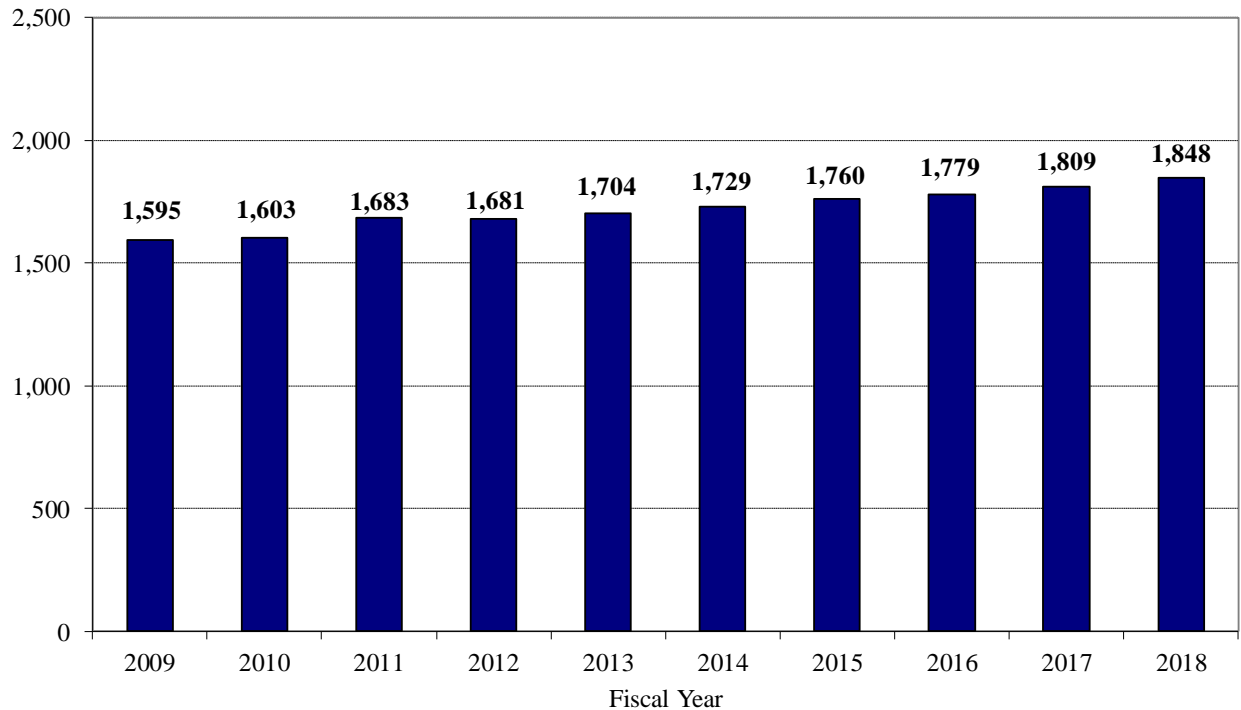


CHART 57

**METROPOLITAN WATER PENSION FUND
Average Employee Salaries**

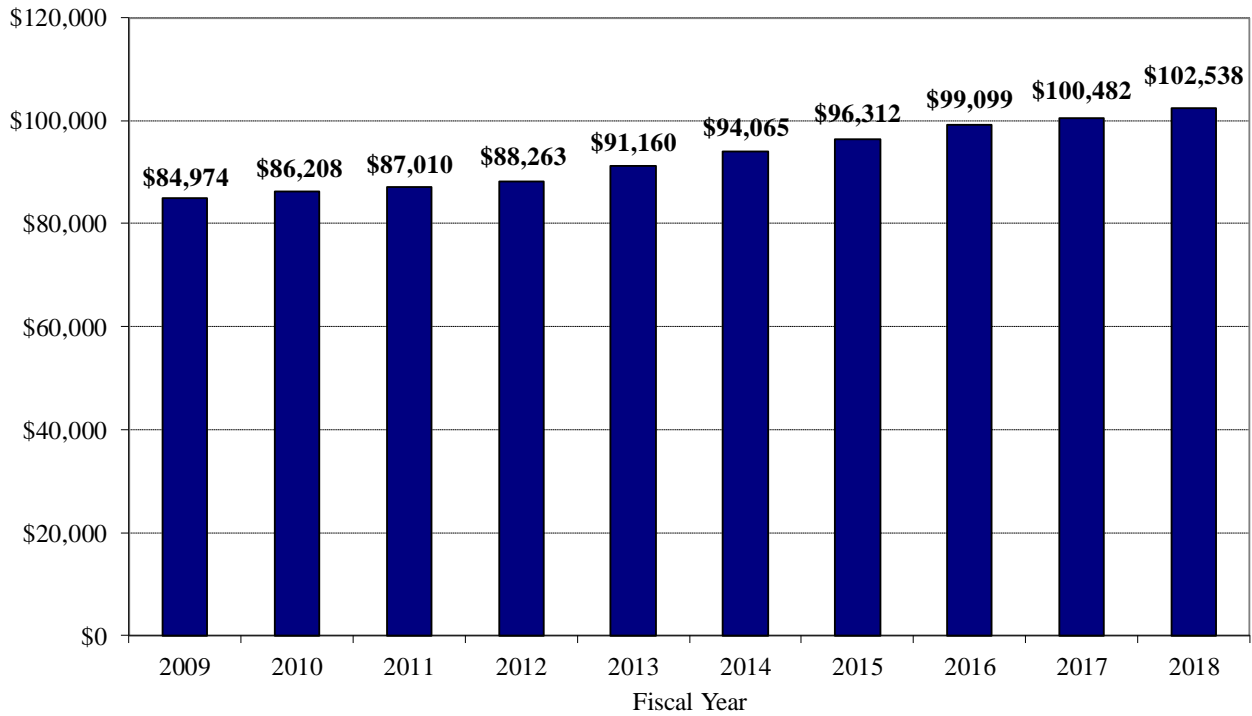


CHART 58

**METROPOLITAN WATER PENSION FUND
Average Retirement Annuity**

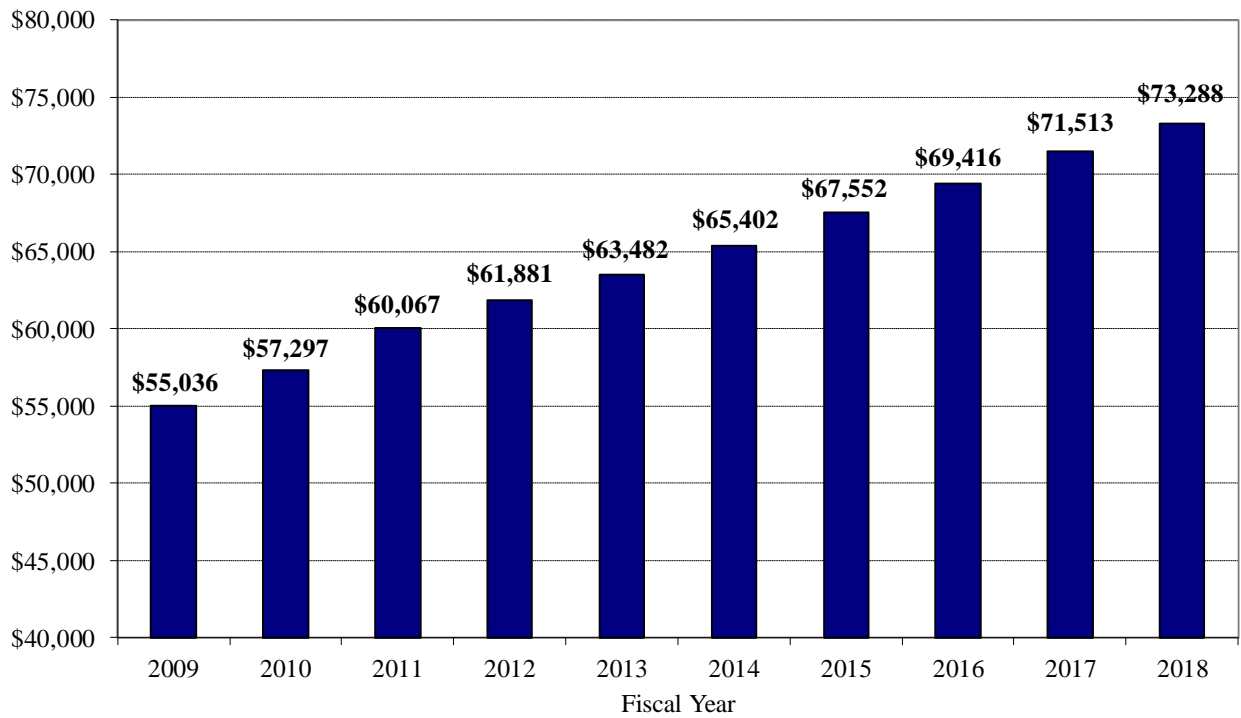


CHART 59

**METROPOLITAN WATER PENSION FUND
Funded Ratio
FY 2009 - FY 2018**

All figures based upon the actuarial value of assets.

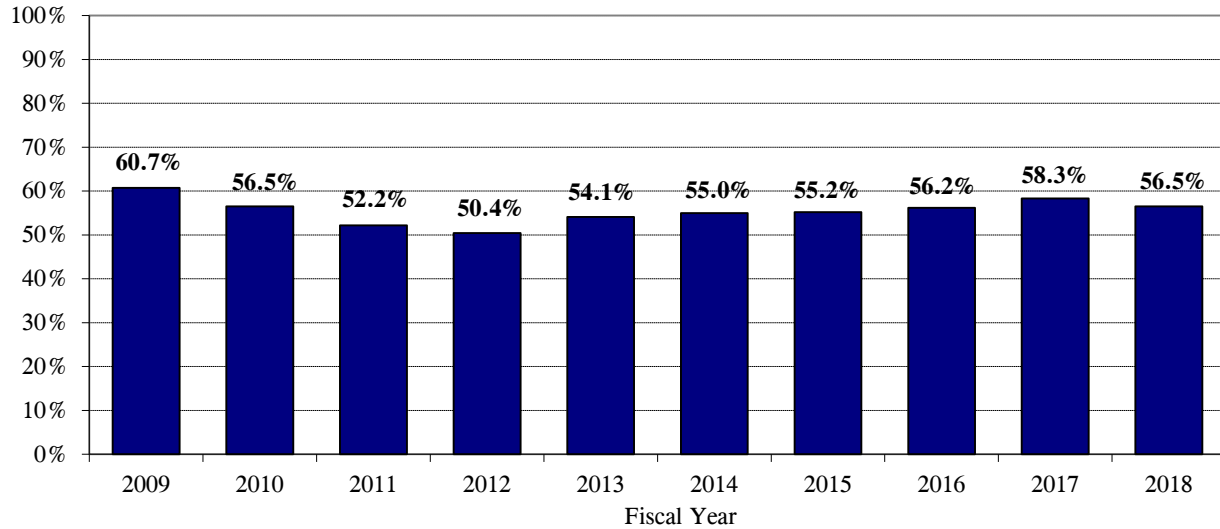
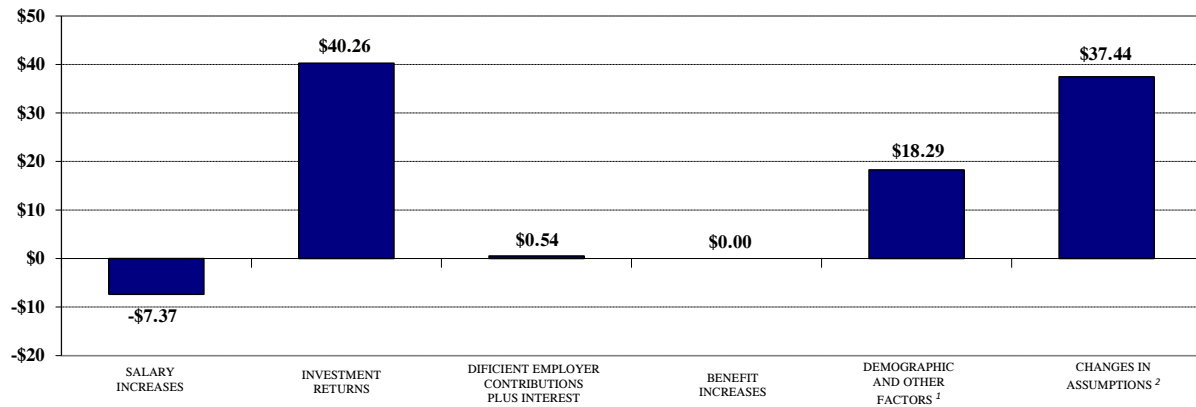


CHART 60

**METROPOLITAN WATER PENSION FUND
Change in Unfunded Liabilities
Year ended December 31, 2018
(\$ in Millions)**

All figures based upon the actuarial value of assets.

TOTAL INCREASE EQUALS
\$89.16 MIL



1 Unfunded liability increased, mostly due to unfavorable decrement experiences. Some examples of decrement assumptions are employee turnover, mortality and retirement rates assumptions.

2 Unfunded liability increased due to the net effect of changes in assumptions, some of which include: Lowering the investment return assumption from 7.50% to 7.25%, updating retirement rates and mortality rates, etc..

CHART 61

METROPOLITAN WATER PENSION FUND
Investment Income FY 2009 - FY 2018
Actuarially Assumed Rate of Return: 7.25%
(\$ in Millions)

All figures based upon the market value of assets.

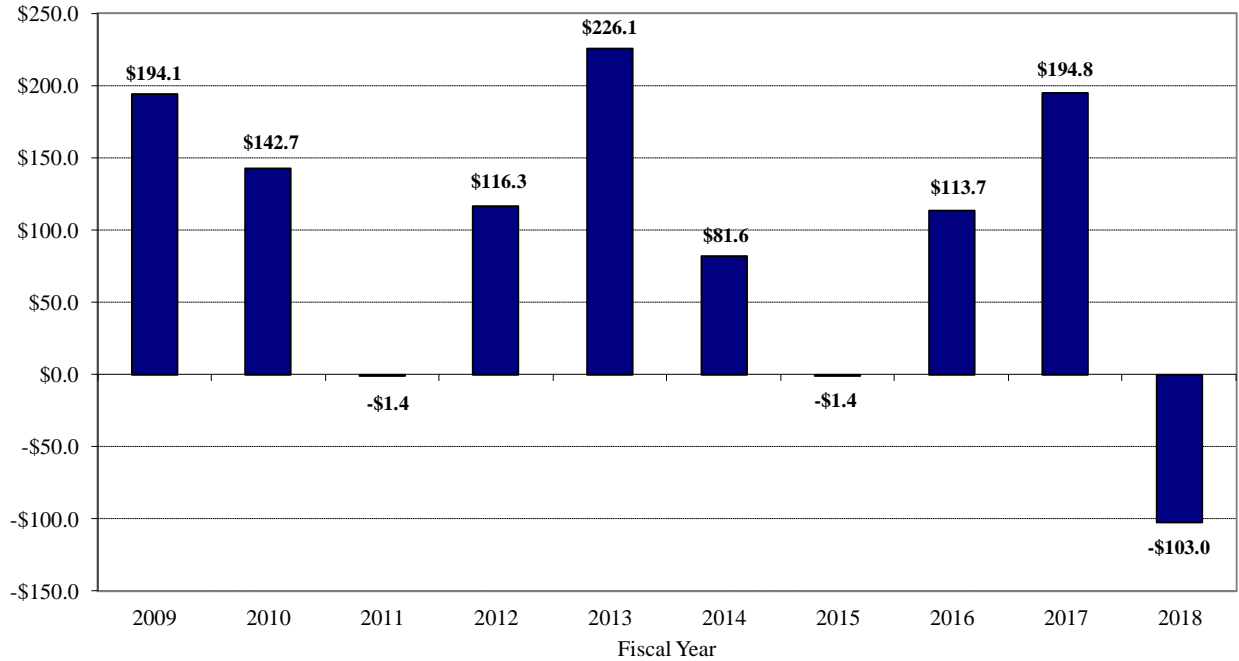


CHART 62

METROPOLITAN WATER PENSION FUND
Rate of Return FY 2009 - FY 2018
Actuarially Assumed Rate of Return: 7.25%

All figures based upon the market value of assets.

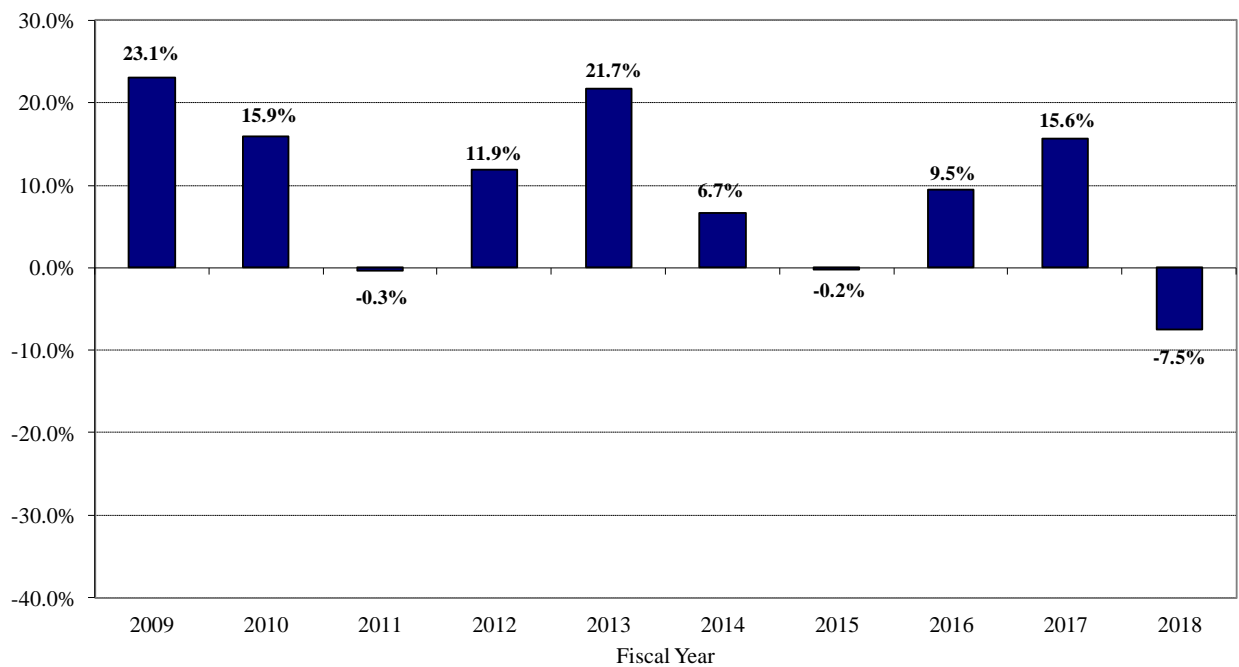


TABLE 19

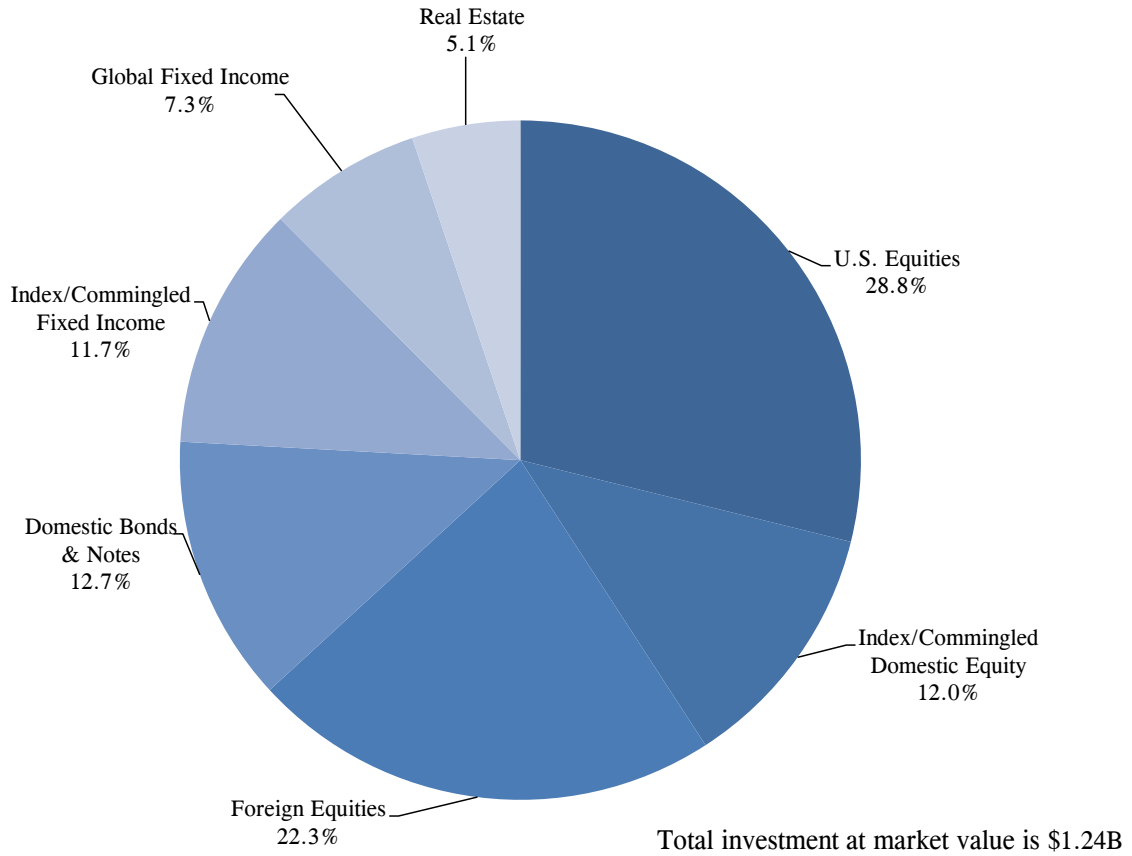
METROPOLITAN WATER PENSION FUND					
System Experience, 2009 - 2018					
(\$ in Millions)					
Fiscal Year	Annual Payroll	Actuarial Liabilities	Actuarial Assets	Unfunded Liabilities	Funded Ratio
2018	187.8	2,601.2	1,470.3	1,130.9	56.5%
2017	184.4	2,497.9	1,456.2	1,041.7	58.3%
2016	182.6	2,443.3	1,372.4	1,070.9	56.2%
2015	177.8	2,371.0	1,308.0	1,063.0	55.2%
2014	176.2	2,296.4	1,263.3	1,033.1	55.0%
2013	169.4	2,194.9	1,188.5	1,006.4	54.1%
2012	163.8	2,136.5	1,076.7	1,059.8	50.4%
2011	164.3	2,101.3	1,097.4	1,003.9	52.2%
2010	174.5	2,036.7	1,151.6	885.1	56.5%
2009	176.9	1,939.2	1,177.8	761.4	60.7%

TABLE 20

METROPOLITAN WATER PENSION FUND										
Changes in Net Assets										
(\$ in Millions)										
Fiscal Year	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Additions to Assets										
Employer	\$87.2	\$89.9	\$80.3	\$71.0	\$73.9	\$92.9	\$65.1	\$37.4	\$29.9	\$32.1
Employees	\$21.0	\$20.8	\$20.8	\$21.4	\$19.0	\$16.9	\$14.7	\$15.0	\$15.9	\$15.7
Net Investment Income	-\$93.0	\$194.8	\$113.6	-\$1.4	\$81.6	\$226.1	\$116.3	-\$1.4	\$142.7	\$194.1
Other	\$0.0	\$0.0	\$0.1	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.2	\$0.0
Total Asset Additions (A)	\$15.2	\$305.5	\$214.8	\$91.0	\$174.5	\$335.9	\$196.1	\$51.0	\$188.7	\$241.9
Deductions from Assets										
Benefits	\$159.6	\$152.2	\$145.3	\$139.2	\$132.9	\$127.2	\$122.7	\$118.1	\$108.2	\$103.4
Refunds	\$1.8	\$2.6	\$2.0	\$1.3	\$1.0	\$1.1	\$1.2	\$2.7	\$1.4	\$1.2
Rebates	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Administrative Expenses	\$1.7	\$1.6	\$1.5	\$1.7	\$1.4	\$1.4	\$1.3	\$1.4	\$1.3	\$1.3
Other	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Total Asset Deductions (B)	\$163.0	\$156.3	\$148.8	\$142.2	\$135.3	\$129.7	\$125.2	\$122.2	\$110.9	\$105.9
Change in Net Assets (A-B=C)	-\$147.8	\$149.2	\$65.9	-\$51.1	\$39.2	\$206.2	\$70.9	-\$71.2	\$77.8	\$136.0

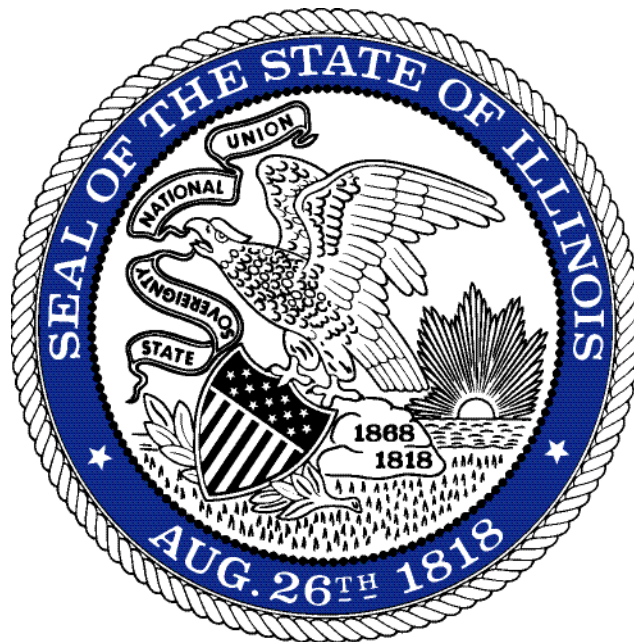
CHART 63

**METROPOLITAN WATER RECLAMATION DISTRICT RETIREMENT FUND
ASSET ALLOCATION AS OF DECEMBER 2018**



IX. Municipal Employees' Annuity and Benefit Fund of Chicago

- **Plan Summary**
- **Active Employees**
- **Employee Annuitants**
- **Average Salaries**
- **Average Retirement Annuity**
- **Funded Ratios**
- **Change in Unfunded Liabilities**
- **Investment Income**
- **Investment Rates of Return**
- **Systems Experience**
- **Changes in Net Assets**
- **Systems Projections**
- **Asset Allocation**



Note: All data shown in this section is based upon the system's Actuarial Valuation and CAFR as of December 31, 2018.

Municipal Employees' Annuity and Benefit Fund of Chicago – Tier 1 Plan Summary

*Pursuant to P.A. 100-0023 that created a third tier of benefits for new members, MEABF implemented the Tier 3 plan. Please see P.A. 100-0023 in Section I for more information.

Retirement Age

- Age 60 with 10 years of service
- Age 55 with 20 years of service
- Age 50 with at least 30 years of service
- Age 55 with 10 years of service (money purchase)

Retirement Formula

- 2.4% of final average salary for each year of service

Maximum Annuity

- 80% of final average salary

Salary Used to Calculate Pension

- Average of 4 highest consecutive years within final 10 years of service

Annual COLA

- 3% compounded

Employee Contributions

- 8.5% of salary

Required Employer Contributions

Pursuant to P.A. 100-0023, the required employer contributions for payment year 2018 through 2022 are specified as follows: \$266 million in 2018, \$344 million in 2019, \$421 million in 2020, \$499 million in 2021, and \$576 million in 2022. After the payment year 2022, the required employer contributions are calculated as a level percent of payroll sufficient to bring the funded ratio up to 90% by 2058.

Note: Benefits shown are for employees hired prior to January 1, 2011 (Tier 1 employees), the effective date of P.A. 96-0889. See P.A. 96-0889 in Section I for a summary of benefits for employees hired after January 1, 2011 (Tier 2 employees).

CHART 64

MUNICIPAL EMPLOYEES' ANNUITY AND BENEFIT FUND OF CHICAGO
Active Employees

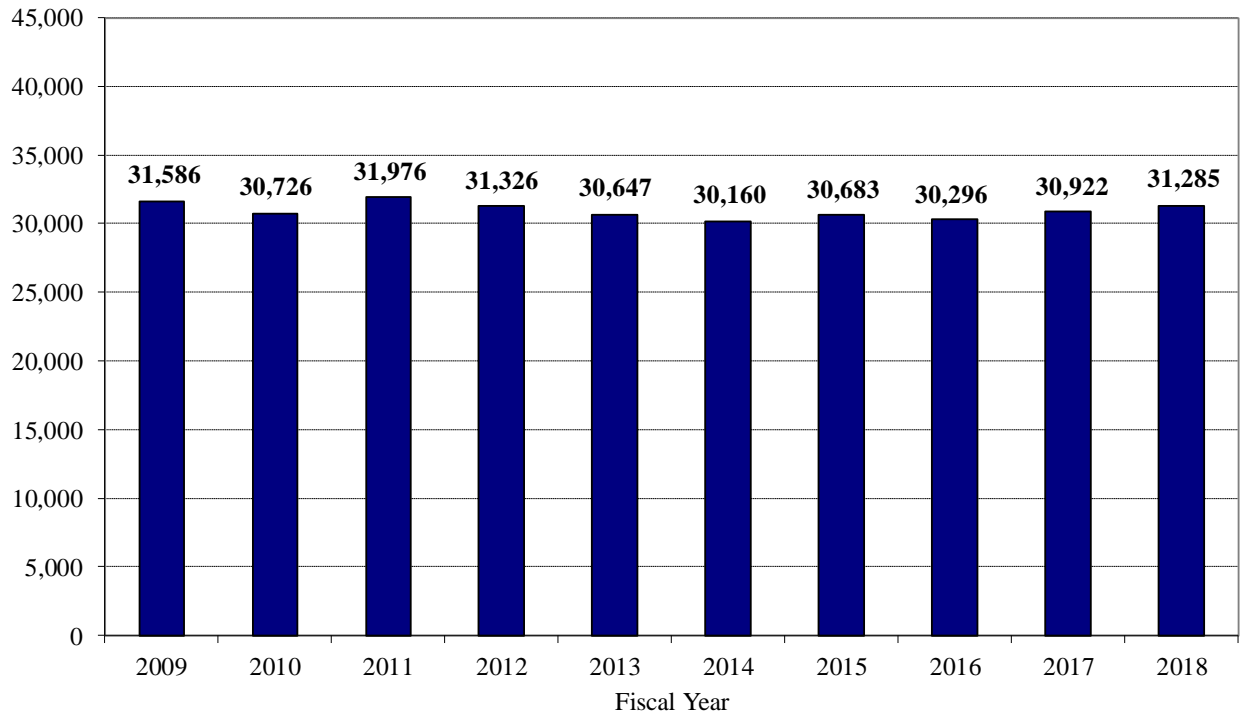


CHART 65

MUNICIPAL EMPLOYEES' ANNUITY AND BENEFIT FUND OF CHICAGO
Employee Annuitants

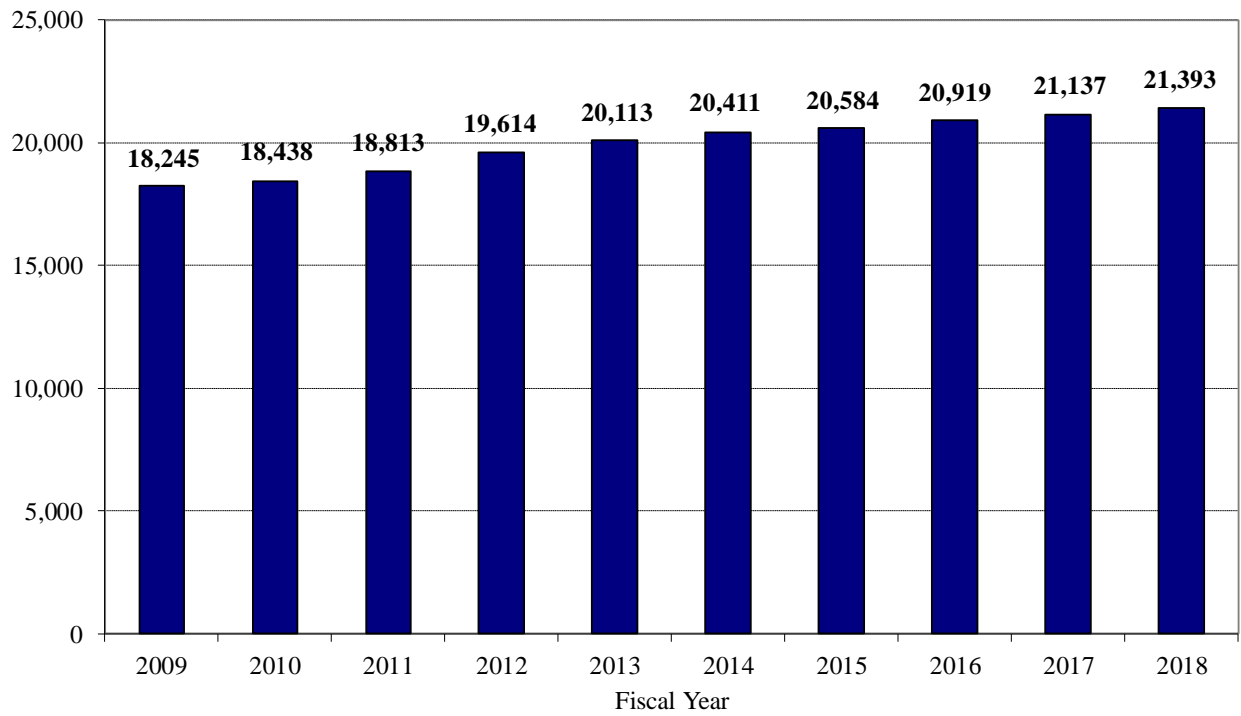


CHART 66

MUNICIPAL EMPLOYEES' ANNUITY AND BENEFIT FUND OF CHICAGO
Average Employee Salaries

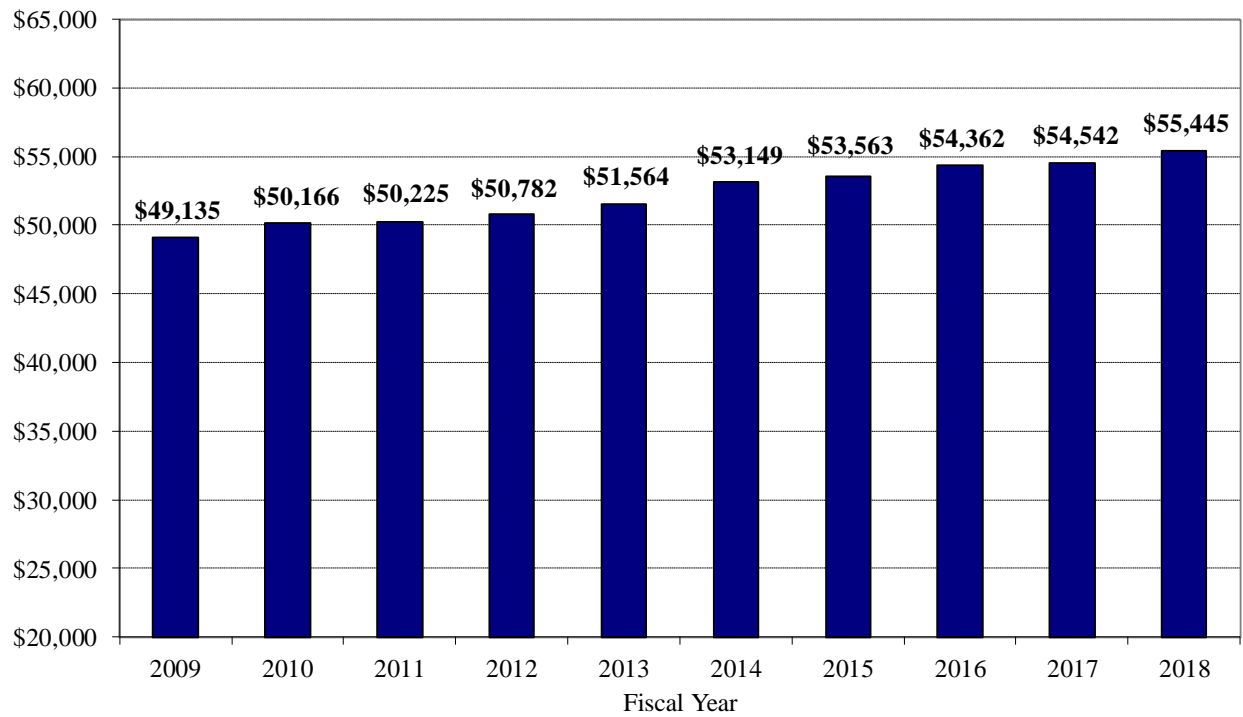


CHART 67

MUNICIPAL EMPLOYEES' ANNUITY AND BENEFIT FUND OF CHICAGO
Average Retirement Annuities

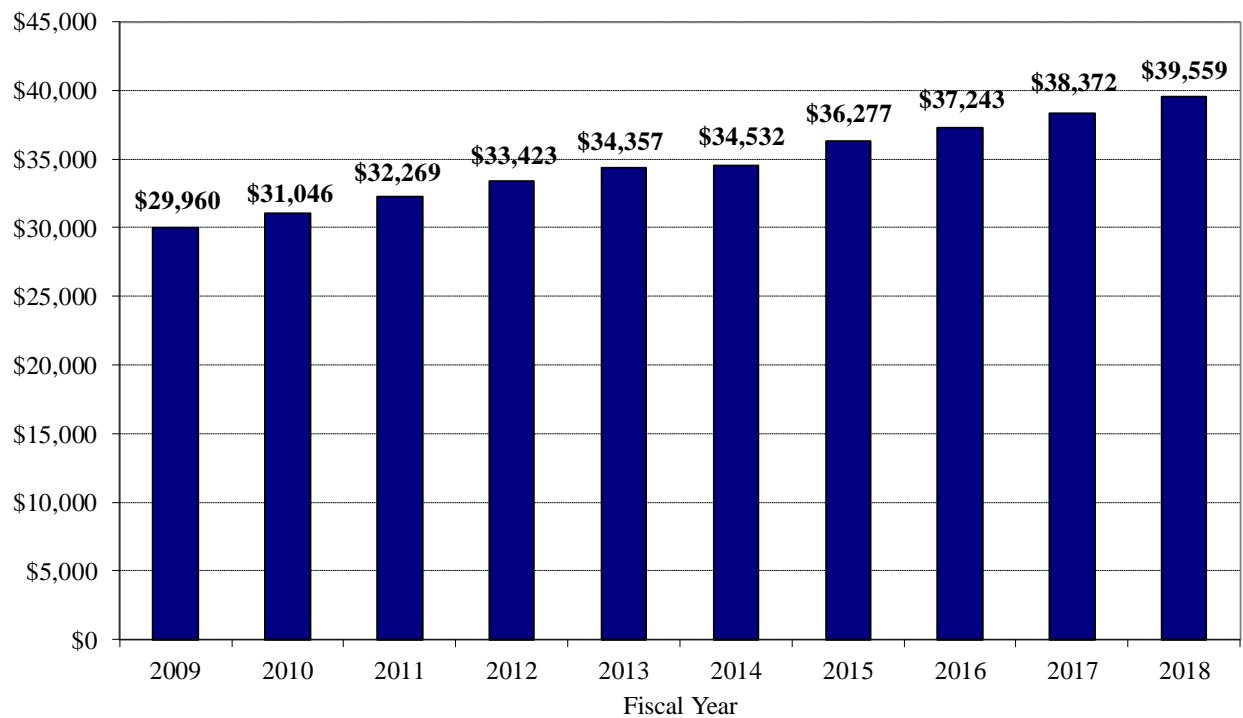
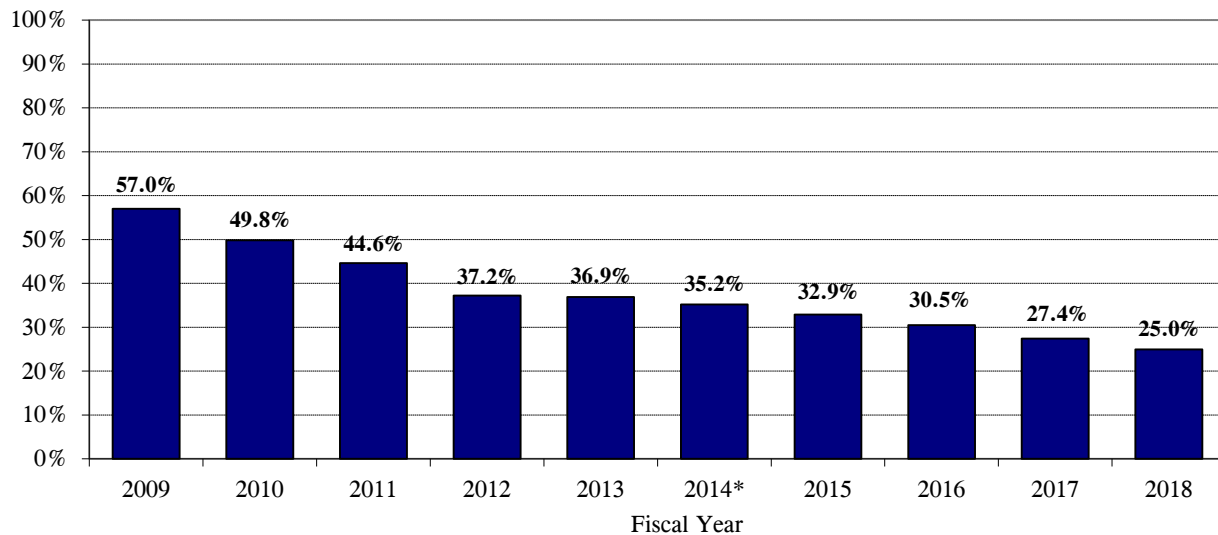


CHART 68

MUNICIPAL EMPLOYEES' ANNUITY AND BENEFIT FUND OF CHICAGO Funded Ratio FY 2009 - FY 2018

All figures based upon the actuarial value of assets.



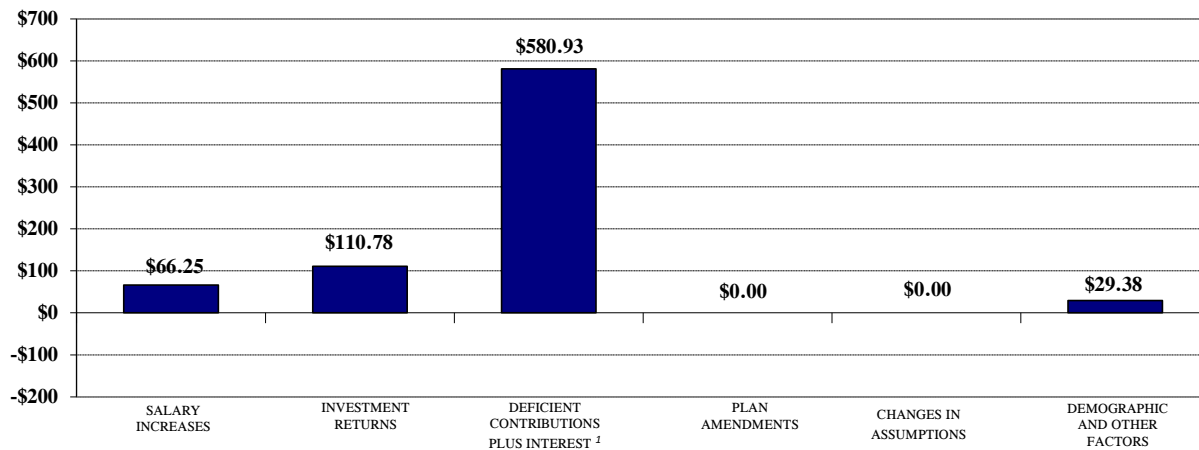
* As P.A. 98-0641 was ruled unconstitutional, the funded ratio as of December 31, 2014, that does not reflect the provisions of the Act is 35.2%. The funded ratio that reflected the provisions of P.A. 98-0641 was 40.9%.

CHART 69

MUNICIPAL EMPLOYEES' ANNUITY AND BENEFIT FUND OF CHICAGO Change in Unfunded Liabilities Year ended December 31, 2018 (\$ in Millions)

All figures based upon the actuarial value of assets.

TOTAL INCREASE EQUALS
\$787.35 MIL



¹ Unfunded liability increased due to contributions being less than normal cost, plus interest cost.

CHART 70

MUNICIPAL EMPLOYEES' ANNUITY AND BENEFIT FUND OF CHICAGO

Investment Income, 2009 - 2018

Actuarially Assumed Rate of Return: 7.00%

(\$ in Millions)

All figures based upon the market value of assets.

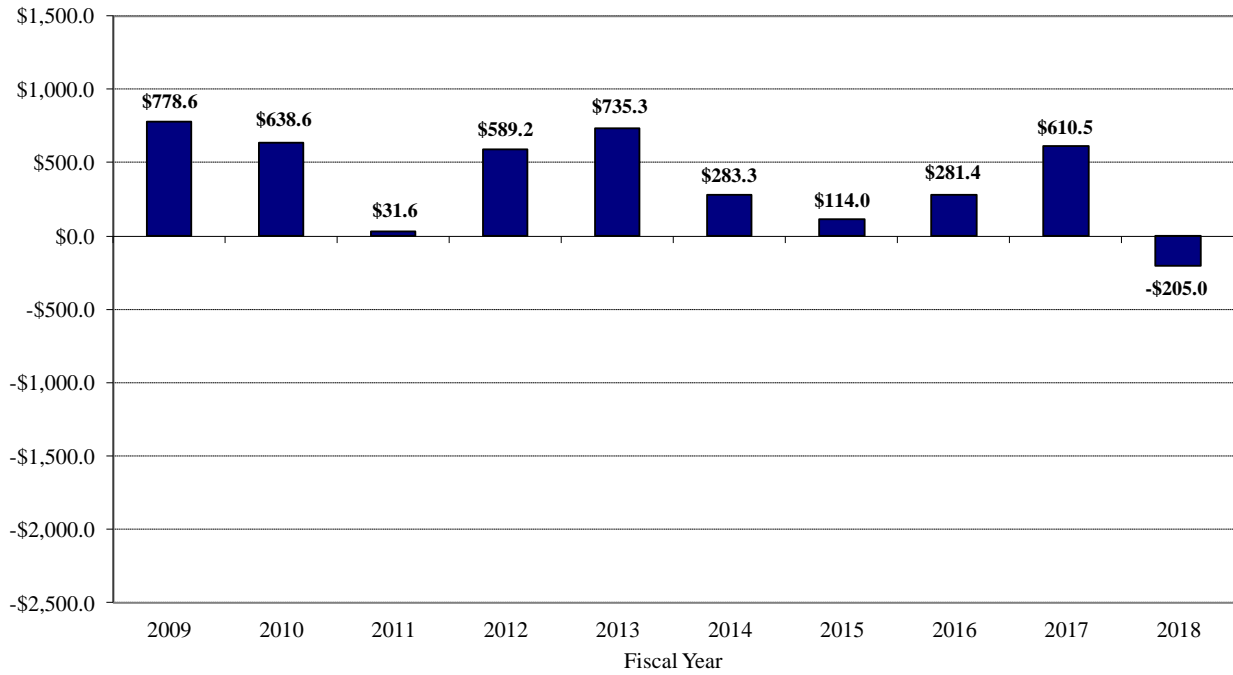


CHART 71

MUNICIPAL EMPLOYEES' ANNUITY AND BENEFIT FUND OF CHICAGO

Rate of Return, 2009 - 2018

Actuarially Assumed Rate of Return: 7.00%

All figures based upon the market value of assets.

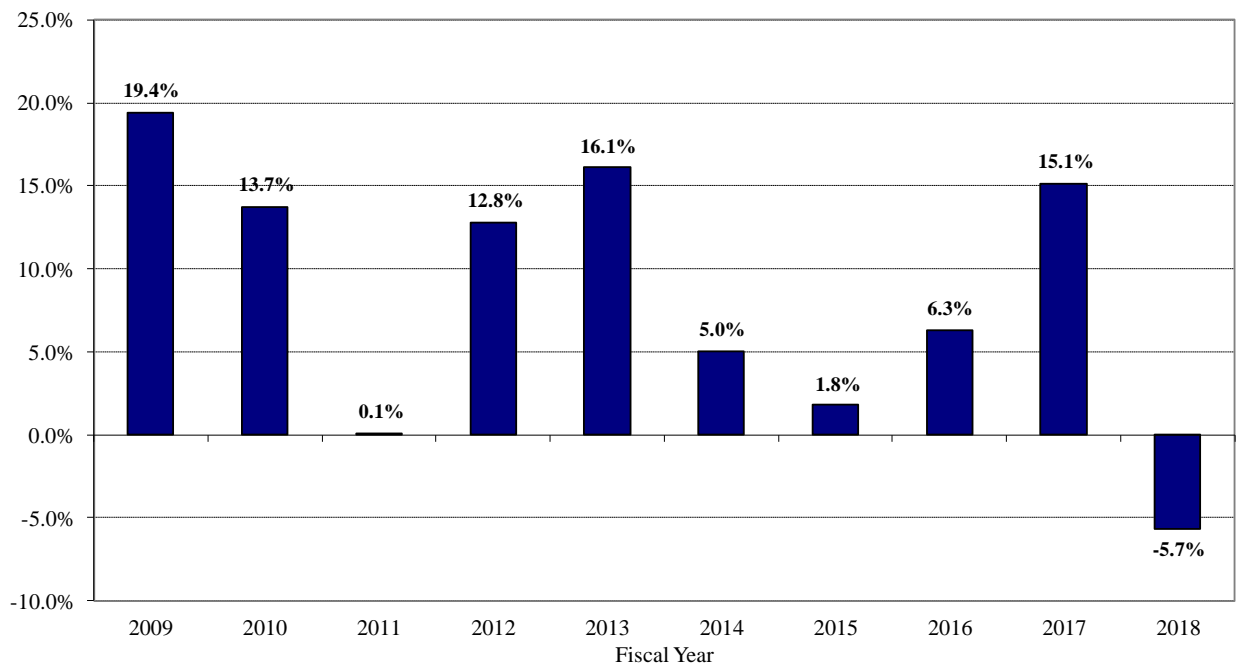


TABLE 21

MUNICIPAL EMPLOYEES' ANNUITY AND BENEFIT FUND OF CHICAGO					
System Experience, FY 2009 - FY 2018					
(\$ in Millions)					
Fiscal Year	Annual Payroll	Actuarial Liabilities	Actuarial Assets	Unfunded Liabilities	Funded Ratio
2018	1,734.6	16,808.6	4,195.6	12,613.0	25.0%
2017	1,686.5	16,282.4	4,456.8	11,825.6	27.4%
2016	1,646.9	15,055.3	4,590.4	10,465.0	30.5%
2015	1,643.5	14,655.3	4,815.1	9,840.1	32.9%
2014	1,603.0	14,315.3	5,039.3	7,285.3	35.2% *
2013	1,580.3	13,856.5	5,114.2	8,742.3	36.9%
2012	1,590.8	13,637.5	5,073.3	8,564.2	37.2%
2011	1,606.0	12,456.2	5,552.3	6,903.9	44.6%
2010	1,541.4	12,052.2	6,003.4	6,048.8	49.8%
2009	1,552.0	11,054.3	6,295.8	4,758.5	57.0%

* As P.A. 98-0641 was ruled unconstitutional, the funded ratio as of December 31, 2014, that does not reflect the provisions of the Act is 35.2%. The funded ratio that reflected the provisions of P.A. 98-0641 was 40.9%.

TABLE 22

MUNICIPAL EMPLOYEES' ANNUITY AND BENEFIT FUND OF CHICAGO										
Changes in Net Assets										
(\$ in Millions)										
Fiscal Years	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Additions to Assets										
Employer	\$349.6	\$261.8	\$157.4	\$157.7	\$158.8	\$157.7	\$158.4	\$156.5	\$164.3	\$157.7
Employees	\$138.4	\$134.8	\$130.4	\$131.4	\$130.0	\$131.5	\$130.2	\$132.6	\$133.3	\$131.0
Net Investment Income	-\$205.0	\$610.5	\$281.4	\$114.0	\$283.3	\$735.3	\$589.2	\$31.6	\$638.6	\$778.6
Other	\$0.0	\$5.4	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Total Asset Additions (A)	\$283.0	\$1,012.4	\$569.3	\$403.2	\$572.1	\$1,024.5	\$877.8	\$320.7	\$936.2	\$1,067.3
Deductions from Assets										
Benefits	\$889.2	\$854.3	\$832.8	\$802.8	\$775.4	\$745.5	\$704.7	\$663.5	\$630.1	\$604.8
Refunds	27.0	\$33.8	\$34.6	\$31.7	\$32.3	\$33.5	\$36.9	\$32.1	\$29.9	\$28.1
Rebates	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Administrative Expenses	\$6.6	\$6.5	\$7.1	\$6.7	\$6.6	\$6.5	\$6.8	\$7.4	\$6.8	\$7.8
Other	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Total Asset Deductions (B)	\$922.8	\$894.6	\$874.5	\$841.2	\$814.3	\$785.5	\$748.4	\$703.0	\$666.8	\$640.7
Change in Net Assets (A-B=C)	-\$639.8	\$117.8	-\$305.2	-\$438.1	-\$242.2	\$239.0	\$129.4	-\$382.3	\$269.4	\$426.6

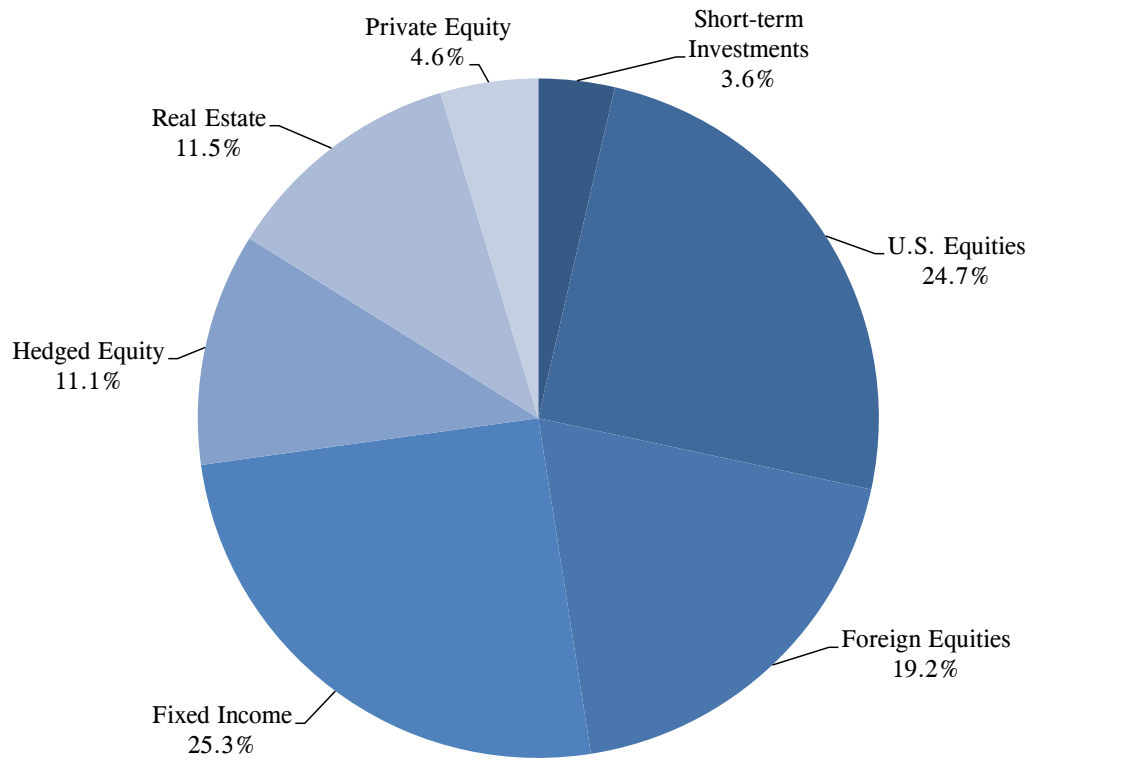
Table 23 below contains funding projections based on the FY 2018 actuarial valuation of the Municipal Employees' Annuity and Benefit Fund of Chicago.

TABLE 23

Municipal Employees' Annuity and Benefit Fund of Chicago Actuarial Valuation Projection Results as of December 31, 2018 (\$ in Millions)								
Fiscal Year	Capped Payroll	Total Employer Contribution	Employer Contribution As % of Payroll	Employee Contribution	Total Actuarial Liability	Actuarial Value of Assets	Unfunded Actuarial Liability	Funded Ratio
2018	\$ 1,735.9	\$ 261.8	15.1%	\$ 138.4	\$ 16,808.6	\$ 4,195.6	\$ 12,613.0	25.0%
2019	1,785.9	344.0	19.3%	145.4	17,212.9	3,920.9	13,292.0	22.8%
2020	1,795.3	421.0	23.5%	146.4	17,608.1	3,723.3	13,884.8	21.1%
2021	1,806.7	499.0	27.6%	150.5	17,987.5	3,562.0	14,425.5	19.8%
2022	1,819.5	576.0	31.7%	154.6	18,348.9	3,658.4	14,690.5	19.9%
2023	1,856.8	944.6	50.9%	160.1	18,695.2	3,844.8	14,850.4	20.6%
2024	1,893.6	960.2	50.7%	165.5	19,025.1	4,020.9	15,004.2	21.1%
2025	1,930.2	975.7	50.6%	170.9	19,336.0	4,184.3	15,151.7	21.6%
2026	1,967.3	991.1	50.4%	176.4	19,626.4	4,334.2	15,292.2	22.1%
2027	2,005.1	1,006.7	50.2%	182.0	19,894.6	4,469.8	15,424.8	22.5%
2028	2,043.7	1,022.6	50.0%	187.7	20,141.1	4,592.4	15,548.7	22.8%
2029	2,083.6	1,038.9	49.9%	193.4	20,363.4	4,700.8	15,662.6	23.1%
2030	2,124.8	1,055.8	49.7%	199.3	20,560.5	4,795.4	15,765.1	23.3%
2031	2,166.4	1,073.4	49.5%	205.2	20,731.3	4,876.0	15,855.4	23.5%
2032	2,209.5	1,091.1	49.4%	211.2	20,876.2	4,944.4	15,931.8	23.7%
2033	2,255.4	1,109.6	49.2%	217.4	20,996.5	5,004.3	15,992.1	23.8%
2034	2,304.0	1,129.6	49.0%	223.8	21,093.0	5,059.1	16,034.0	24.0%
2035	2,354.4	1,151.1	48.9%	230.3	21,165.7	5,110.6	16,055.1	24.1%
2036	2,406.0	1,173.5	48.8%	237.0	21,216.2	5,162.6	16,053.7	24.3%
2037	2,460.0	1,196.6	48.6%	243.8	21,245.5	5,218.7	16,026.8	24.6%
2038	2,516.5	1,221.0	48.5%	250.8	21,269.3	5,297.6	15,971.7	24.9%
2039	2,575.9	1,246.6	48.4%	258.0	21,278.5	5,393.6	15,884.9	25.3%
2040	2,638.1	1,273.8	48.3%	265.5	21,273.8	5,510.8	15,762.9	25.9%
2041	2,701.7	1,302.6	48.2%	273.1	21,257.4	5,654.6	15,602.7	26.6%
2042	2,768.1	1,332.1	48.1%	280.9	21,232.3	5,832.1	15,400.2	27.5%
2043	2,837.5	1,363.2	48.0%	289.0	21,202.1	6,051.0	15,151.0	28.5%
2044	2,910.0	1,395.8	48.0%	297.3	21,170.3	6,319.8	14,850.5	29.9%
2045	2,985.1	1,430.2	47.9%	305.8	21,137.3	6,643.4	14,493.9	31.4%
2046	3,060.8	1,466.0	47.9%	314.3	21,104.0	7,027.2	14,076.8	33.3%
2047	3,138.2	1,502.3	47.9%	323.0	21,072.8	7,478.4	13,594.4	35.5%
2048	3,217.7	1,539.5	47.8%	331.3	21,045.3	8,004.3	13,041.0	38.0%
2049	3,299.6	1,578.5	47.8%	339.8	21,024.1	8,613.5	12,410.6	41.0%
2050	3,384.0	1,618.7	47.8%	348.6	21,006.6	9,310.1	11,696.5	44.3%
2051	3,468.2	1,660.5	47.9%	357.2	20,993.4	10,100.2	10,893.2	48.1%
2052	3,553.6	1,702.4	47.9%	365.9	20,986.2	10,992.7	9,993.6	52.4%
2053	3,641.3	1,745.1	47.9%	374.7	20,986.0	11,996.0	8,990.0	57.2%
2054	3,730.9	1,789.1	48.0%	383.7	20,994.3	13,120.0	7,874.3	62.5%
2055	3,822.8	1,834.3	48.0%	392.8	21,006.7	14,369.3	6,637.4	68.4%
2056	3,915.0	1,880.8	48.0%	401.9	21,025.1	15,754.2	5,270.9	74.9%
2057	4,009.0	1,927.7	48.1%	411.1	21,050.1	17,285.3	3,764.8	82.1%
2058	4,105.3	1,975.6	48.1%	420.4	21,081.9	18,973.7	2,108.2	90.0%
2059	4,203.7	2,024.8	48.2%	287.1	21,120.6	19,008.5	2,112.1	90.0%
2060	4,304.0	400.4	9.3%	293.9	21,164.3	19,047.8	2,116.4	90.0%
2061	4,406.0	407.6	9.3%	300.8	21,212.7	19,091.5	2,121.3	90.0%
2062	4,509.7	415.1	9.2%	307.9	21,264.9	19,138.4	2,126.5	90.0%
2063	4,615.2	422.9	9.2%	315.0	21,319.8	19,187.8	2,132.0	90.0%
2064	4,722.4	431.1	9.1%	322.3	21,376.3	19,238.7	2,137.6	90.0%
2065	4,831.5	439.6	9.1%	329.8	21,432.9	19,289.6	2,143.3	90.0%
2066	4,942.2	448.6	9.1%	337.3	21,487.8	19,339.0	2,148.8	90.0%
2067	5,055.5	458.0	9.1%	345.1	21,541.0	19,386.9	2,154.1	90.0%

CHART 72

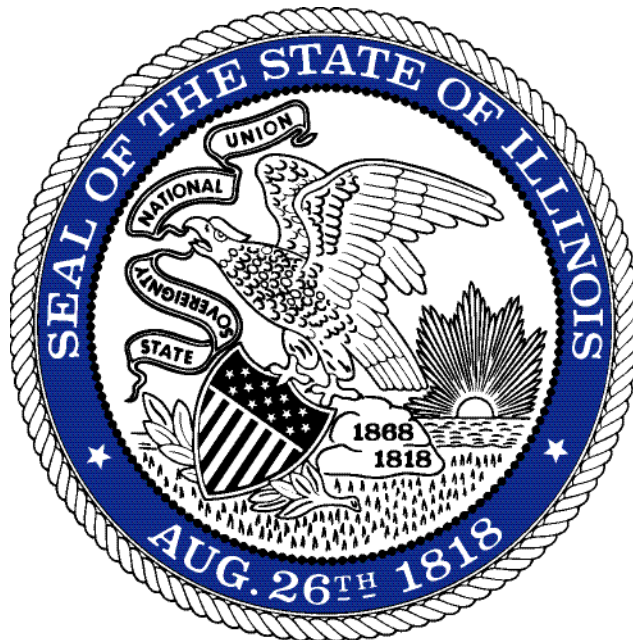
**MUNICIPAL EMPLOYEES' ANNUITY AND BENEFIT FUND OF CHICAGO
ASSET ALLOCATION AS OF DECEMBER 2018**



Total investment at fair value is \$3.6B

X. Park Employees' Annuity and Benefit Fund of Chicago

- Plan Summary
- Active Employees
- Employee Annuitants
- Average Salaries
- Average Retirement Annuity
- Funded Ratios
- Change in Unfunded Liabilities
- Investment Income
- Investment Rates of Return
- Systems Experience
- Changes in Net Assets
- System Projections
- Normal Cost Projections
- Asset Allocation



Note: All data shown in this section is based upon the system's Actuarial Valuation and CAFR as of December 31, 2018.

Park Employees' Annuity and Benefit Fund of Chicago Tier 1 Plan Summary

Retirement Age

- Age 60 with 4 years of service
- Age 50 with at least 10 years of service (reduced annuity)

Retirement Formula

- 2.4% of final average salary

Maximum Annuity

- 80% of final average salary

Salary Used to Calculate Pension

- Average of 4 highest consecutive years within final 10 years of service

Annual COLA

- 3% non-compounded

Employee Contributions

- 9.0% of salary

Employer Contributions

The Board of Park Commissioners is required to contribute an amount equal to the employee contributions during the fiscal year two years prior to the year the tax is levied, multiplied by 1.10.

Note: Benefits shown are for employees hired prior to January 1, 2011 (Tier 1 employees), the effective date of P.A. 96-0889. See P.A. 96-0889 in Section I for a summary of benefits for employees hired after January 1, 2011.

CHART 73

PARK EMPLOYEES' ANNUITY AND BENEFIT FUND OF CHICAGO
Active Employees

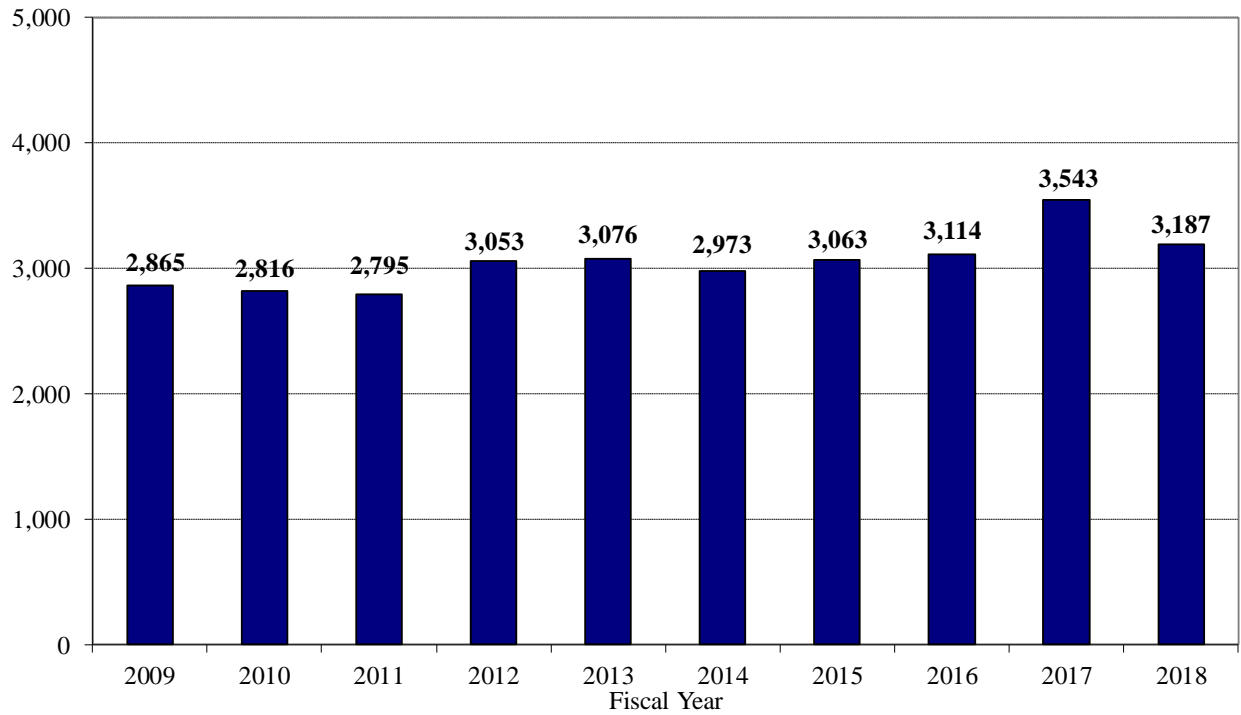


CHART 74

PARK EMPLOYEES' ANNUITY AND BENEFIT FUND OF CHICAGO
Employee Annuitants

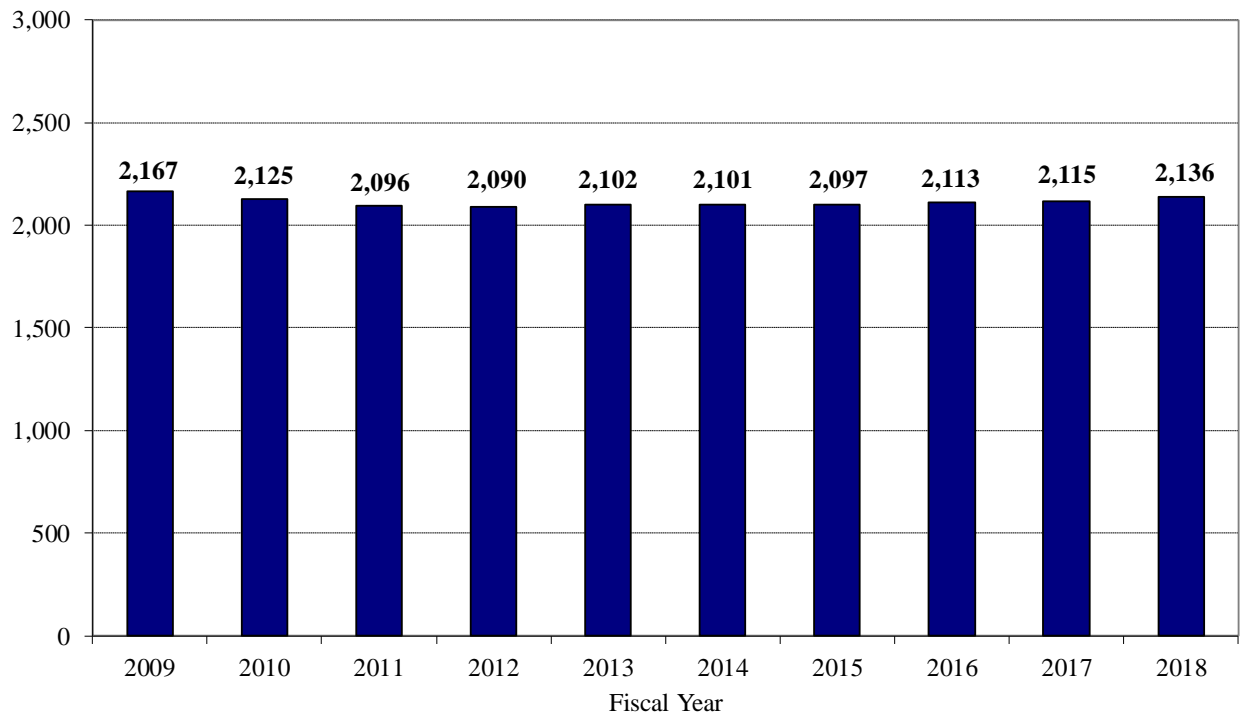


CHART 75

PARK EMPLOYEES' ANNUITY AND BENEFIT FUND OF CHICAGO
Average Employee Salaries

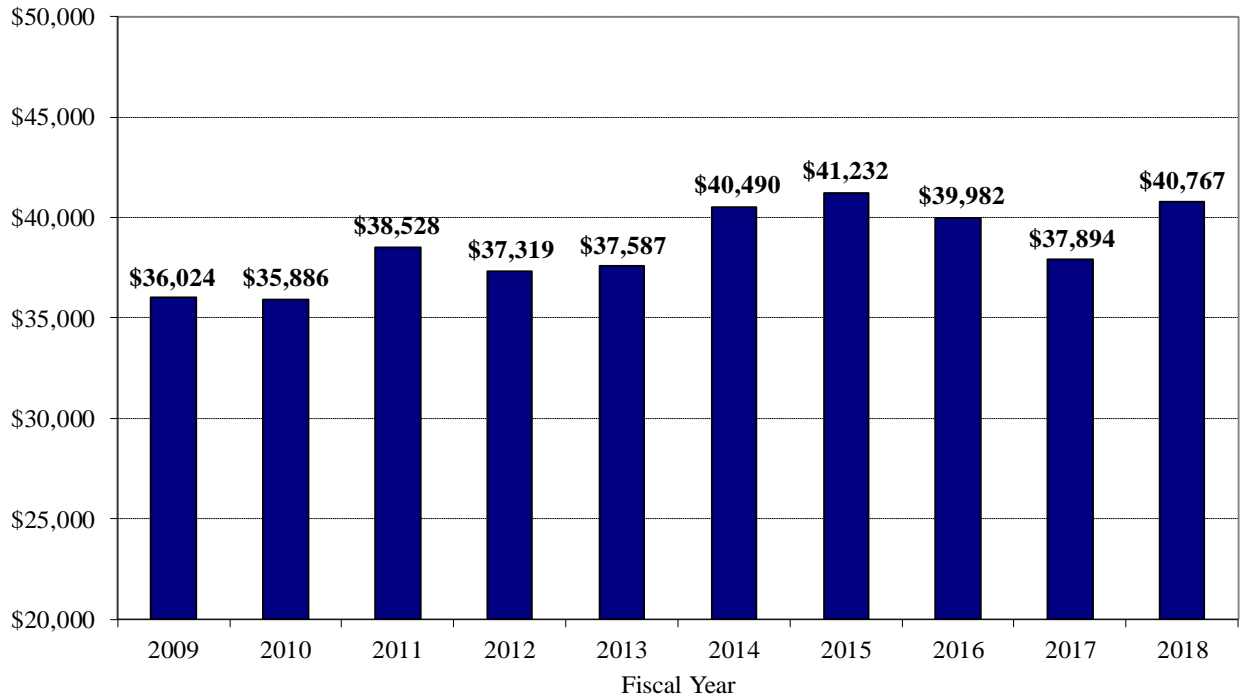


CHART 76

PARK EMPLOYEES' ANNUITY AND BENEFIT FUND OF CHICAGO
Average Retirement Annuities

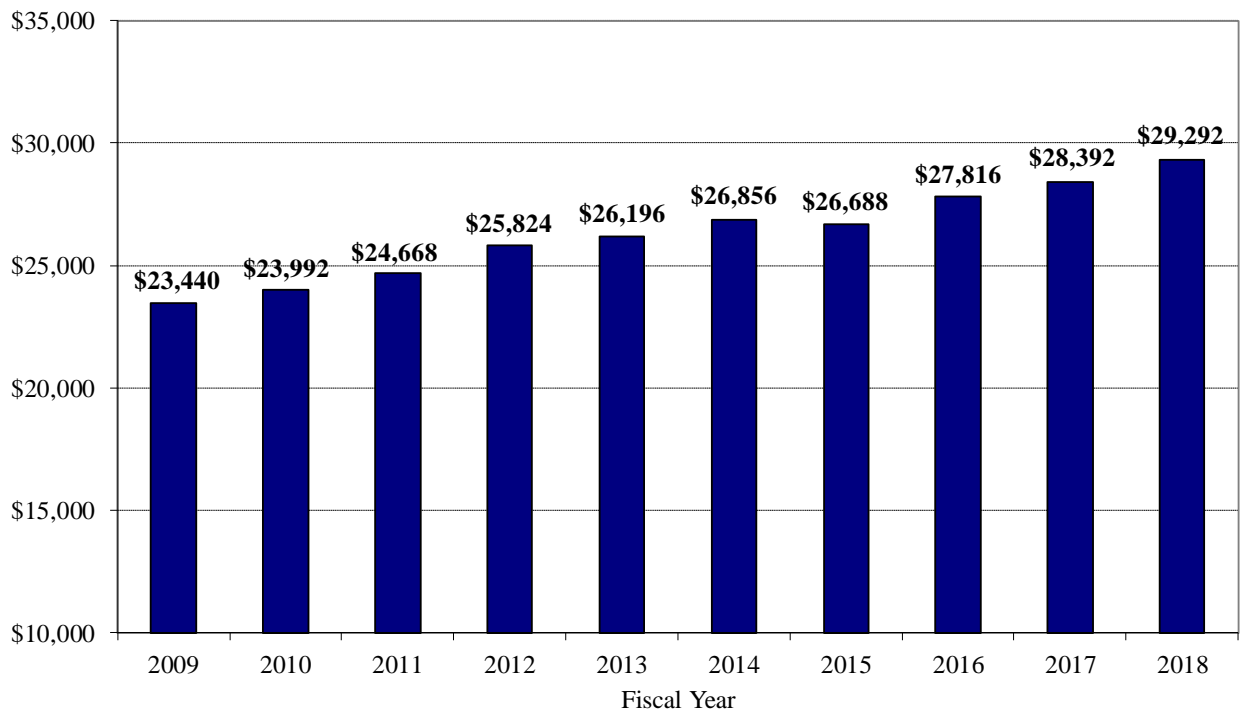
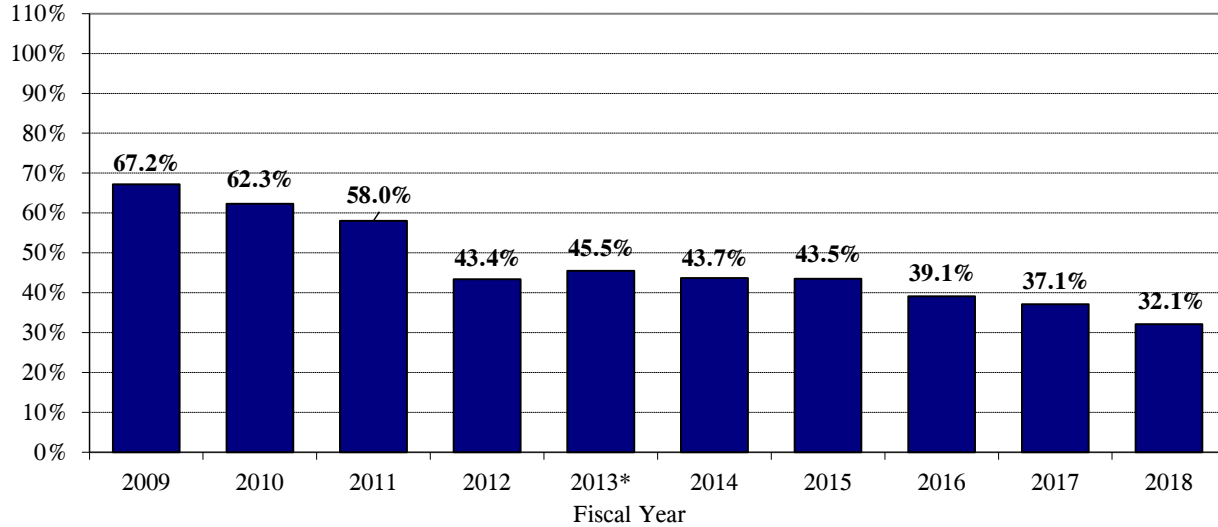


CHART 77

PARK EMPLOYEES' ANNUITY AND BENEFIT FUND OF CHICAGO
Funded Ratio
FY 2009 - FY 2018

All figures based upon the actuarial value of assets.

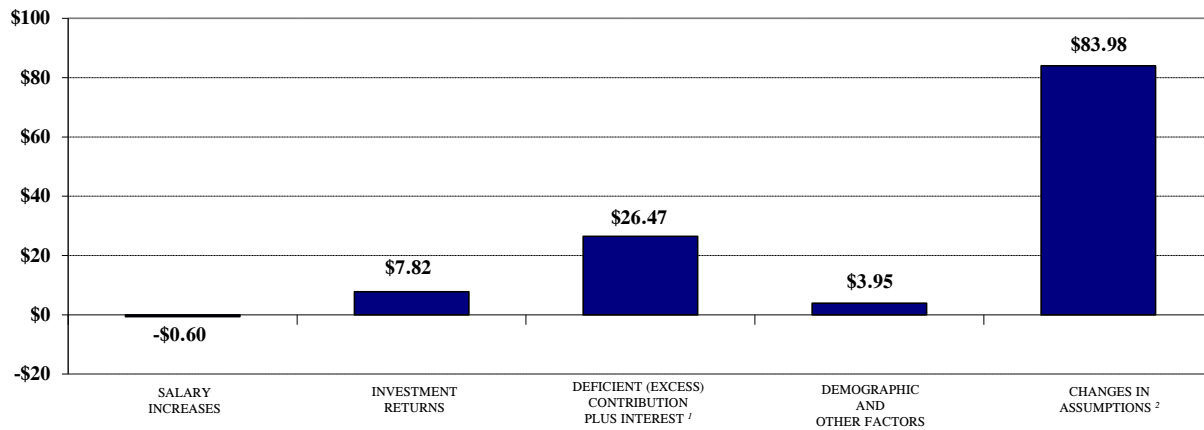


* Public Act 97-0973, effective August 16, 2012, changed the Fund's year end to December 31 from June 30. As a result, from January 1, 2013, the Fund's fiscal year commences January 1 and ends December 31.

CHART 78

PARK EMPLOYEES' ANNUITY AND BENEFIT FUND OF CHICAGO
Change in Unfunded Liabilities
Year ended December 31, 2018
(\$ in Millions)

TOTAL INCREASE EQUALS
\$121.631 MILLION



¹ Unfunded liability increased due to total contributions being less than normal cost, plus interest cost.

² Unfunded liability increased due to a net effect of their assumptions changes, some of which include lowering the investment assumption rate to 7.25% from 7.50%, adjusting mortality rates, etc.

CHART 79

PARK EMPLOYEES' ANNUITY AND BENEFIT FUND OF CHICAGO
Investment Income, FY 2009 - FY 2018
Actuarially Assumed Rate of Return: 7.25%
(\$ in Millions)

All figures based upon the market value of assets.

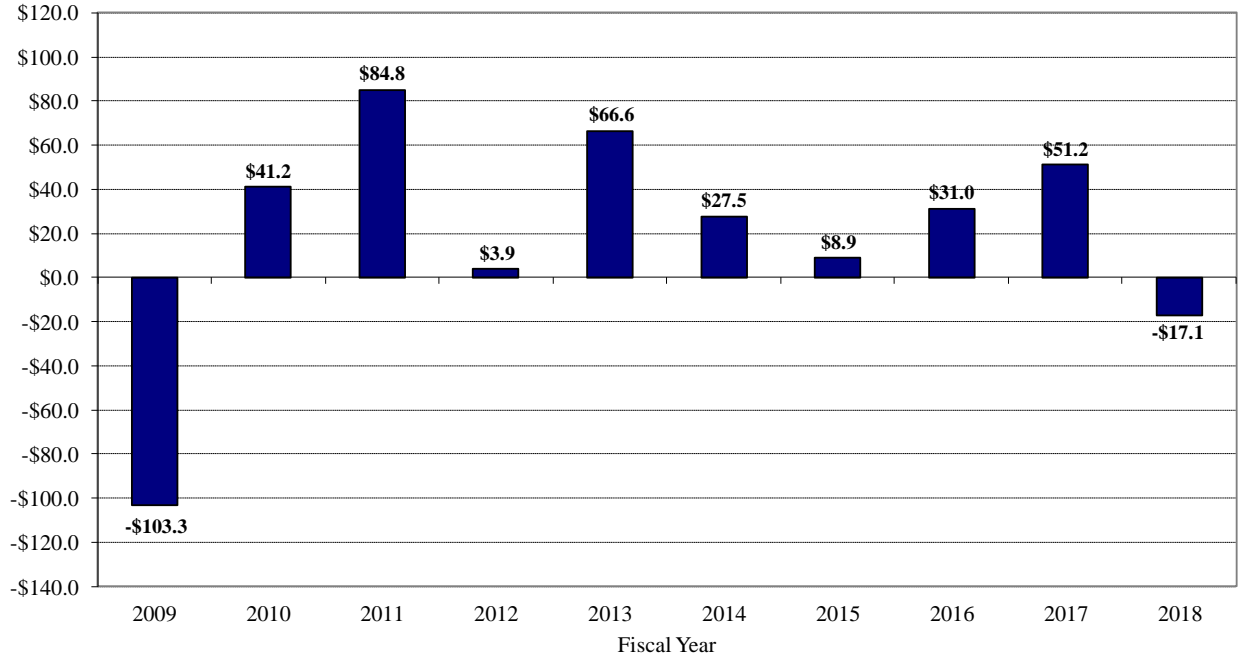


CHART 80

PARK EMPLOYEES' ANNUITY AND BENEFIT FUND OF CHICAGO
Rate of Return 2009 - 2018

Actuarially Assumed Rate of Return: 7.25%

All figures based upon the market value of assets.

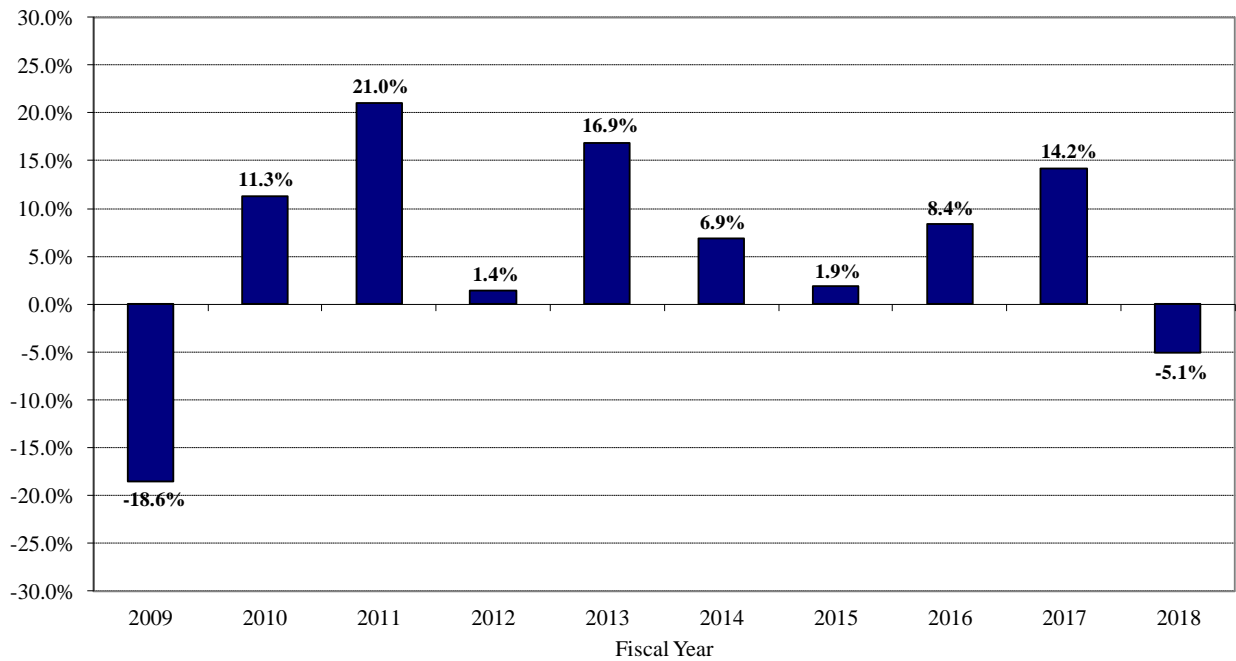


TABLE 24

PARK EMPLOYEES' ANNUITY AND BENEFIT FUND OF CHICAGO System Experience, FY 2009 - FY 2018 (\$ in Millions)					
Fiscal Year	Annual Payroll	Actuarial Liabilities	Actuarial Assets	Unfunded Liabilities	Funded Ratio
2018	133.1	1,142.3	366.8	775.5	32.1%
2017	135.3	1,039.3	385.4	653.9	37.1%
2016	121.1	1,005.5	393.6	611.9	39.1%
2015	122.4	910.3	395.7	514.6	43.5%
2014	119.0	900.8	393.8	507.0	43.7%
2013*	117.8	888.0	404.3	483.7	45.5%
2012	114.2	866.4	440.7	425.7	50.9%
2011	107.7	843.9	489.4	354.5	58.0%
2010	107.4	833.0	518.6	314.4	62.3%
2009	108.9	823.9	553.8	270.1	67.2%

* Public Act 97-0973, effective August 16, 2012, changed the Fund's year end to December 31 from June 30. As a result, from January 1, 2013, the Fund's fiscal year commences January 1 and ends December 31.

TABLE 25

PARK EMPLOYEES' ANNUITY AND BENEFIT FUND OF CHICAGO										
Changes in Net Assets										
(\$ in Millions)										
Fiscal Years	2018	2017	2016	2015	2014	2013*	2012	2011	2010	2009
Additions to Assets										
Employer	\$27.6	\$20.9	\$30.9	\$30.6	\$11.2	\$15.8	\$10.8	\$11.0	\$10.8	\$9.7
Employees	\$12.1	\$13.7	\$12.2	\$12.4	\$10.8	\$10.7	\$10.4	\$9.8	\$9.8	\$10.1
Net Investment Income	-\$17.1	\$51.2	\$31.0	\$8.9	\$27.6	\$66.6	\$3.8	\$84.8	\$41.5	-\$103.5
Other	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.1	\$0.1	\$0.0	\$0.0	\$0.0
Total Asset Additions (A)	\$22.6	\$85.8	\$74.2	\$51.9	\$49.6	\$93.2	\$25.1	\$105.6	\$62.1	-\$83.7
Deductions from Assets										
Benefits	\$73.8	\$72.3	\$71.6	\$68.6	\$67.8	\$66.2	\$63.5	\$62.0	\$61.2	\$60.3
Refunds	\$2.7	\$5.9	\$2.5	\$2.0	\$2.7	\$2.1	\$2.0	\$1.7	\$1.4	\$2.7
Rebates	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Administrative Expenses	\$1.5	\$1.7	\$1.5	\$1.5	\$1.5	\$1.5	\$1.6	\$1.5	\$1.4	\$1.3
Other	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Total Asset Deductions (B)	\$78.0	\$79.8	\$75.6	\$72.1	\$72.0	\$69.8	\$67.1	\$65.2	\$64.0	\$64.3
Change in Net Assets (A-B=C)	-\$55.4	\$5.9	-\$1.5	-\$20.3	-\$22.3	\$23.4	-\$42.0	\$40.4	-\$1.9	-\$148.0

* Public Act 97-0973, effective August 16, 2012, changed the Fund's year end to December 31 from June 30. As a result, from January 1, 2013, the Fund's fiscal year commences January 1 and ends December 31.

Table 26 below contains funding projections based on the December 31, 2018 actuarial valuation of the Park Employees' Annuity and Benefit Fund of Chicago. As shown in the table below, under the current funding policy the Park Employees' Annuity and Benefit Fund of Chicago is projected to run out of assets by 2026 if all future assumptions are met and no additional contributions are made.

TABLE 26

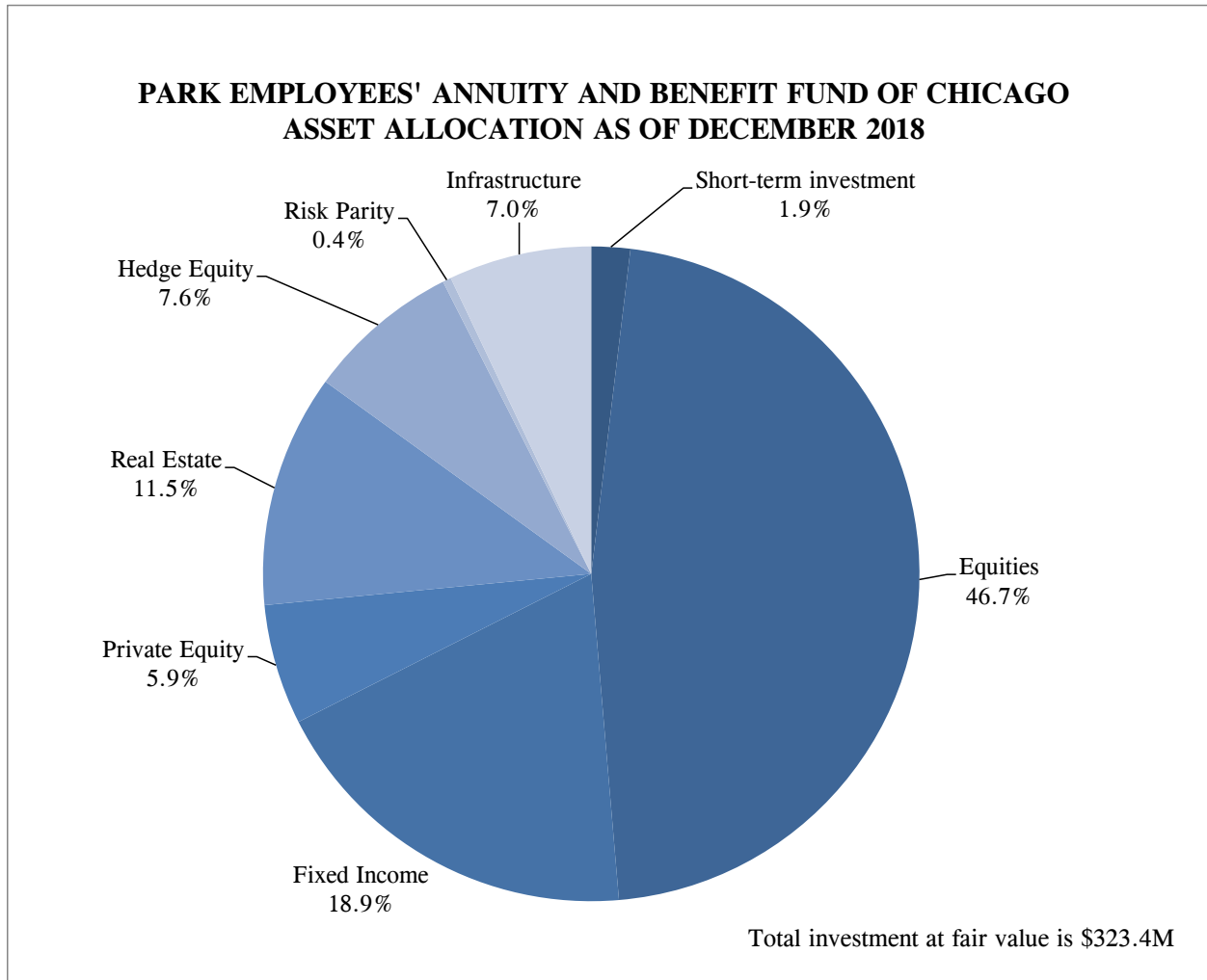
Park Employees' Annuity and Benefit Fund of Chicago Funding Policy under P.A. 98-0622 Actuarial Valuation Projection Results as of December 31, 2018 (\$ in Millions)								
Fiscal Year	Capped Payroll	Total City Contribution	Total City Contribution As % of Payroll	Total Employee Contribution	Accrued Liability	Actuarial Value of Assets	Unfunded Liabilities	Funded Ratio
2019	136.2	14.1	10.4%	12.4	1,159.8	328.4	831.5	28.3%
2020	134.3	12.9	9.6%	12.2	1,177.2	288.1	889.1	24.5%
2021	133.4	13.2	9.9%	12.1	1,194.5	243.3	951.3	20.4%
2022	132.9	13.0	9.8%	12.1	1,211.8	188.8	1,023.0	15.6%
2023	132.5	13.0	9.8%	12.1	1,228.9	137.7	1,091.2	11.2%
2024	132.4	12.9	9.8%	12.1	1,245.7	81.7	1,163.9	6.6%
2025	132.3	12.9	9.7%	12.0	1,262.0	20.3	1,241.7	1.6%
2026	132.4	49.2	37.1%	12.0	1,278.0	0.0	1,278.0	0.0%
2027	132.3	79.7	60.2%	12.0	1,293.1	0.0	1,293.1	0.0%
2028	132.4	81.5	61.5%	12.1	1,307.6	0.0	1,307.6	0.0%
2029	132.4	83.2	62.8%	12.1	1,321.2	0.0	1,321.2	0.0%
2030	132.6	85.1	64.1%	12.1	1,333.7	0.0	1,333.7	0.0%
2031	132.8	86.9	65.5%	12.1	1,345.1	0.0	1,345.1	0.0%
2032	133.1	88.7	66.6%	12.1	1,355.5	0.0	1,355.5	0.0%
2033	133.5	90.3	67.6%	12.2	1,364.8	0.0	1,364.8	0.0%
2034	134.1	92.0	68.6%	12.2	1,373.0	0.0	1,373.0	0.0%
2035	134.7	93.3	69.3%	12.3	1,380.2	0.0	1,380.2	0.0%
2036	135.6	94.8	69.9%	12.3	1,386.4	0.0	1,386.4	0.0%
2037	136.3	94.8	69.5%	12.4	1,393.8	0.0	1,393.8	0.0%
2038	137.3	95.8	69.8%	12.5	1,400.6	0.0	1,400.6	0.0%
2039	138.3	96.6	69.8%	12.6	1,407.1	0.0	1,407.1	0.0%
2040	139.6	97.0	69.5%	12.7	1,413.5	0.0	1,413.5	0.0%
2041	141.1	97.2	68.9%	12.8	1,420.0	0.0	1,420.0	0.0%
2042	142.8	97.1	68.0%	13.0	1,427.1	0.0	1,427.1	0.0%
2043	144.7	96.6	66.7%	13.2	1,435.1	0.0	1,435.1	0.0%
2044	146.9	95.8	65.2%	13.4	1,444.6	0.0	1,444.6	0.0%
2045	149.4	94.8	63.5%	13.6	1,455.7	0.0	1,455.7	0.0%
2046	152.0	93.6	61.6%	13.8	1,468.9	0.0	1,468.9	0.0%
2047	154.8	92.4	59.7%	14.1	1,484.4	0.0	1,484.4	0.0%
2048	157.6	91.1	57.8%	14.3	1,502.4	0.0	1,502.4	0.0%
2049	160.7	89.6	55.8%	14.6	1,523.3	0.0	1,523.3	0.0%
2050	163.9	88.1	53.8%	14.9	1,547.3	0.0	1,547.3	0.0%
2051	167.2	86.7	51.8%	15.2	1,574.6	0.0	1,574.6	0.0%
2052	170.7	85.4	50.0%	15.5	1,605.3	0.0	1,605.3	0.0%
2053	174.2	84.0	48.2%	15.8	1,639.7	0.0	1,639.7	0.0%
2054	177.9	82.7	46.5%	16.1	1,678.1	0.0	1,678.1	0.0%
2055	181.8	81.5	44.8%	16.5	1,720.6	0.0	1,720.6	0.0%
2056	185.8	80.4	43.2%	16.9	1,767.4	0.0	1,767.4	0.0%
2057	190.1	79.2	41.7%	17.2	1,819.0	0.0	1,819.0	0.0%

TABLE 27

Park Employees' Annuity and Benefit Fund of Chicago Projected Normal Cost as of December 31, 2018 (\$ in Millions)						
Fiscal Year	Employer Normal Cost ¹	Employer's Normal Cost as a % of Payroll	Employee Contributions	Employee Contributions as a % of Payroll	Total Normal Cost ¹	Total Normal Cost as a % of Payroll
2019	5.6	4.1%	12.4	9.1%	18.0	13.2%
2020	5.6	4.2%	12.2	9.1%	17.8	13.3%
2021	5.6	4.2%	12.1	9.1%	17.7	13.3%
2022	5.6	4.2%	12.1	9.1%	17.7	13.3%
2023	5.6	4.2%	12.1	9.1%	17.7	13.3%
2024	5.6	4.2%	12.1	9.1%	17.6	13.3%
2025	5.5	4.2%	12.0	9.1%	17.6	13.3%
2026	5.5	4.1%	12.0	9.1%	17.5	13.2%
2027	5.4	4.1%	12.0	9.1%	17.4	13.2%
2028	5.3	4.0%	12.1	9.1%	17.4	13.1%
2029	5.2	4.0%	12.1	9.1%	17.3	13.1%
2030	5.2	3.9%	12.1	9.1%	17.2	13.0%
2031	5.1	3.8%	12.1	9.1%	17.2	12.9%
2032	5.0	3.7%	12.1	9.1%	17.1	12.8%
2033	4.9	3.7%	12.2	9.1%	17.0	12.8%
2034	4.8	3.6%	12.2	9.1%	17.0	12.7%
2035	4.7	3.5%	12.3	9.1%	17.0	12.6%
2036	4.6	3.4%	12.3	9.1%	16.9	12.5%
2037	4.5	3.3%	12.4	9.1%	16.9	12.4%
2038	4.4	3.2%	12.5	9.1%	16.9	12.3%
2039	4.3	3.1%	12.6	9.1%	16.9	12.2%
2040	4.2	3.0%	12.7	9.1%	16.9	12.1%
2041	4.2	2.9%	12.8	9.1%	17.0	12.0%
2042	4.1	2.9%	13.0	9.1%	17.1	12.0%
2043	4.1	2.8%	13.2	9.1%	17.2	11.9%
2044	4.0	2.7%	13.4	9.1%	17.4	11.8%
2045	4.0	2.7%	13.6	9.1%	17.6	11.8%
2046	4.0	2.7%	13.8	9.1%	17.9	11.7%
2047	4.1	2.6%	14.1	9.1%	18.1	11.7%
2048	4.1	2.6%	14.3	9.1%	18.4	11.7%
2049	4.1	2.6%	14.6	9.1%	18.7	11.7%
2050	4.2	2.6%	14.9	9.1%	19.1	11.6%
2051	4.2	2.5%	15.2	9.1%	19.4	11.6%
2052	4.3	2.5%	15.5	9.1%	19.8	11.6%
2053	4.4	2.5%	15.8	9.1%	20.2	11.6%
2054	4.5	2.5%	16.1	9.1%	20.6	11.6%
2055	4.5	2.5%	16.5	9.1%	21.0	11.6%
2056	4.6	2.5%	16.9	9.1%	21.5	11.6%
2057	4.7	2.5%	17.2	9.1%	22.0	11.6%

¹ Includes estimated expenses.

CHART 81



XI. Policemen's Annuity and Benefit Fund of Chicago

- Plan Summary
- Active Employees
- Employee Annuitants
- Average Salaries
- Average Retirement Annuity
- Funded Ratios
- Change in Unfunded Liabilities
- Investment Income
- Investment Rates of Return
- Systems Experience
- Changes in Net Assets
- System Projections
- Asset Allocation



Note: All data shown in this section is based upon the system's Actuarial Valuation and CAFR as of December 31, 2018.

Policemen's Annuity and Benefit Fund of Chicago

Tier 1 Plan Summary

Retirement Age

- Age 50 with 20 years of service
- Age 50 with 10 years of service (accumulated annuity)
- Mandatory retirement at age 63

Retirement Formula

- For employees with 20 or more years of service, 50% of final average salary plus 2.5% of final average salary for each year in excess of 20

Maximum Annuity

- 75% of final average salary

Salary Used to Calculate Pension

- Average of 4 highest consecutive years within final 10 years of service

Annual COLA

- 3% non-compounded with no limit if born before 1/1/66
- 1.5% non-compounded if born after 1/1/66, subject to 30% maximum

Employee Contributions

- 9.0% of salary

Employer Contributions

Pursuant to P.A. 99-0506, the employer contributions for payment years 2016 through 2020 are specified as follows: \$420 million in 2016, \$464 million in 2017, \$500 million in 2018, \$557 million in 2019, and \$579 million in 2020. After payment year 2020, the city (employer) is required to make an annual actuarially determined contribution as a level percentage of pay, with a funding goal of 90% by the end of 2055, based upon the actuarial value of fund assets and application of required actuarial assumptions and methodologies.

Note: Benefits shown are for employees hired prior to January 1, 2011 (Tier 1 employees), the effective date of P.A. 96-1495. See P.A. 96-1495 in Section I for a summary of benefits for employees hired after January 1, 2011 (Tier 2 employees).

CHART 82

POLICEMEN'S ANNUITY AND BENEFIT FUND OF CHICAGO
Active Employees

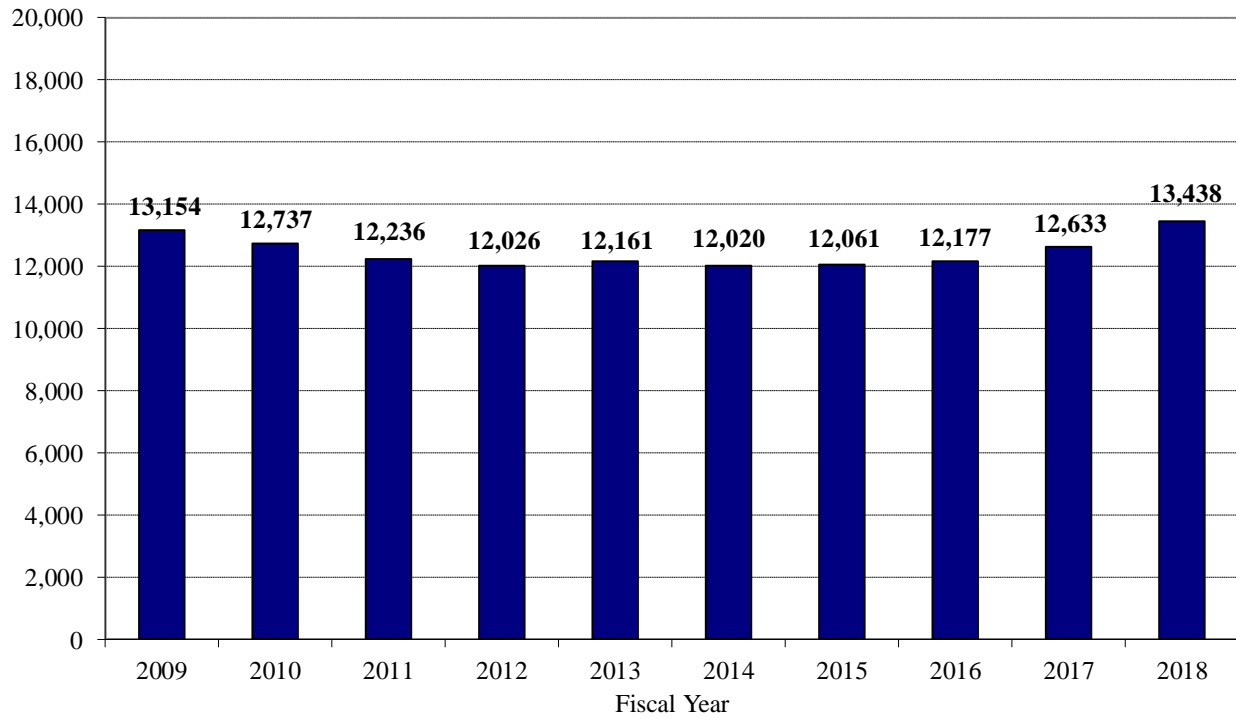


CHART 83

POLICEMEN'S ANNUITY AND BENEFIT FUND OF CHICAGO
Employee Annuitants

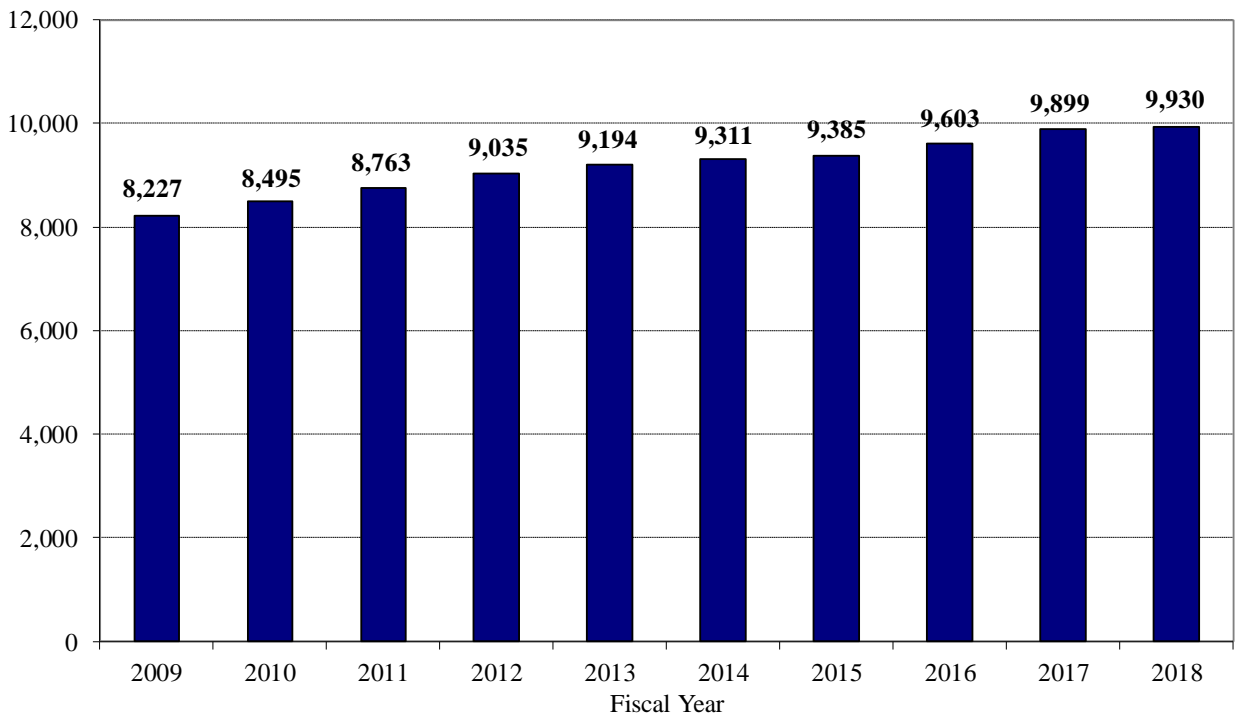


CHART 84

POLICEMEN'S ANNUITY AND BENEFIT FUND OF CHICAGO
Average Employee Salaries

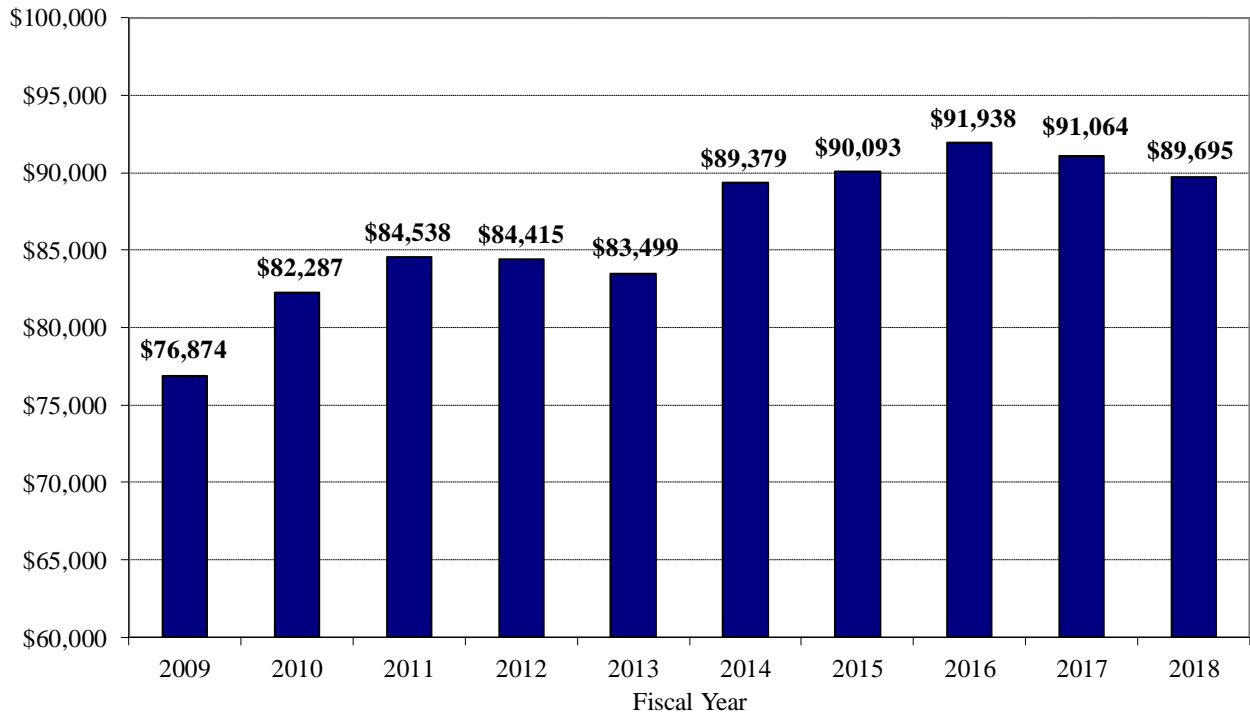


CHART 85

POLICEMEN'S ANNUITY AND BENEFIT FUND OF CHICAGO
Average Retirement Annuity

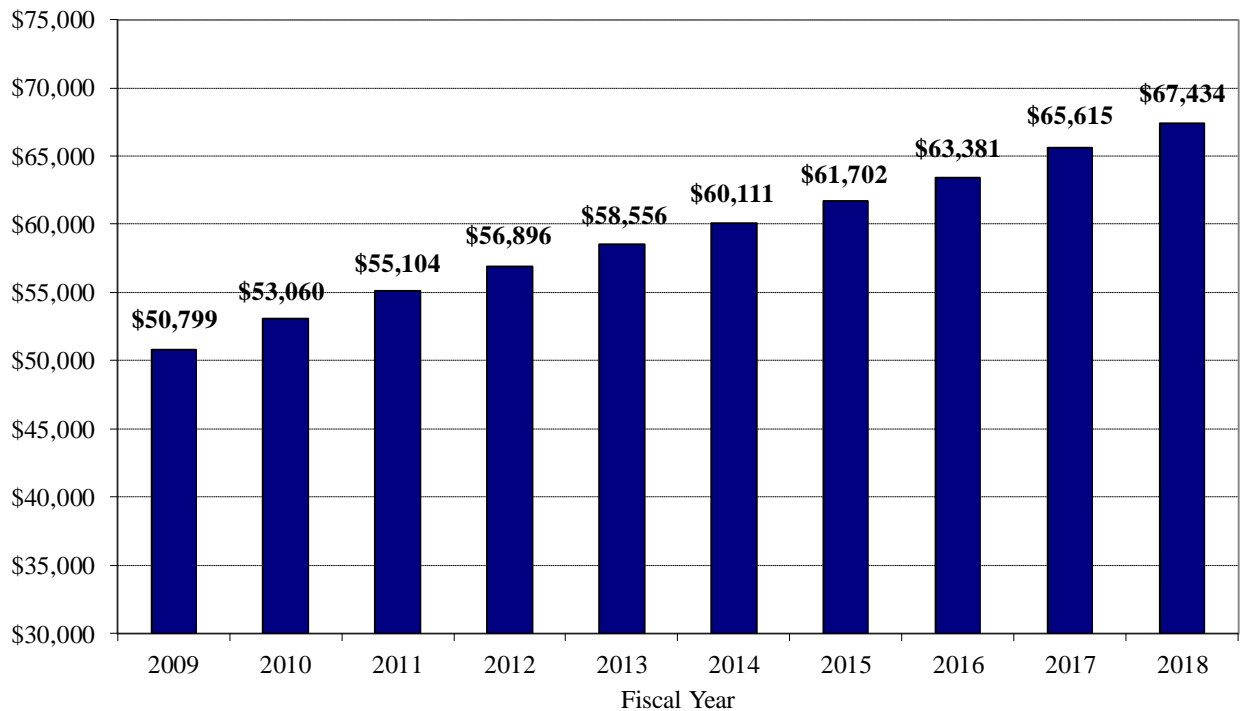


CHART 86

POLICEMEN'S ANNUITY AND BENEFIT FUND OF CHICAGO
Funded Ratio
FY 2009 - FY 2018

All figures based upon the actuarial value of assets.

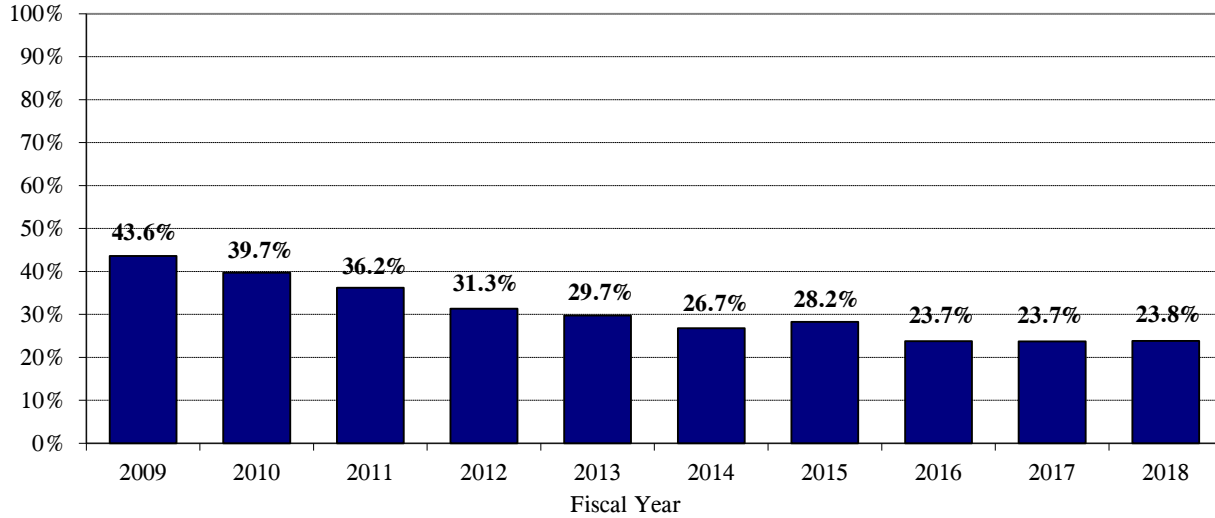
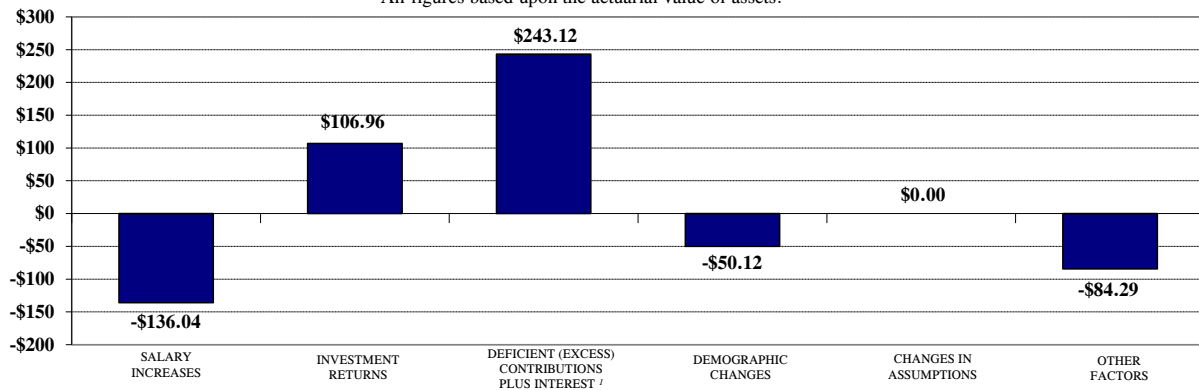


CHART 87

POLICEMEN'S ANNUITY AND BENEFIT FUND OF CHICAGO
Change in Unfunded Liabilities
Year ended December 31, 2018
(\$ in Millions)

All figures based upon the actuarial value of assets.

TOTAL INCREASE EQUALS
\$79.6 MIL



¹ Unfunded liability increased due to total contributions being less than normal cost, plus interest cost.

CHART 88

POLICEMEN'S ANNUITY AND BENEFIT FUND OF CHICAGO
Investment Income FY 2009 - FY 2018
Actuarially Assumed Rate of Return: 7.25%
(\$ in Millions)

All figures based upon the market value of assets.

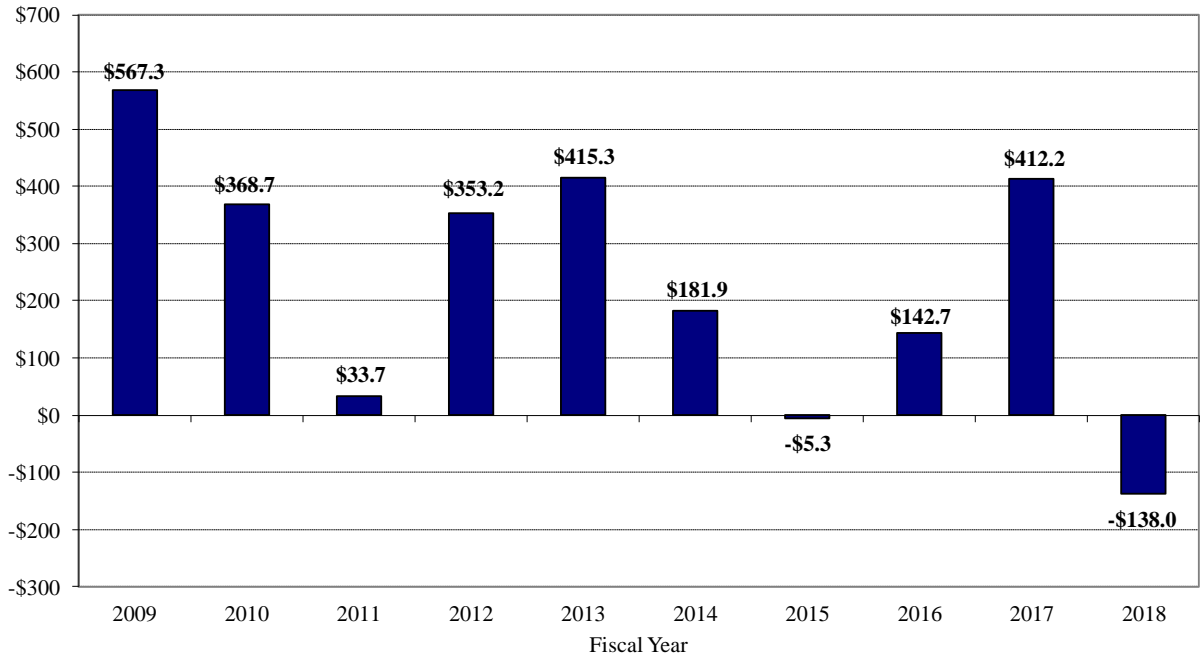


CHART 89

POLICEMEN'S ANNUITY AND BENEFIT FUND OF CHICAGO
Rate of Return FY 2009 - FY 2018
Actuarially Assumed Rate of Return: 7.25%

All figures based upon the market value of assets.

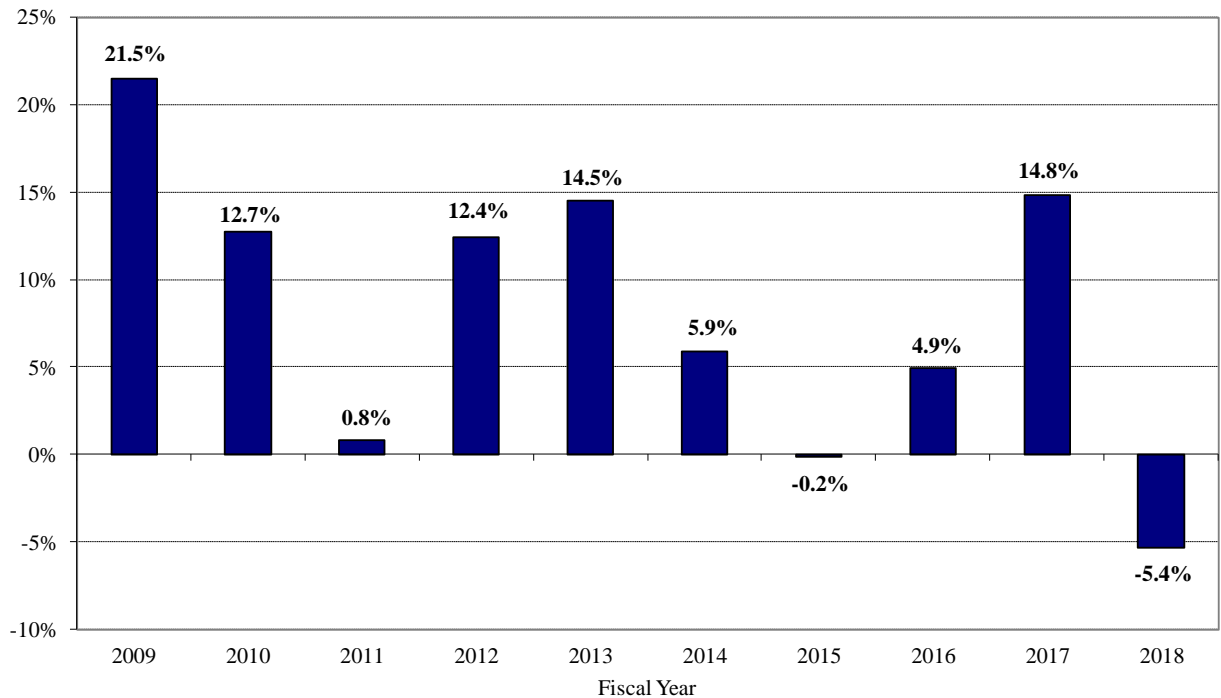


TABLE 28

POLICEMEN'S ANNUITY AND BENEFIT FUND OF CHICAGO					
System Experience, FY 2009 - FY 2018					
(\$ in Millions)					
Fiscal Year	Annual Payroll	Actuarial Liabilities	Actuarial Assets	Unfunded Liabilities	Funded Ratio
2018	1,205.3	13,214.7	3,145.1	10,069.5	23.8%
2017	1,150.4	13,093.9	3,104.0	9,989.9	23.7%
2016	1,119.5	12,856.6	3,052.1	9,804.5	23.7%
2015	1,086.6	11,288.2	3,186.4	8,101.8	28.2%
2014	1,074.3	11,048.2	2,954.3	8,093.9	26.7%
2013	1,015.4	10,282.3	3,053.9	7,228.5	29.7%
2012	1,015.2	10,051.8	3,148.9	6,902.9	31.3%
2011	1,034.4	9,522.4	3,444.7	6,077.7	36.2%
2010	1,048.1	9,374.9	3,719.0	5,655.9	39.7%
2009	1,011.2	8,900.9	3,885.0	5,015.9	43.6%

TABLE 29

POLICEMEN'S ANNUITY AND BENEFIT FUND OF CHICAGO										
Changes in Net Assets										
(\$ in Millions)										
Fiscal Years	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Additions to Assets										
Employer	\$588.0	\$494.5	\$281.6	\$582.3	\$187.1	\$188.9	\$207.2	\$183.5	\$183.8	\$180.5
Employees	\$107.2	\$103.0	\$101.5	\$107.6	\$95.7	\$93.3	\$95.9	\$98.2	\$108.4	\$95.6
Net Investment Income	-\$138.0	\$412.2	\$142.7	-\$5.3	\$181.9	\$415.3	\$353.2	\$33.7	\$368.7	\$567.3
Other	\$1.6	\$0.1	\$1.4	\$3.1	\$0.7	\$0.5	\$0.4	\$0.1	\$0.9	\$0.8
Total Asset Additions (A)	\$558.8	\$1,009.8	\$527.2	\$687.7	\$465.4	\$698.0	\$656.7	\$315.5	\$661.8	\$844.2
Deductions from Assets										
Benefits	\$764.4	\$737.9	\$705.6	\$678.4	\$655.3	\$633.8	\$602.7	\$568.0	\$536.3	\$508.5
Refunds	\$6.7	\$10.0	\$10.7	\$7.8	\$9.0	\$8.1	\$11.2	\$7.3	\$8.0	\$6.4
Rebates	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Administrative Expenses	\$4.1	\$4.8	\$4.7	\$4.5	\$4.2	\$4.3	\$4.9	\$4.4	\$3.9	\$4.3
Other	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Total Asset Deductions (B)	\$775.2	\$752.7	\$721.1	\$690.7	\$668.5	\$646.2	\$618.8	\$579.7	\$548.2	\$519.2
Change in Net Assets (A-B=C)	-\$216.3	\$257.0	-\$193.9	-\$3.1	-\$203.1	\$51.8	\$37.9	-\$264.2	\$113.6	\$325.0

Table 30 below contains funding projections based on the December 31, 2018 actuarial valuation of the Policemen's Annuity and Benefit Fund of Chicago.

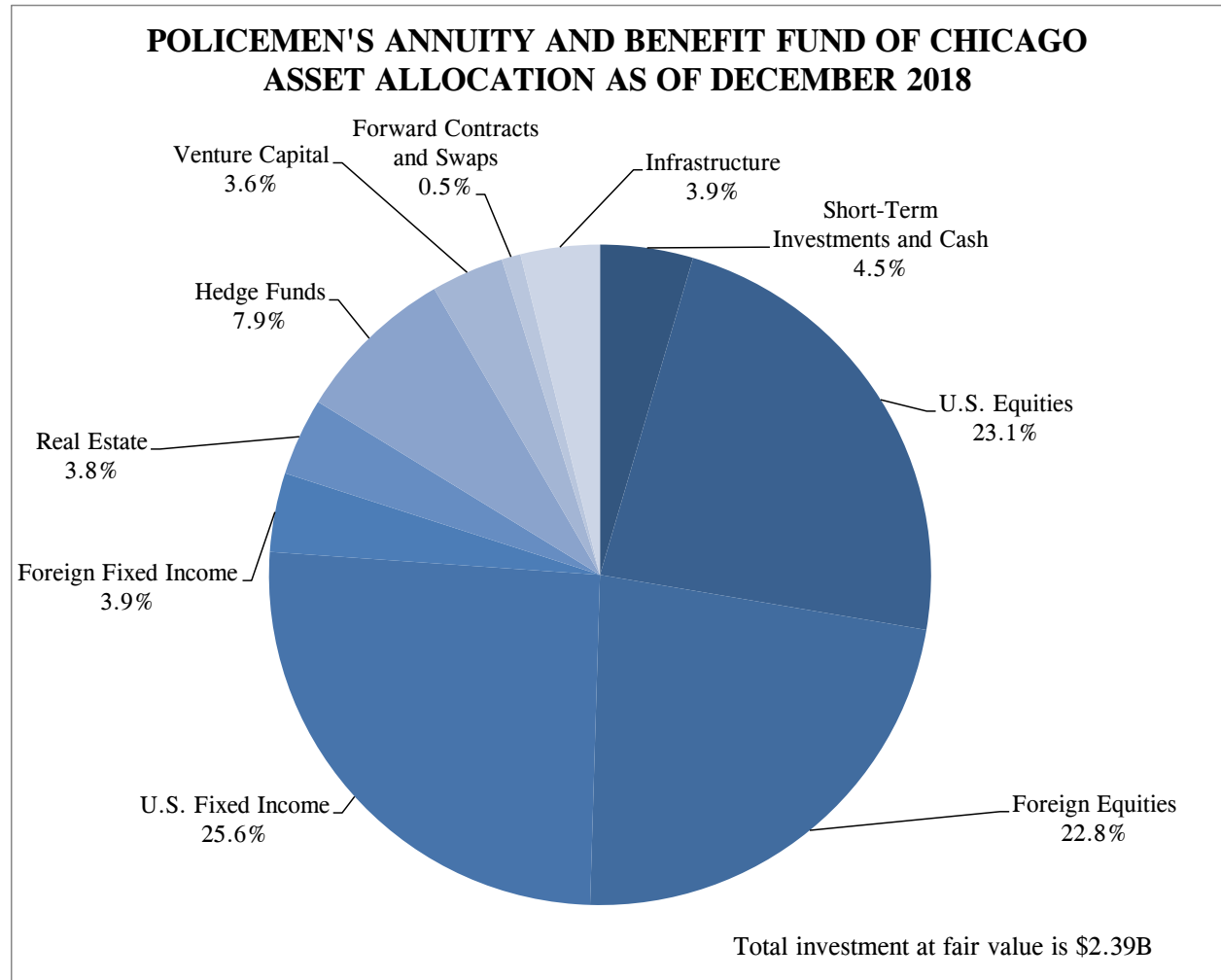
TABLE 30

Policemen's Annuity and Benefit Fund of Chicago Actuarial Valuation Projection Results as of December 31, 2018 (\$ in Millions)								
Fiscal Year	Capped Payroll	Total City Contribution	Total City Contribution As % of Payroll	Total Employee Contribution	Accrued Liability	Actuarial Value of Assets	Unfunded Liabilities	Funded Ratio
2018	\$1,205.3	\$589.6	48.9%	\$107.2	\$13,214.7	\$3,145.1	\$10,069.5	23.8%
2019	1,249.5	579.0	46.3%	110.9	13,595.7	3,116.1	10,479.6	22.9%
2020	1,294.1	737.5	57.0%	124.3	13,979.2	3,281.2	10,698.0	23.5%
2021	1,340.6	764.0	57.0%	128.8	14,362.6	3,471.6	10,890.9	24.2%
2022	1,378.7	785.7	57.0%	132.4	14,743.6	3,627.4	11,116.2	24.6%
2023	1,414.7	806.3	57.0%	135.9	15,120.2	3,860.2	11,260.0	25.5%
2024	1,450.1	826.4	57.0%	139.3	15,490.8	4,096.6	11,394.2	26.4%
2025	1,484.4	846.0	57.0%	142.8	15,853.0	4,334.3	11,518.6	27.3%
2026	1,519.5	865.9	57.0%	146.2	16,204.7	4,572.8	11,632.0	28.2%
2027	1,556.4	887.0	57.0%	149.7	16,544.5	4,812.4	11,732.0	29.1%
2028	1,594.2	908.5	57.0%	153.2	16,871.7	5,054.4	11,817.3	30.0%
2029	1,632.7	930.5	57.0%	156.8	17,186.7	5,300.3	11,886.4	30.8%
2030	1,671.1	952.3	57.0%	160.3	17,490.1	5,551.9	11,938.2	31.7%
2031	1,710.6	974.9	57.0%	163.9	17,782.7	5,812.0	11,970.8	32.7%
2032	1,751.2	998.0	57.0%	167.7	18,065.6	6,083.3	11,982.4	33.7%
2033	1,794.4	1,022.6	57.0%	171.7	18,339.7	6,369.8	11,970.0	34.7%
2034	1,840.5	1,048.9	57.0%	175.8	18,606.8	6,676.4	11,930.4	35.9%
2035	1,887.0	1,075.4	57.0%	180.0	18,869.3	7,007.9	11,861.5	37.1%
2036	1,932.3	1,101.2	57.0%	184.2	19,129.5	7,367.7	11,761.7	38.5%
2037	1,969.1	1,122.2	57.0%	187.5	19,388.0	7,754.7	11,633.3	40.0%
2038	1,995.7	1,137.4	57.0%	189.8	19,645.2	8,165.9	11,479.4	41.6%
2039	2,021.6	1,152.1	57.0%	192.1	19,902.3	8,604.0	11,298.3	43.2%
2040	2,046.6	1,166.3	57.0%	194.2	20,160.3	9,071.5	11,088.9	45.0%
2041	2,073.2	1,181.5	57.0%	196.5	20,420.5	9,572.4	10,848.1	46.9%
2042	2,100.7	1,197.2	57.0%	198.9	20,684.3	10,110.8	10,573.5	48.9%
2043	2,128.8	1,213.2	57.0%	201.3	20,952.3	10,689.8	10,262.4	51.0%
2044	2,157.0	1,229.3	57.0%	203.7	21,224.9	11,312.4	9,912.4	53.3%
2045	2,185.3	1,245.4	57.0%	206.2	21,501.6	11,980.8	9,520.8	55.7%
2046	2,215.0	1,262.3	57.0%	208.8	21,782.4	12,698.5	9,083.9	58.3%
2047	2,245.8	1,279.9	57.0%	211.6	22,067.1	13,468.9	8,598.2	61.0%
2048	2,277.7	1,298.1	57.0%	214.4	22,355.0	14,295.2	8,059.8	63.9%
2049	2,310.3	1,316.6	57.0%	217.3	22,644.6	15,180.0	7,464.7	67.0%
2050	2,343.7	1,335.7	57.0%	220.3	22,934.6	16,126.0	6,808.5	70.3%
2051	2,377.9	1,355.2	57.0%	223.3	23,224.3	17,137.5	6,086.8	73.8%
2052	2,412.9	1,375.1	57.0%	226.4	23,514.1	18,219.7	5,294.4	77.5%
2053	2,448.5	1,395.4	57.0%	229.5	23,804.9	19,378.8	4,426.1	81.4%
2054	2,484.6	1,416.0	57.0%	232.6	24,097.7	20,621.4	3,476.3	85.6%
2055	2,521.4	1,436.9	57.0%	235.8	24,393.3	21,954.3	2,439.0	90.0%

TABLE 31

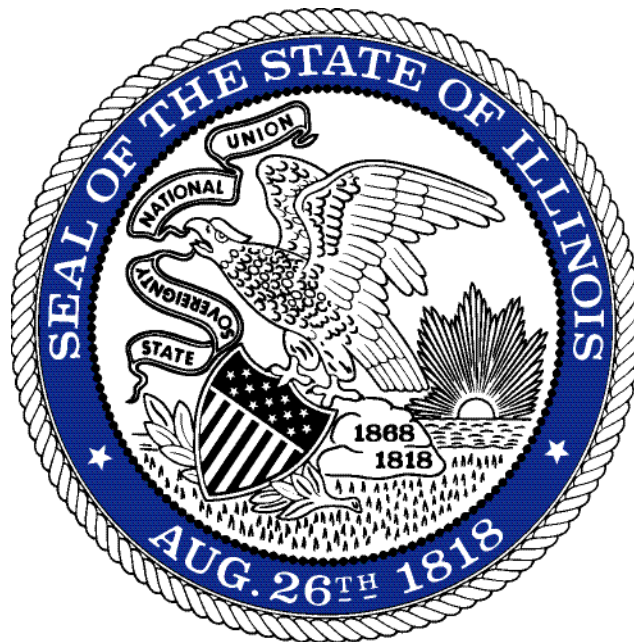
Policemen's Annuity and Benefit Fund of Chicago						
Projected Normal Cost as of December 31, 2018						
(\$ in Millions)						
Fiscal Year	Employer's Normal Cost	Employer's Normal Cost as a % of Payroll	Employee Contributions	Employee Contributions as a % of Payroll	Total Normal Cost	Total Normal Cost as a % of Payroll
2018	117.1	9.7%	107.2	8.9%	224.2	18.6%
2019	120.9	9.7%	110.9	8.9%	231.8	18.5%
2020	111.8	8.6%	124.3	9.6%	236.1	18.2%
2021	111.8	8.3%	128.8	9.6%	240.5	17.9%
2022	111.3	8.1%	132.4	9.6%	243.7	17.7%
2023	110.9	7.8%	135.9	9.6%	246.8	17.4%
2024	110.5	7.6%	139.3	9.6%	249.8	17.2%
2025	110.0	7.4%	142.8	9.6%	252.8	17.0%
2026	109.2	7.2%	146.2	9.6%	255.4	16.8%
2027	108.2	6.9%	149.7	9.6%	257.9	16.6%
2028	107.0	6.7%	153.2	9.6%	260.3	16.3%
2029	105.9	6.5%	156.8	9.6%	262.7	16.1%
2030	104.9	6.3%	160.3	9.6%	265.2	15.9%
2031	103.9	6.1%	163.9	9.6%	267.7	15.7%
2032	102.9	5.9%	167.7	9.6%	270.6	15.5%
2033	102.1	5.7%	171.7	9.6%	273.7	15.3%
2034	101.2	5.5%	175.8	9.6%	277.1	15.1%
2035	100.5	5.3%	180.0	9.5%	280.5	14.9%
2036	99.7	5.2%	184.2	9.5%	283.9	14.7%
2037	98.5	5.0%	187.5	9.5%	285.9	14.5%
2038	96.9	4.9%	189.8	9.5%	286.7	14.4%
2039	95.2	4.7%	192.1	9.5%	287.3	14.2%
2040	93.7	4.6%	194.2	9.5%	287.9	14.1%
2041	92.2	4.4%	196.5	9.5%	288.7	13.9%
2042	91.0	4.3%	198.9	9.5%	289.8	13.8%
2043	89.9	4.2%	201.3	9.5%	291.2	13.7%
2044	89.0	4.1%	203.7	9.4%	292.8	13.6%
2045	88.3	4.0%	206.2	9.4%	294.5	13.5%
2046	87.7	4.0%	208.8	9.4%	296.6	13.4%
2047	87.5	3.9%	211.6	9.4%	299.0	13.3%
2048	87.4	3.8%	214.4	9.4%	301.7	13.2%
2049	87.5	3.8%	217.3	9.4%	304.8	13.2%
2050	87.9	3.8%	220.3	9.4%	308.2	13.2%
2051	88.5	3.7%	223.3	9.4%	311.8	13.1%
2052	89.3	3.7%	226.4	9.4%	315.7	13.1%
2053	90.3	3.7%	229.5	9.4%	319.8	13.1%
2054	91.4	3.7%	232.6	9.4%	324.0	13.0%
2055	92.7	3.7%	235.8	9.4%	328.5	13.0%

CHART 90



XII. Public School Teachers' Pension and Retirement Fund of Chicago

- **Plan Summary**
- **Active Employees**
- **Employee Annuitants**
- **Average Salaries**
- **Average Retirement Annuity**
- **Funded Ratios**
- **Change in Unfunded Liabilities**
- **Investment Income**
- **Investment Rates of Return**
- **Systems Experience**
- **Changes in Net Assets**
- **System Projections**
- **Asset Allocation**



Note: All data shown in this section is based upon the system's Actuarial Valuation and CAFR as of June 30, 2018.

Public School Teachers' Pension and Retirement Fund of Chicago - Tier 1 Plan Summary

Retirement Age

- Age 60 with 20 years of service
- Age 55 with 20 years of service
- Age 62 with 5 years of service

Retirement Formula

- 2.2% of final average salary for each year of service

Maximum Annuity

- 75% of final average salary or \$1,500 per month, whichever is greater

Salary Used to Calculate Pension

- Average of 4 highest consecutive years within final 10 years of service

Annual COLA

- 3% compounded

Employee Contributions

- 9.0% of salary

Employer Contributions

Pursuant to P.A. 96-0889, for fiscal years 2014 through 2059 the employer (the Board of Education) is required to make contributions calculated as a level percentage of payroll sufficient to bring the fund's total assets up to 90% of the fund's total liabilities by the end of FY 2059. In years where the funded ratio is above 90%, the employer is not required to make contributions.

P.A. 99-0521, effective June 1, 2017, allows the Board of Education to levy annually a property tax capped at 0.383% for purposes of making employer contributions.

P.A. 100-0465, effective August 31, 2017, increases the property tax cap from 0.383% to 0.567% beginning FY 2018. Also, the Act requires the State to pay \$221.3 million for FY 2018 and an amount equal to the employer normal cost portion of the required Board of Education contributions beginning FY 2019.

Note: Benefits shown are for employees hired prior to January 1, 2011 (Tier 1 employees), the effective date of P.A. 96-0889. See P.A. 96-0889 in Section I for a summary of benefits for employees hired after January 1, 2011 (Tier 2 employees).

CHART 91

**CHICAGO TEACHERS' PENSION FUND
Active Employees**

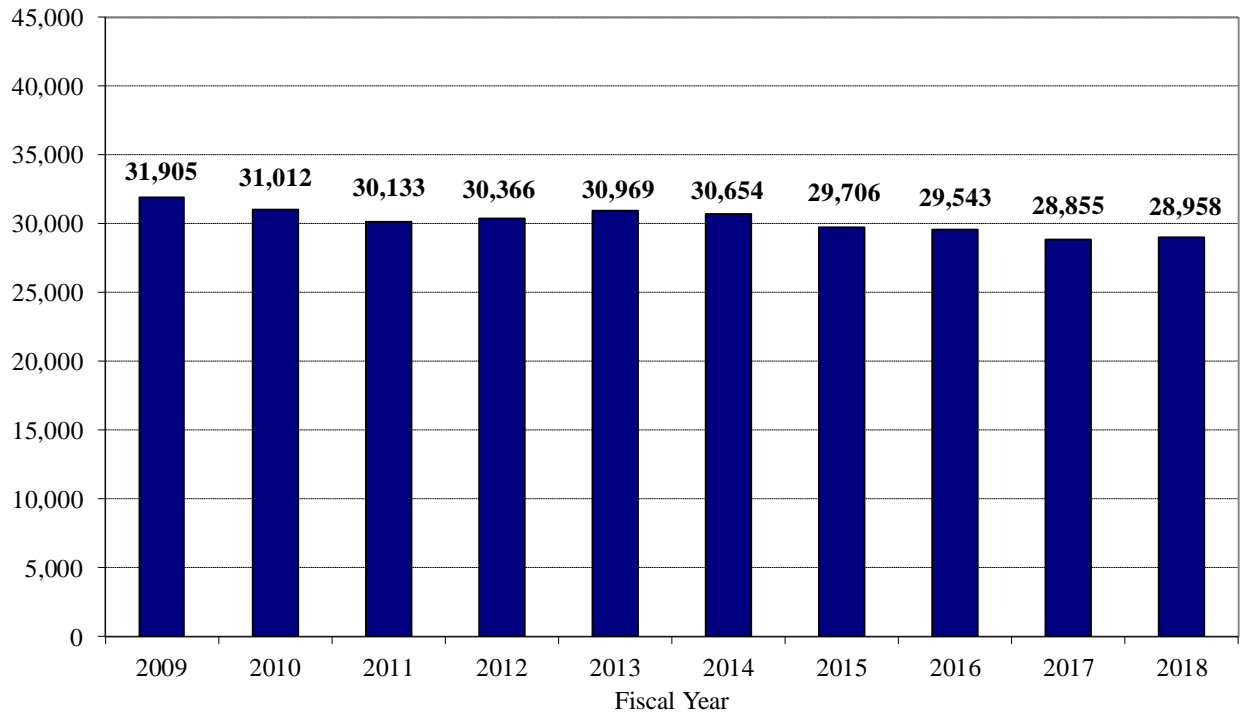


CHART 92

**CHICAGO TEACHERS' PENSION FUND
Employee Annuitants**

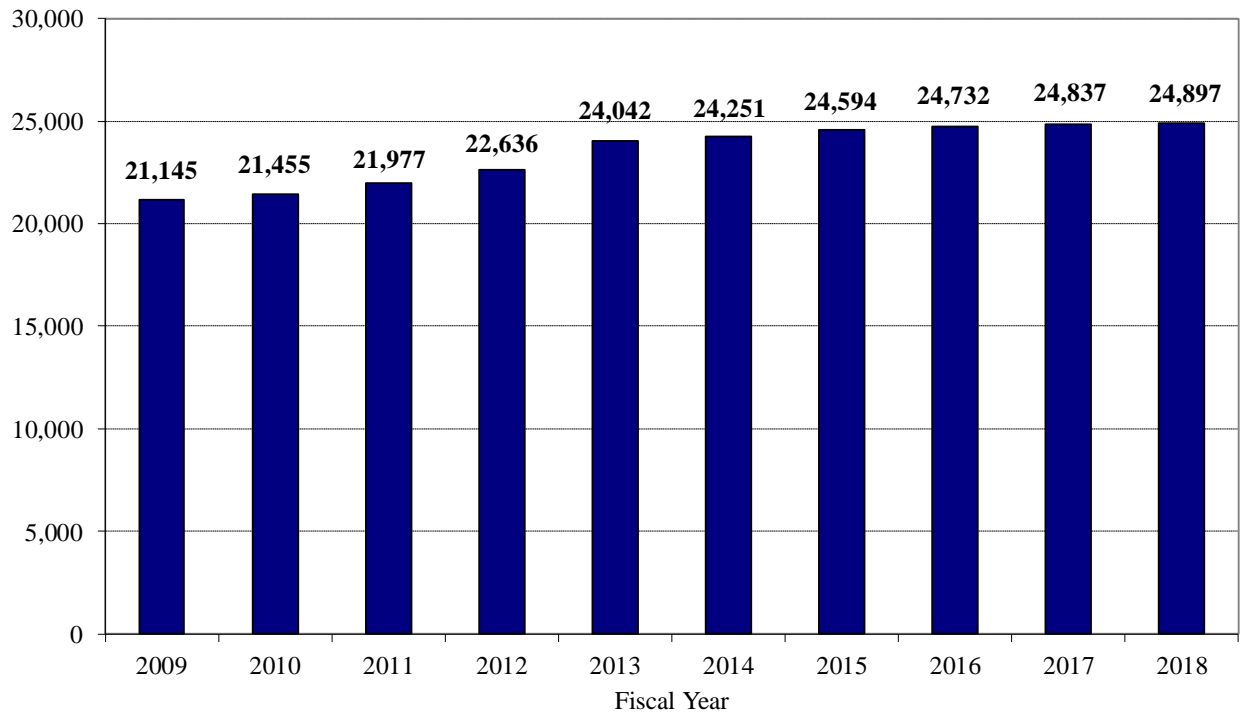


CHART 93

**CHICAGO TEACHERS' PENSION FUND
Average Employee Salaries**

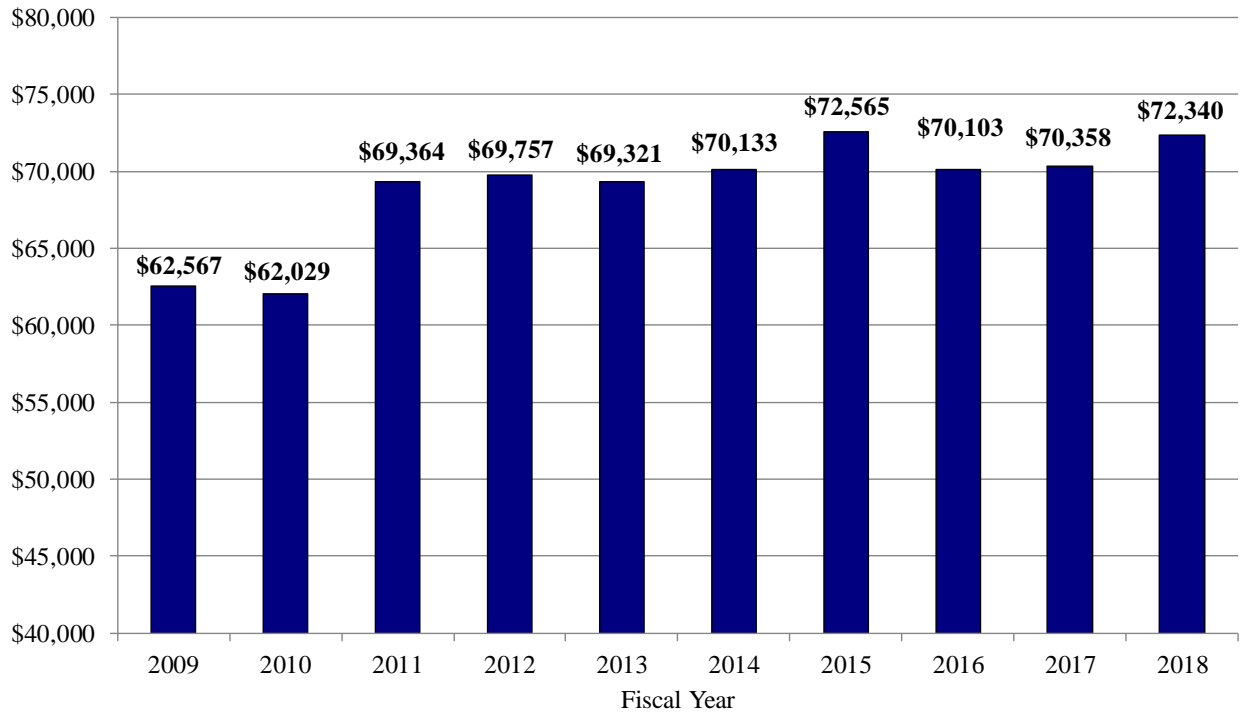


CHART 94

**CHICAGO TEACHERS' PENSION FUND
Average Retirement Annuities**



CHART 95

**CHICAGO TEACHERS' PENSION FUND
Funded Ratio
FY 2009 - FY 2018**

All figures based upon the actuarial value of assets.

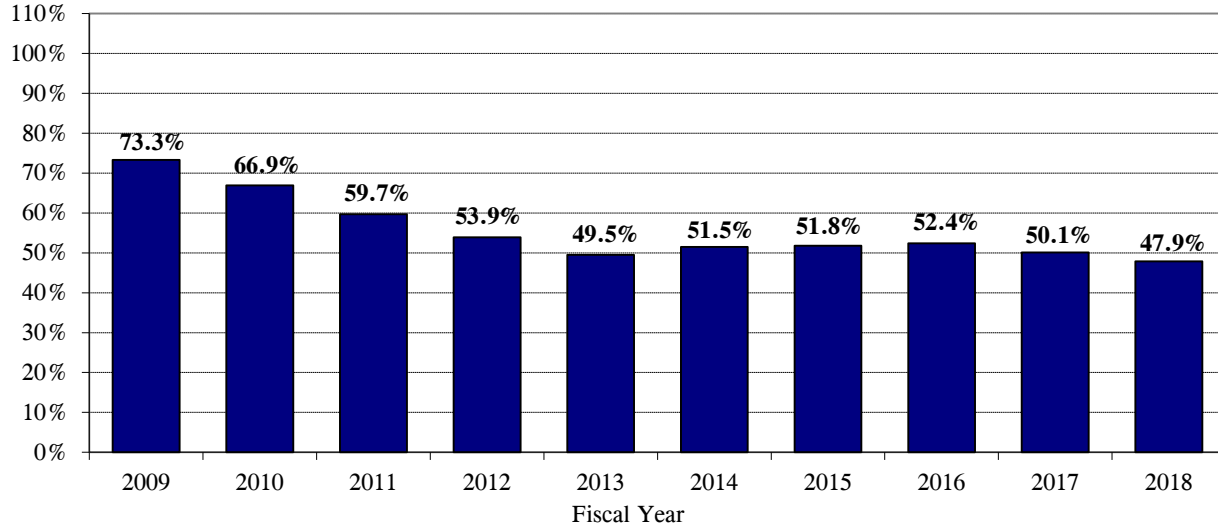
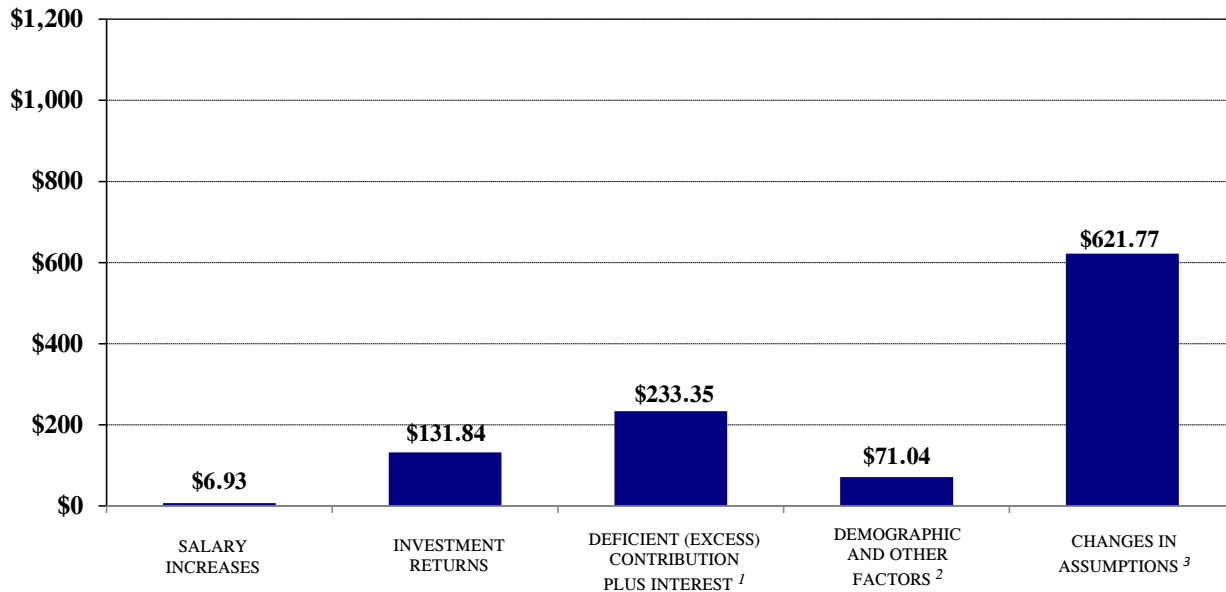


CHART 96

**CHICAGO TEACHERS PENSION FUND
Change in Unfunded Liabilities
Year ended June 30, 2018
(\$ Millions)**

All figures based upon the actuarial value of assets.

TOTAL INCREASE EQUALS
\$1,064.9 MIL



¹ Unfunded liability increased due to contributions being less than normal cost, plus interest cost.

² Includes an actuarial loss of \$71 million from a net actuarial loss from demographic experiences.

³ Investment return assumption lowered from 7.25% to 7.00%, salary increase rates decreased, and wage inflation lowered from 3.25% to 3.00%.

CHART 97

CHICAGO TEACHERS' PENSION FUND
Investment Income FY 2009 - FY 2018
Actuarially Assumed Rate of Return: 7.00%
(\$ in Millions)

All figures based upon the market value of assets.

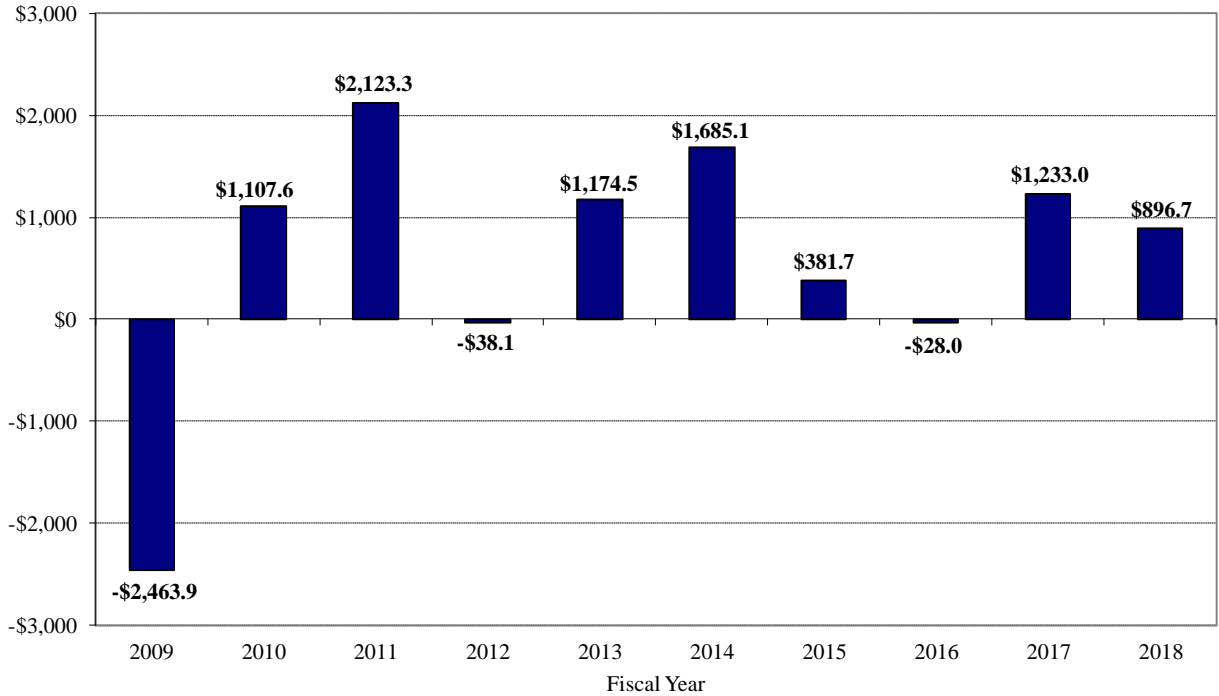


CHART 98

CHICAGO TEACHERS' PENSION FUND
Rate of Return FY 2009 - FY 2018
Actuarially Assumed Rate of Return: 7.00%

All figures based upon the market value of assets.

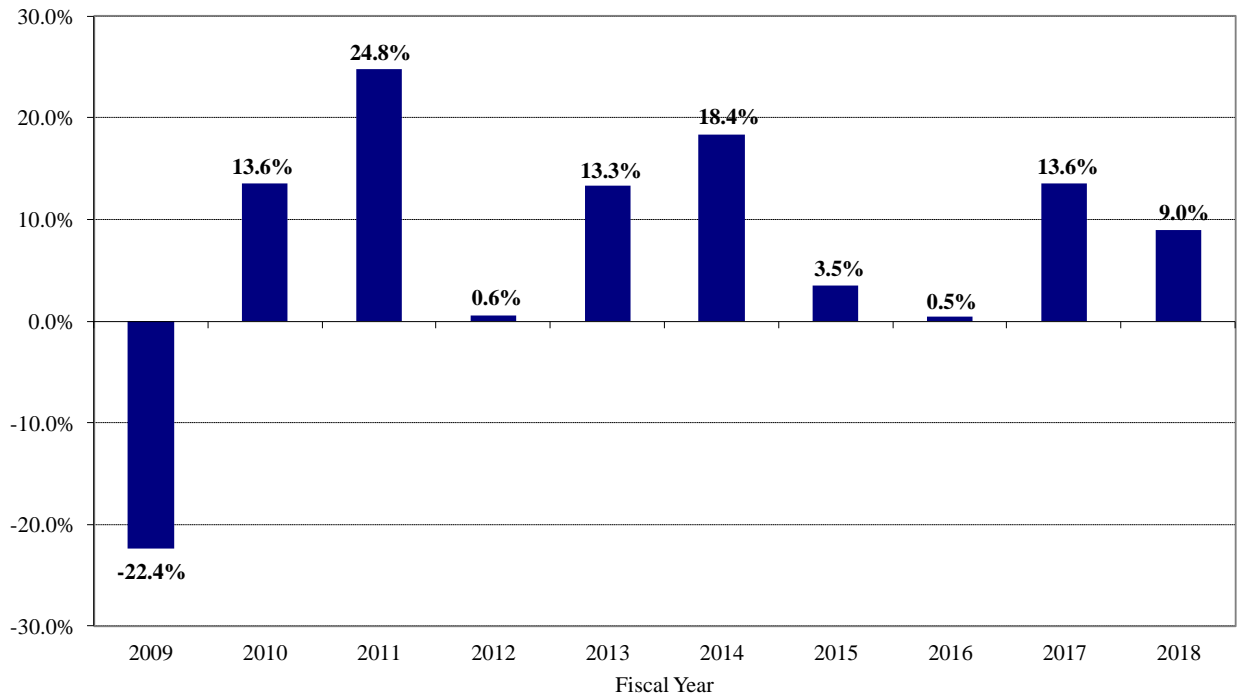


TABLE 32

CHICAGO TEACHERS PENSION FUND					
System Experience, FY 2009 - FY 2018					
(\$ in Millions)					
Fiscal Year	Annual Payroll	Actuarial Liabilities	Actuarial Assets	Unfunded Liabilities	Funded Ratio
2018	2,094.8	22,922.9	10,969.0	11,953.9	47.9%
2017	2,030.2	21,822.0	10,933.0	10,889.0	50.1%
2016	2,281.3	20,246.1	10,610.7	9,635.4	52.4%
2015	2,273.6	19,951.3	10,344.4	9,606.9	51.8%
2014	2,233.3	19,503.9	10,045.5	9,458.4	51.5%
2013	2,239.3	19,044.5	9,422.5	9,622.0	49.5%
2012	2,224.9	17,375.7	9,364.1	8,011.6	53.9%
2011	2,090.1	16,940.3	10,109.3	6,831.0	59.7%
2010	2,107.9	16,319.7	10,917.4	5,402.3	66.9%
2009	1,996.2	15,683.2	11,493.3	4,189.9	73.3%

TABLE 33

CHICAGO TEACHERS PENSION FUND										
Changes in Net Assets										
(\$ in Millions)										
Fiscal Years	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Additions to Assets										
Employer	717.5343	\$697.8	\$635.1	\$643.7	\$585.4	\$142.6	\$138.8	\$208.6 *	\$355.8 *	\$263.0 *
Employees	\$183.7	\$187.5	\$191.9	\$191.2	\$187.8	\$188.4	\$187.1	\$185.9	\$194.6	\$176.2
Net Investment Income	\$896.7	\$1,233.0	-\$28.2	\$381.7	\$1,685.1	\$1,174.5	-\$38.1	\$2,123.3	\$1,107.6	-\$2,463.9
Other	\$1.5	\$0.2	\$1.5	\$0.9	\$0.0	\$0.0	\$0.4	\$10.4	\$0.0	\$15.0
Total Asset Additions (A)	\$1,799.4	\$2,118.5	\$800.2	\$1,217.5	\$2,458.3	\$1,505.5	\$288.2	\$2,528.2	\$1,658.0	-\$2,009.7
Deductions from Assets										
Benefits	\$1,441.2	\$1,392.7	\$1,351.3	\$1,307.7	\$1,273.5	\$1,232.3	\$1,117.2	\$1,050.9	\$991.4	\$944.5
Refunds	\$25.1	\$32.2	\$33.6	\$23.9	\$32.8	\$24.8	\$36.3	\$27.1	\$21.1	\$19.0
Rebates	\$0.00	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$75.8
Administrative Expenses	\$21.5	\$13.8	\$12.3	\$11.7	\$10.5	\$11.5	\$10.1	\$9.5	\$8.8	\$8.8
Other	\$0.00	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$78.9	\$80.0	\$0.0
Total Asset Deductions (B)	\$1,487.8	\$1,438.7	\$1,397.1	\$1,343.3	\$1,316.8	\$1,268.6	\$1,163.6	\$1,166.4	\$1,101.3	\$1,048.1
Change in Net Assets (A-B=C)	\$311.6	\$679.8	-\$596.9	-\$125.7	\$1,141.5	\$236.9	-\$875.4	\$1,361.8	\$556.7	-\$3,057.8

* From fiscal years 2009 through 2011, employer contributions for the Health Insurance Fund were included.

Table 34 below contains funding projections based on the June 30, 2018 actuarial valuation of the Chicago Teachers' Pension Fund.

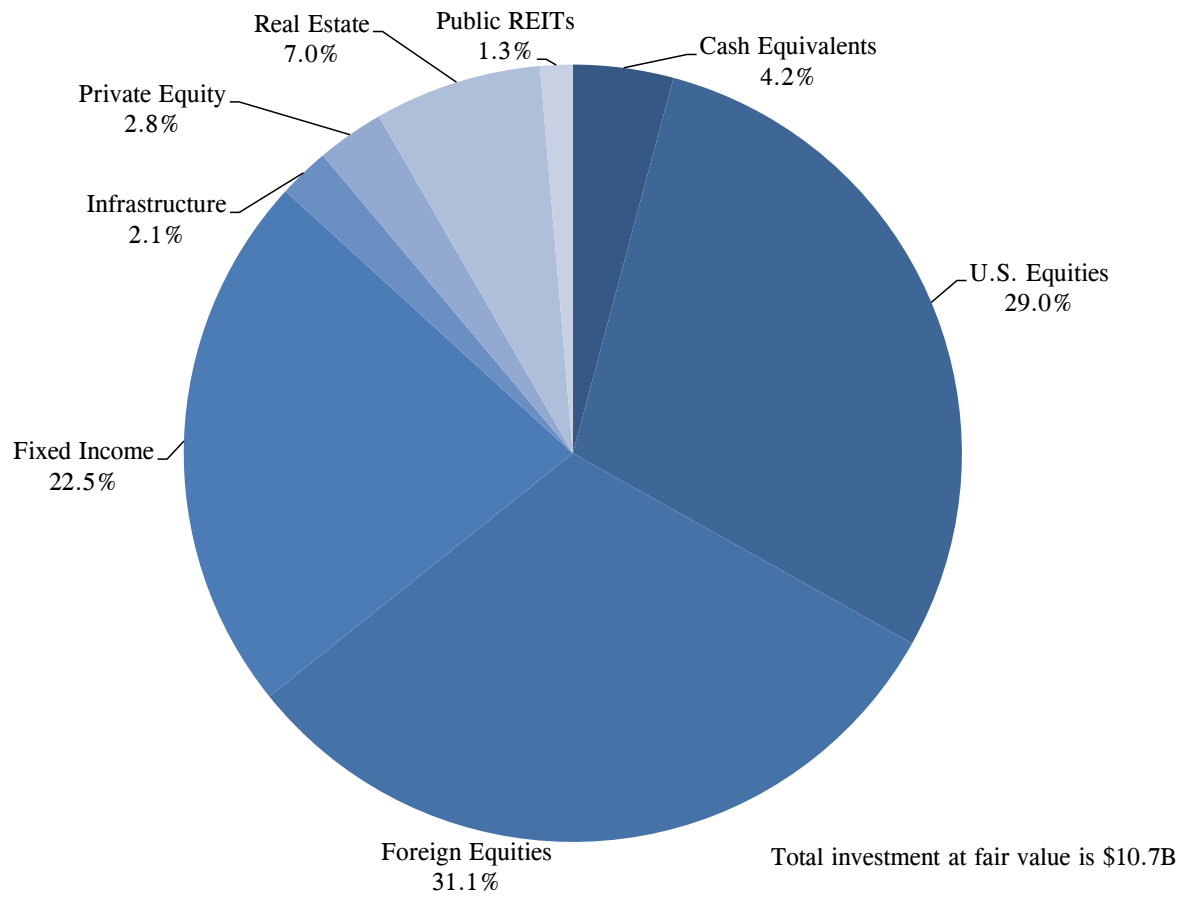
TABLE 34

Chicago Teachers' Pension Fund								
Actuarial Valuation Projection Results as of June 30, 2018								
Projections Based on P.A. 90-0655, P.A. 91-0357, P.A. 96-0889, P.A. 100-0465								
(\$ in Millions)								
Fiscal Year	Capped Payroll	Total Employer Contributions ¹	Employer Contribution As % of Payroll	Total Employee Contribution	Total Actuarial Liability	Actuarial Value of Assets	Unfunded Actuarial Liability	Funded Ratio
2019	2,118.1	808.6	38.2%	190.6	23,326.3	11,058.3	12,268.0	47.4%
2020	2,180.6	854.5	39.2%	196.3	23,737.4	11,378.4	12,359.0	47.9%
2021	2,238.3	877.1	39.2%	201.4	24,157.2	11,604.9	12,552.3	48.0%
2022	2,295.7	899.6	39.2%	206.6	24,587.2	11,810.7	12,776.5	48.0%
2023	2,353.9	922.4	39.2%	211.9	25,026.4	12,026.4	13,000.0	48.1%
2024	2,412.5	945.4	39.2%	217.1	25,474.7	12,251.4	13,223.3	48.1%
2025	2,470.7	968.2	39.2%	222.4	25,931.0	12,487.5	13,443.5	48.2%
2026	2,528.4	990.8	39.2%	227.6	26,394.1	12,734.8	13,659.3	48.2%
2027	2,586.0	1,013.4	39.2%	232.7	26,863.6	12,993.5	13,870.1	48.4%
2028	2,644.0	1,036.1	39.2%	238.0	27,336.7	13,262.4	14,074.3	48.5%
2029	2,702.4	1,059.0	39.2%	243.2	27,824.4	13,553.7	14,270.7	48.7%
2030	2,760.9	1,081.9	39.2%	248.5	28,314.4	13,856.4	14,458.0	48.9%
2031	2,819.8	1,105.0	39.2%	253.8	28,805.0	14,170.3	14,634.7	49.2%
2032	2,879.9	1,128.5	39.2%	259.2	29,295.5	14,496.1	14,799.4	49.5%
2033	2,940.7	1,152.4	39.2%	264.7	29,783.3	14,833.1	14,950.2	49.8%
2034	3,002.0	1,176.4	39.2%	270.2	30,267.1	15,183.6	15,083.5	50.2%
2035	3,063.5	1,200.5	39.2%	275.7	30,744.6	15,547.4	15,197.2	50.6%
2036	3,124.6	1,224.4	39.2%	281.2	31,214.4	15,925.2	15,289.2	51.0%
2037	3,186.1	1,248.5	39.2%	286.7	31,674.5	16,317.3	15,357.2	51.5%
2038	3,247.5	1,272.6	39.2%	292.3	32,122.7	16,724.1	15,398.6	52.1%
2039	3,309.6	1,296.9	39.2%	297.9	32,556.4	17,145.5	15,410.9	52.7%
2040	3,372.9	1,321.7	39.2%	303.6	32,974.1	17,582.8	15,391.3	53.3%
2041	3,438.1	1,347.2	39.2%	309.4	33,372.4	18,036.5	15,335.9	54.0%
2042	3,503.7	1,373.0	39.2%	315.3	33,749.2	18,507.1	15,242.1	54.8%
2043	3,572.2	1,399.8	39.2%	321.5	34,104.4	18,998.0	15,106.4	55.7%
2044	3,644.5	1,428.2	39.2%	328.0	34,438.8	19,514.1	14,924.7	56.7%
2045	3,720.2	1,457.9	39.2%	334.8	34,754.3	20,060.7	14,693.6	57.7%
2046	3,800.9	1,489.4	39.2%	342.1	35,054.8	20,645.5	14,409.3	58.9%
2047	3,884.9	1,522.4	39.2%	349.6	35,343.8	21,275.6	14,068.2	60.2%
2048	3,972.6	1,556.8	39.2%	357.5	35,626.6	21,960.1	13,666.5	61.6%
2049	4,063.0	1,592.2	39.2%	365.7	35,907.2	22,707.0	13,200.2	63.2%
2050	4,154.7	1,628.1	39.2%	373.9	36,188.0	23,522.8	12,665.2	65.0%
2051	4,247.0	1,664.3	39.2%	382.2	36,471.0	24,414.1	12,056.9	66.9%
2052	4,340.4	1,700.9	39.2%	390.6	36,755.8	25,385.2	11,370.6	69.1%
2053	4,434.5	1,737.7	39.2%	399.1	37,041.9	26,441.0	10,600.9	71.4%
2054	4,530.5	1,775.4	39.2%	407.7	37,328.5	27,586.5	9,742.0	73.9%
2055	4,628.1	1,813.6	39.2%	416.5	37,612.8	28,825.3	8,787.5	76.6%
2056	4,727.2	1,852.4	39.2%	425.4	37,892.6	30,162.3	7,730.3	79.6%
2057	4,827.3	1,891.7	39.2%	434.5	38,166.9	31,603.4	6,563.5	82.8%
2058	4,928.4	1,931.3	39.2%	443.6	38,436.9	33,157.6	5,279.3	86.3%
2059	5,030.2	1,971.2	39.2%	452.7	38,705.1	34,835.7	3,869.4	90.0%

¹ Total employer contributions consist of the required Board of Education and State contributions and additional Board of Education and State contributions.

CHART 99

**PUBLIC SCHOOL TEACHERS' PENSION AND RETIREMENT FUND OF CHICAGO
ASSET ALLOCATION AS OF JUNE 30, 2018**



COMMISSION OVERVIEW

The Commission on Government Forecasting & Accountability is a bipartisan legislative support service agency responsible for advising the Illinois General Assembly on economic and fiscal policy issues and for providing objective policy research for legislators and legislative staff. The Commission's board is comprised of twelve legislators—split evenly between the House and Senate and between Democrats and Republicans. Effective December 10, 2018, pursuant to P.A. 100-1148 the former Legislative Research Unit was merged into the Commission.

The Commission has three internal units—Revenue, Pensions, and Research, each of which has a staff of analysts and researchers who analyze policy proposals, legislation, state revenues & expenditures, and benefit programs, and who provide research services to members and staff of the General Assembly. The Commission's staff fulfills the statutory obligations set forth in the Commission on Government Forecasting and Accountability Act (25 ILCS 155/), the State Debt Impact Note Act (25 ILCS 65/), the Illinois Pension Code (40 ILCS 5/), the Pension Impact Note Act (25 ILCS 55/), the State Facilities Closure Act (30 ILCS 608/), the State Employees Group Insurance Act of 1971 (5 ILCS 375/), the Public Safety Employee Benefits Act (820 ILCS 320/), the Legislative Commission Reorganization Act of 1984 (25 ILCS 130/), and the Reports to the Commission on Government Forecasting and Accountability Act (25 ILCS 110/).

- The **Revenue Unit** issues an annual revenue estimate, reports monthly on the state's financial and economic condition, and prepares bill analyses and debt impact notes on proposed legislation having a financial impact on the State. The Unit publishes a number of statutorily mandated reports, as well as on-demand reports, including the Monthly Briefing newsletter and annually, the Budget Summary, Capital Plan Analysis, Illinois Economic Forecast Report, Wagering in Illinois Update, and Liabilities of the State Employees' Group Insurance Program, among others. The Unit's staff also fulfills the agency's obligations set forth in the State Facilities Closure Act.
- The **Pension Unit** prepares pension impact notes on proposed pension legislation and publishes several statutorily mandated reports including the Financial Condition of the Illinois State Retirement Systems, the Financial Condition of Illinois Public Pension Systems and the Fiscal Analysis of the Downstate Police & Fire Pension Funds in Illinois. The Unit's staff also fulfills the statutory responsibilities set forth in the Public Safety Employee Benefits Act.
- The **Research Unit** primarily performs research and provides information as may be requested by members of the General Assembly or legislative staffs. Additionally, the Unit maintains a research library and, per statute, collects information concerning state government and the general welfare of the state, examines the effects of constitutional provisions and previously enacted statutes, and considers public policy issues and questions of state-wide interest. Additionally, the Unit publishes First Reading, a quarterly newsletter which includes abstracts of annual reports or special studies from other state agencies, the Illinois Tax Handbook for Legislators, Federal Funds to State Agencies, various reports detailing appointments to State Boards and Commissions, the 1970 Illinois Constitution Annotated for Legislators, the Roster of Illinois Legislators, and numerous special topic publications.

Commission on Government Forecasting & Accountability

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